Duke Power
A Duke Energy Company

GARY R. PETERSON
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August 9, 2004

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Subject: Duke Energy Corporation (Duke)
McGuire Nuclear Station Units 1 and 2
Docket Nos. 50-369 and 50-370
Relief Requests (RR) 04-MN-02, 04-MN-03, and 04-MN-04

Pursuant to 10 CFR 50.55a(a)(3), Duke requests approval to use alternatives to Section XI of the ASME Boiler and Pressure Vessel Code (Code). Compliance with the specified requirements of this section would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. However, the proposed alternatives will provide an acceptable level of quality and safety. Specific details are described in the attached relief requests.

Questions on this matter should be directed to Norman T. Simms, McGuire Regulatory Compliance, at (704) 875-4685.

Sincerely,

G.R. Peterson

Attachments

A047

cc w/attachments:

Mr. W.D. Travers
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
Atlanta Federal Center
61 Forsyth Street, SW, Suite 23T85
Atlanta, Georgia 30303

Mr. J.J. Shea, Project Manager (addressee only)
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
One White Flint North, Mail Stop 08 H12
11555 Rockville Pike
Rockville, MD 20852-2738

Mr. J.B. Brady
Senior NRC Resident Inspector
McGuire Nuclear Station

bxc w/o attachments:

N.T. Simms
R. Branch (MG01WC)
G.J. Underwood (EC05A)
D.E. Caldwell (MG01WC)
R.K. Rhyne (EC05A)
J.J. Mc Ardle(EC05A)
J.F. Swan (MG01WC)
K.L. Crane

bxc w/attachments:

NRIA File/ELL
Master File # 1.3.2.13

ATTACHMENT 1

Relief Request 04-MN-002

Proposed Relief in Accordance with 10 CFR 50.55a(g)(5)(iii)
Inservice Inspection Impracticality

Duke Energy Corporation
McGuire Nuclear Station – Unit 1 (EOC-15), Examination Dates April 18, 2001 To October 10, 2002
Third 10-Year Interval – Inservice Inspection Plan
Interval Start Date December 1, 2001. Interval End Date December 1, 2011
ASME Section XI Code – 1995 Edition with 1996 Addenda and * Westinghouse Owner's Group (WCAP-14572)

	I.	II. & III.	IV.	V.	VI.	VII.
Limitation I.D. Number	System / Component for Which Relief is Requested: Area or Weld to be Examined	Code Requirement from Which Relief is Requested: 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	Basis for Relief	Alternate Examinations or Testing	Justification for the Granting of Relief	Implementation Schedule
1CCPUMP-1A-LEG	1A Centrifugal Charging Pump Support Legs (Integrally Welded Attachment)	Exam Category C-C Item No. C03.030.001 Fig. IWC-2500-5 (a) 77.74% Surface Area Coverage	See Paragraph "A" also (See Attachment 1 Pages 1-5)	None	See Paragraph "C" also (See Attachment 1 Pages 1-5)	The examination requirements for this interval were met; no additional exams are planned.
1RPV1-462C-SE	NI Safety Injection System Reactor Vessel Head to Upper Head Injection Tube Weld	Exam Category R-A (RI-ISI Program) Item No.R01.011.026 Fig. IWB-2500-8(c) Appendix III,III-4420 and III-4430 74.62% Volume Coverage	See Paragraph "B" also (See Attachment 2 Pages 1-5)	None	See Paragraph "D" also (See Attachment 2 Pages 1-5)	The examination requirements for this interval were met; no additional exams are planned.

*** Piping welds examined under the RI-ISI program developed in accordance with methodology contained in the Westinghouse Owner's Group (WOG) Topical Report, WCAP-14572, Revision 1-NPA and Request for Relief 01-005 approved by SER dated June 12, 2002.**

Note: Item Number C03.030.001 was examined on 09/10/2002 and R01.011.026 was examined on 09/23/2002.

Basis for Relief

Paragraph: A
(The 1A Centrifugal Charging Pump Support Leg material is stainless steel.)
During the liquid penetrant examination of the welds, 100% coverage of the required surface examination area could not be obtained. The examination coverage was limited to 77.74%. The limitations were caused by the geometric configuration of the support legs restricting access for complete examination coverage. No recordable indications were found during the surface examination of this weld.

Paragraph: B
(The Upper Head Injection Tube Weld material is carbon steel and inconel. The weld has a diameter of 6.250" and a wall thickness of .625".)
During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 74.62%. This percentage represents the aggregate coverage from all scans. A 45 degree longitudinal wave axial scan from the pipe side covered 92.31% of the examination volume from one direction. Two opposing circumferential scans using 45 degree shear waves covered 73.85% and a 45 degree longitudinal wave axial scan from the vessel side covered 58.46% of the required volume from one direction. In order to achieve greater than 90% coverage from two beam path directions, axially and circumferentially, the weld would have to be re-designed to allow scanning from both sides which is impractical. No recordable indications were found during the volumetric examination of this weld.

Justification for Relief

Paragraph: C
Although the examination surface area as defined in ASME Section XI 1995 Edition with 1996 Addenda, Figure IWC-2500-5 (a) could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. The code required surface (PT) examination was the only examination performed for this item. The liquid penetrant examination was performed in accordance with ASME Section V Article 6, 1989 Edition with no addenda. No additional C3.30 (Pump Integrally Welded Attachments) welds were scheduled during this outage.

This is an Integrally Welded Attachment located on the 1A Centrifugal Charging Pump Support Legs 1CCPUMP-1A-LEG. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation.

A leak at this weld would likely result in abnormal Volume Control Tank (VCT) level trends and/or unexpected auto make-ups.

A leak at this weld would likely result in an increase in unidentified reactor coolant leakage. Such a leak would be discovered during performance of the reactor coolant leakage calculation,

which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage specification in Technical Specification 3.4.13.1 is 1 gpm. Any increased reactor coolant leakage identified by the calculation would make Duke suspect either the operating or idle CCP, especially if a recent train swap has occurred (normally biweekly). To evaluate either of these indicators an operator would be dispatched to the pump rooms, which would identify any leakage from this weld.

Also, operators perform surveillance once per shift during daily rounds of the room containing the 1A CCP. This surveillance should identify any leak at the weld in question.

Paragraph: D

Although the examination volume as defined in the Risk Informed program and WCAP-14572 Revision 1, Figure IWB-2500-8(c), Table 4.1.1 (Examination Category R-A, Risk Informed Piping Examinations) could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures in accordance with Section XI, Appendix III 1995 Edition with the 1996 Addenda. This is a Dissimilar Metal Weld limited due to material characteristics and single sided access caused by component geometry which prevents two-beam path direction coverage of the examination volume. In order to obtain greater than 90% coverage, this weld would have to be re-designed to allow scanning from both sides. Replacement or re-design of this Class 1 weld is not a viable alternative and would create an undue burden on Duke Energy Corporation. During the examination of this weld, techniques were utilized to obtain the maximum possible coverage. Beginning in 1990 Duke Energy Corporation changed to refracted longitudinal wave search units to examine DissimilarM welds based upon NRC Information Notice 90-30, "Ultrasonic Inspection Techniques for Dissimilar Metal Welds". The procedure used complied with the requirements of ASME Section XI, Appendix III. The procedure required the use of refracted longitudinal waves to examine the weld and buttered material and shear waves to examine the wrought nozzle and safe base materials. The code required volumetric (UT) examination was the only examination performed for this item. No additional R01.011. (RPV Head to UHI Tube) welds were scheduled during this outage. However three additional (RPV Head to UHI Tube) welds were examined by volumetric (UT) under the station augmented program (G04.001). No recordable conditions were found during the examination of these welds.

The reactor coolant system weld listed above is located on the reactor vessel closure head. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. This weld was rigorously inspected by radiography and dye penetrant during construction and verified to be free from unacceptable fabrication defects. If a leak were to occur at this weld, the reactor coolant leakage calculation which is normally performed daily (and required by Technical Specifications to be performed every 72 hours) would provide an early indication of leakage. The unidentified leakage specification in Technical Specification 3.4.13.1 is 1 gpm. Several other indicators, such as, containment radiation monitors EMF-38, 39 and 40; the containment floor and equipment sump levels; containment humidity instruments; and the ventilation unit condensate drain tank

level would provide an early indication of weld leakage for prompt Operations and Engineering evaluation.

Jim McArdle and Tim Tucker (NDE Level III's) provided Sections II through V and part of Section VI

Ed Hyland, (MNS Systems Engineer) provided part of Section VI

Gary Underwood (Sponsor) compiled the remaining sections

Attachment 1	PT Examination Data C03.030.001
Attachment 2	UT Examination Data R01.011.026

Sponsored By: Gary Underwood **Date** 6-29-04

Approved By: L. Kevin Rhyne **Date** 6/29/04

Form NDE-35A	Revision 3

DUKE POWER COMPANY

STATION McGuire **UNIT** 1

LIQUID PENETRANT EXAMINATION REPORT

Weld/ID No. 1CCPUMP-1A-LEG Material Type: ☒ SS ☐ CS ☐ Inconel

Diameter 0 Schedule/Thickness /0 ☒ ISI ☐ PSI ☐ Other

Procedure Rev. No. 19 Field Change No.(s) N/A

W/O No. 98438548-28

Surface Temperature 86° F

M&TE S/N MCNDE 27220

Penetrant Materials Category:

A ☒ A(SE) ☐ B ☐ C ☐ D ☐

A(SE) Approved

Penetrant Materials Data:

Batch Numbers

Cleaner 01G12K

Penetrant 97A10K

Developer 02B03K

Emulsifier

Fluorescent ☐ Nonfluorescent ☒

SKETCH OF ITEM EXAMINED

Black Light Intensity Verified

Time Date

Light Meter S/N:

Acceptance Standard: A ☐ D ☐ G ☐ K ☐

Other: B ☐ E ☐ H ☒ L ☐

C ☐ F ☐ J ☐ M ☐

Ind. No.	Indication Type/Dimensions	Reference Documents	Recordable	Reportable
NRI				

PIP S/N: N/A Rejectabl ☐ Acceptable ☒

Exam Limitations: ☒ Yes 77.74 % Examined ☐ No (100% Examined)

Comments:

Examiner: David Zimmerman Level: II Date: 9/10/2002

Examiner: James L. Panel Level: II Date: 9/10/2002

Reviewed By: Level: II Date: 9/17/02

Final Review	Date	ANII Review	Date	Item No.
	9/19/2002		9-19-02	C03.030.001

R Gee 9/26/02

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Attachment-1
PAGE 1 OF 5

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1 Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
138.5 in. of weld length X 2.4 in. wide inspection area = 332.4 sq. in. total weld area.	

Coverage Calculations

Scan #	Angle	Beam Direction	~~Area of~~ WIDTH Examined ~~(sq.in.)~~ in	Length Examined (in.)	~~Volume of~~ AREA Examined ~~(cu.in.)~~ sq.in	~~Volume of~~ AREA Required ~~(cu.in.)~~ sq.in.	Percent Coverage
N/A	N/A	N/A	2.4	107.5	258	332.5	
N/A	N/A	N/A	1.9	14.0	26.6	33.6	
					284.6	366.1	77.74

Item No: C03.030.001			
Prepared By: David K. Zimmerman	Level: II	Date: 9/10/2002	
Reviewed By:	Level: II	Date: 9/17/02	

R GH 9/26/02

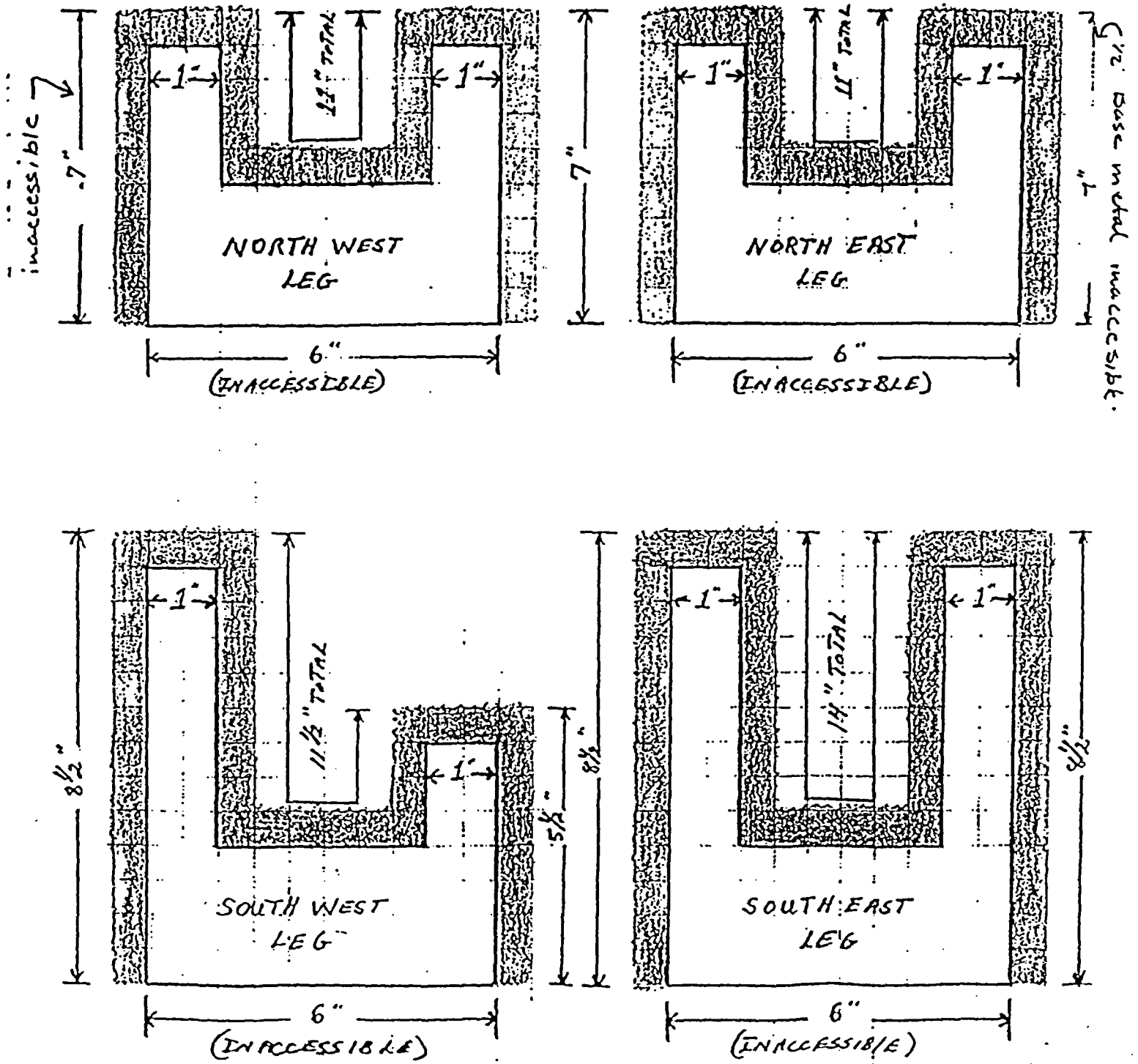
R 9-19-02

ation MCGUIRE Unit Rev. File No. Sheet Of

Subject ICCPUMP - A-LEG

By James A. Parnell Date 9/10/2002

Prob No. ITEM# C03.030.001 Checked By David K. B Date 9/10/2002



R
9-19-02

PAGE 3 OF 3

II 9/17/02

WELD-SHADED AREA

"NOT TO SCALE"

04-MN-002
ATTACHMENT-1
Page 30F5

"-1/2" NPT CONN.	FA	COUPLING - KOPPERS FAST'S TYPE FS NO. 2, BALANCED, SPACER & GUARD.
	FS	COUPLING - KOPPERS FAST'S MODEL "B" NO. 3½ L.E.F. GUARD (SEE NOTE 1)
CT - 1/2" NPT CONN.		
(FOR 1" DIA CARBON STEEL BOLTS)	AP	AUXILIARY LUBE OIL PUMP, BROWN & SHARPE MODEL 35, 2 HP., 60 CYCLES, 3 PHASE, 575 VOLTS, FRAME 145T
MINIMUM TWENTY	LG	LIFTING LUG - 4 PLACES @ 2" DIA. HOLE.
D. OF 6" STD. PIPE.	OC	OIL COOLER - AM. STD. SIZE 06030 SSCF-C, ASME SECT. III CLASS 3.
SHD.		

COOLING WATER IN & OUT CONNS. MOTOR DWG B27103 SUB 7

QA CONDITION 1

See coupling data sheets.

NOTES :- 1- THIS COUPLING HAS LIMITED END FLOAT (L.E.F.) TO PREVENT MOTOR SHAFT THRUST COLLAR FROM CONTACTING & DAMAGING MOTOR SLEEVE BEARINGS. ~~TO POSITION MOTOR, PULL SHAFT ALL THE WAY TOWARD DRIVEN EQUIPMENT UNTIL THRUST COLLAR CONTACTS BEARING & MOVE BACK 1/8" - MARK ON SHAFT AND, HOLDING THIS POSITION, MOVE MOTOR FRAME UNTIL MOTOR SHAFT CONTACTS DRIVEN EQUIPMENT'S SHAFT SPACER BUTTON.~~

2- MECHANICAL SEAL FLUSHING LINE FROM SEAL PLATE THRU LOOPED TUBING BACK TO SEAL PLATE FURNISHED BY P.P. SEE DWG. SF-48582

3- COOLING WATER DATA FOR:-

(1) GEAR OIL COOLER : 8 GPM OF BRACKISH WATER @ 100°F MAX. TO PROVIDE MAX. OF 350 BTU/MIN. COOLING. PRESSURE DROP 1 PSI.

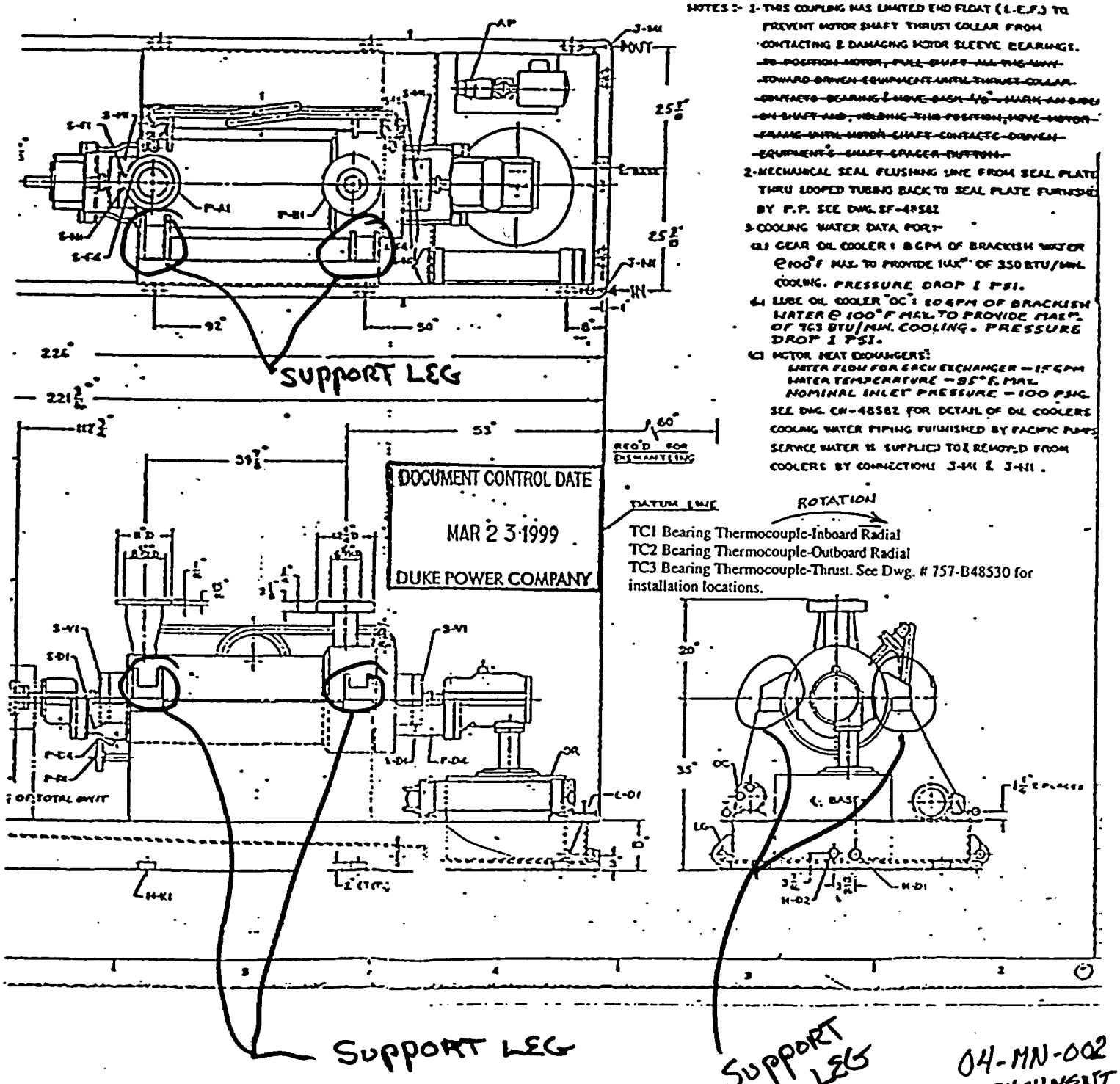
(2) LUBE OIL COOLER "OC" : 20 GPM OF BRACKISH WATER @ 100°F MAX. TO PROVIDE MAX. OF 763 BTU/MIN. COOLING. PRESSURE DROP 1 PSI.

(3) MOTOR HEAT EXCHANGERS:
WATER FLOW FOR EACH EXCHANGER - 15 GPM
WATER TEMPERATURE - 95°F. MAX.
NOMINAL INLET PRESSURE - 100 PSIG.

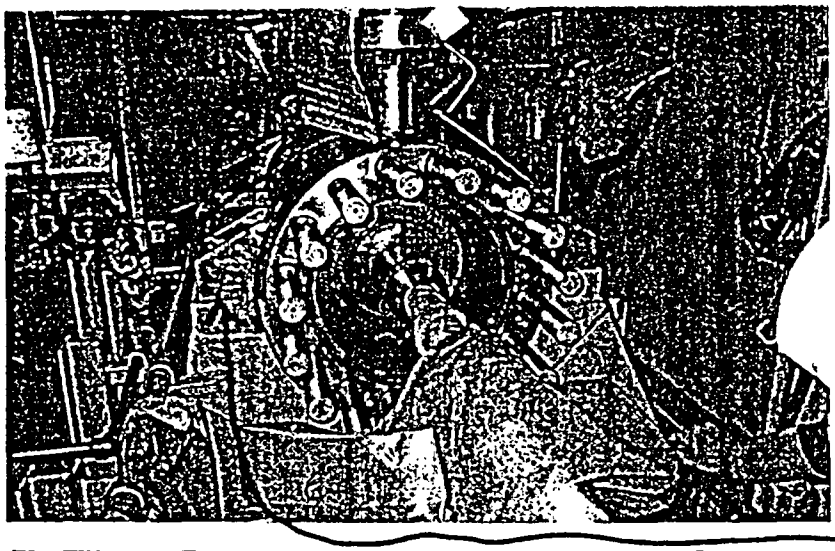
SEE DWG. CN-48582 FOR DETAIL OF OIL COOLERS

COOLING WATER PIPING FURNISHED BY PACIFIC PUMPS

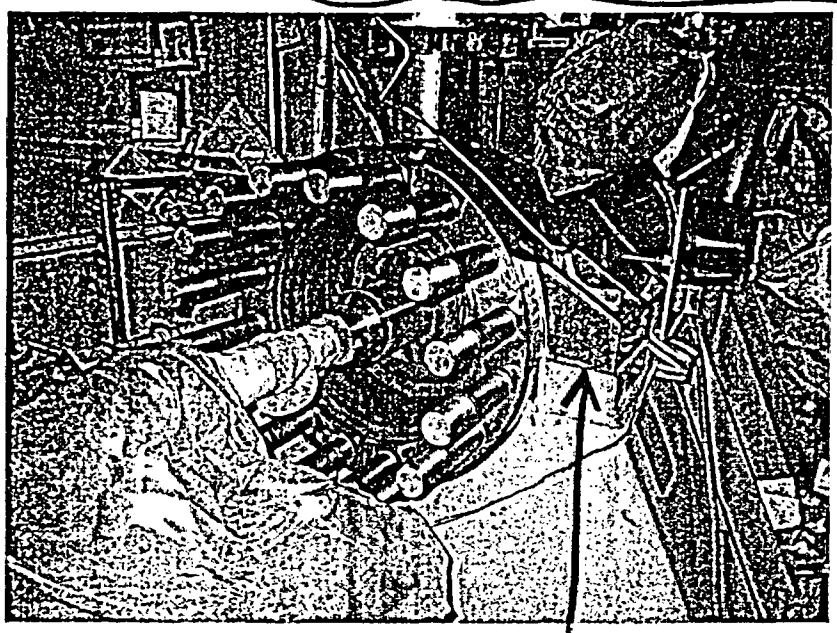
SERVICE WATER IS SUPPLIED TO & REMOVED FROM COOLERS BY CONNECTIONS J-M1 & J-N1.



04-MN-002
ATTACHMENT
Page 4 of 5



Support LEG



Support LEG

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0510 | Form NDE-UT-2A

Exam Finish: 0553 | Revision 4

Station: McGuire | Unit: 1 | Component/Weld ID: 1RPV1-462C-SE | Date: 09/23/2002

Weld Length (in.): 19.6 | Surface Condition: AS GROUND | Lo: N/A

Surface Temperature: 75 ° F

Examiner: James L. Panel Level: II

Examiner: Gary J. Moss Level: II

Pyrometer S/N: MCNDE 27221

Cal Due: 01/22/2003

Procedure: NDE-310 Rev: 0

FC: N/A

Calibration Sheet No: 0201036, 0201038

Scans:

45 ☑ 59.5 dB 70 ☐ ____ dB

45T ☑ 48.0 dB 70T ☐ ____ dB

60 ☐ ____ dB

60T ☐ ____ dB

Other: ____ dB

Configuration: CIRC. WELD

S2 Flow S1

UHI TUBE to HEAD

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: N/A

IND #	∠	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI	45°														

Remarks: OK 10/1/02

Limitations: (see NDE-UT-4) ☐ 90% or greater coverage obtained: yes ☑ no ☑

Sheet 1 of 4

Reviewed By: Level: III Date: 10/1/02

Authorized Inspector: Date: 10-2-02

Item No: R01.011.026

04-MN-002
ATTACHment-2
Page 1 of 5

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1RPV1-462C-SE   Item No: R01.011.026   Remarks:

RPV HEAD CONFIGURATON

☐ NO SCAN ☒ LIMITED SCAN	SURFACE ☒ 1 ☐ 2	BEAM DIRECTION ☐ 1 ☒ 2 ☐ cw ☐ ccw
FROM L 0 + 0" to L 0 + 20"	INCHES FROM WO C/L + 0.7" to BEYOND	
ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other ____	FROM ____ DEG to ____ DEG	
☐ NO SCAN ☐ LIMITED SCAN	SURFACE ☐ 1 ☐ 2	BEAM DIRECTION ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ____ to L ____	INCHES FROM WO ____ to ____	
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ____	FROM ____ DEG to ____ DEG	
☐ NO SCAN ☐ LIMITED SCAN	SURFACE ☐ 1 ☐ 2	BEAM DIRECTION ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ____ to L ____	INCHES FROM WO ____ to ____	
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ____	FROM ____ DEG to ____ DEG	
☐ NO SCAN ☐ LIMITED SCAN	SURFACE ☐ 1 ☐ 2	BEAM DIRECTION ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ____ to L ____	INCHES FROM WO ____ to ____	
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ____	FROM ____ DEG to ____	

Prepared By: Gary J. Moss [signature] Level: II Date: 9/23/2002 Sketch(s) attached ☒ yes ~~☒~~ no (GE 10/1/02) Sheet 2 of 4

Reviewed By: [signature] III Date: 10/1/02 Authorized Inspector: [signature] Date: 10-2-02

04-MN-002
Attachment-1
Page 2 of 5

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1 Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
3.1" x 0.21" = 0.65 sq. in.	0.65 sq. in. x 20" = 13 cu. in.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45°	S1	0.60	20	12	13	92.31
2	45°	S2	0.38	20	7.6	13	58.46
3	45°	CW	0.48	20	9.6	13	73.85
4	45°	CCW	0.48	20	9.6	13	73.85
		Total	Aggregate	Coverage	38.8	52	74.62

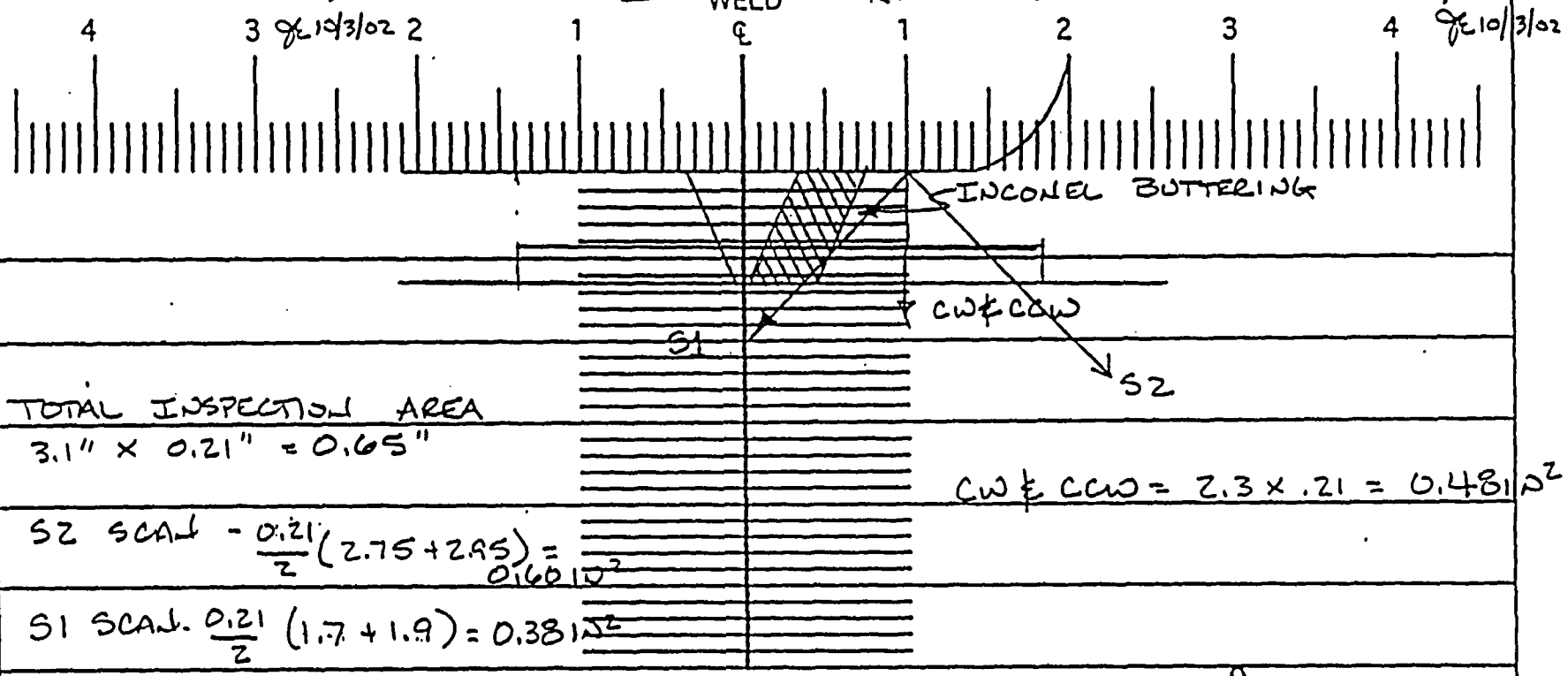
		Item No:	R01.011.026
Prepared By: Jay Eaton	Level: III		Date: 10/3/2002
Reviewed By: James J. McCullers	Level: III		Date: 10-3-02

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5
Revision 1

EXAMINATION SURFACE 2 UHI PIPE WELD RPV HEAD - EXAMINATION SURFACE 1



TOTAL INSPECTION AREA
3.1" x 0.21" = 0.65"

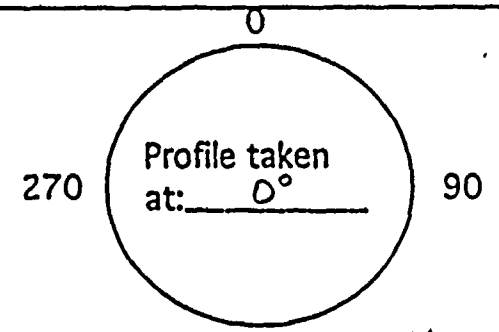
CW & CCW = 2.3 x .21 = 0.481 in²

S2 SCAN - $\frac{0.21}{2}(2.75+2.95)$ = 0.660 in²

S1 SCAN. $\frac{0.21}{2}(1.7+1.9)$ = 0.381 in²

Component ID/Weld No. 1RPV1-462C-SE

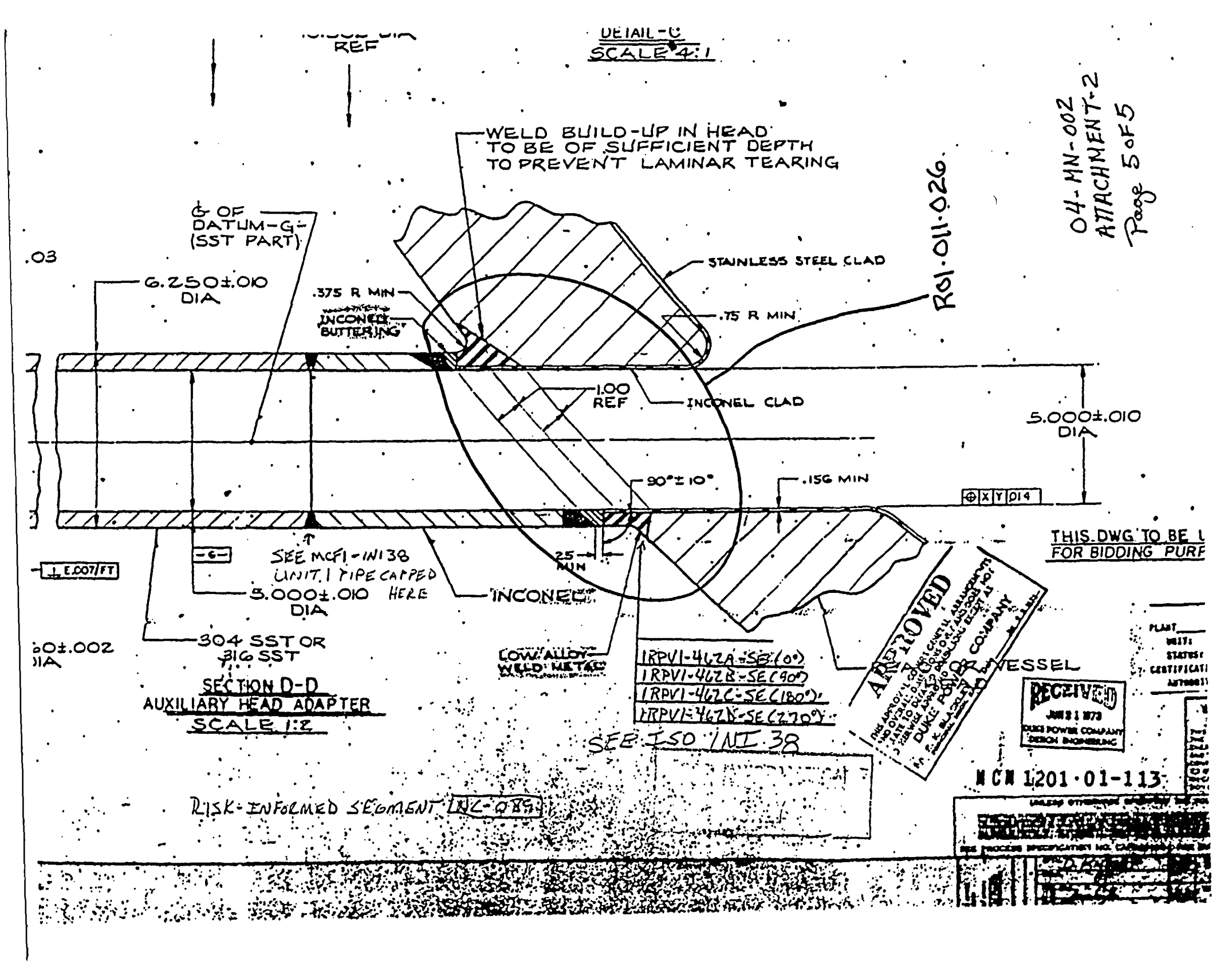
Remarks: RPV HEAD TO UHI PIPE



Item No: R01.011.076

Examiner:	Level: III	Date: 10/3/02
Reviewed By: James J. McCullough	Level: III	Date: 10-3-02
Authorized Inspector: Bob Klein		Date: 10-8-02

Sheet 4 of 4


DETAIL-C
SCALE 4:1
REF
WELD BUILD-UP IN HEAD TO BE OF SUFFICIENT DEPTH TO PREVENT LAMINAR TEARING
04-MN-002
ATTACHMENT-2
Page 5 of 5
R01-011-026
℄ OF DATUM-G- (SST PART)
.03
6.250±.010 DIA
.375 R MIN
INCONEL BUTTERING
STAINLESS STEEL CLAD
.75 R MIN
1.00 REF
INCONEL CLAD
5.000±.010 DIA
90°±10°
.156 MIN
⊕ X Y D14
THIS DWG TO BE U
FOR BIDDING PURP
-G-
SEE MCFI-IN138 UNIT 1 PIPE CAPPED HERE
25 MIN
INCONEL
5.000±.010 DIA
304 SST OR 316 SST
LOW ALLOY WELD METAL
IRPV1-462A-SE(0°)
IRPV1-462B-SE(90°)
IRPV1-462C-SE(180°)
IRPV1-462D-SE(270°)
SECTION D-D
AUXILIARY HEAD ADAPTER
SCALE 1:2
SEE ISO INI 38
APPROVED
DUKE POWER COMPANY
RECEIVED
DUKE POWER COMPANY
DESIGN ENGINEERING
NCN 1201-01-113
RISK-INFORMED SEGMENT INC-089

ATTACHMENT 2

Relief Request 04-MN-003

Proposed Relief in Accordance with 10 CFR 50.55a(g)(5)(iii)
Inservice Inspection Impracticality

Duke Energy Corporation
McGuire Nuclear Station – Unit 2 (EOC-14), Examination Dates October 14, 2000 To March 27, 2002
Second 10-Year Interval – Inservice Inspection Plan
ASME Section XI Code – 1989 Edition with No Addenda
Interval Start Date 03/01/1994 Interval End Date 03/01/2004
Code Case N-460 is applicable.

	I.	II. & III.	IV.	V.	VI.	VII.
Limitation I.D. Number	System / Component for Which Relief is Requested: Area or Weld to be Examined	Code Requirement from Which Relief is Requested: 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	Basis for Relief	Alternate Examinations or Testing	Justification for the Granting of Relief	Implementation Schedule
2SGA-INLET-W5SE	NC System 2A Steam Generator Inlet Nozzle to Safe End	Exam Category B-F Item No. B05.070.001 Fig. IWB-2500-8 75.00% Volume Coverage	See Paragraph "A" See Attachment 1 Pages 1-4	None	See Paragraph "J" See Attachment 1 Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2SGA-OUTLET-W6SE	NC System 2A Steam Generator Outlet Nozzle to Safe End	Exam Category B-F Item No. B05.070.002 Fig. IWB-2500-8 75.00% Volume Coverage	See Paragraph "A" See Attachment 1A Pages 1-4	None	See Paragraph "J" See Attachment 1A Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2SGD-INLET-W5SE	NC System 2D Steam Generator Inlet Nozzle to Safe End	Exam Category B-F Item No. B05.070.007 Fig. IWB-2500-8 75.00% Volume Coverage	See Paragraph "A" See Attachment 1B Pages 1-4	None	See Paragraph "J" See Attachment 1B Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.

Inspection Dates for Item Numbers

B05.070.001	03/09/2002	B09.011.013	03/14/2002
B05.070.002	03/09/2002	B09.011.018	03/14/2002
B05.070.007	03/08/2002	B09.011.169	03/14/2002
B05.070.008	03/08/2002	C03.030.001	02/19/2002
B08.020.001A	03/05/2002		
B09.011.009	02/26/2002		
B09.011.011	03/13/2002		
B09.011.011A	03/03/2002		
B09.011.012	03/14/2002		

Proposed Relief in Accordance with 10 CFR 50.55a(g)(5)(iii)
Inservice Inspection Impracticality

Duke Energy Corporation
McGuire Nuclear Station – Unit 2 (EOC-14)
Second 10-Year Interval – Inservice Inspection Plan
ASME Section XI Code – 1989 Edition with No Addenda

	I.	II. & III.	IV.	V.	VI.	VII.
Limitation I.D. Number	System / Component for Which Relief is Requested: Area or Weld to be Examined	Code Requirement from Which Relief is Requested: 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	Basis for Relief	Alternate Examinations or Testing	Justification for the Granting of Relief	Implementation Schedule
2SGD-OUTLET-W6SE	NC System 2D Steam Generator Outlet Nozzle to Safe End	Exam Category B-F Item No. B05.070.008 Fig. IWB-2500-8 75.00% Volume Coverage	See Paragraph "A" See Attachment 1C Pages 1-4	None	See Paragraph "J" See Attachment 1C Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2PZR-SKIRT	NC System Pressurizer Support Skirt to Lower Head (Integral Attachment)	Exam Category B-H Item No. B08.020.001A Fig. IWB-2500-13 75.16% Volume Coverage	See Paragraph "B" See Attachment 2 Pages 1-9	None	See Paragraph "K" See Attachment 2 Pages 1-9	The examination requirements for this interval were met; no additional exams are planned.
2NCW-3673-1	NC System B Loop Cold Leg (Pipe to Elbow near RV Inlet Nozzle)	Exam Category B-J Item No. B09.011.009 Fig. IWB-2500-8 79.01% Volume Coverage	See Paragraph "C" See Attachment 3 Pages 1-4	None	See Paragraph "L" See Attachment 3 Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2NC2FW2-1	NC System 14" Pipe to Pipe Weld on Pressurizer Surge Line (Stress Weld)	Exam Category B-J Item No. B09.011.011 Fig. IWB-2500-8 72.73% Volume Coverage	See Paragraph "D" See Attachment 4 Pages 1-3	None	See Paragraph "M" See Attachment 4 Pages 1-3	The examination requirements for this interval were met; no additional exams are planned.
2NC2FW2-1	NC System 14" Pipe to Pipe Weld on Pressurizer Surge Line (Stress Weld)	Exam Category B-J Item No. B09.011.011A Fig. IWB-2500-8 81.82% Surface Area Coverage	See Paragraph "D" See Attachment 4A Pages 1-2	None	See Paragraph "M" See Attachment 4A Pages 1-2	The examination requirements for this interval were met; no additional exams are planned.
2NC2FW22-6	NC System B Loop Cold Leg 10" Elbow to Nozzle Weld	Exam Category B-J Item No. B09.011.012 Fig. IWB-2500-8 61.09% Volume Coverage	See Paragraph "E" See Attachment 5 Pages 1-5	None	See Paragraph "N" See Attachment 5 Pages 1-5	The examination requirements for this interval were met; no additional exams are planned.

Proposed Relief in Accordance with 10 CFR 50.55a(g)(5)(iii)
Inservice Inspection Impracticality

Duke Energy Corporation
McGuire Nuclear Station – Unit 2 (EOC-14)
Second 10-Year Interval – Inservice Inspection Plan
ASME Section XI Code – 1989 Edition with No Addenda

	I.	II. & III.	IV.	V.	VI.	VII.
Limitation I.D. Number	System / Component for Which Relief is Requested: Area or Weld to be Examined	Code Requirement from Which Relief is Requested: 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	Basis for Relief	Alternate Examinations or Testing	Justification for the Granting of Relief	Implementation Schedule
2NC2FW22-9	NC System C Loop Cold Leg 10" Pipe to Nozzle Weld	Exam Category B-J Item No. B09.011.013 Fig. IWB-2500-8 61.09% Volume Coverage	See Paragraph "F" See Attachment 6 Pages 1-5	None	See Paragraph "O" See Attachment 6 Pages 1-5	The examination requirements for this interval were met; no additional exams are planned.
2NC2FW16-6	NC System A Loop Hot Leg 6" Elbow to Nozzle Weld	Exam Category B-J Item No. B09.011.018 Fig. IWB-2500-8 59.09% Volume Coverage	See Paragraph "G" See Attachment 7 Pages 1-4	None	See Paragraph "P" See Attachment 7 Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2NI2F871	NI System 6" Elbow to Pipe Weld	Exam Category B-J Item No. B09.011.169 Fig. IWB-2500-8 59.09% Volume Coverage	See Paragraph "H" See Attachment 8 Pages 1-4	None	See Paragraph "Q" See Attachment 8 Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.
2CCPUMP-2A-LEG	2A Centrifugal Charging Pump Support Legs (Integrally Welded Attachment)	Exam Category C-C Item No. C03.030.001 Fig. IWC-2500-5 82.65% Surface Area coverage	See Paragraph "I" See Attachment 9 Pages 1-4	None	See Paragraph "R" See Attachment 9 Pages 1-4	The examination requirements for this interval were met; no additional exams are planned.

IV. Basis for Relief

Paragraph: A
(The Steam Generator Inlet and Outlet Nozzle to SE material is stainless steel to carbon steel. The weld has a diameter of 31.00" with a wall thickness of 2.500".)

During the ultrasonic examination of the welds, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 75.00% for all four welds. The percentage of coverage reported represents the aggregate coverage obtained by each scan. A 45 degree scan was performed from the safe end side of the weld achieving 100% coverage from one axial direction, and a 45 degree scan in two opposing circumferential directions achieved 100% coverage. The nozzle configuration allows scanning from only the safe end side of the weld. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. In order to achieve more coverage, the nozzles would have to be re-designed to allow scanning from both sides of the weld.

The Steam Generator Nozzle-to-Safe End welds were examined to the maximum extent practical using ultrasonic techniques in accordance with the requirements of ASME Section XI, Appendix III of the 1989 Edition. No recordable indications were found during the volumetric and surface examinations of these welds.

Paragraph: B
(The Pressurizer Support Skirt material is carbon steel. The weld diameter is 87.00" with a wall thickness of 1.500".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume in four orthogonal directions could not be obtained. The examination coverage was limited to 75.16%. The percentage of coverage reported represents the aggregate coverage obtained by each scan. The entire examination volume was covered 100% from at least one axial and one circumferential direction. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. The examination procedure and calibration block was in accordance with ASME Section XI, Appendix I and ASME Section V, Article 5 1989 Edition.

A recordable indication was found during the volumetric examination of this weld. The recordable indication was determined to be a Geometric Reflector. This weld was determined to be acceptable after NDE evaluation.

Paragraph: C
(The B Loop Cold Leg material is stainless steel. The weld diameter is 27.500" and the wall thickness is 2.000".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 79.01%. Limitations are caused by cast austenitic weld metal characteristics and single sided access caused by the location of pipe restraints preventing two-beam path direction coverage of the examination volume. The percentage of coverage reported represents the aggregate coverage obtained by each scan. A 45 degree scan was performed from one side of the weld achieving 100% coverage from one axial direction, and a 45 degree scan in two opposing circumferential directions achieved 100% coverage. An additional 4% was achieved from the restraint side of the weld. The proximity of the restraint limits scanning from two opposing axial directions. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible.

No recordable indications were found during the volumetric and surface examination of this weld.

The most effective ultrasonic technique for the examination of welds in cast austenitic piping uses refracted longitudinal waves. The longitudinal wave is preferred as the austenitic weld metal and buttering create highly attenuative barriers to shear wave ultrasound. The longitudinal wave is less affected by these difficulties. However, the longitudinal wave is affected by mode conversion when it strikes the inside surface of the safe end or pipe at any angle other than a right angle to the surface.

The calculations below show that a 45^0 refracted longitudinal wave striking the inside surface of a pipe will produce a 22.9^0 refracted shear wave in addition to the normally expected 45^0 reflected longitudinal wave.

$$\text{Sin}^{-1} = (\sin 45^0 \times V_s) \div V_L$$

$$= (0.707 \times 0.123) \div 0.223$$

Where: $\sin^{-1}$ is the shear wave angle

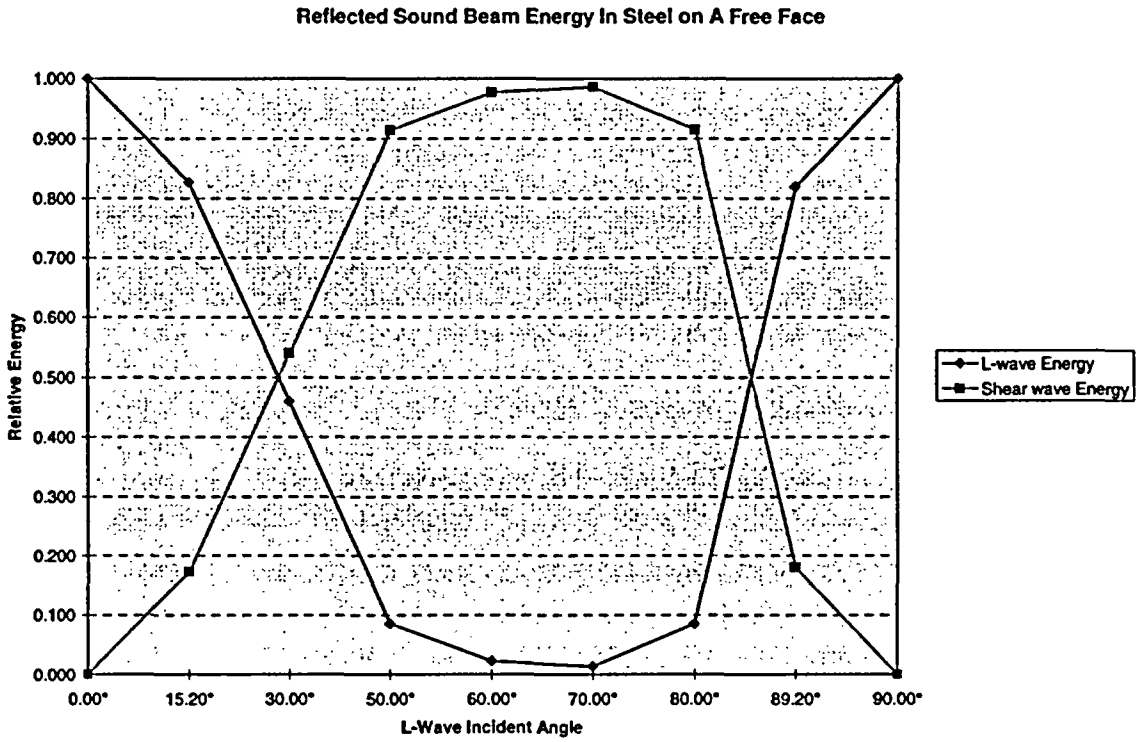
V_s is the shear wave velocity of the stainless steel safe end/pipe material in inches /μsec.

V_L is the longitudinal wave velocity of the stainless steel safe/pipe end material in inches/μsec.

As shown in the graph below, the mode conversion process creates two sound beams of differing intensities reflecting off the inside surface[1]. At incident angles greater than 30 degrees, the shear wave will predominate. However, the shear wave is attenuated and scattered by the cast austenitic material. The examination sensitivity is degraded to such an extent that any examination using the second sound path leg is meaningless. Therefore, the two-beam path direction coverage requirement is impractical.

In order to obtain the required two-beam path direction coverage, the pipe restraints would have to be re-located to allow scanning from both sides.

[1]Firestone, F.A.: Tricks with the Supersonic Reflectoscope, J. Soc. Nondestructive Testing, vol. 7, no. 2 Fall 1948.


Reflected Sound Beam Energy In Steel on A Free Face
Relative Energy
1.000
0.900
0.800
0.700
0.600
0.500
0.400
0.300
0.200
0.100
0.000
0.00°
15.20°
30.00°
50.00°
60.00°
70.00°
80.00°
89.20°
90.00°
L-Wave Incident Angle
L-wave Energy
Shear wave Energy

Paragraph: D
(The Pressurizer Surge Line material is stainless steel. The weld diameter is 14.00" and the wall thickness is 1.406".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 72.73%. Limitations are caused by austenitic weld metal characteristics and single sided access caused by the location of rigid restraints which prevents scanning of the weld from two opposing sides. The percentage of coverage reported represents the aggregate coverage obtained by each scan. A 60 degree scan was performed from one side of the weld achieving 100% coverage from one axial direction, and a 45 degree scan in two opposing circumferential directions achieved 100% coverage. An additional 4% was achieved from the restraint side of the weld. The proximity of the restraint limits scanning from two opposing axial directions. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. In order to achieve more coverage, the restraint would have to be moved to allow scanning from both sides of the weld.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. Refracted longitudinal waves provide better penetration but cannot be used beyond the first sound path leg. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds.

During the Liquid Penetrant examination for this same weld the required surface examination area could not be obtained. The examination coverage was limited to 81.82%. The Liquid Penetrant exam limitations were caused by the close proximity of a pipe support/restraint that obstructed a portion of the weld and adjacent base metal in two locations.

No recordable indications were found during the volumetric and surface examination of this weld.

Paragraph: E
(The Elbow to Nozzle material is stainless steel. The weld diameter is 10.00" and the wall thickness is 1.000".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 61.09%. The reported percent of coverage represents the aggregate coverage from all scans performed on the weld. A 60 degree shear wave scan was performed from the elbow side of the weld achieving 44.3% coverage of the examination volume from one axial direction and a 45 shear wave degree scan in

two opposing circumferential directions achieved 100% coverage. A supplemental axial scan from the elbow side using a 60 degree refracted longitudinal wave search unit covered 100% of the weld metal and far side base material. Limitations are caused by austenitic weld metal characteristics and single sided access due to the proximity of the nozzle which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. Refracted longitudinal waves provide better penetration but cannot be used beyond the first sound path leg. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds.

No recordable indications were found during the volumetric and surface examination of this weld.

Paragraph: F
(The pipe to nozzle material is stainless steel. The weld diameter is 10.000" and the wall thickness is 1.000".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 61.09%. The reported percent of coverage represents the aggregate coverage from all scans performed on the weld. A 60 degree shear wave scan was performed from the elbow side of the weld achieving 44.3% coverage of the examination volume from one axial direction and a 45 degree shear wave scan in two opposing circumferential directions achieved 100% coverage of the weld base material. A supplemental axial scan from the elbow side using a 60 degree refracted longitudinal wave search unit covered 100% of the weld metal and far side base material. Limitations are caused by austenitic weld metal characteristics and single sided access due to the proximity of the nozzle which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. Refracted longitudinal waves provide better penetration but cannot be used beyond the first sound path leg. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in

the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds.

No recordable indications were found during the volumetric and surface examination of this weld.

Paragraph: G
(The elbow to nozzle material is stainless steel. The weld diameter is 6.000" and the wall thickness is .719".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 59.09%. The reported percent of coverage represents the aggregate coverage from all scans performed on the weld. A 60 degree shear wave scan was performed from the elbow side of the weld achieving 36.36% coverage of the examination volume from one axial direction and a 45 degree shear wave scan in two opposing circumferential directions achieved 100% coverage of the weld and base material. A supplemental axial scan from the elbow side using a 60 degree refracted longitudinal wave search unit covered 100% of the weld metal and far side base material. Limitations are caused by austenitic weld metal characteristics and single sided access due to the proximity of the nozzle which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. Refracted longitudinal waves provide better penetration but cannot be used beyond the first sound path leg. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds.

No recordable indications were found during the volumetric and surface examination of this weld.

Paragraph: H
(The elbow to pipe material is stainless steel. The weld diameter is 6.000" and the wall thickness is .719".)

During the ultrasonic examination of the weld, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 59.09%. The reported percent of coverage represents the aggregate coverage from all scans performed on the weld. A 60 degree shear wave scan was performed from the elbow side of the weld achieving 36.36% coverage of the examination volume from one axial direction and a 45 degree shear wave scan in two opposing circumferential directions achieved 100% coverage of the weld and base material. A supplemental axial scan from the elbow side using 60 degree refracted longitudinal wave search unit covered 100% of the weld metal and far side base material. Limitations are caused by austenitic weld metal characteristics and single sided access due to the elbow configuration and the proximity of an adjacent weld which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. Refracted longitudinal waves provide better penetration but cannot be used beyond the second sound path leg. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds.

No recordable indications were found during the volumetric and surface examination of this weld.

Paragraph: I
(The support leg material is stainless steel.)
During the Liquid Penetrant examination of the weld, 100% coverage of the required surface examination area could not be obtained. The examination coverage was limited to 82.65%. The limitations were caused by the geometric configuration of the support legs restricting access for complete examination coverage.

No recordable indications were found during the surface examination of this weld.

VI. Justification for Relief

Paragraph: J

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. These welds were examined using procedures in accordance with ASME Section XI, Appendix III. Ultrasonic examination personnel are qualified in accordance with ASME Section XI, Appendix VII 1989 Edition.

No additional B05.070 welds were scheduled during this outage.

The 2A Steam Generator Inlet and Outlet Nozzle to Safe End Welds (2SGA-Inlet-W5SE and 2SGA-Outlet-W6SE) and the 2D Steam Generator Inlet and Outlet Nozzle to Safe End Welds (2SGD-Inlet-W5SE and 2SGD-Outlet-W6SE) are part of the NC (Reactor Coolant System) boundary. These welds are not exposed to significant neutron fluence and are not prone to negative material property changes (i.e., embrittlement) associated with neutron bombardment. If a leak were to occur at the welds in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at one of these welds would result in the following:

a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
b) Increased Steam Generator enclosure temperature. This parameter is continuously monitored by the Operations via an Operator Aid Computer (OAC) alarm, and is periodically monitored by the System Engineer.
c) Increased input into the Ventilation Unit Condensate Drain Tank (VUCDT). This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
d) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
e) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the Steam Generator enclosure or containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk-down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walk down should identify any leak at the weld in question

Paragraph: K
Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-13 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity.

There is inadequate accessibility to the inside surface (surface C-D) of the Pressurizer Support Skirt Weld to perform the required surface examination. Therefore, an ultrasonic examination was used to inspect the inner examination surface from the skirt's exterior surface per Relief Request 00-001. For additional information reference NRC letter dated August 23, 2001, Docket Numbers 50-369, 50-370 and Tac Numbers MB 2325 and MB 2326. The ultrasonic procedure and the basic calibration block conformed to the requirements of ASME Section XI, Appendix I, 1989 Edition, and ASME Section V, Article 5, 1989 Edition. Ultrasonic examination personnel were qualified in accordance with ASME Section XI Appendix VII, 1989 Edition.

No additional B08.020 welds were scheduled during this outage.

This weld 2PZR-SKIRT joins the pressurizer support skirt to the pressurizer lower head. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e., embrittlement) associated with neutron bombardment. This weld joins the pressurizer support skirt, a non-pressure boundary component, to the lower pressurizer head. Therefore, the weld serves no pressure boundary function. However, if a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also the Containment Ventilation System Engineer.

b) Increased Pressurizer enclosure temperature. This parameter is continuously monitored by the Operations via an OAC alarm, and is periodically monitored by the System Engineer.

c) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.

d) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of the reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours (McGuire normally performs this calculation every 24 Hrs). The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.

e) Other indicators such as containment radiation monitors EMF-38, 39, and 40, the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the pressurizer enclosure or containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walk down should identify any leak at the weld in question.

Paragraph: L
Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures in accordance with ASME Section XI, Appendix III. Ultrasonic examination personnel are qualified in accordance with ASME Section XI Appendix VII, 1989 Edition.

No additional B09.011 cold leg welds were scheduled during this outage.

This is a Pipe to Elbow Weld 2NCW-3673-1 located on the NC (Reactor Coolant System) B Loop Cold Leg near the Reactor Vessel Inlet Nozzle. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

   Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walk down should identify any leak at the weld in question.

Paragraph: M

Although the examination volume and surface area as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was ultrasonically examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI). Liquid penetrant examination was performed in accordance with ASME Section V, Article 6 1989 Edition with no addenda.

No additional B09.011 Pressurizer Surge Line welds were scheduled during this outage.

This is a 14" Pipe to Pipe Weld 2NC2FW2-1 located on the NC (Reactor Coolant System) Pressurizer Surge Line. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walkdown is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph: N
Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI).

One additional B09.011, 10.00" weld on the NC System was scheduled during this outage. No recordable indications were found during the volumetric and surface examination of this weld.

This is a 10" Elbow to Nozzle Weld 2NC2FW22-6 located on the NC (Reactor Coolant System) B Loop Cold Leg. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph: O
Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI).

One additional B09.011, 10.00" weld on the NC System was scheduled during this outage. No recordable indications were found during the volumetric and surface examination of this weld.

This is a 10" Pipe to Nozzle Weld 2NC2FW22-9 located on the NC (Reactor Coolant System) C Loop Cold Leg. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph: P
Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI).

Five additional B09.011, 6.00" welds on the NC System were scheduled and examined during this outage. No recordable indications were found on three of these welds. Recordable indications were found on two of the welds. The indications were determined to be Geometric Reflectors, and were determined to be acceptable after NDE evaluation.

This is a 6" Elbow to Nozzle Weld 2NC2FW16-6 located on the NC (Reactor Coolant System) A Loop Hot Leg. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph: Q
Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI).

Four additional B09.011 welds on the NI System were scheduled and examined during this outage. No recordable indications were found during the volumetric and surface examinations of these welds.

This is a 6" Elbow to Pipe Weld 2NI2F871 located on the NI (Safety Injection System). This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following:

a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walk down is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph: R
Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWC-2500-5 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. The liquid penetrant examination was performed in accordance with ASME Section V, Article 6, 1989 Edition with no addenda.

No additional C03.030 welds were scheduled during this outage.

This is an Integrally Welded Attachment located on the 2A Centrifugal Charging Pump Support Legs 2CCPUMP-2A-LEG. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation.

a) A leak at this weld would likely result in abnormal Volume Control Tank (VCT) level trends and/or unexpected auto make-ups.

b) A leak at this weld would likely result in an increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of the reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm. Any increase reactor coolant leakage identified by the calculation would make suspect either the operating or idle CCP especially if a recent train swap has occurred (normally biweekly). To evaluate

either of these indicators an operator would be dispatched to the pump rooms, which would identify any leakage from this weld.

Also, operators perform surveillance once per shift during daily rounds of the room containing the 2A CCP. This surveillance should identify any leak at the weld in question.

The following individuals contributed to the development of this relief request:

Jim McArdle and Tim Tucker (Principal UT and RT NDE Level III Examiners, respectively) provided Sections II through V and part of Section VI.

Ed Hyland, Bryan Meyer and Larry Kunka (MNS Systems Engineers) provided parts of Section VI.

Gary Underwood (McGuire ISI Plan Manager) compiled the remaining sections.

Sponsored By: Gary Underwood **Date** 7-12-04

Approved By: L. Kevin Rhyne **Date** 7/13/04

Attachment 1	UT Examination Data B05.070.001, B05.070.002, B05.070.007, B05.070.008
Attachment 2	UT Examination Data B08.020.001A
Attachment 3	UT Examination Data B09.011.009
Attachment 4	UT, PT Examination Data B09.011.011, B09.011.011A respectively
Attachment 5	UT Examination Data B09.011.012
Attachment 6	UT Examination Data B09.011.013
Attachment 7	UT Examination Data B09.011.018
Attachment 8	UT Examination Data B09.011.169
Attachment 9	PT Examination Data C03.030.001

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1001 | Form NDE-UT-2A
Exam Finish: 1026 | Revision 4

Station: McGuire | Unit: 2 | Component/Weld ID: 2SGA-INLET-W5SE | Date: 3/9/2002

Weld Length (in.): 119.4 | Surface Condition: AS MACHINED | Lo: RT "0"

Surface Temperature: 78 ° F
Pyrometer S/N: MCNDE 27228
Cal Due: 7/3/2002

Examiner: Winfred C. Leeper Level: II
Examiner: Gary Moss Level: II

Procedure: NDE-930 Rev: 1 | FC: 02-04

Calibration Sheet No: 0202056

Scans:
45 ☐ ____ dB 70 ☐ ____ dB
45T ☒ 73** dB 70T ☐ ____ dB
60 ☐ ____ dB
60T ☐ ____ dB
Other: 33° @ 54dB dB

Configuration: CIRC.
S1 Flow S2
Safe End to Nozzle
Scan Surface: OD

Applies to NDE-680 only
Skew Angle: N/A

IND #	∠	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI	33°														
NRI	45°														

Remarks: ** SCANNED AT 69dB DUE TO NOISE

Limitations: (see NDE-UT-4) ☒ 90% or greater coverage obtained: yes ☐ no ☒ | Sheet 1 of 4

Reviewed By: Level: III Date: 3/11/02 | Authorized Inspector: Date: 3-13-02 | Item No: B05.070.001

3/18/02

ATTACHMENT 1
RR 04-MN-003 Page 2 of 4

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2SGA-INLET-W5SE   Item No: B05.070.001   Remarks:

☒ NO SCAN ☐ LIMITED SCAN
SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☒ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ________ to L ________ INCHES FROM WO 2" to Beyond
ANGLE: ☐ 0 ☒ 45 ☐ 60 ☒ Other 33° FROM ____ DEG to ____ DEG
Remarks: Nozzle Configuration

☐ NO SCAN ☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ________ to L ________ INCHES FROM WO ________ to ________
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ________ FROM ____ DEG to ____ DEG

☐ NO SCAN ☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ________ to L ________ INCHES FROM WO ________ to ________
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ________ FROM ____ DEG to ____ DEG

☐ NO SCAN ☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ________ to L ________ INCHES FROM WO ________ to ________
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ________ FROM ____ DEG to ____

Prepared By: Winfred C. Leeper [signature] Level: II Date: 3/9/2002 Sketch(s) attached ☒ yes ☐ no Sheet 2 of 4

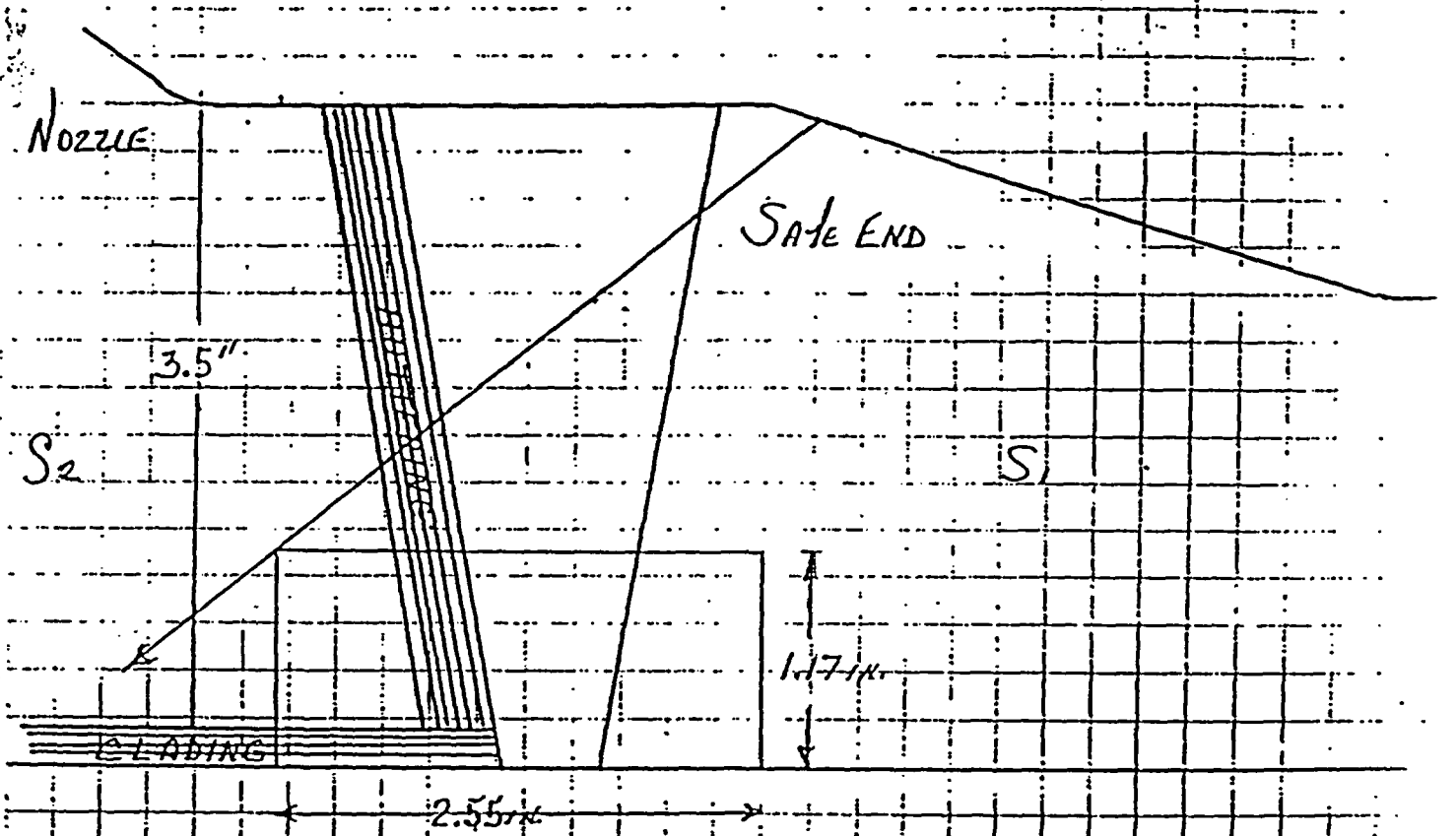
Reviewed By: [signature] III Date: 3/11/02 Authorized Inspector: [signature] Date: 3-13-02

ATTACHMENT 1
RR 04-HN-003 Page 3 of 4

Station: McGUIRE Unit 2 Rev. File No. Sheet 3 OF 4

Subject: SAFE END TO NOZZLE
WELD # 2SKA-INLET-WSSE By [signature] III Date 3/10/02

Prob No. B05.070.001 Checked by Date



EXAM AREA:

1.17 IN. X 2.55 IN. = 2.98 SQ. IN.

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1
Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
1.17" x 2.55" = 2.98 sq. in.	2.98 sq. in. x 119.4" = 355.81 cu. in.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	33°	S2	2.98	119.4	355.81	355.81	100.00
2	45°	S1	0	0	0	355.81	0.00
3	45°	CW	2.98	119.4	355.81	355.81	100.00
4	45°	CCW	2.98	119.4	355.81	355.81	100.00
		Total	Aggregate	Coverage	1067.43	1423.24	75.00

Item No: B05.070.001

Prepared By: Jay A. Eaton Level: III Date: 3/10/2002

Reviewed By: David K. Level: III Date: 3/11/02

ATTACHMENT 1A

RR 04-MN-003 Page 1 of 4

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1027 | Exam Finish: 1053 | Form NDE-UT-2A | Revision 4

Station: McGuire | Unit: 2 | Component/Weld ID: 2SGA-OUTLET-W6SE | Date: 3/9/2002

Weld Length (in.): 119.4 | Surface Condition: AS MACHINED | Lo: RT "0"

Surface Temperature: 78 ° F

Examiner: Winfred C. Leeper Level: II

Examiner: Gary A. Moss Level: II

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Procedure: NDE-930 Rev: 1 | FC: 02-04

Calibration Sheet No: 0202056

Scans:

45 ☐ _____ dB 70 ☐ _____ dB

45T ☒ 73 ** dB 70T ☐ _____ dB

60 ☐ _____ dB

60T ☐ _____ dB

Other: 33° @ 54dB dB

Configuration: CIRC.

S1 Flow S2

Safe End to Nozzle

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: N/A

IND #	∠	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI	33°														
NRI	45°														

Remarks: ** SCANNED AT 69dB DUE TO NOISE

Limitations: (see NDE-UT-4) ☒ | 90% or greater coverage obtained: yes ☐ no ☒ | Sheet 1 of 4

Reviewed By: Level: III Date: 3/11/02

Authorized Inspector: Date: 3-13-02

Item No: B05.070.002

3/18

ATTACHMENT 1A
RR 04-MN-003 Page 2 of 4

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2SGA-OUTLET-W6SE   Item No: B05.070.002   Remarks:

	SURFACE	BEAM DIRECTION	Remarks
☒ NO SCAN ☐ LIMITED SCAN	☐ 1 ☒ 2	☒ 1 ☐ 2 ☐ cw ☐ ccw	Nozzle Configuration
FROM L ______ to L ______	INCHES FROM WO 2" to Beyond		
ANGLE: ☐ 0 ☒ 45 ☐ 60 ☒ Other 33°	FROM ____ DEG to ____ DEG		
☐ NO SCAN ☐ LIMITED SCAN	☐ 1 ☐ 2	☐ 1 ☐ 2 ☐ cw ☐ ccw	
FROM L ______ to L ______	INCHES FROM WO ______ to ______		
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ______	FROM ____ DEG to ____ DEG		
☐ NO SCAN ☐ LIMITED SCAN	☐ 1 ☐ 2	☐ 1 ☐ 2 ☐ cw ☐ ccw	
FROM L ______ to L ______	INCHES FROM WO ______ to ______		
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ______	FROM ____ DEG to ____ DEG		
☐ NO SCAN ☐ LIMITED SCAN	☐ 1 ☐ 2	☐ 1 ☐ 2 ☐ cw ☐ ccw	
FROM L ______ to L ______	INCHES FROM WO ______ to ______		
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ______	FROM ____ DEG to ____		

Prepared By: Winfred C. Leeper [signature] Level: II Date: 3/9/2002 Sketch(s) attached ☒ yes ☐ no Sheet 2 of 4

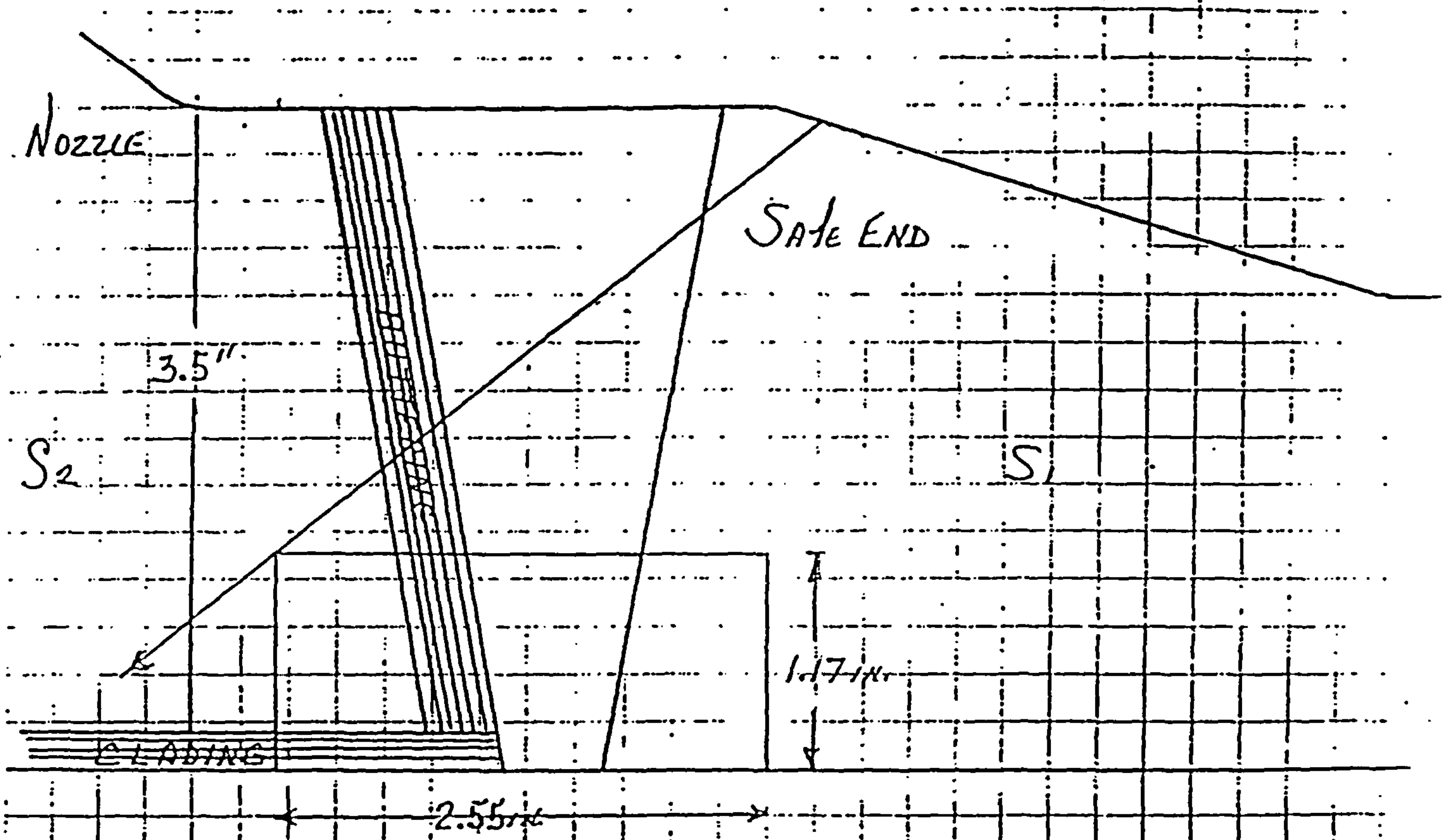
Reviewed By: [signature] III Date: 3/11/02 Authorized Inspector: [signature] Date: 3/13-02

Station: McGUIRE Unit 2 Rev. File No. Sheet 3 OF 4

Subject: SAFE END TO NOZZLE

WELD# 2SGA-OUTLET-W6SE By [signature] III Date 3/10/02

Prob No. B05.070.002 Checked by Date



EXAM AREA:

1.17 IN. X 2.55 IN. = 2.98 sq. in.

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
1.17" x 2.55" = 2.98 sq. in.	2.98 sq. in. x 119.4" = 355.81 cu. in.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	33°	S2	2.98	119.4	355.81	355.81	100.00
2	45°	S1	0	0	0	355.81	0.00
3	45°	CW	2.98	119.4	355.81	355.81	100.00
4	45°	CCW	2.98	119.4	355.81	355.81	100.00
		Total	Aggregate	Coverage	1067.43	1423.24	75.00

Item No: B05.070.002

Prepared By: Jay A. Eaton Level: III Date: 3/10/2002

Reviewed By: David K [illegible] Level: III Date: 3/11/02

ATTACHMENT 1B

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1049 | Form NDE-UT-2A

Exam Finish: 1115 | Revision 4

Station: McGuire | Unit: 2 | Component/Weld ID: 2SGD-INLET-W5SE | Date: 3/8/2002

Weld Length (in.): 119.4 | Surface Condition: AS MACHINED | Lo: RT "0"

Surface Temperature: 87 ° F

Examiner: Gary J. Moss Gary J. Moss Level: II

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Examiner: Winfred C. Leeper Winfred C. Leeper Level: II

Scans:

45 ☐ _____ dB 70 ☐ _____ dB

45T ☒ 73** dB 70T ☐ _____ dB

60 ☐ _____ dB

60T ☐ _____ dB

Other: 33° @ 54dB dB

Configuration: CIRC.

S1 Flow S2

Safe End to Nozzle

Scan Surface: OD

Procedure: NDE-930 Rev: 1

FC: 02-04

Calibration Sheet No: 0202055

Applies to NDE-680 only

Skew Angle: N/A

IND #	∠	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI	33°														
NRI	45°														

Remarks: ** SCANNED AT 69 dB DUE TO NOISE

Limitations: (see NDE-UT-4) ☐ | 90% or greater coverage obtained: yes ☐ no ☒ | Sheet 1 of 4

Reviewed By: Level: Date: | Authorized Inspector: Date: | Item No:

III 3/11/02 3-13-02 B05.070.007

ATTACHMENT 18
RR 04-MN-003 Page 2 of 4

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2SGD-INLET-W5SE   Item No: B05.070.007

Remarks:

Nozzle Configuration

☒ NO SCAN ☐ LIMITED SCAN
SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☒ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ______ to L ______ INCHES FROM WO 2" to Beyond
ANGLE: ☐ 0 ☒ 45 ☐ 60 ☒ Other 33° FROM ____ DEG to ____ DEG

☐ NO SCAN ☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ______ to L ______ INCHES FROM WO ______ to ______
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ______ FROM ____ DEG to ____ DEG

☐ NO SCAN ☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ______ to L ______ INCHES FROM WO ______ to ______
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ______ FROM ____ DEG to ____ DEG

☐ NO SCAN ☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ______ to L ______ INCHES FROM WO ______ to ______
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ______ FROM ____ DEG to ____

Prepared By: Winfred C. Leeper [signature] Level: II Date: 3/9/2002 Sketch(s) attached ☒ yes ☐ no Sheet 2 of 4

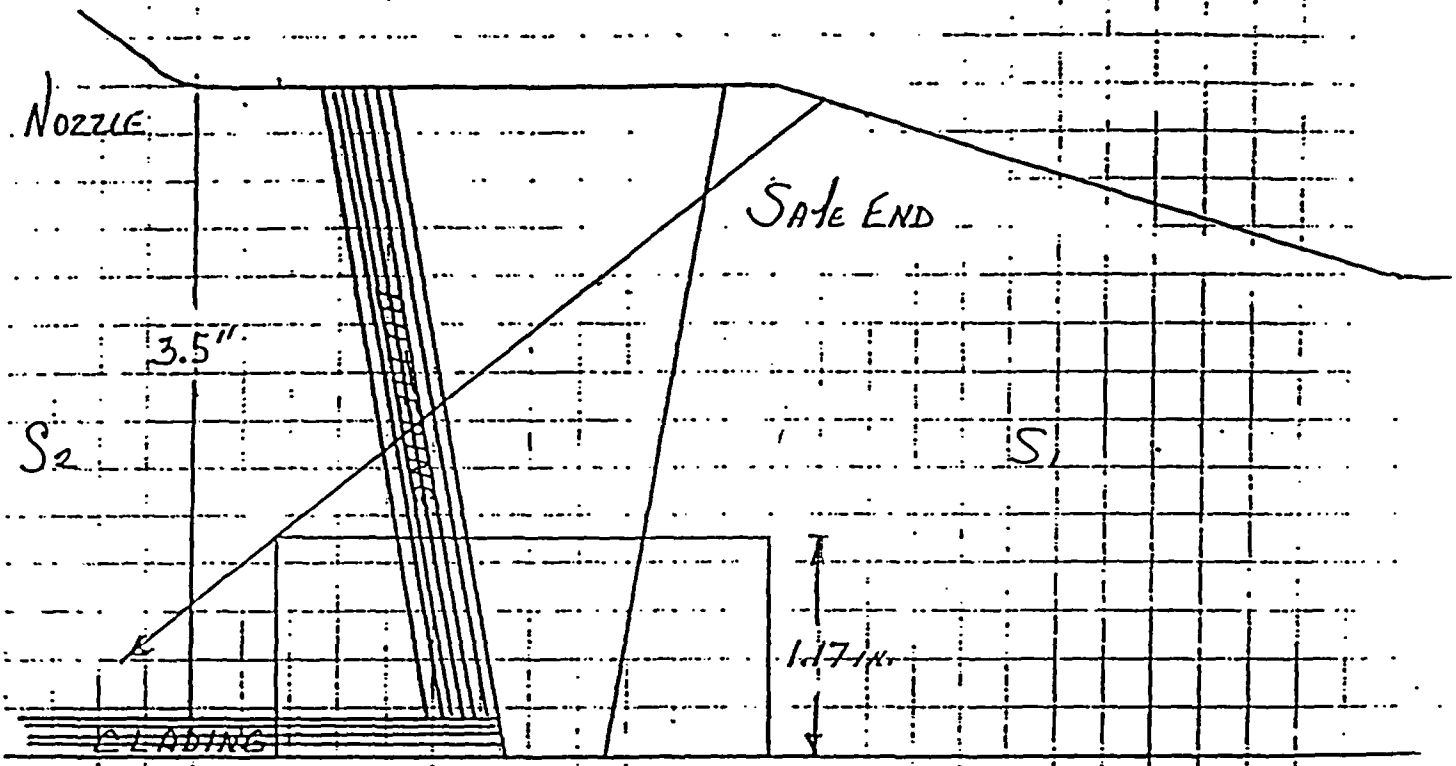
Reviewed By: [signature] III Date: 3/11/02 Authorized Inspector: [signature] Date: 3-13-02

Station: McGUIRE Unit 2 Rev. File No. Sheet 3 OF 4

Subject SAFE END TO NOZZLE

WELD # 2SGD-INLET-W55E By JH III Date 3/10/02

Prob No. B05.070.007 Checked by Date



EXAM AREA:

1.17 IN. X 2.55 IN. = 2.98 SQ. IN.

2/8/02

Page 3 of 4

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
1.17" x 2.55" = 2.98 sq. in.	2.98 sq. in. x 119.4" = 355.81 cu. in.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	33°	S2	2.98	119.4	355.81	355.81	100.00
2	45°	S1	0	0	0	355.81	0.00
3	45°	CW	2.98	119.4	355.81	355.81	100.00
4	45°	CCW	2.98	119.4	355.81	355.81	100.00
		Total	Aggregate	Coverage	1067.43	1423.24	75.00

Item No: B05.070.007

Prepared By: Jay A. Eaton Level: III Date: 3/10/2002

Reviewed By: David K [illegible] Level: III Date: 3/11/02

ATTACHMENT 1C

RR 04-MN-003 Page 1 of 4

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1012 | Form NDE-UT-2A

Exam Finish: 1048 | Revision 4

Station: McGuire | Unit: 2 | Component/Weld ID: 2SGD-OUTLET-W6SE | Date: 3/8/2002

Weld Length (in.): 119.4 | Surface Condition: AS MACHINED | Lo: RT "0"

Surface Temperature: 87 ° F

Examiner: Gary J. Moss Level: II

Examiner: Winfred C. Leeper Level: II

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Procedure: NDE-930 Rev: 1

FC: 02-04

Calibration Sheet No: 0202055

Scans:

45 ☐ _____ dB 70 ☐ _____ dB

45T ☒ 73 ** dB 70T ☐ _____ dB

60 ☐ _____ dB

60T ☐ _____ dB

Other: 33° @ 54dB dB

Configuration: CIRC.

S1 Flow S2

Safe End to Nozzle

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: N/A

IND #	∠	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI	33°														
NRI	45°														

Remarks: ** SCANNED AT 69dB DUE TO NOISE

Limitations: (see NDE-UT-4) ☐ 90% or greater coverage obtained: yes ☐ no ☒

Sheet 1 of 4

Reviewed By: Level: III Date: 3/11/02

Authorized Inspector: Date: 3-13-02

Item No: B05.070.008

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2SGD-OUTLET-W6SE | Item No: B05.070.008 | Remarks:

☒ NO SCAN
☐ LIMITED SCAN
SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☒ 1 ☐ 2 ☐ cw ☐ ccw
FROM L _____ to L _____
INCHES FROM WO 2" to Beyond
ANGLE: ☐ 0 ☒ 45 ☐ 60 ☒ Other 33°
FROM ___ DEG to ___ DEG
Nozzle Configuration

☐ NO SCAN
☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM ___ DEG to ___ DEG

☐ NO SCAN
☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM ___ DEG to ___ DEG

☐ NO SCAN
☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM ___ DEG to ___

Prepared By: Winfred C. Leeper Level: II Date: 3/9/2002 | Sketch(s) attached ☒ yes ☐ no | Sheet 2 of 4

Reviewed By: III Date: 3/11/02 | Authorized Inspector: Date: 3-13-02

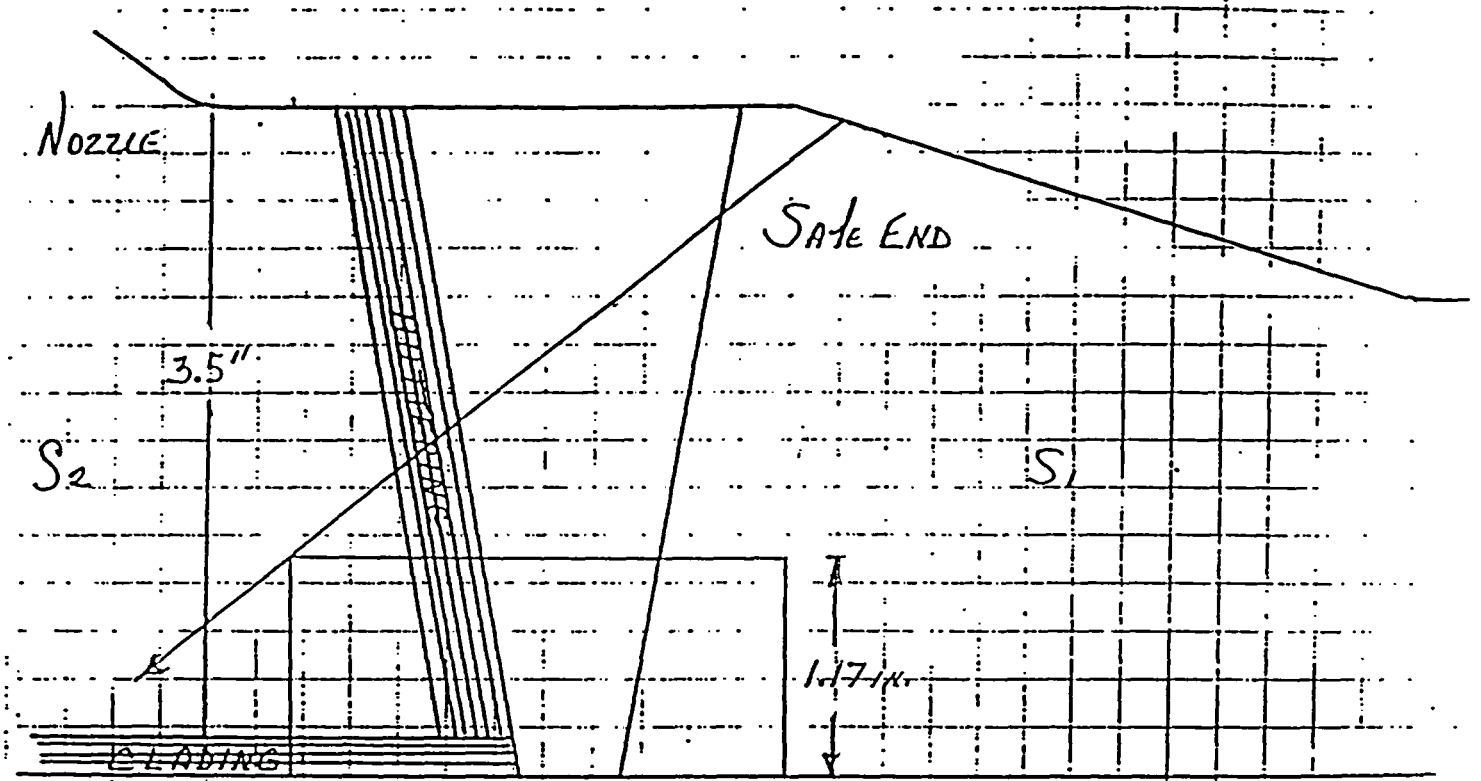
Stock Code No. 89203

ATTACHMENT 1C
RR 04-MN-003 ~~Page 3 of 4~~

Station: McGUIRE Unit 2 Rev. File No. Sheet 3 OF 4

Subject SAFE END TO NOZZLE
WELD # 2SGD-OUTLET-W6SE By JTL Date 3/10/02

Prob No. B05.070.008 Checked by Date



EXAM AREA:

1.17 IN. X 2.55 IN. = 2.98 SQ. IN.

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1
Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
1.17" x 2.55" = 2.98 sq. in.	2.98 sq. in. x 119.4" = 355.81 cu. in.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	33°	S2	2.98	119.4	355.81	355.81	100.00
2	45°	S1	0	0	0	355.81	0.00
3	45°	CW	2.98	119.4	355.81	355.81	100.00
4	45°	CCW	2.98	119.4	355.81	355.81	100.00
		Total	Aggregate	Coverage	1067.43	1423.24	75.00

Item No: B05.070.008

Prepared By: Jay A. Eaton Level: III Date: 3/10/2002

Reviewed By: David K. [illegible] Level: III Date: 3/11/02

ATTACHMENT 2

RR 04-NN-003 Page 1 of 9

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 1012		NDE-UT-3A
Exam Finish: 1020		Revision 2

Station: McGuire	Unit: 2	Component/Weld ID: 2PZR-SKIRT	Date: 03/05/2002
Nominal Material Thickness (in): 1.5		Weld Length (in.): 273.3	Surface Temperature: 82° Deg F
Measured Material Thickness (in): 1.69		Lo: 9.2.1	Pyrometer S/N: MCNDE 27227
Surface Condition: AS GROUND		Calibration Sheet No: 0202049	Cal Due: 07/03/2002
Examiner: Gary J. Moss Gary J Moss	Level: II		Configuration: SKIRT to LOWER HEAD
Examiner: James L. Panel James L Panel	Level: II		S2 Flow S1
Procedure: NDE-640	Rev: 1 FC: *		SKIRT to HEAD

IND NO.	∠	Ampl ≥ rem BW LOB	L1 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	L2 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	Exam Surf.	Damps
NRI	0°													

Remarks: * FC 95-18 & 95-19

Limitations: see NDE-UT-4 ☐ None: ☒

Sheet 1 of 9

Reviewed By: Level: III Date: 3/10/02

Authorized Inspector: Date: 3-11-02

Item No: B08.020.001A 3/10/02

3/18/02

ATTACHMENT 2

RR 04-MN-003 Page 20 of 9

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1012 | Form NDE-UT-2A

Exam Finish: 1105 | Revision 4

Station: McGuire | Unit: 2 | Component/Weld ID: 2PZR-SKIRT | Date: 03/05/2002

Weld Length (in.): 273.3 | Surface Condition: AS GROUND | Lo: 9.2.1 | Surface Temperature: 82 ° F

Examiner: Gary J. Moss Gary J. Moss Level: II

Examiner: James L. Panel James L. Panel Level: II

Procedure: NDE-952 Rev: 0 | FC: 02-05

Calibration Sheet No: 0202049 , 0202050

Scans:

45 ☒ 60.5 dB 70 ☐ ____ dB

45T ☒ 60.5 dB 70T ☐ ____ dB

30° 60 ☒ 63.5 dB qc 3/14/02

60T ☐ ____ dB

Other: 0° @ 34 dB

Pyrometer S/N: MCNDE 27227

Cal Due: 07/03/2002

Configuration: Skirt to Lower Head

S2 Flow S1

Skirt to Head

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: N/A

IND #	∠	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
1	30°	350	2.83	Taper-5.7°	0.0°	360°	INT.	IND.	N/A	N/A	N/A	2	1	AX	NO

Remarks: qc 3/14/02

Limitations: (see NDE-UT-4) ☒ 90% or greater coverage obtained: yes ☐ no ☒

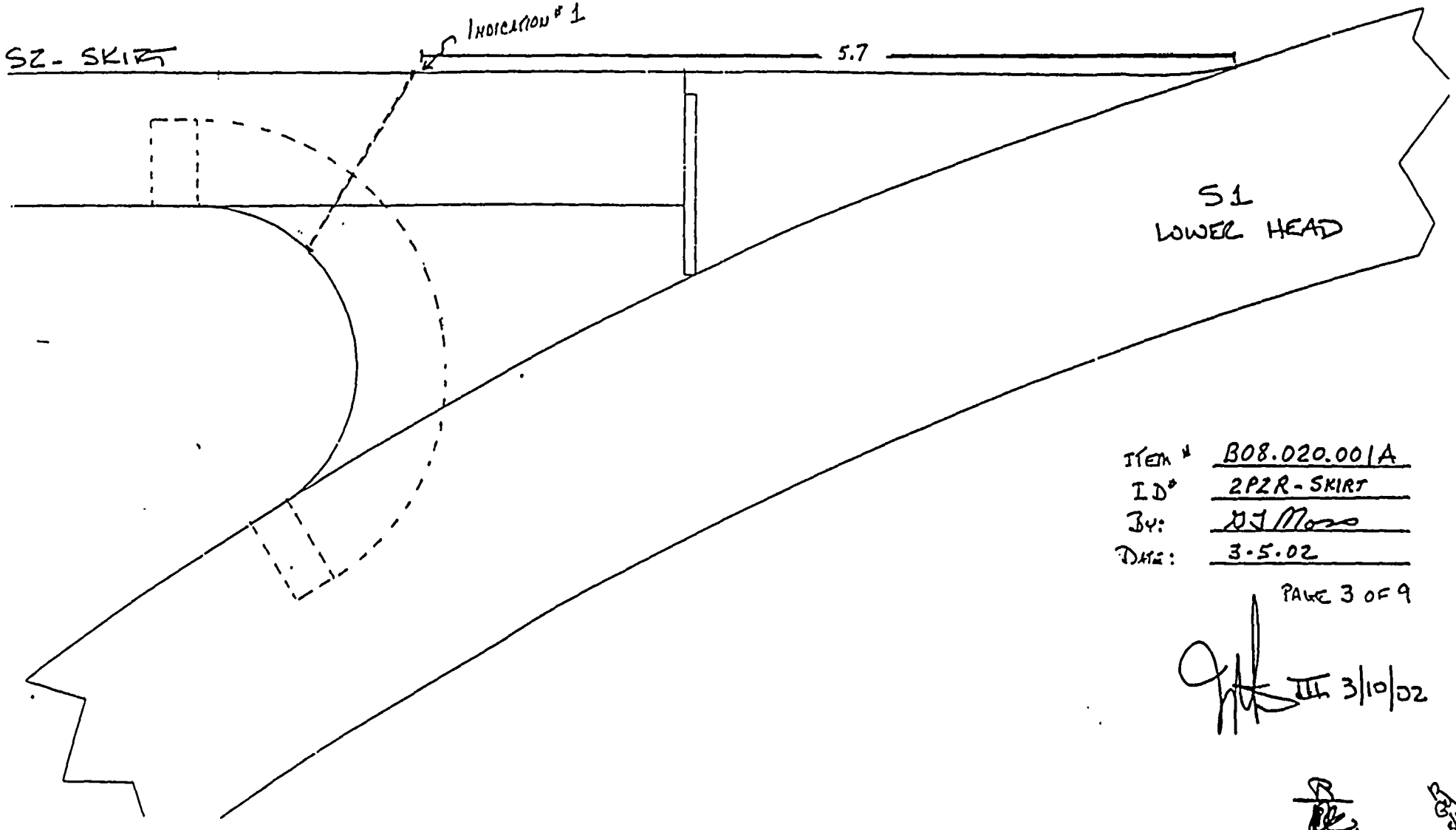
Sheet 2 of 9

Reviewed By: Level: III Date: 3/10/02

Authorized Inspector: Date: 3-14-02

Item No: B08.020.001A qc 3/14/02

R1 qc 3/13/02



ITEM # B08.020.001A
ID# 2PZR - SKIRT
BY: DJ Moss
DATE: 3-5-02

PAGE 3 OF 9

3/10/02

3/1/02
5/12/07

DUKE POWER COMPANY

ULTRASONIC INDICATION RESOLUTION SHEET

Form NDE-UT-8

Revision 1

Acceptance Standard:

IND. 1 - PLOTTING OF INDICATION SHOWS THIS TO BE A GEOMETRICAL REFLECTOR FROM THE I.D. OF THE WELD. INDICATION WOULDNOT HOLD UP TO SKEWING.

Item No: B08.020.001A

Acceptable Indications: IND. 1

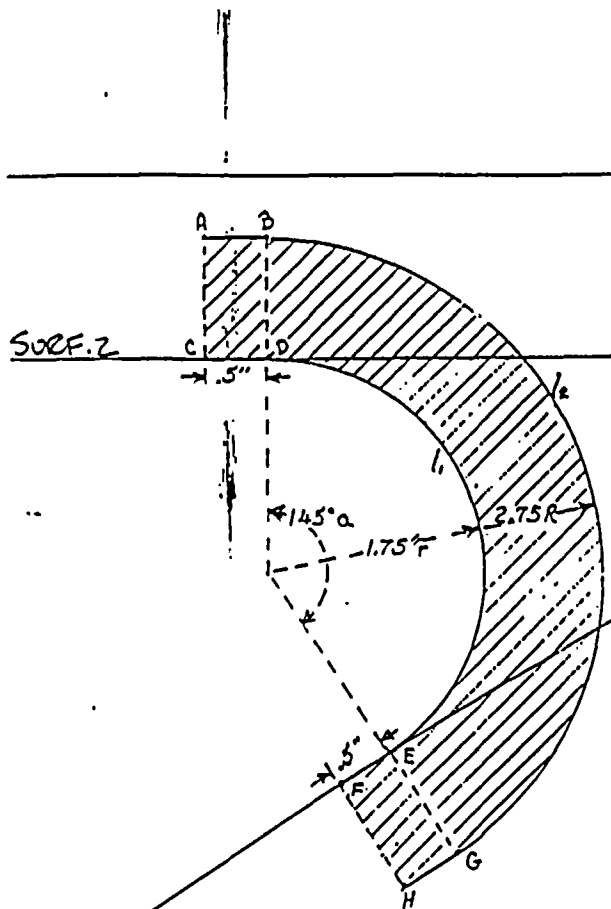
Rejectable Indications: NONE

These indications have been compared with previous ultrasonic data ☐ Yes ☒ No previous data available

Examiner: Gary J. Moss	Level: II	Date: 03/05/2002		Sheet 4 of 9
Reviewer:	Level: III	Date: 3/10/02	Authorized Inspector:	Date: 3/1/02

GJM 3/13/02

PRESSURIZER SUPPORT SKIRT



AREA of INTEREST

ABCD — .5" X 1.0" = .5 sq. in.

EFGH — .5" X 1.0" = .5 sq. in.

BDEG — $\overset{\frown}{BG} = l_2 = \frac{\pi R}{180} a^\circ = l_2 = \frac{\pi \times 2.75}{180} \times 145 = 6.959 = 6.96$ IN.

$\overset{\frown}{DE} = l_1 = \frac{\pi r}{180} a^\circ = l_1 = \frac{\pi \times 1.75}{180} \times 145 = 4.428 = 4.43$ IN.

$k = \frac{l_1 + l_2}{2} = 5.695$

AREA = $k\,(R-r) = 5.695 \times (2.75 - 1.75) = 5.695 = 5.7$ sq. in.

TOTAL AREA =

.5 + .5 + 5.7 = 6.7 sq. in.

ITEM # B08.020.001A

I.D. # PZR - SKIRT

BY David K. [illegible] III

DATE 03/05/02

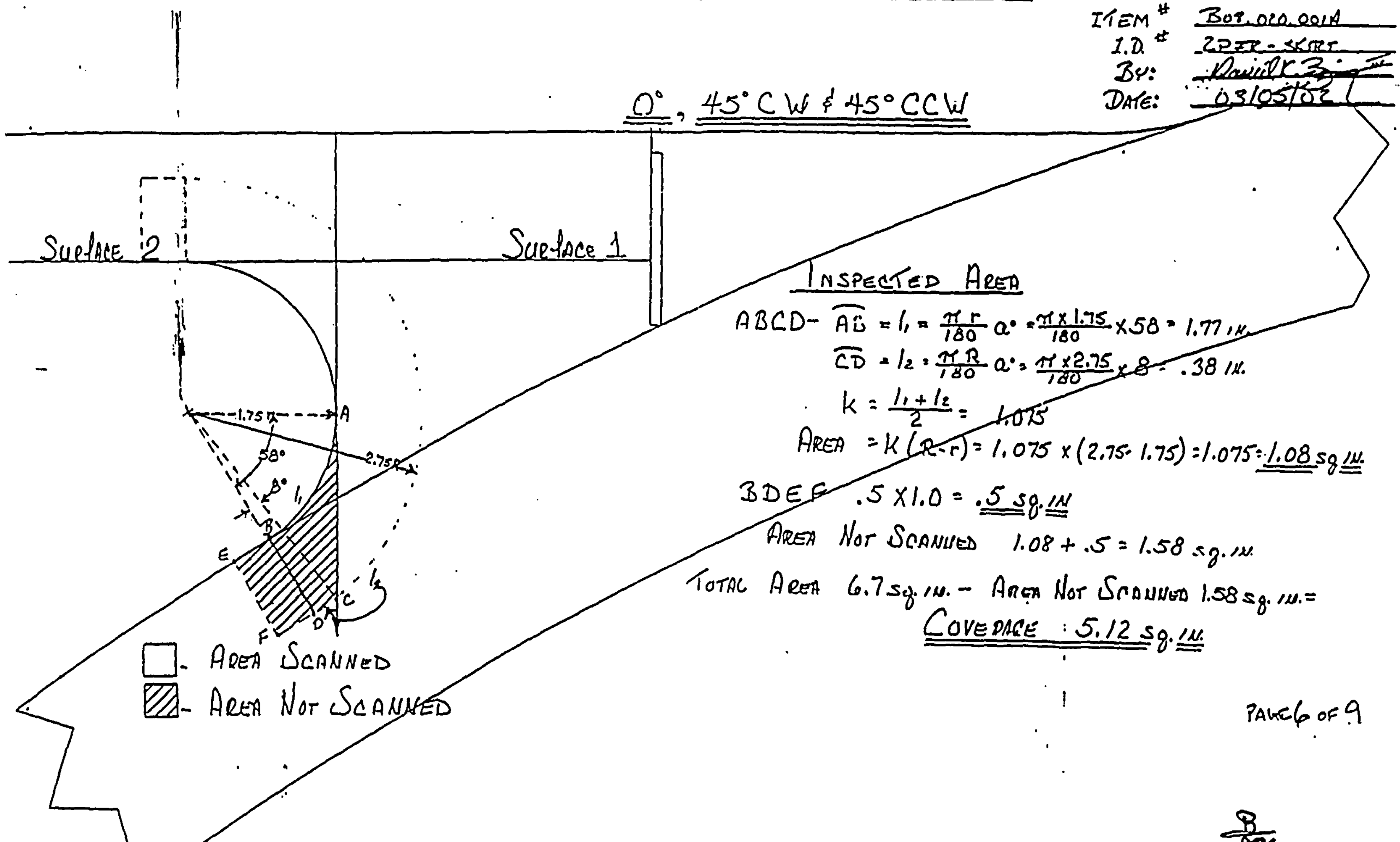
III 3/10/02

R 3/4/10

PRESSURIZER SUPPORT SKIRT

ITEM # B09.010.001A
I.D. # 2PZR-SKIRT
BY: David K. [illegible]
DATE: 03/05/02

0°, 45° CW & 45° CCW



INSPECTED AREA

ABCD – $\overline{AB} = l_1 = \frac{\pi r}{180} a^\circ = \frac{\pi \times 1.75}{180} \times 58 = 1.77$ in.

$\overline{CD} = l_2 = \frac{\pi R}{180} a^\circ = \frac{\pi \times 2.75}{180} \times 8 = .38$ in.

$k = \frac{l_1 + l_2}{2} = 1.075$

Area $= k(R - r) = 1.075 \times (2.75 - 1.75) = 1.075 = \underline{1.08}$ sq. in.

BDEF – $.5 \times 1.0 = \underline{.5}$ sq. in.

Area Not Scanned $1.08 + .5 = 1.58$ sq. in.

Total Area 6.7 sq. in. – Area Not Scanned 1.58 sq. in. =

Coverage : 5.12 sq. in.

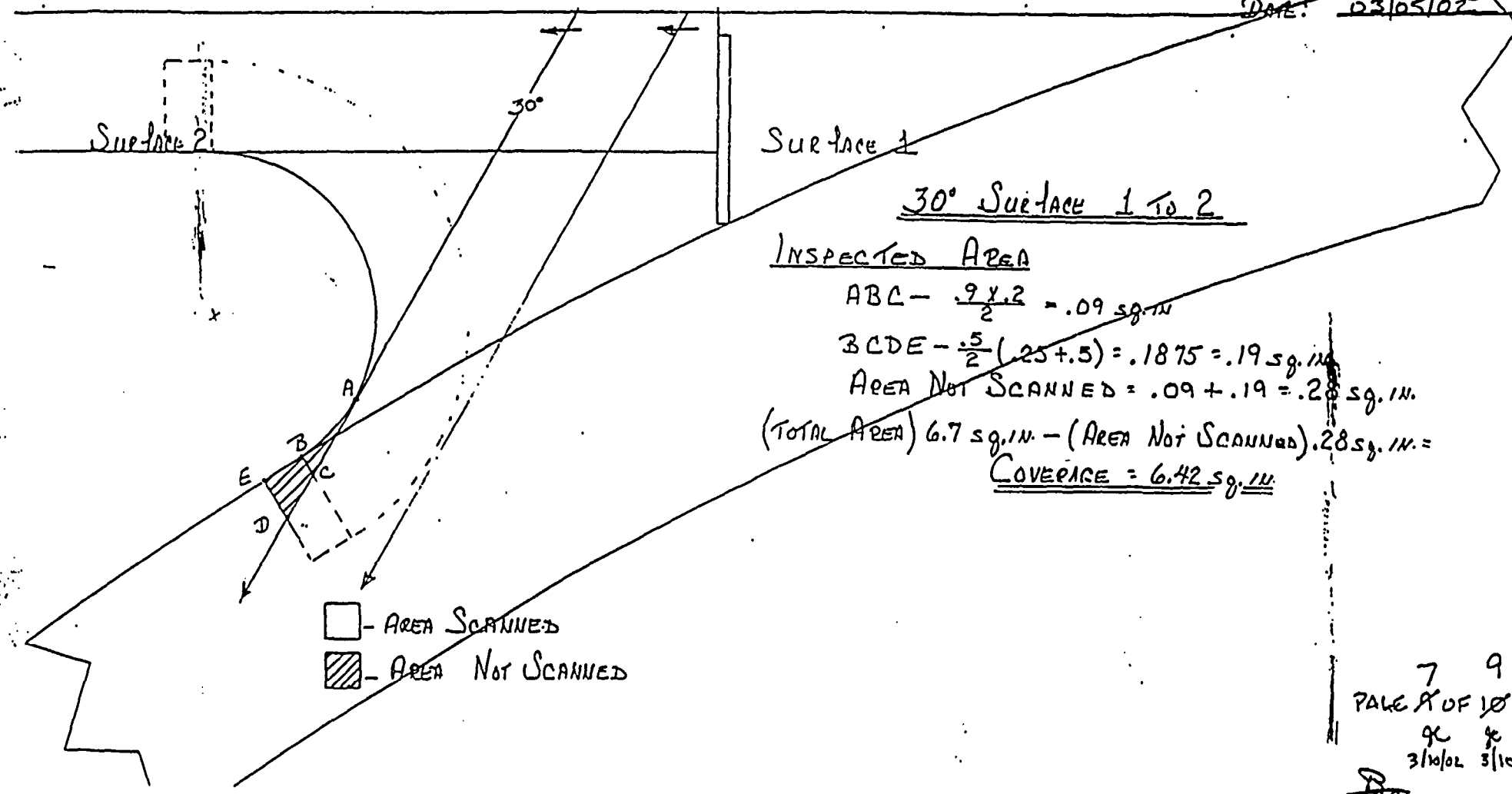
B 3/13/02
[illegible] HEBERT 3/11/02

ATTACHMENT 2
KR 04-MN-003 Page 7 of 9

PRESSURIZER SUPPORT SKIRT

III 3/10

ITEM # B01.020.001A
I.D. # PZR. SKIRT
BY: David K. III
DATE: 03/05/02



30° SURFACE 1 TO 2

INSPECTED AREA

ABC – $\frac{.9 \times .2}{2}$ = .09 sq. in.

BCDE – $\frac{.5}{2}(.25+.5)$ = .1875 = .19 sq. in.

AREA NOT SCANNED = .09 + .19 = .28 sq. in.

(TOTAL AREA) 6.7 sq. in. – (AREA NOT SCANNED) .28 sq. in. =

COVERAGE = 6.42 sq. in.

PAGE 7 OF 9

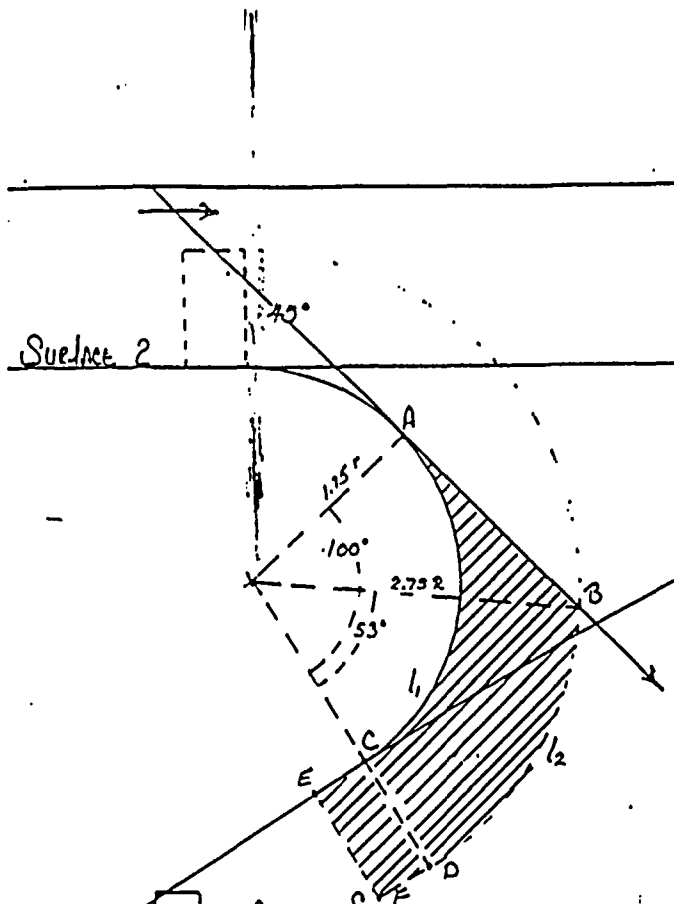
3/10/02 3/10/02

3/13/02 3/11/02

ATTACHMENT 2
RR 04-MN-003 Page 8 of 9

PRESSURIZER SUPPORT SKIRT

ITEM# BOTTOM HEAD
I.D.# PZR. SKIRT
BY: DavidK 3/12/02
DATE: 03/05/02



45° SURFACE 2 TO 1

INSPECTED AREA

ABCD- $\overset{\frown}{BD} = l_2 = \frac{\pi R}{180}\alpha^\circ = \frac{\pi \times 2.75}{180} \times 53 = 2.54$ IN.

$\overset{\frown}{AC} = l_1 = \frac{\pi r}{180}\alpha^\circ = \frac{\pi \times 1.75}{180} \times 100 = 3.05$ IN.

$k = \frac{l_1 + l_2}{2} = 2.795$

AREA $= k(R-r) = 2.795 \times (2.75 - 1.75) = 2.795 \rightarrow$ 2.8 SQ.IN.

CDEF- .5" X 1.0" = .5 SQ.IN

AREA NOT SCANNED = 2.8 + .5 = 3.3 SQ. IN.

(TOTAL AREA) 6.7 SQ.IN. - (AREA NOT SCANNED) 3.3 SQ.IN. = 3.4 SQ.IN

COVERAGE = 3.4 SQ IN

Pg 8 of 9

RR 04-MN-003
3-4-02

RGH 3/13/02

DUKE POWER COMPANY

Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
SEE DRWG. - 6.7 SQ. IN.	6.7 SQ. IN. X 274 IN. = 1835 CU. IN.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	0°	N/A	5.12	274	1402.88	1835	
2	45°	1	3.4	274	931.6	1835	
3	30°	2	6.42	274	1759.08	1835	
4	45°	CW	5.12	274	1402.88	1835	
5	45°	CCW	5.12	274	1402.88	1835	
		TOTAL	AGGREGATE	COVERAGE	6899.32	9179	75.16

Item No: B08.020.001A

Prepared By: David [illegible]	Level: III	Date: 03/05/02
Reviewed By: [illegible]	Level: III	Date: 3/10/02

ATTACHMENT 3

RR 04-NN-003 Page 1 of 4

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1013 | Form NDE-UT-2A

Exam Finish: 1026 | Revision 4

Station: McGuire | Unit: 2 | Component/Weld ID: 2ncw-3673-1 | Date: 2/26/2002

Weld Length (in.): 101" | Surface Condition: AS GROUND | Lo: 9.1.1.1 | Surface Temperature: 118 ° F

Examiner: Larry Mauldin Level: III | Scans: | Pyrometer S/N: MCNDE 27227

Examiner: James L. Panel Level: II | 45 ☒ 68.5 dB 70 ☐ ____ dB | Cal Due: 7/3/2002

Procedure: NDE-610 Rev: 4 | FC: | 45T ☒ 75 dB 70T ☐ ____ dB | Configuration: PC.1 Loop 2) to Elbow (PC.A L

60 ☐ ____ dB | SI S1 4/27/02 Flow SI S2 2/27/02

Calibration Sheet No: 0202028, 0202029 | 60T ☐ ____ dB | ELBOW to PIPE

Other: ____ dB | Scan Surface: OD

Applies to NDE-680 only

Skew Angle: N/A

IND #	∠	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI	45A														
NRI	45C														

Remarks: *97-01, 98-20, 01-05

Limitations: (see NDE-UT-4) ☒ | 90% or greater coverage obtained: yes ☐ no ☒ | Sheet 1 of 4

Reviewed By: Level: III Date: 2/27/02 | Authorized Inspector: Date: 2-28-02 | Item No: B09.011.009

R Rev 3/13/02

ATTACHMENT 3
RR04-NN-003 Page 2 of 4

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2NCW-3673-1 | Item No: B09.011.009 | Remarks:

	SURFACE	BEAM DIRECTION		
☒ NO SCAN ☐ LIMITED SCAN	☐ 1 ☒ 2	☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 16.25" to L 34.25"	INCHES FROM WO 2.0" to BEYOND ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other _____ FROM N/A DEG to N/A DEG	DUE TO 18 INCH PIPE RESTRAINT
☒ NO SCAN ☐ LIMITED SCAN	☐ 1 ☒ 2	☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 44.5" to L 56.5"	INCHES FROM WO 2.0" to BEYOND ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other _____ FROM N/A DEG to N/A DEG	DUE TO 12 INCH PIPE RESTRAINT
☒ NO SCAN ☐ LIMITED SCAN	☐ 1 ☒ 2	☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 69.75" to L 81.75"	INCHES FROM WO 2.0" to BEYOND ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other _____ FROM N/A DEG to N/A DEG	DUE TO 12 INCH PIPE RESTRAINT
☒ NO SCAN ☐ LIMITED SCAN	☐ 1 ☒ 2	☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 95.0" to L 6.0"	INCHES FROM WO 2.0" to BEYOND ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other _____ FROM N/A DEG to N/A	DUE TO 12 INCH PIPE RESTRAINT 2/27/02

Prepared By: [signature] Level: III Date: 2-26-02 | Sketch(s) attached ☒ yes ☒ no | Sheet 2 of 4

Reviewed By: [signature] III Date: 2/27/02 | Authorized Inspector: [signature] Date: 2-28-02

GH 3/13/02

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1
Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
3.5 IN. X 0.67 IN. = 2.35 SQ.IN.	2.35 SQ.IN. X 101 IN. = 237.35 CU.IN.

Coverage Calculations

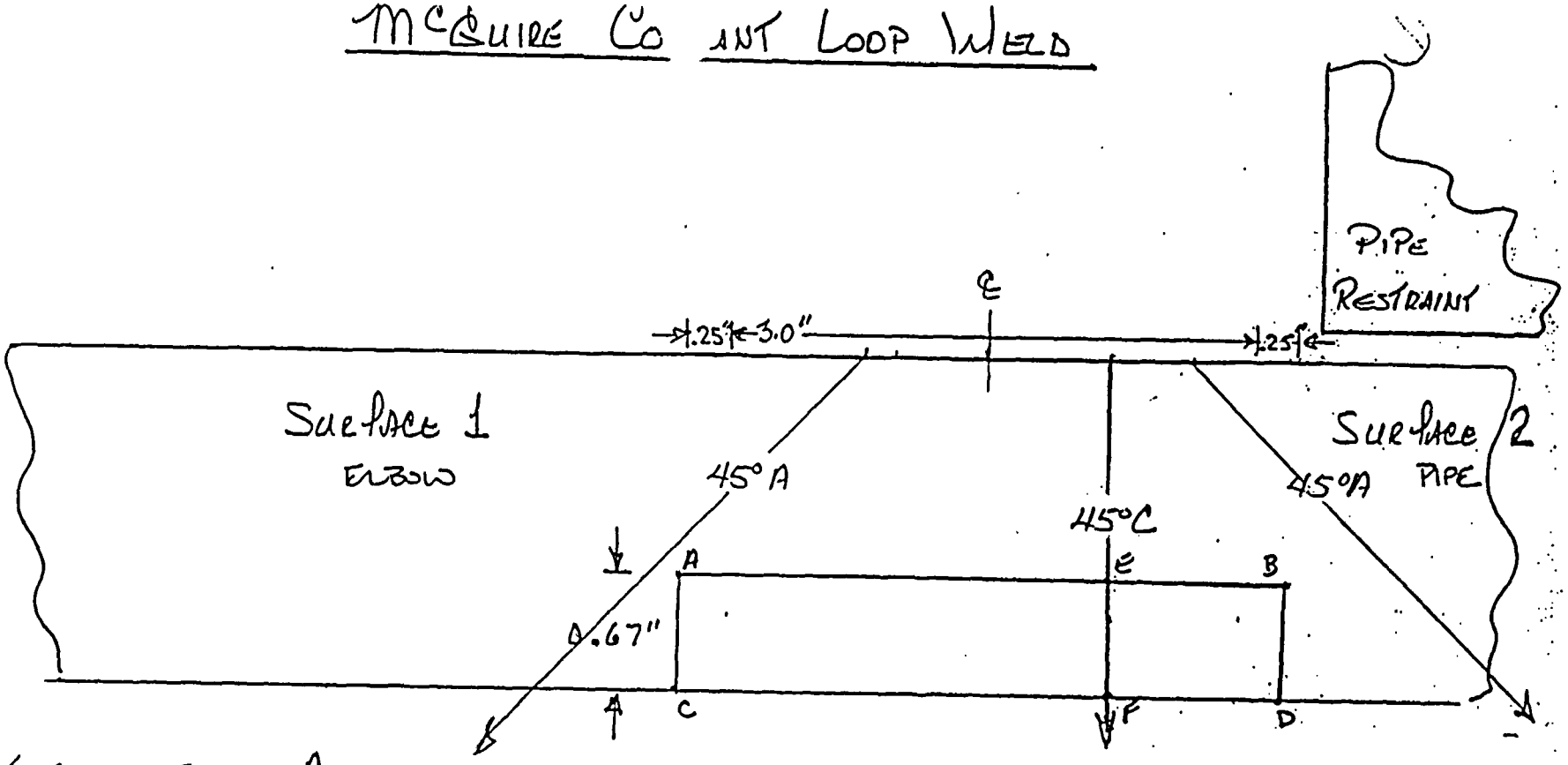
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	2	2.35	101	237.35	237.35	
2	45	1	2.35	47	110.45	110.45	
2	45	1	0.0	54	0	126.9	
3	45	CW	2.35	47	110.45	110.45	
3	45	CW	1.68	54	90.72	126.9	
4	45	CCW	2.35	47	110.45	110.45	
4	45	CCW	1.68	54	90.72	126.9	
					750.14	949.4	79.01

Item No: B09.011.009

Prepared By: Larry Trimble Level: III Date: 2-26-02

Reviewed By: Level: III Date: 2-27-02

McGuire Co ANT Loop Weld



TOTAL EXAM AREA

ABCD = 3.5 in. X 0.67 IN. = 2.345 = 2.35 sq. in.

COVERAGE IN RESTRAINT AREAS

S1 TO S2 Full Coverage = 2.35 sq. in.

S2 TO S1 Total Loss 0.0 sq. in.

CW TO CCW & CCW TO CW

AECF = 2.5 IN. X 0.67 IN. = 1.675 = 1.68 sq. in.

RESTRAINT WIDTHS

3 @ 12.0 IN.

1 @ 18.0 IN.

ATTACHMENT 3
RR 04-MN-003 Page 4 of 4

SHEET 4 OF 4

ITEM # B09.011.009

I.D. # 2NCW-3673-1

BY: Larry Mauldin

DATE: 12-26-02

R
04
5/15/02

12-26-02

McGuire Unit #2
EOC14

Item # B09.011.011
Weld # 2NC2FW2-1

No Data Recorded. Reference Calibration Sheet #'s
0202068-45° & 60°

R. 9/8/06

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2NC2FW2-1 | Item No: B09.011.011 | Remarks:

	SURFACE	BEAM DIRECTION	Remarks
☒ NO SCAN ☐ LIMITED SCAN	☒ 1 ☒ 2	☒ 1 ☒ 2 ☒ cw ☒ ccw	RIGID RESTRAINT
FROM L 19.0" to L 25.0"		INCHES FROM WO C/L to BEYOND	
ANGLE: ☐ 0 ☒ 45 ☒ 60 ☐ Other _____		FROM N/A DEG to N/A DEG	
☒ NO SCAN ☐ LIMITED SCAN	☒ 1 ☒ 2	☒ 1 ☒ 2 ☒ cw ☒ ccw	RIGID RESTRAINT
FROM L 41.0" to L 3.0"		INCHES FROM WO C/L to BEYOND	
ANGLE: ☐ 0 ☒ 45 ☒ 60 ☐ Other _____		FROM N/A DEG to N/A DEG	
☐ NO SCAN ☐ LIMITED SCAN	☐ 1 ☐ 2	☐ 1 ☐ 2 ☐ cw ☐ ccw	
FROM L _____ to L _____		INCHES FROM WO _____ to _____	
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____		FROM _____ DEG to _____ DEG	
☐ NO SCAN ☐ LIMITED SCAN	☐ 1 ☐ 2	☐ 1 ☐ 2 ☐ cw ☐ ccw	
FROM L _____ to L _____		INCHES FROM WO _____ to _____	
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____		FROM _____ DEG to _____	

Prepared By: [signature] Level: II Date: 3-13-02 Sketch(s) attached ☐ yes ☒ no Sheet 2 of 3

Reviewed By: [signature] III Date: 3/13/02 Authorized Inspector: [signature] Date: 3-14-02

R 0 3/18/02

ATTACHMENT 4
RR 04-MN-003 Page 3 of 3

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1
Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
"T" = 1.3" per past ultrasonic data. 1.3"/3 X 2.0" = 0.87 sq. in.	0.87 sq. in. X 44.0" = 38.28 cu. in.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	S2	0.87	32.0	27.84	38.28	
2	45	S1	0.87	32.0	27.84	38.28	
3	60	CW	0.87	32.0	27.84	38.28	
4	60	CCW	0.87	32.0	27.84	38.28	
		TOTAL	AGGREGATE	COVERAGE	111.36	153.12	72.73

REJECT 3-14-02 SHEET 3 OF 3

		Item No:	B09.011.011
Prepared By: DAVID K. ZIMMERMAN	Level: III		Date: 3/13/2002
Reviewed By:	Level: III		Date: 3/13/02

SHEET 3 OF 3

ATTACHMENT 4A

RR04-HN-003 Page 1 of 2

Form NDE-35A	Revision 3

DUKE POWER COMPANY

STATION McGuire **UNIT** 2

LIQUID PENETRANT EXAMINATION REPORT

Weld/ID No. 2NC2FW2-1 Material Type: ☒ SS ☐ CS ☐ Inconel

Diameter 14 Schedule/Thickness 160/1.406 ☒ ISI ☐ PSI ☐ Other

Procedure Rev. No. 19 Field Change No.(s) N/A

W/O No. 98395261

Surface Temperature 75°F

M&TE S/N: MCNDE 27221

Penetrant Materials Category:

A ☒ A(SE) ☐ B ☐ C ☐ D ☐

A(SE) Approved

Penetrant Materials Data:

Batch Numbers

Cleaner 99M01K

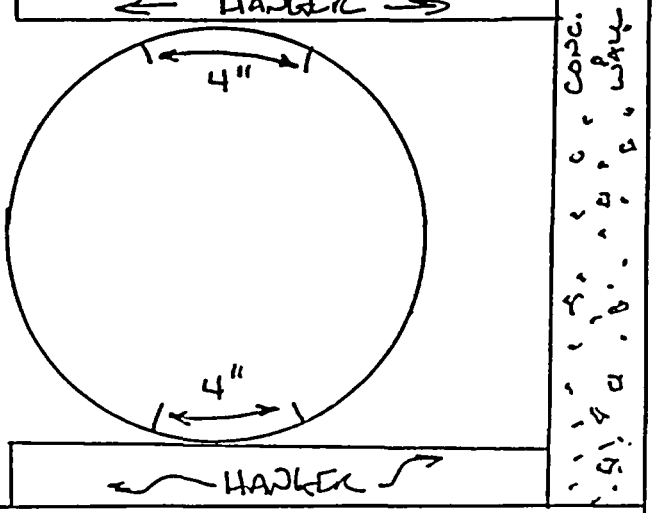
Penetrant 97A10K

Developer 01B09K

Emulsifier

Fluorescent ☐ Nonfluorescent ☒

SKETCH OF ITEM EXAMINED



Black Light Intensity Verified

Time Date

Light Meter S/N:

Acceptance Standard: A ☐ D ☐ G ☐ K ☐

Other: B ☐ E ☐ H ☐ L ☐

C ☐ F ☒ J ☐ M ☐

Ind. No.	Indication Type/Dimensions	Reference Documents	Recordable	Reportable
NRI				

PIP S/N: Rejectable ☐ Acceptable ☒

Exam Limitations: ☒ Yes 81.82 % Examined ☐ No (100% Examined)

Comments: LIMITED @ HANGER AS SHOWN ABOVE

Examiner: Jay A. Eaton Level: II Date: 3/3/2002

Examiner: Level: Date:

Reviewed By: Level: II Date: 3-4-02

Final Review	Date	ANII Review	Date	Item No.
				B09.011.011A

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1
Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
44" of weld length x 2.5" wide inspection area = 110 sq.in. total weld area.	

Coverage Calculations

Scan #	Angle	Beam Direction	~~Area~~ WELD WIDTH Examined ~~(sq.in.)~~	Length Examined (in.)	~~Volume~~ AREA Examined ~~(cu.in.)~~ SQ IN	~~Volume~~ AREA Required ~~(cu.in.)~~ SQ IN	Percent Coverage
N/A	N/A	N/A	2.5"	36"	90	110	81.82

		Item No:	B09.011.011A
Prepared By: Jay A. Eaton	Level: II		Date: 3/3/2002
Reviewed By: TL Tucker	Level: III		Date: 3/11/02

McGuire Unit #2
EOC14

Item # B09.011.012

Weld # ZNCZFWZZ-6

No Data Recorded. Reference Calibration Sheet #'s

0202069 - 45°F60°

0202070 - 60°L

R
GJ
3/18/02

ATTACHMENT 5
RR 04-MN-003 Page 2 of 5

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2NC2FW22-6 | Item No: B09.011.012 | Remarks:

NOZZLE CONFIGURATION

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☒ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☒ 2 ☐ cw ☐ ccw

FROM L N/A to L N/A
INCHES FROM WO 0.7" to BEYOND
ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____
FROM 0 DEG to 360 DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM _____ DEG to _____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM _____ DEG to _____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

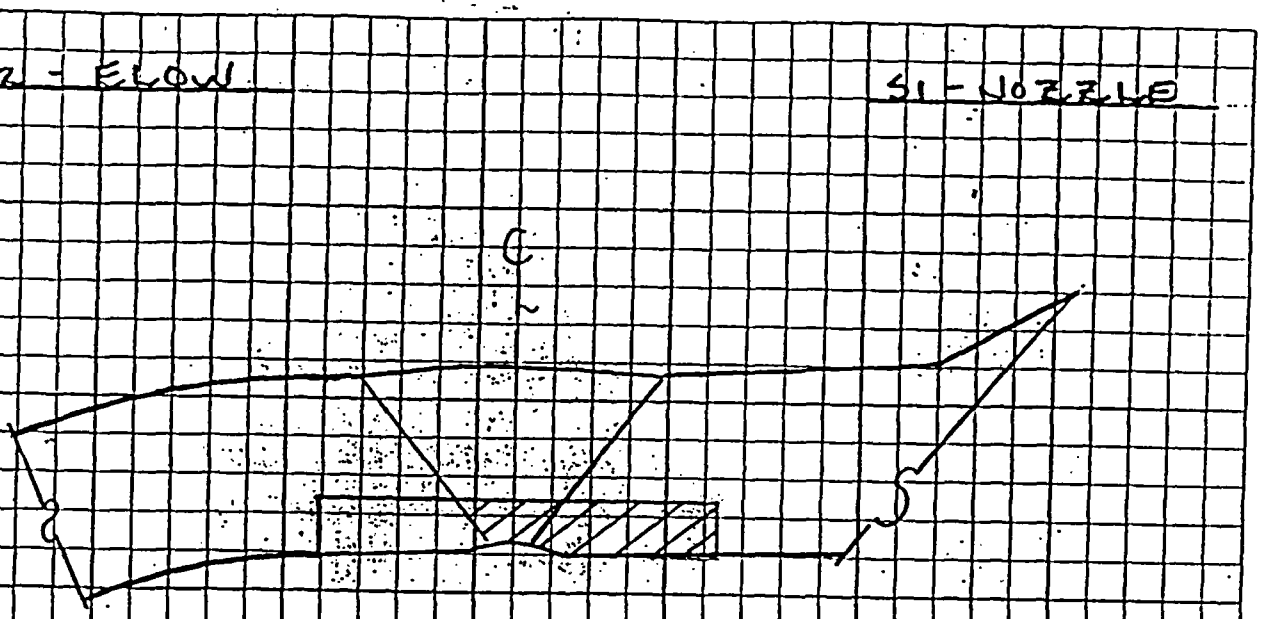
FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM _____ DEG to _____

Prepared By: Winfred L. Rogers | Level: II | Date: 3-14-02 | Sketch(s) attached ☒ yes ☐ no | Sheet 2 of 5

Reviewed By: _____ III | Date: 3/15/02 | Authorized Inspector: _____ | Date 3-15-02

R GH 3/18/02

ATTACHMENT 5
RP.04.MN-003 Page 3 of 5



SHEAR CALCULATION

$(0.33_{in} \times 0.55_{in}) + \left(\frac{0.20_{in} \times 0.33_{in}}{2}\right) + \left(\frac{0.35_{in} \times 0.35_{in}}{2}\right) =$

AREA = 0.28_{in}^2

RL CALCULATION = TOTAL AREA - SHEAR AREA =

$0.63_{in}^2 - 0.28_{in}^2 = 0.35_{in}^2$

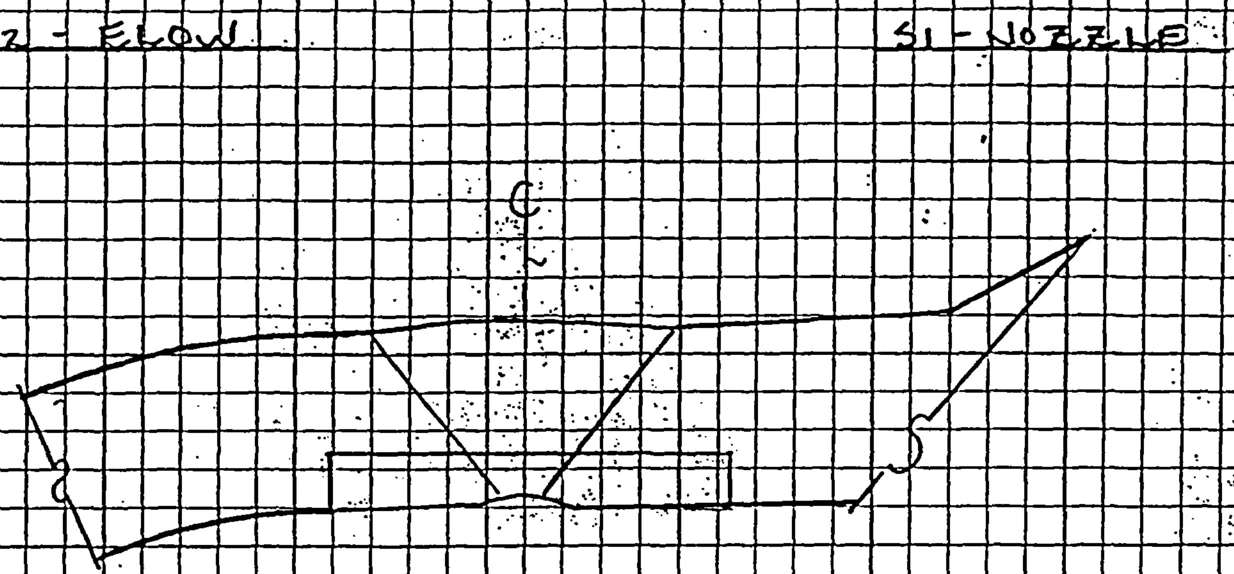
ITEM NO	BOT.011.012
COMP. NO	2WCZFW22-6
INSP	
DATE	05/14/02
SCALE	FULL

2WCZFW22-6

SHEET 3 OF 5

ATTACHMENT 5

RR 04-MN-003 Page 4 of 5



AREA CALCULATION

$2(0.33\text{in} \times 0.55\text{in}) = 0.36\text{in}^2$

$2\left(\frac{0.5\text{in}}{2}\left[0.33\text{in} + 0.20\text{in}\right]\right) = 0.27\text{in}^2$

TOTAL AREA $= 0.36\text{in}^2 + 0.27\text{in}^2 = 0.63\text{in}^2$

III 3/15/02

ITEM NO	B04.011.012
COMPONENT	~~2NC2FW22-6~~ 2NC2FW22-6
INSP	David K. B... III
DATE	03/14/02
SCALE	FULL

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
SEE ATTACHED DRWG. AREA = 0.63 sq. in.	33.8 in. X 0.63 sq. in. = 21.3 cu. in.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	60	S2	0	33.8	0	21.3	
2	60	S1	0.28	33.8	9.45	21.3	
3	45	CW	0.63	33.8	21.3	21.3	
4	45	CCW	0.63	33.8	21.3	21.3	
		TOTAL	COVERAGE	AGGREGATE	52.05	85.2	61.09
2	60RL	S1	0.35	33.8	11.83	21.3	
		TOTAL	COVERAGE	SUPPLEMENT	11.83	85.2	13.88

Item No: B09.011.012

Prepared By: DAVID K. ZIMMERMAN Level: III Date: 3/14/2002

Reviewed By: Level: III Date: 3/15/02

ATTACHMENT 6
RR 04-MN-003 Page 1 of 5

McGuire Unit #2
EOC14

Item # B09.011.013

Weld # 2NC2FW22-9

No Data Recorded. Reference Calibration Sheet #'s

0202069 - 45° & 60°

0202070 - 60°L

SHEET 1 OF 5

3/18/02

ATTACHMENT 6
RR 04-MN-003 Page 2 of 5

DUKE POWER COMPANY ISI LIMITATION REPORT	FORM NDE-UT-4 Revision 1

Component/Weld ID: 2NC2FW22-9 Item No: B09.011.013

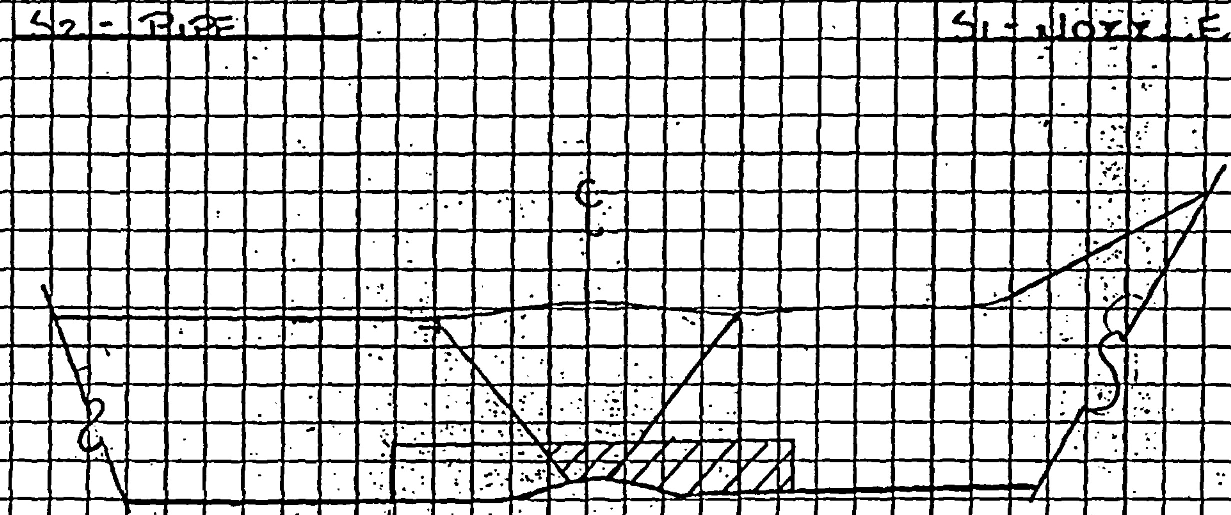
Remarks: NOZZLE CONFIGURATION

	SURFACE	BEAM DIRECTION
☒ NO SCAN ☐ LIMITED SCAN	☒ 1 ☐ 2	☐ 1 ☒ 2 ☐ cw ☐ ccw
FROM L N/A to L N/A		INCHES FROM WO 0.7" to BEYOND
ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other ____		FROM 0 DEG to 360 DEG
☐ NO SCAN ☐ LIMITED SCAN	☐ 1 ☐ 2	☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ____ to L ____		INCHES FROM WO ____ to ____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ____		FROM ____ DEG to ____ DEG
☐ NO SCAN ☐ LIMITED SCAN	☐ 1 ☐ 2	☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ____ to L ____		INCHES FROM WO ____ to ____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ____		FROM ____ DEG to ____ DEG
☐ NO SCAN ☐ LIMITED SCAN	☐ 1 ☐ 2	☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L ____ to L ____		INCHES FROM WO ____ to ____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ____		FROM ____ DEG to ____

Prepared By: Winfred C. Reeper Level: II Date: 3-14-02 Sketch(s) attached ☒ yes ☐ no Sheet 2 of 5

Reviewed By: [signature] III Date: 3/15/02 Authorized Inspector: [signature] Date: 3-15-02

ATTACHMENT-6
RL 04MN-003 Page 3 of 5



SHEAR CALCULATION

$$(0.33in \times 0.55in) + \left(\frac{0.21in \times 0.33in}{2}\right) + \left(\frac{0.35in \times 0.35in}{2}\right) =$$

AREA = 0.28 in^2

RL CALCULATION = TOTAL AREA - SHEAR AREA =

$$0.63in^2 - 0.28in^2 = \boxed{0.35in^2}$$

QC-S-C.C.

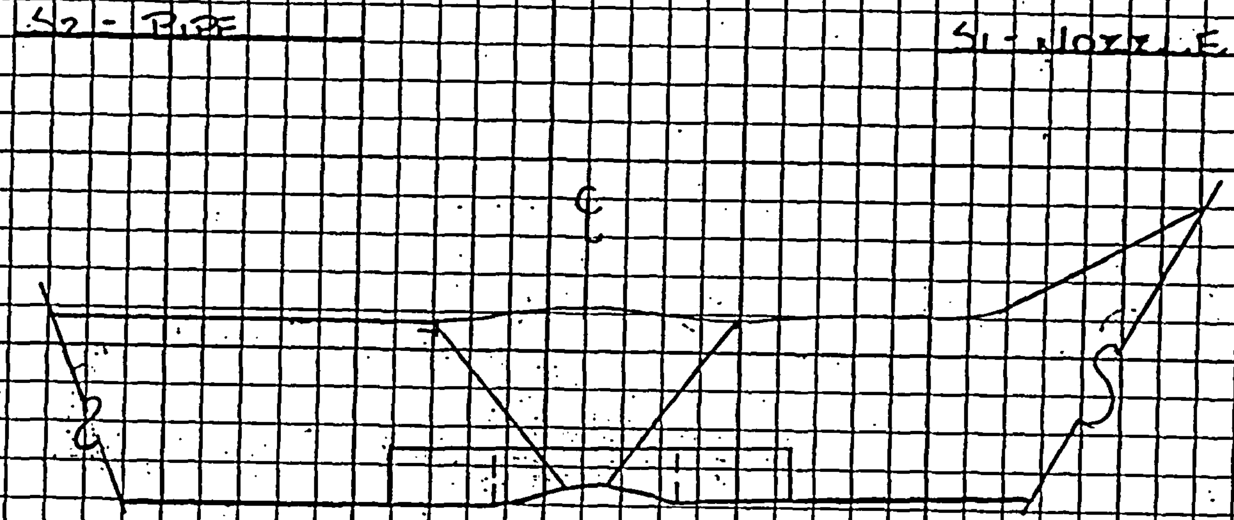
[signature] III 3/15/02

ITEM NO:	B09.011.013
COMPONENT	~~2NC2F22-9~~ 2NC2FW22-9
INSP	David K. ... III
DATE	03/14/02
SCALE	FULL

3/15/02 3/18/02

SHEET 3 OF 5

ATTACHMENT 6
RY04-MN-003 Page 4 of 5



AREA CALCULATION

$2(0.33\text{in} \times 0.55\text{in}) = 0.36\text{in}^2$

$2\left(\frac{0.5\text{in}}{2}\left[0.33\text{in} + 0.20\text{in}\right]\right) = 0.27\text{in}^2$

TOTAL AREA = $0.36\text{in}^2 + 0.27\text{in}^2 =$ **0.63in^2**

III 3/15/02

ITEM NO:	B09.011.013
COMPONENT	2NC2FW122-9
INSP	David K. [signature] III
DATE	03/14/02
SCALE	FULL

DUKE POWER COMPANY

Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
SEE ATTACHED DRWG. AREA = 0.63 sq. in.	33.8 in. X 0.63 sq. in. = 21.3 cu. in.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	60	S2	0	33.8	0	21.3	
2	60	S1	0.28	33.8	9.45	21.3	
3	45	CW	0.63	33.8	21.3	21.3	
4	45	CCW	0.63	33.8	21.3	21.3	
		TOTAL	COVERAGE	AGGREGATE	52.05	85.2	61.09
2	60RL	S1	0.35	33.8	11.83	21.3	
		TOTAL	COVERAGE	SUPPLEMENT	11.83	85.2	13.88

3/18/02

	Item No:	B09.011.013	
Prepared By: DAVID K. ZIMMERMAN	Level:	III	Date: 3/14/2002
Reviewed By:	Level:	III	Date: 3/15/02

SHEET 5 OF 5

ATTACHMENT 7
RR 04-MN-003 Page 1 of 4

McGuire Unit #2
EOC14

Item # B09.011.018

Weld # 2NC2FW16-6

No Data Recorded. Reference Calibration Sheet #'s

0202071 - 45° & 60°

0202072 - 60° L

SHEET 1 OF 4

R
GU
2/E

ATTACHMENT 7
RR 04-MN-003 Page 2 of 4

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2NC2FW16-6 | Item No: B09.011.018 | Remarks:

NOZZLE CONFIGURATION

☒ NO SCAN
☐ LIMITED SCAN
SURFACE: ☒ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☒ 2 ☐ cw ☐ ccw
FROM L N/A to L N/A
INCHES FROM WO C/L to BEYOND
ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____
FROM 0 DEG to 360 DEG

I-BEAM ADJACENT TO PIPE

☒ NO SCAN
☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L 7.0" to L 13.0"
INCHES FROM WO C/L to BEYOND
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☒ Other 60RL
FROM N/A DEG to N/A DEG

☐ NO SCAN
☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM _____ DEG to _____ DEG

☐ NO SCAN
☐ LIMITED SCAN
SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw
FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM _____ DEG to _____

Prepared By: [signature] Level: II Date: 3-14-02 | Sketch(s) attached ☒ yes ☐ no | Sheet 2 of 4

Reviewed By: [signature] III Date: 3/14/02 | Authorized Inspector: [signature] Date: 3-15-02

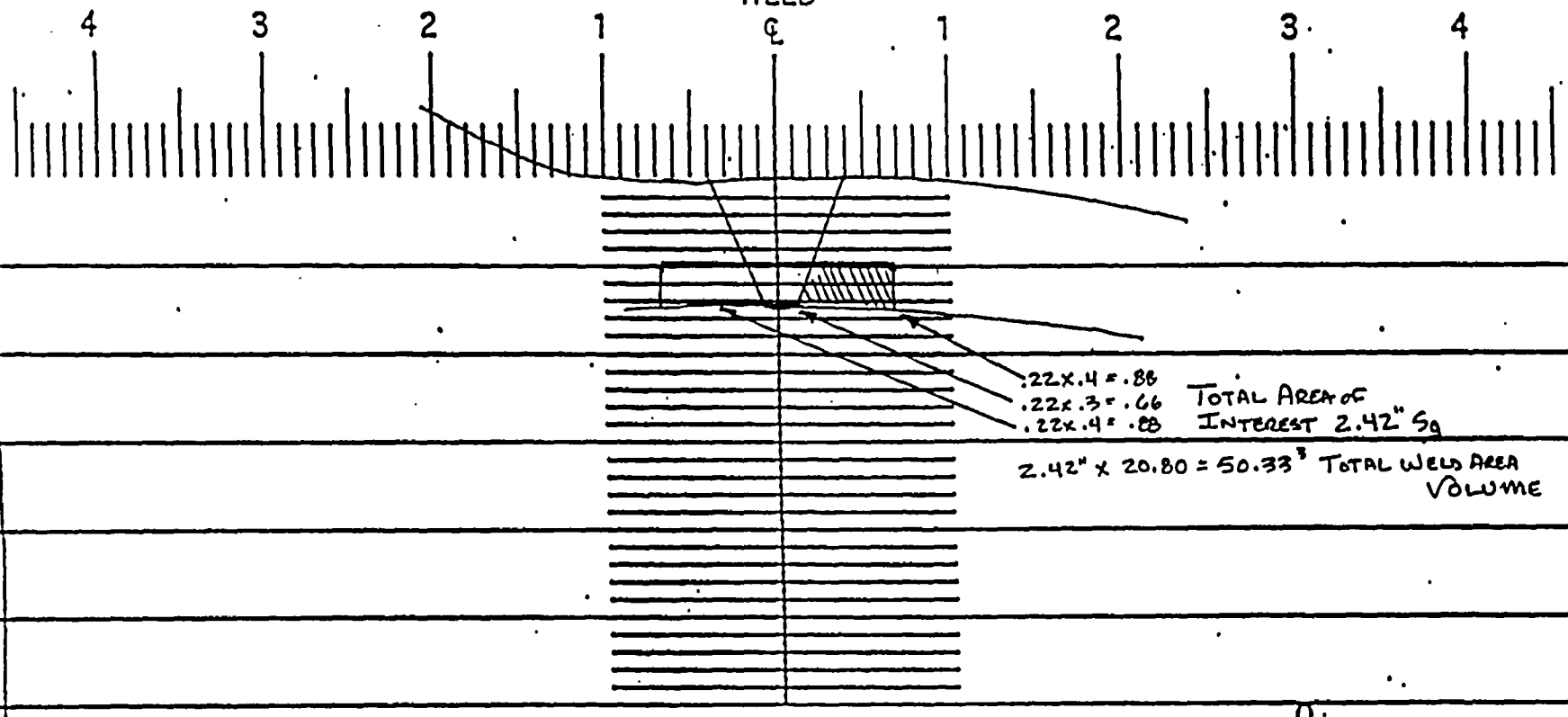
R. 9 31

ATTACHMENT 7
KR 04-MN-003 Page 3 of 4

DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-UT-5
Revision 1

EXAMINATION SURFACE 1 - NOZZLE WELD ELBOW - EXAMINATION SURFACE 2



.22x.4 = .88
.22x.3 = .66
.22x.4 = .88
TOTAL AREA OF INTEREST 2.42" Sq

2.42" x 20.80 = 50.33³ TOTAL WELD AREA VOLUME

Component ID/Weld No. 2NC2FW-16-6

Remarks:

Item No: B09.011.018

Examiner: James A. Beaver	Level: II	Date: 3-14-02
Reviewed By:	Level: III	Date: 3-14-02
Authorized Inspector:		Date: 3-15-02

0
270
Profile taken at: 0
90
180

Sheet 3 of 4

R GH 3/18/02

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1
Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
SEE ATTACHED DRWG. TOTAL AREA = 2.42 sq. in.	2.42 sq. in. X 20.8 in. = 50.33 cu. in.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	CW	2.42	20.8	50.33	50.33	
2	45	CCW	2.42	20.8	50.33	50.33	
3	60	S2	0	20.8	0	50.33	
4	60	S1	0.88	20.8	18.3	50.33	
		TOTAL	AGGREGATE	COVERAGE	118.96	201.32	59.09
4	60RL	S1	1.54	13.8	21.3	50.33	
		TOTAL	SUPPLEMENT	COVERAGE	21.3	201.32	10.58

3/18/02

Item No: B09.011.018

Prepared By: JAMIE H. RESOR Level: II Date: 3/14/2002

Reviewed By: Level: III Date: 3/14/02

McGuire Unit #2
EOC14

Item # B09.011.169

Weld # 2NI2F-871

No Data Recorded. Reference Calibration Sheet #'s

0202071 - 45° & 60°

0202072 - 60° L

3/18/07

ATTACHMENT 8

RR 04-MN-003 Page 2 of 4

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 2NI2F871 | Item No: B09.011.169 | Remarks:

Remarks: ADJACENT WELD

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☒ 1 ☐ 2

BEAM DIRECTION: ☐ 1 ☒ 2 ☐ cw ☐ ccw

FROM L N/A to L N/A

INCHES FROM WO C/L to BEYOND

ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____

FROM 0 DEG to 360 DEG

Remarks: THROAT RADIUS OF 6" ELBOW

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☒ 2

BEAM DIRECTION: ☒ 1 ☐ 2 ☐ cw ☐ ccw

FROM L 7.0" to L 13.0"

INCHES FROM WO C/L to BEYOND

ANGLE: ☐ 0 ☐ 45 ☐ 60 ☒ Other 60RL

FROM N/A DEG to N/A DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2

BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____

INCHES FROM WO _____ to _____

ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____

FROM _____ DEG to _____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2

BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____

INCHES FROM WO _____ to _____

ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____

FROM _____ DEG to _____

Prepared By: [signature] Level: II Date: 3-14-02 | Sketch(s) attached ☒ yes ☐ no | Sheet 2 of 4

Reviewed By: [signature] III Date: 3/14/02 | Authorized Inspector: [signature] Date: 3-15-02

R2 3/19

ATTACHMENT 8

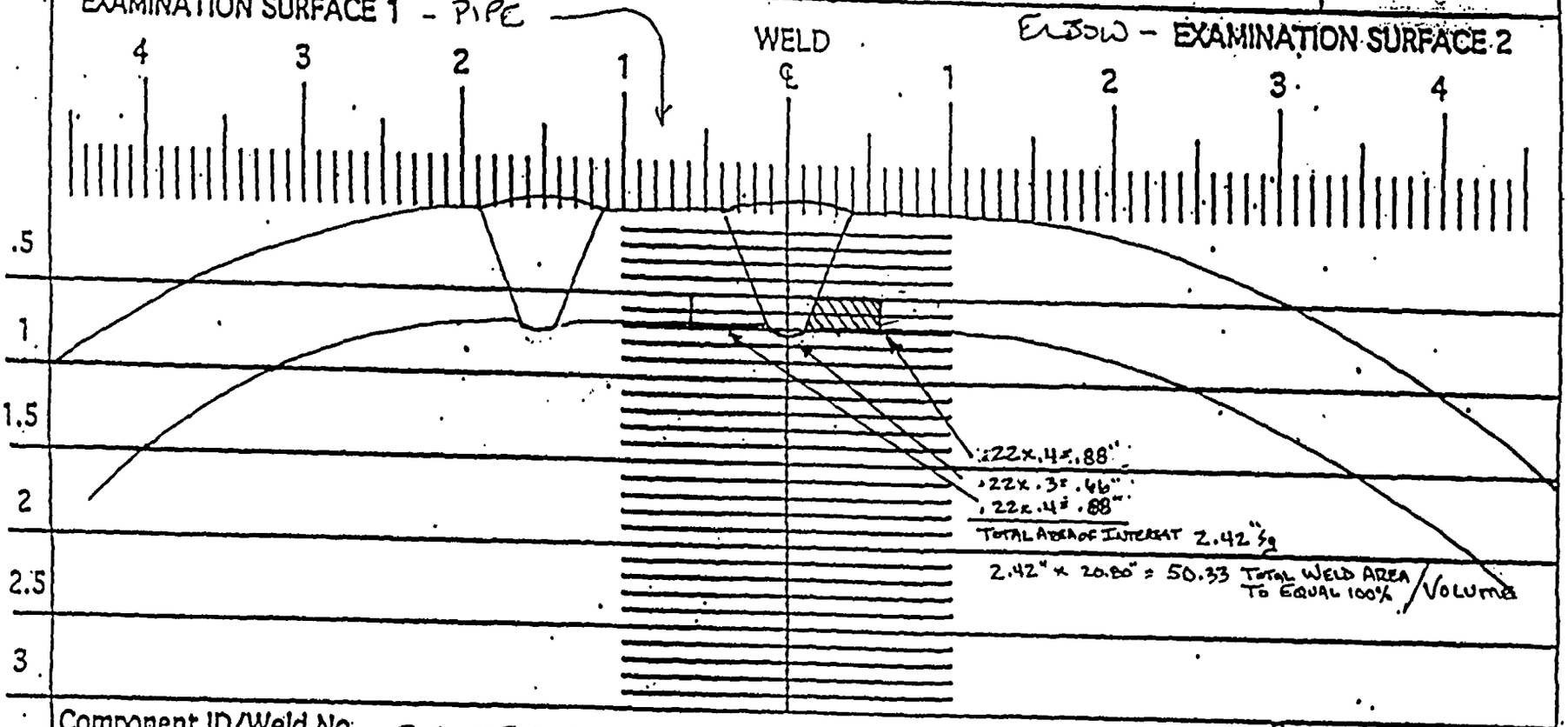
RR-04-AN-003 Page 3084

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



Component ID/Weld No. 2NI2F 871

Remarks:

0

270

Profile taken at 0

90

180

Item No: 309.011.169

Examiner: [signature] Level: II Date: 3-14-02

Reviewed By: [signature] Level: III Date: 3/14/02

Authorized Inspector: [signature] Date: 3-15-02

Sheet 3 of 4

RJ 3/18/02

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1
Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
SEE ATTACHED DRWG. TOTAL AREA = 2.42 sq. in.	2.42 sq. in. X 20.8 in. = 50.33 cu. in.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	CW	2.42	20.8	50.33	50.33	
2	45	CCW	2.42	20.8	50.33	50.33	
3	60	S2	0	20.8	0	50.33	
4	60	S1	0.88	20.8	18.3	50.33	
		TOTAL	AGGREGATE	COVERAGE	118.96	201.32	59.09
4	60RL	S1	1.54	13.8	21.3	50.33	
		TOTAL	SUPPLEMENT	COVERAGE	21.3	201.32	10.58

Item No: B09.011.169

Prepared By: JAMIE H. RESOR Level: II Date: 3/14/2002

Reviewed By: Level: III Date: 3/14/02

ATTACHMENT 9
RR04-MN-003 Page 1 of 4

Form NDE-35A | Revision 3

DUKE POWER COMPANY

STATION McGuire **UNIT** 2

LIQUID PENETRANT EXAMINATION REPORT

Weld/ID No. 2CCPUMP-2A-LEG Material Type: ☒ SS ☐ CS ☐ Inconel

Diameter 0 Schedule/Thickness /0 ☒ ISI ☐ PSI ☐ Other

Procedure Rev. No. 19 Field Change No.(s) N/A

W/O No. 98395260-01

Surface Temperature 84°F

M&TE S/N: MCNDE 27228

Penetrant Materials Category:

A ☒ A(SE) ☐ B ☐ C ☐ D ☐

A(SE) Approved

Penetrant Materials Data:

Batch Numbers

Cleaner	99M01K
Penetrant	97A10K
Developer	96M09K
Emulsifier	

Fluorescent ☐ Nonfluorescent ☒

Black Light Intensity Verified

Time Date

Light Meter S/N:

SKETCH OF ITEM EXAMINED

Acceptance Standard: Other:

A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐ H ☒ J ☐ K ☐ L ☐ M ☐

Ind. No.	Indication Type/Dimensions	Reference Documents	Recordable	Reportable
NRI				

PIP S/N: Rejectable ☐ Acceptable ☒

Exam Limitations: ☒ Yes 82.65 % Examined ☐ No (100% Examined)

Comments:
See attached sheets for limited area examined calculations.

Examiner: Marion T. Weaver Level: II Date: 2/19/2002

Examiner: B. Dale Jolly Level: II Date: 2/19/2002

Reviewed By: Level: III Date: 2/19/02

Final Review	Date	ANII Review	Date	Item No.
	2/25/2002		2-25-02	C03.030.001

QA 212162

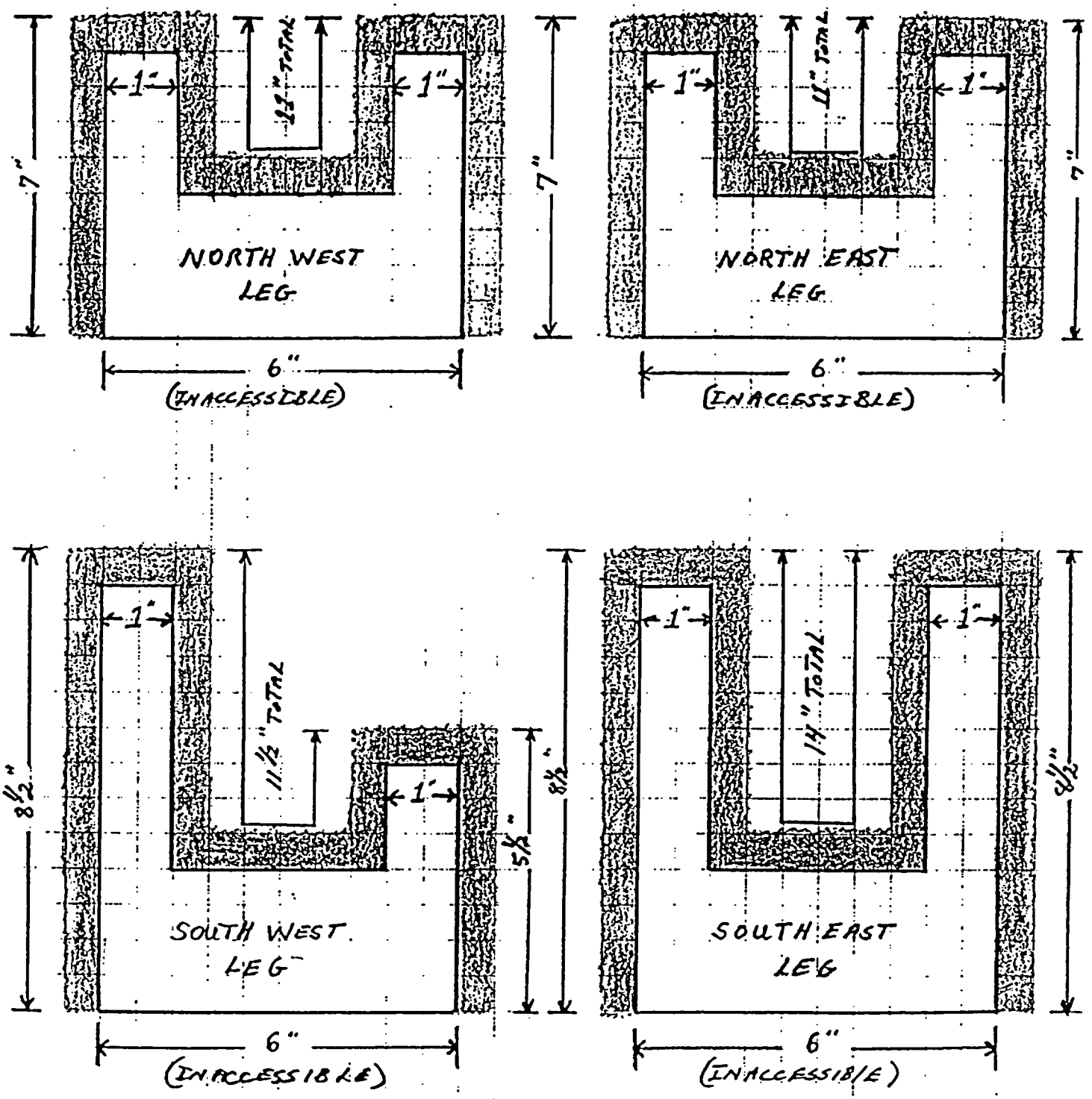
ATTACHMENT 9 Page 2 of 4
RR 04-HN-008

Station MCGUIRE Unit 2 Rev. 1 File No. _____ Sheet _____ Of _____

Subject 2CCPUMP-2A-LEG

By M.T. Weaver Date 2-19-01

Prob No. ITEM# C03.030.001 Checked By _____ Date _____



WELD-SHADED AREA

"NOT TO SCALE"

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1 Revision 0

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

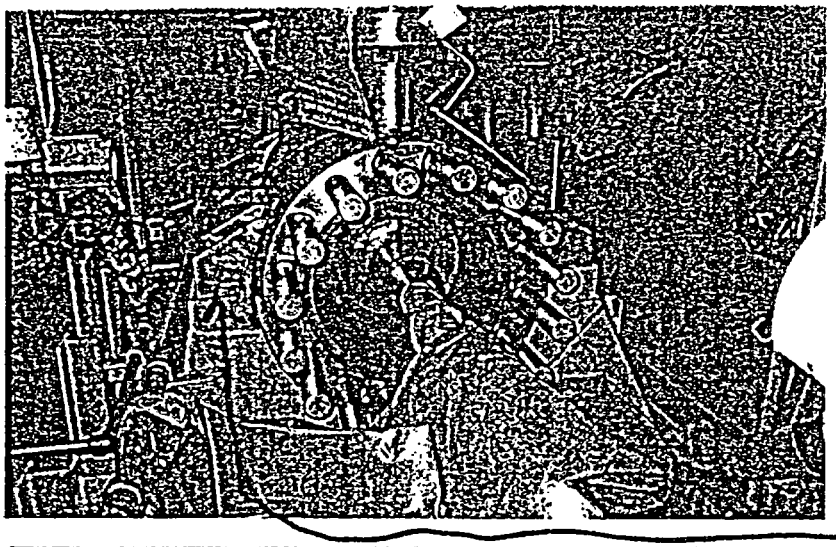
Area Calculation	Volume Calculation
138.5" of weld length x 2.4" wide inspection area = 332.4 sq.in. total weld area.	

Coverage Calculations

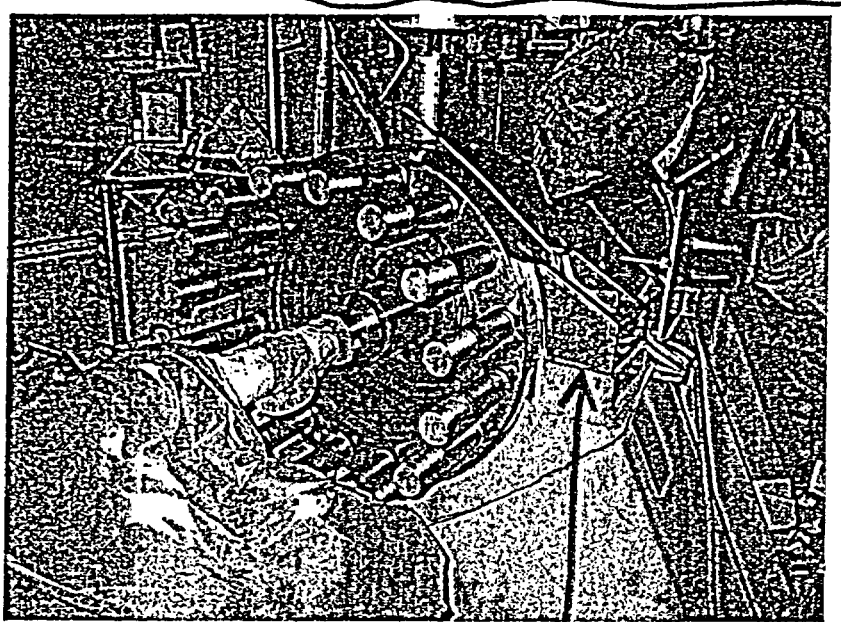
Scan #	Angle	Beam Direction	~~Area~~ WIDTH Examined (sq.in.)	Length Examined (in.)	~~Volume~~ AREA Examined SQ (cu.in.)	~~Volume~~ AREA Required Sq. (cu.in.)	Percent Coverage
N/A	N/A	N/A	2.4	114.5	274.8	332.5	82.65

Item No:	C03.030.001

Prepared By: Marion T. Weaver		Level:	II	Date: 2/19/2002
Reviewed By:		Level:	III	Date: 2/19/02



Support LEG



SupporT LEG

ATTACHMENT-9
RR 04-MN-003
Page 4 OF 4

ATTACHMENT 3

Relief Request 04-MN-004

Proposed Relief in Accordance with 10 CFR 50.55a(g)(5)(iii)
Inservice Inspection Impracticality

Duke Energy Corporation
McGuire Nuclear Station – Unit 2 (EOC-15), March 28, 2002 To October 6, 2003
Second 10-Year Interval – Inservice Inspection Plan
Interval Start Date March 1, 1994. Interval End Date March 1 2004.
ASME Section XI Code – 1989 Edition with No Addenda
Code Case N-460 is applicable

	I.	II. & III.	IV.	V.	VI.	VII.
Limitation I.D. Number	System / Component for Which Relief is Requested: Area or Weld to be Examined	Code Requirement from Which Relief is Requested: 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	Basis for Relief	Alternate Examinations or Testing	Justification for the Granting of Relief	Implementation Schedule
2ND2F-12	ND System 14" Pipe to Valve 2ND2A weld	Exam Category B-J Item No. B09.011.104 Fig. IWB-2500-8 35.20% Volume Coverage	See Paragraph "A" also See Attachment 1 Pages 1-5	None	See Paragraph "E" also See Attachment 1 Pages 1-5	The examination requirements for this interval were met; no additional exams are planned.
2NI2FW26-7	NI System 8" Valve 2NI129 to Pipe Weld	Exam Category B-J Item No. B09.011.171 Fig. IWB-2500-8 34.96% Volume Coverage	See Paragraph "B" also See Attachment 2 Pages 1-5	None	See Paragraph "F" also See Attachment 2 Pages 1-5	The examination requirements for this interval were met; no additional exams are planned.
2NI2FW26-16	NI System 8" Valve 2NI125 to Pipe Weld	Exam Category B-J Item No. B09.011.172 Fig. IWB-2500-8 34.96% Volume Coverage	See Paragraph "C" also See Attachment 3 Pages 1-5"	None	See Paragraph "F" also See Attachment 3 Pages 1-5"	The examination requirements for this interval were met; no additional exams are planned.
2NI2FW26-15	NI System 8" Elbow to Valve 2NI125 Weld	Exam Category C-F-1 Item No. C05.011.168 Fig. IWC-2500-7 34.96% Volume Coverage	See Paragraph "D" also See Attachment 4 Pages 1-5	None	See Paragraph "G" also See Attachment 4 Pages 1-5	The examination requirements for this interval were met; no additional exams are planned.

Inspection Dates for Item Numbers

B09.011.104	09/16/2003
B09.011.171	09/18/2003
B09.011.172	09/18/2003
C05.011.168	09/18/2003

IV. Basis for Relief

Paragraph A:
(The pipe to valve weld material is stainless steel. The weld diameter is 14.00" with a wall thickness of 1.250".)
During the ultrasonic examination of the weld, 100% coverage of the required scan and coverage examination volume could not be obtained. The examination coverage was limited to 35.20%. Limitations are caused by austenitic weld metal characteristics and single sided access caused by the valve configuration which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. The percent coverage reported represents the aggregate coverage from all shear wave scans performed on the weld and base material. A 45° shear wave axial scan was used to scan from the pipe side of the weld covering 40.8% of the examination volume. Two opposing 45° shear wave circumferential scans were performed on the pipe side of the weld covering 50% of the examination volume.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. A 60° refracted longitudinal wave axial scan was used to supplement the shear wave scan to provide better penetration but cannot be used beyond the first sound path leg. This supplemental scan covered 100% of the examination volume from the pipe side.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds. No recordable indications were found during the volumetric and surface examinations of this weld.

Paragraph B:
(The valve to pipe weld material is stainless steel. The weld diameter is 8.00" with a wall thickness of .906".)
During the ultrasonic examination of the weld, 100% coverage of the required scan and coverage examination volume could not be obtained. The examination coverage was limited to 34.96%. Limitations are caused by austenitic weld metal characteristics and single sided access caused by the valve configuration which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. The percent coverage reported represents the aggregate coverage from all shear wave scans performed on the weld and base material. A 45° shear wave axial scan was used to scan from the pipe side of the weld covering 39.84% of the examination volume. Two opposing 45° shear wave circumferential scans were performed on the pipe side of the weld covering 50% of the examination volume.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam

when shear waves pass through the weld. A 60° refracted longitudinal wave axial scan was used to supplement the shear wave scan to provide better penetration but cannot be used beyond the first sound path leg. This supplemental scan covered 100% of the examination volume from the pipe side. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds. No recordable indications were found during the volumetric and surface examinations of this weld.

Paragraph C:
(The valve to pipe weld material is stainless steel. The weld diameter is 8.00" with a wall thickness of .906".) During the ultrasonic examination of the weld, 100% coverage of the required scan and coverage examination volume could not be obtained. The examination coverage was limited to 34.96%. Limitations are caused by austenitic weld metal characteristics and single sided access caused by the valve configuration which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the weld volume as defined in Code Case N-460 is not possible. The percent coverage reported represents the aggregate coverage from all shear wave scans performed on the weld and base material. A 45° shear wave axial scan was used to scan from the pipe side of the weld covering 39.84% of the examination volume. Two opposing 45° shear wave circumferential scans were performed on the pipe side of the weld covering 50% of the examination volume.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. A 60° refracted longitudinal wave axial scan was used to supplement the shear wave scan to provide better penetration but cannot be used beyond the first sound path leg. This supplemental scan covered 100% of the examination volume from the pipe side. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds. No recordable indications were found during the volumetric and surface examinations of this weld.

Paragraph D:
(The elbow to valve weld material is stainless steel. The weld diameter is 8.00" with a wall thickness of .906".) During the ultrasonic examination of the weld, 100% coverage of the required scan and coverage examination volume could not be obtained. The examination coverage was limited to 34.96%. Limitations are caused by austenitic weld metal characteristics and single sided access caused by the valve configuration which prevents scanning of the weld from two opposing sides. Obtaining coverage greater than 90% of the

weld volume as defined in Code Case N-460 is not possible. The percent coverage reported represents the aggregate coverage from all shear wave scans performed on the weld and base material. A 45° shear wave axial scan was used to scan from the pipe side of the weld covering 39.84% of the examination volume. Two opposing 45° shear wave circumferential scans were performed on the pipe side of the weld covering 50% of the examination volume.

Duke Energy Corporation does not claim credit for coverage of the far side of austenitic welds. The characteristics of austenitic weld metal attenuate and distort the sound beam when shear waves pass through the weld. A 60° refracted longitudinal wave axial scan was used to supplement the shear wave scan to provide better penetration but cannot be used beyond the first sound path leg. This supplemental scan covered 100% of the examination volume from the pipe side. Duke Energy Corporation uses a combination of shear waves and longitudinal waves to examine single sided austenitic welds.

The procedures, personnel and equipment have been qualified through the Performance Demonstration Initiative (PDI). However, although longitudinal wave search units were used in the qualification and cracks were detected through the weld metal, PDI does not provide a qualification for single sided examinations of austenitic welds. No recordable indications were found during the volumetric and surface examinations of this weld.

Justification for Relief

VI. Paragraph E:

Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI). No additional B09.011 welds on the ND System were scheduled during this outage. No recordable indications were found during the volumetric and surface examination of this weld.

This is a 14" Pipe to Valve 2ND2A Weld 2ND2F-12 located on the ND (Residual Heat Removal System). This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following.

a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
b) Increased input into the Ventilation Unit Condensate Drain Tank (VUCDT). This parameter is monitored continuously by Operations via an Operator Aid Computer (OAC) alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of a reactor coolant leakage calculation, which is

required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.

d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walkdown is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph F:
Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI). One additional weld on NI System was scheduled this outage. No recordable indications were found during the volumetric and surface examination of this weld.

These are 8" Valves 2NI129/2NI125 to Pipe Welds 2NI2FW26-7/2NI2FW26-16 (respectively) located on the NI (Safety Injection System). These welds are not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the welds in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at these welds would result in the following.

a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.

b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.

c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of a reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.

d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walkdown is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

Paragraph G:
Although the examination volume as defined in ASME Section XI 1989 Edition with no addenda, Figure IWB-2500-8 could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI). Eleven additional C05.011 welds on NI System were scheduled during this outage. Two welds had recordable indications on the surface examination. One weld had a Linear indications of .15" and .65", the other weld had a indication of .25". Subsequent evaluation determined these indications were acceptable per the Section XI Code.

This is a 8" SS Elbow to Valve 2NI125 Weld 2NI2FW26-15 located on the NI (Safety Injection System). This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e. embrittlement) associated with neutron bombardment. If a leak were to occur at the weld in question, there are methods by which the leak could be identified for prompt Engineering evaluation. A leak at this weld would result in the following.

a) Increased containment humidity. This parameter is indicated in the control room and is monitored periodically by Operations and also monitored by the Containment Ventilation System Engineer.
b) Increased input into the VUCDT. This parameter is monitored continuously by Operations via an OAC alarm and also periodically by the Liquid Radwaste System Engineer and Reactor Coolant System Engineer.
c) Increase in unidentified reactor coolant leakage. This parameter would be exhibited during performance of a reactor coolant leakage calculation, which is required by Technical Specifications to be performed every 72 hours. The unidentified leakage limit in Technical Specification 3.4.13.1 is 1 gpm.
d) Other indicators such as containment radiation monitors EMF-38, 39 and 40 the containment floor and equipment sump levels.

Note: The above parameters would be used to identify a leak in the containment, but could not specifically identify this weld as the source of leakage. A containment entry would be required to identify the exact source of the leakage.

Also, a containment walkdown is performed when the unit reaches Mode 3 (full temperature / pressure) during the unit shutdown and startup for each refueling outage. This walkdown should identify any leak at the weld in question.

VIII. Other:

The following individuals contributed to the development of this relief request:

Jim McArdle (Principal UT NDE Level III Examiner) provided Sections II through V and part of Section VI.

Ed Hyland, Bryan Meyer and Larry Kunka (MNS Systems Engineers) provided parts of Section VI.

Gary Underwood (McGuire ISI Plan Manager) compiled the remaining sections.

Sponsored By: Gary Underwood **Date** 7/12/2004

Approved By: L. Kevin Rhyne **Date** 7/13/04

Attachment 1	UT Examination Data B09.011.104
Attachment 2	UT Examination Data B09.011.171
Attachment 3	UT, Examination Data B09.011.172
Attachment 4	UT Examination Data C05.011.168

UT Pipe Weld Examination

Relief Request 04-MN-004
ATTACHMENT-1
Page 1 of 5

Site/Unit: McGuire / 2 | Procedure: PDI-UT-2 | Outage No.: MN2EOC15
Summary No.: B09.011.104 | Procedure Rev.: C | Report No.: UT-03-109
Workscope: ISI | Work Order No.: 98536824 | Page: 1 of 5

Code: Section XI, 1989 | Cat./Item: B-J/B9.11.104 | Location: N/A
Drawing No.: MCFI-2ND1 | Description: Pipe to Valve (2ND2A)
System ID: ND
Component ID: B09.011.104 /2ND2F-12 | Size/Length: 14" SS | Thickness/Diameter: 1.25
Limitations: Yes - Pipe to Valve Configuration | Start Time: 1430 | Finish Time: 1600

Examination Surface: Inside ☐ Outside ☑ | Surface Condition: GROUND
Lo Location: Top of Pipe | Wo Location: Centerline of Weld | Couplant: ULTRAGEL II | Batch No.: 03125
Temp. Tool Mfg.: FISHER | Serial No.: MCNDE 27220 | Surface Temp.: 79 °F
Cal. Report No.: CAL-03-164, CAL-03-165, CAL-03-166

Angle Used	0	45	45T	60	60RL	
Scanning dB		48	48	64.4	69.4	

Indication(s): Yes ☑ No ☐ | Scan Coverage: Upstream ☑ Downstream ☐ CW ☑ CCW ☑
Comments:

Results: Accept ☑ Reject ☐ Info ☐ RLK 12-3-03
Percent Of Coverage Obtained > 90%: No ~~75%~~ 35.2% CJE 12/2/03 | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Busby, John S.	II-N	John S Busby	9/16/2003	Jay A Eaton Level III		9/23/2003
Examiner	Level	Signature	Date	Site Review	Signature	Date
Matteson, Mary F.	II-N	Mary F. Matteson	9/16/2003			
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A				RLK 9-25-03	

RLK 9/30/03

Duke Energy.

Ultrasonic Indication Report

RP 04-MN-004
ATTACHMENT-1
Page 2 OF 5

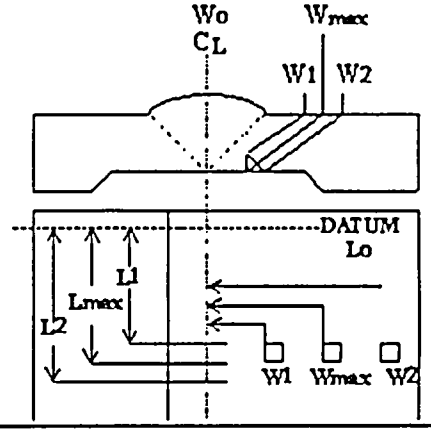
Site/Unit:	McGuire / 2	Procedure:	PDI-UT-2	Outage No.:	MN2EOC15
Summary No.:	B09.011.104	Procedure Rev.:	C	Report No.:	UT-03-109
Workscope:	ISI	Work Order No.:	98536824	Page:	2 of 5

Search Unit Angle: 45-60 °

Wo Location: Weld CL

Lo Location: Top of Pipe

- (●) Piping Welds
- ( ) Ferritic Vessels ≥ 2"T
- ( ) Other _____



MP	Metal Path	Wmax	Distance From Wo To S.U. At Maximum Response		
RBR	Remaining Back Reflection	W1	Distance From Wo At		Of Max (Forward)
L	Distance From Datum	W2	Distance From Wo At		Of Max (Forward)

Comments:

Scan #	Indication No.	% Of DAC	W Max W	W Max MP	Forward Of Max W1	Forward Of Max MP	Backward Of Max W2	Backward Of Max MP	L1 Of Max	L Max	L2 Of Max	RBR Amp.	Remarks
45°	1	60%	1.6"	1.8"	N/A	N/A	N/A	N/A	360°	12"	N/A	Int.	
60°	2	150%	2.5"	2.45"	N/A	N/A	N/A	N/A	360°	0"	N/A	Int.	

Examiner Busby, John S.	Level II-N	Signature	Date 9/16/2003	Reviewer Jay A Eaton Level III	Signature / Date 9/23/2003
Examiner Matteson, Mary F.	Level II-N	Signature	Date 9/16/2003	Site Review	Signature / Date
Other N/A	Level N/A	Signature	Date	ANII Review	Signature / Date 9-25-03

R1 04 9/30/03

Duke Energy

Supplemental Report

RR 04-HN-004
ATTACHMENT-1
Page 3 of 5

Report No.: UT-03-109

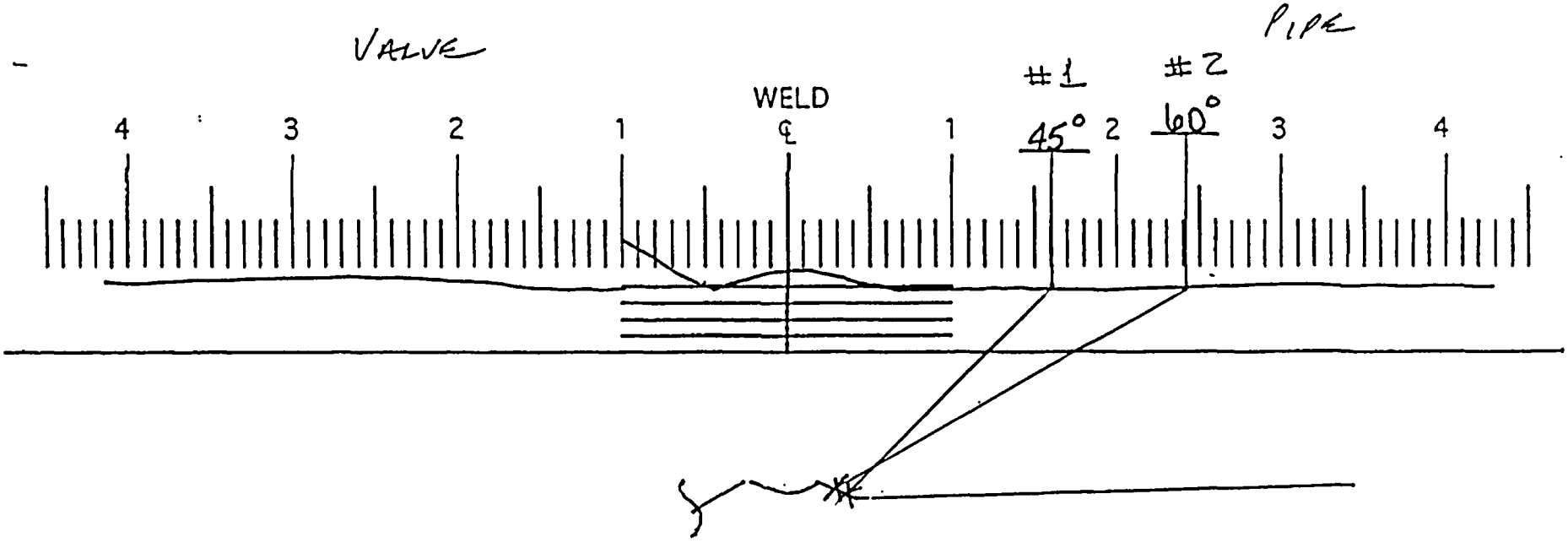
9/23/03

Summary No.: B09.011.104

Examiner:	Busby, John S.	Level:	II-N	Reviewer:	JAY EATON L III	Date:	9/23/03
Examiner:	Matteson, Mary F.	Level:	II-N	Site Review:		Date:	
Other:	N/A	Level:	N/A	ANII Review:		Date:	9-25-03

Comments: Plot Sheet

Sketch or Photo: \\ngofs1\iddeal7\iddeal_Server\Graphics\Common\Contour2.jpg



RKee 9/30/03

Duke Energy.

Supplemental Report

R1 Cat 9/30/03

Report No.: UT-03-109

Page: 4 of 5

Summary No.: B09.011.104

Examiner:	Busby, John S.	Level:	II-N	Reviewer:	Jay A Eaton Level III	Date:	9/23/2003
Examiner:	Matteson, Mary F.	Level:	II-N	Site Review:		Date:	
Other:	N/A	Level:	N/A	ANII Review:		Date:	9-25-03

Comments:

Indication #1-45° & #2-60° are geometric reflectors from counterbore. Review of RT fillm showed extensive counterbore and near the bottom of this weld there is evidence of thru-wall repair.

RR 04-NN-004
ATTACHMENT-1
Page 4 of 5

RR04-MN-004
ATTACHMENT-1
Page 5 of 5

Duke Energy.

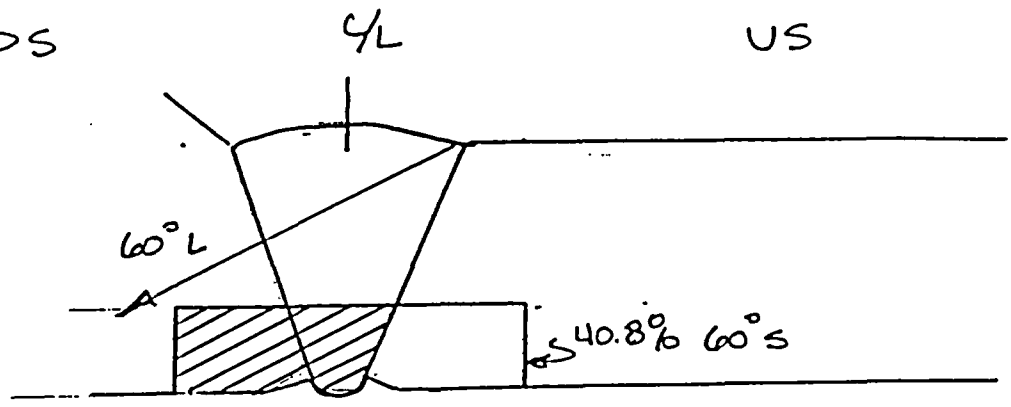
Limitation Record

Site/Unit:	McGuire / 2	Procedure:	PDI-UT-2	Outage No.:	MN2EOC15
Summary No.:	B09.011.104	Procedure Rev.:	C	Report No.:	UT-03-109
Workscope:	ISI	Work Order No.:	98536824	Page:	5 of 5

Description of Limitation:

No scan on the downstream side of the weld C/L + 0.5" and beyond due to valve configuration.

Sketch of Limitation:



U.S. SCAN	45/60 S	- ~~100%~~ 40.8% RBK 12-3-03	
DS. SCAN	60° L	- ~~100%~~ 0% RBK 12-3-03 ~~RBK 12-3-03~~ 0% RBK 12/2/03	SUPPLEMENTAL (L WAVE FROM U.S. SIDE. NO-CREDIT CLAIMED
CW	45° S	- 50%	(NO SCAN D.S. SIDE)
CCW	45° S	- 50%	(NO SCAN D.S. SIDE)

AGGREGATE COVERAGE = ~~300~~ 140.8 ÷ 4 = ~~75%~~ 35.2%
RBK 12/2/03 RBK 12-3-03 RBK 12-3-03

Limitations removal requirements:

N/A

Radiation field: N/A

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Busby, John S.	II-N		9/16/2003	Jay A Eaton Level III		9/23/2003
Examiner	Level	Signature	Date	Site Review	Signature	Date
Matteson, Mary F.	II-N		9/16/2003			
9r	Level N/A	Signature	Date	ANII Review	Signature	Date
N/A					9-25-03	

R/Lee 9/30/03

Duke Energy

UT Pipe Weld Examination

Relief Request: 04-MN-004
ATTACHMENT-2
Page 1 OF 5

Site/Unit: McGuire / 2 | Procedure: PDI-UT-2 | Outage No.: MN2EOC15
Summary No.: B09.011.171 | Procedure Rev.: C | Report No.: UT-03-151
Workscope: ISI | Work Order No.: 98536824 | Page: 1 of 1

Code: Section XI, 1989 | Cat./Item: B-J/B9.11.171 | Location: N/A
Drawing No.: MCFI-2NI26 | Description: Valve (2NI129) to Pipe
System ID: NI
Component ID: B09.011.171 /2NI2FW26-7 | Size/Length: 8" SS | Thickness/Diameter: 0.906"
Limitations: Yes | Start Time: 1400 | Finish Time: 1500

Examination Surface: Inside ☐ Outside ☑ | Surface Condition: GROUND SMOOTH
Lo Location: Top of Pipe | Wo Location: Centerline of Weld | Couplant: ULTRAGEL II | Batch No.: 00325
Temp. Tool Mfg.: FISHER | Serial No.: MCNDE 27219 | Surface Temp.: 80 °F
Cal. Report No.: CAL-03-174, CAL-03-175

Angle Used	0	45	45T	60		
Scanning dB		47.7	45.7	50.5		

Indication(s): Yes ☐ No ☑ | Scan Coverage: Upstream ☐ Downstream ☑ CW ☑ CCW ☑
Comments:

Results: Accept ☑ Reject ☐ Info ☐ RDE 12-3-03
Percent Of Coverage Obtained > 90%: gc 12/2/03 No ~~75%~~ 34.96 | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Matteson, Mary F.	II-N	Mary F. Matteson	9/18/2003	Jay A Eaton Level III		9/25/2003
Examiner	Level	Signature	Date	Site Review	Signature	Date
Charbonnet, Shane C.	II-N		9/18/2003			
Other	Level	Signature	Date	ANII Review	Signature	Date
					9-27-03	

RJGL 9/30/03

UT Pipe Weld Examination

RR 04-MN-004
ATTACHMENT-2
Page 2 OF 5

Site/Unit: McGuire / 2 | Procedure: NDE-600 | Outage No.: MN2EOC15
Summary No.: B09.011.171 | Procedure Rev.: 15 | Report No.: UT-03-135
Workscope: ISI | Work Order No.: 98536824 | Page: 1 of 4

Code: Section XI, 1989 | Cat./Item: B-J/B9.11.171 | Location: N/A
Drawing No.: MCFI-2NI26 | Description: Valve (2NI129) to Pipe
System ID: NI
Component ID: B09.011.171 /2NI2FW26-7 | Size/Length: 8" SS | Thickness/Diameter: 0.906"
Limitations: Yes | Start Time: 0958 | Finish Time: 1005

Examination Surface: Inside ☐ Outside ☑ | Surface Condition: GROUND SMOOTH
Lo Location: Top of Pipe | Wo Location: Centerline of Weld | Couplant: ULTRAGEL II | Batch No.: 01225
Temp. Tool Mfg.: FISHER | Serial No.: MCNDE 27221 | Surface Temp.: 80 °F
Cal. Report No.: CAL-03-188

Angle Used	0	45	45T	60	60L	
Scanning dB					60	

Indication(s): Yes ☑ No ☐ | Scan Coverage: Upstream ☑ Downstream ☐ CW ☐ CCW ☐
Comments:

Results: Accept ☑ Reject ☐ Info ☐
Percent Of Coverage Obtained > 90%: JE 12/2/03 No-~~75%~~ 34.96% | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Eaton, Jay A.	III		9/20/2003	Gayle E Houser	Level III	9/25/2003
Examiner	Level	Signature	Date	Site Review	Signature	Date
Other	Level	Signature	Date	ANII Review	Signature	Date

R/Bu 9/30/03

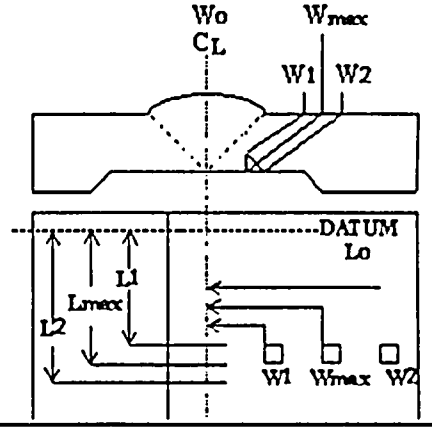
Ultrasonic Indication Report

RR 04-MN-004
ATTACHMENT-2
Page 3 OF 5

Site/Unit: McGuire / 2 | Procedure: NDE-600 | Outage No.: MN2EOC15
Summary No.: B09.011.171 | Procedure Rev.: 15 | Report No.: UT-03-135
Workscope: ISI | Work Order No.: 98536824 | Page: 2 of 4

Search Unit Angle: 60L °
Wo Location: C/L of Weld
Lo Location: Top of Pipe

- (•) Piping Welds
- ( ) Ferritic Vessels ≥ 2"T
- ( ) Other _____



MP	Metal Path	Wmax	Distance From Wo To S.U. At Maximum Response
RBR	Remaining Back Reflection	W1	Distance From Wo At Of Max (Forward)
L	Distance From Datum	W2	Distance From Wo At Of Max (Forward)

Comments:

Scan #	Indication No.	% Of DAC	W Max W	W Max MP	Forward Of Max W1	Forward Of Max MP	Backward Of Max W2	Backward Of Max MP	L1 Of Max	L Max	L2 Of Max	RBR Amp.	Remarks
S1	1	80	1.4	1.7	N/A	N/A	N/A	N/A	360°	0"	Int	N/A	

Examiner Eaton, Jay A.	Level III	Signature	Date 9/20/2003	Reviewer Gayle E Houser Level III	Signature Date 9/25/2003
Examiner	Level	Signature	Date	Site Review	Signature Date
Other	Level	Signature	Date	ANII Review	Signature Date 9-27-03

RKeen 9/30/03

Duke Energy.

Supplemental Report

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Report No.: UT-03-135

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Summary No.: B09.011.171

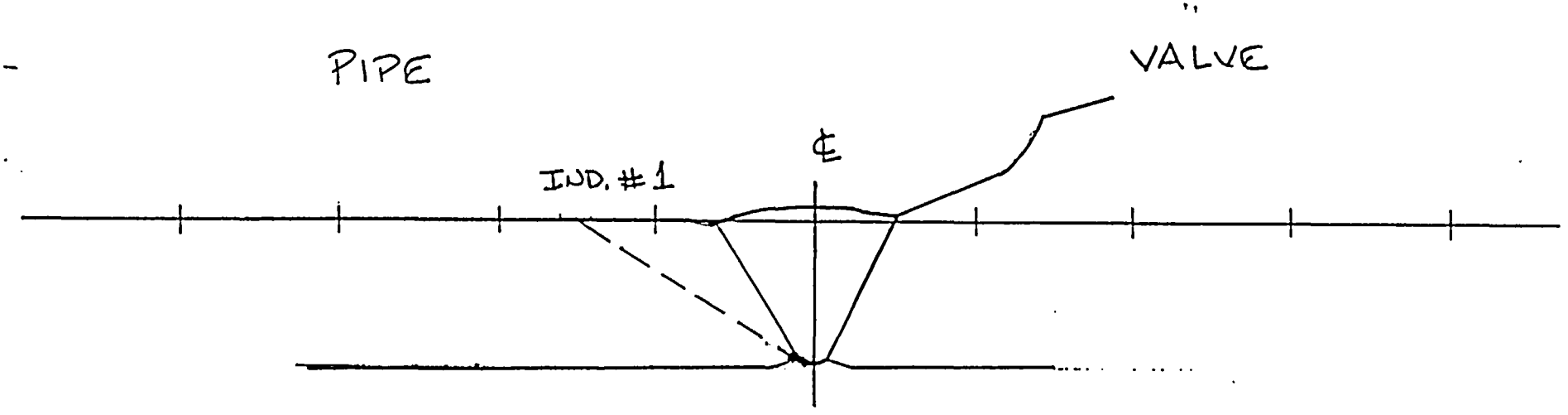
Examiner: Eaton, Jay A. Level: III Reviewer: Gayle E Houser Level III Date: 9/25/2003

Examiner: Level: Site Review: Date:

Other: Level: ANII Review: Date: 9/25/03

Comments: Indication # 1-60°L is a geometric reflector from the weld root / counterbore configuration. This was confirmed by review of RT film.

Sketch or Photo: \\ngofs1\DDeal7\Iddeal_Server\Graphics\Common\ProfileLine2.jpg



R1 GJ
9/30/03

RR 04-MN-004
ATTACHMENT-2
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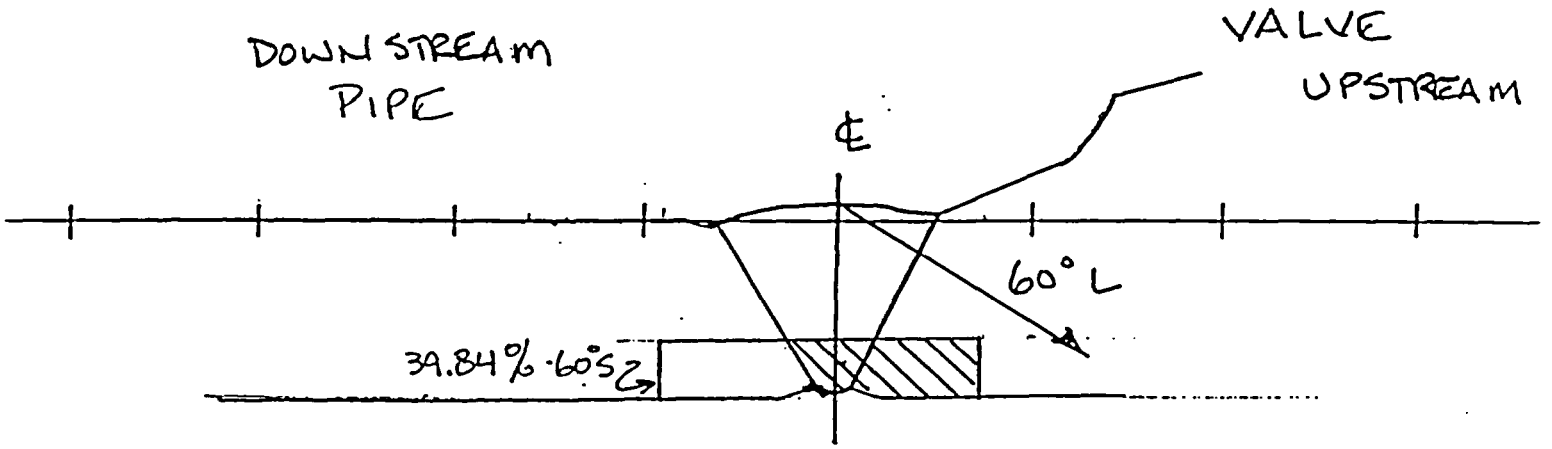
Limitation Record

Site/Unit:	McGuire / 2	Procedure:	NDE-600	Outage No.:	MN2EOC15
Summary No.:	B09.011.171	Procedure Rev.:	15	Report No.:	UT-03-135
Workscope:	ISI	Work Order No.:	98536824	Page:	4 of 4

Description of Limitation:

Limited due to valve configuration on the Upstream side from the weld C/L + 0.5" and Beyond (360°).

Sketch of Limitation:



ANGLE	SCAN	COVERAGE
60°L	UP S.	0% 12/2/03 ~~100%~~ 12/2/03 (SUPPLEMENTAL 60°L FROM DS SIDE)
45°/60°S	DOWN S.	39.84 ~~100%~~ 12/2/03 NO CREDIT CLAIMED
45°	CW	50% 12-3-03 (NO SCAN UPS SIDE)
45°	CCW	50% (NO SCAN UPS SIDE)

139.84 ~~300~~ ÷ 4 = 34.96 ~~75%~~ AGGREGATE COVERAGE
12/2/03 12-3-03 12/2/03 12-3-03

Limitations removal requirements:

N/A

Radiation field: N/A

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Eaton, Jay A.	III		9/20/2003	Gayle E Houser Level III		9/25/2003
Examiner	Level	Signature	Date	Site Review	Signature	Date
	Level	Signature	Date	ANII Review	Signature	Date
						9-22-03

9/23/03

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ATTACHMENT-3
Page 1 OF 5

UT Pipe Weld Examination

Site/Unit:	McGuire / 2	Procedure:	PDI-UT-2	Outage No.:	MN2EOC15
Summary No.:	B09.011.172	Procedure Rev.:	C	Report No.:	UT-03-152
Workscope:	ISI	Work Order No.:	98536824	Page:	1 of 1

Code: Section XI, 1989 Cat./Item: B-J/B9.11.172 Location: N/A

Drawing No.: MCFI-2NI26 Description: Valve (2NI125) to Pipe

System ID: NI

Component ID: B09.011.172 /2NI2FW26-16 Size/Length: 8" SS Thickness/Diameter: 0.906"

Limitations: Yes Start Time: 1440 Finish Time: 1515

Examination Surface: Inside ☐ Outside ☑ Surface Condition: GROUND SMOOTH

Lo Location: Top of Pipe Wo Location: Centerline of Weld Couplant: ULTRAGEL II Batch No.: 00325

Temp. Tool Mfg.: FISHER Serial No.: MCNDE 27220 Surface Temp.: 80 °F

Cal. Report No.: CAL-03-174, CAL-03-175

Angle Used	0	45	45T	60		
Scanning dB		44.8	44.8	52.3		

Indication(s): Yes ☐ No ☑ Scan Coverage: Upstream ☐ Downstream ☑ CW ☑ CCW ☑

Comments:

Results: Accept ☑ Reject ☐ Info ☐ RGK 12-3-03

Percent Of Coverage Obtained > 90%: 9L 12/2/03 No ~~75%~~ 34.96 Reviewed Previous Data: Yes

Examiner	Level II-N	Signature	Date	Reviewer		Signature	Date
Matteson, Mary F.		Mary F. Matteson	9/18/2003	Jay A Eaton Level III			9/25/2003
Examiner	Level II-N	Signature	Date	Site Review		Signature	Date
Charbonnet, Shane C.			9/18/2003				
Other	Level	Signature	Date	ANII Review		Signature	Date
							9-27-03

RGK 9/30/03

UT Pipe Weld Examination

RR 04-MN-004
ATTACHMENT-3
Page 2 OF 5

Site/Unit: McGuire / 2 | Procedure: NDE-600 | Outage No.: MN2EOC15
Summary No.: B09.011.172 | Procedure Rev.: 15 | Report No.: UT-03-132
Workscope: ISI | Work Order No.: 98536824 | Page: 1 of 4

Code: Section XI, 1989 | Cat./Item: B-J/B9.11.172 | Location: N/A
Drawing No.: MCFI-2NI26 | Description: Valve (2NI125) to Pipe
System ID: NI
Component ID: B09.011.172 /2NI2FW26-16 | Size/Length: 8" SS | Thickness/Diameter: 0.906"
Limitations: Yes | Start Time: 0945 | Finish Time: 0951

Examination Surface: Inside ☐ Outside ☑ | Surface Condition: GROUND SMOOTH
Lo Location: Top of Pipe | Wo Location: Centerline of Weld | Couplant: ULTRAGEL II | Batch No.: 01225
Temp. Tool Mfg.: FISHER | Serial No.: MCNDE 27221 | Surface Temp.: 80 °F
Cal. Report No.: CAL-03-188

Angle Used	0	45	45T	60	60L	
Scanning dB					60	

Indication(s): Yes ☑ No ☐ | Scan Coverage: Upstream ☑ Downstream ☐ CW ☐ CCW ☐

Comments:
60° L wave to gain coverage on the valve side of the weld.

Results: Accept ☑ Reject ☐ Info ☐
Percent Of Coverage Obtained > 90%: 9E 12/2/03 No 75% 34.96 | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Eaton, Jay A.	III		9/20/2003	Gayle E Houser Level III	GE Houser	9/25/2003
Examiner	Level	Signature	Date	Site Review	Signature	Date
Other	Level	Signature	Date	ANII Review	Signature	Date
					9-27-03	

RIGH 9/30/03

Duke Energy

Ultrasonic Indication Report

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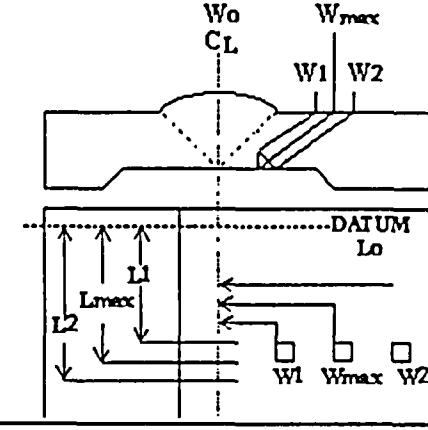
Site/Unit:	McGuire / 2	Procedure:	NDE-600	Outage No.:	MN2EOC15
Summary No.:	B09.011.172	Procedure Rev.:	15	Report No.:	UT-03-132
Workscope:	ISI	Work Order No.:	98536824	Page:	2 of 4

Search Unit Angle: 60°L °

Wo Location: C/L of Weld

Lo Location: Top of Pipe

- (●) Piping Welds
- ( ) Ferritic Vessels ≥ 2"T
- ( ) Other _____



MP	Metal Path	Wmax	Distance From Wo To S.U. At Maximum Response
RBR	Remaining Back Reflection	W1	Distance From Wo At Of Max (Forward)
L	Distance From Datum	W2	Distance From Wo At Of Max (Forward)

Comments:

Scan #	Indication No.	% Of DAC	W Max W	W Max MP	Forward Of Max W1	Forward Of Max MP	Backward Of Max W2	Backward Of Max MP	L1 Of Max	L Max	L2 Of Max	RBR Amp.	Remarks
S1	1	100	1.4	1.7	N/A	N/A	N/A	N/A	360°	0"	Int.	N/A	

Examiner	Level III	Signature	Date	Reviewer	Signature	Date
Eaton, Jay A.			9/20/2003	Gayle E Houser Level III		9/25/2003
Examiner	Level	Signature	Date	Site Review	Signature	Date
Other	Level	Signature	Date	ANII Review	Signature	Date

R1 9/30/03

9-27-03

Supplemental Report

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ATTACHMENT-3
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Report No.: UT-03-132

Page: 3 of 4

Summary No.: B09.011.172

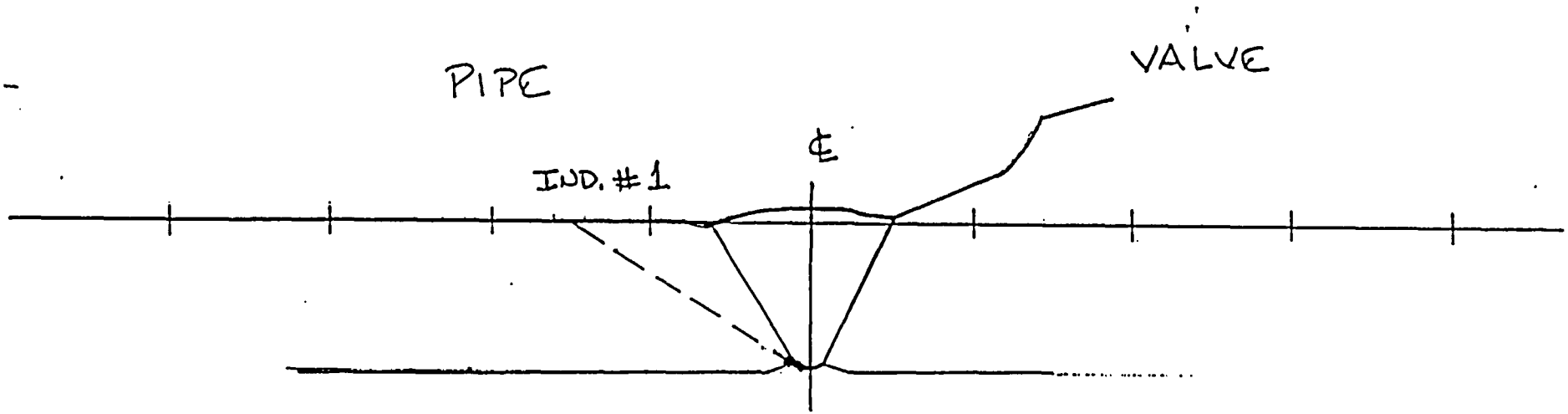
Examiner: Eaton, Jay A. Level: III Reviewer: Gayle E Houser Level III Date: 9/25/2003

Examiner: Level: Site Review: Date:

Other: Level: ANII Review: Date: 9-27-03

Comments: Indication # 1-60°L is a geometric reflector from the weld root / counterbore configuration. This was confirmed by review of RT film.

Sketch or Photo: \\ngofs1\IDDeal7\Iddeal_Server\Graphics\Common\ProfileLine2.jpg



RKM 9/30/03

RR 04-MN-004
ATTACHMENT-3
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Duke Energy

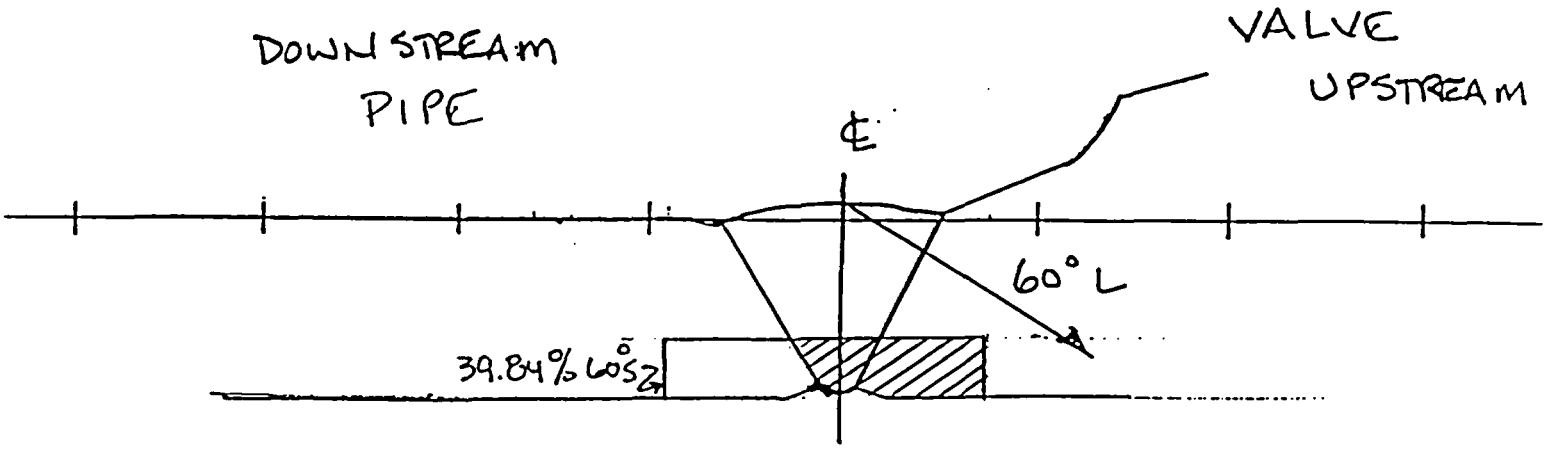
Limitation Record

Site/Unit:	McGuire / 2	Procedure:	NDE-600	Outage No.:	MN2EOC15
Summary No.:	B09.011.172	Procedure Rev.:	15	Report No.:	UT-03-132
Workscope:	ISI	Work Order No.:	98536824	Page:	4 of 4

Description of Limitation:

Limited due to valve configuration on the Upstream side from the weld C/L + 0.5" and Beyond (360°).

Sketch of Limitation:



ANGLE	SCAN	COVERAGE
60°L	UP S.	0% ~~100%~~ 39.84% (60° L FROM DS SIDE) SUPPLEMENTAL NO CREDIT CLAIMED
45°/60° S	DOWN S.	~~100%~~ 50% (NO SCAN UPS SIDE
45°	CW	50% (NO SCAN UPS SIDE
45°	CCW	

139.84 ~~300~~ ÷ 4 = 34.96% ~~75%~~ AGGREGATE COVERAGE

Limitations removal requirements:

N/A

Radiation field: N/A

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Eaton, Jay A.	III		9/20/2003	Gayle E Houser Level III		9/25/2003
Examiner	Level	Signature	Date	Site Review	Signature	Date
er	Level	Signature	Date	ANII Review	Signature	Date

RJG 9/30/03

Relief Request 04-MN-004
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UT Pipe Weld Examination

Site/Unit: McGuire / 2 | Procedure: PDI-UT-2 | Outage No.: MN2EOC15
Summary No.: C05.011.168 | Procedure Rev.: C | Report No.: UT-03-150
Workscope: ISI | Work Order No.: 98536824 | Page: 1 of 1

Code: Section XI, 1989 | Cat./Item: C-F-1/C5.11.168 | Location: N/A
Drawing No.: MCFI-2NI26 | Description: Elbow to Valve (2NI125)
System ID: NI
Component ID: C05.011.168 /2NI2FW26-15 | Size/Length: 8" SS | Thickness/Diameter: 0.906"
Limitations: Yes | Start Time: 1520 | Finish Time: 1602

Examination Surface: Inside ☐ Outside ☑ | Surface Condition: GROUND SMOOTH
Lo Location: Top of Pipe | Wo Location: Centerline of Weld | Couplant: ULTRAGEL II | Batch No.: 00325
Temp. Tool Mfg.: FISHER | Serial No.: MCNDE 27220 | Surface Temp.: 80 °F
Cal. Report No.: CAL-03-174, CAL-03-175

Angle Used	0	45	45T	60		
Scanning dB		44.8	44.8	52.3		

Indication(s): Yes ☐ No ☑ | Scan Coverage: Upstream ☐ Downstream ☑ CW ☑ CCW ☑
Comments:

Results: Accept ☑ Reject ☐ Info ☐ RSK 12-3-03
Percent Of Coverage Obtained > 90%: JC 12/2/03 No ~~75%~~ 34.96 | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Matteson, Mary F.	II-N	Mary F. Matteson	9/18/2003	Jay A Eaton Level III		9/25/2003
Examiner	Level	Signature	Date	Site Review	Signature	Date
Charbonnet, Shane C.	II-N		9/18/2003			
Other	Level	Signature	Date	ANII Review	Signature	Date
N/A	N/A					9-27-03

RLG 10-1-03

UT Pipe Weld Examination

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Site/Unit: McGuire / 2 | Procedure: NDE-600 | Outage No.: MN2EOC15
Summary No.: C05.011.168 | Procedure Rev.: 15 | Report No.: UT-03-133
Workscope: ISI | Work Order No.: 98536824 | Page: 1 of 4

Code: Section XI, 1989 | Cat./Item: C-F-1/C5.11.168 | Location: N/A
Drawing No.: MCFI-2NI26 | Description: Elbow to Valve (2NI125)
System ID: NI
Component ID: C05.011.168 /2NI2FW26-15 | Size/Length: 8" SS | Thickness/Diameter: 0.906"
Limitations: Yes | Start Time: 0951 | Finish Time: 0957

Examination Surface: Inside ☑ Outside ☐ | Surface Condition: GROUND SMOOTH
Lo Location: Outside Radius of Elbow | Wo Location: Centerline of Weld | Couplant: ULTRAGEL II | Batch No.: 01225
Temp. Tool Mfg.: FISHER | Serial No.: MCNDE 27221 | Surface Temp.: 80 °F
Cal. Report No.: CAL-03-188

Angle Used	0	45	45T	60	60L	
Scanning dB					60	

Indication(s): Yes ☑ No ☐ | Scan Coverage: Upstream ☑ Downstream ☐ CW ☐ CCW ☐

Comments:
60° L wave to gain coverage on the valve side of the weld.

Results: Accept ☑ Reject ☐ Info ☐ 9-26-03
Percent Of Coverage Obtained > 90%: ~~No~~ 9L 12/2/03 ~~75%~~ 34.96% | Reviewed Previous Data: Yes

Examiner	Level	Signature	Date	Reviewer	Signature	Date
Eaton, Jay A.	III		9/20/2003	Gayle E Houser Level III		9/25/2003
Examiner	Level	Signature	Date	Site Review	Signature	Date
Other	Level	Signature	Date	ANII Review	Signature	Date
						9-27-03

RIGH 10-1-03

Ultrasonic Indication Report

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ATTACHMENT-4
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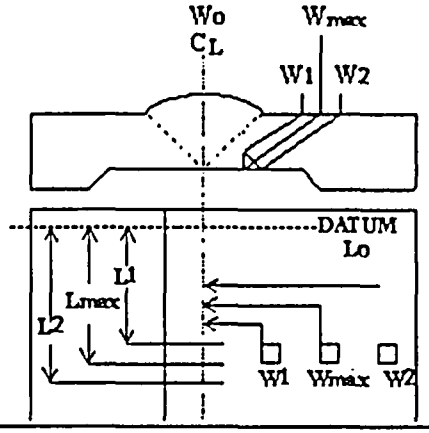
Site/Unit: McGuire / 2 | Procedure: NDE-600 | Outage No.: MN2EOC15
Summary No.: C05.011.168 | Procedure Rev.: 15 | Report No.: UT-03-133
Workscope: ISI | Work Order No.: 98536824 | Page: 2 of 4

Search Unit Angle: 60°L °
Wo Location: C/L of Weld
Lo Location: Top of Pipe

- (●) Piping Welds
- ( ) Ferritic Vessels ≥ 2"T
- ( ) Other



MP	Metal Path	Wmax	Distance From Wo To S.U. At Maximum Response
RBR	Remaining Back Reflection	W1	Distance From Wo At Of Max (Forward)
L	Distance From Datum	W2	Distance From Wo At Of Max (Forward)

Comments:

Scan #	Indication No.	% Of DAC	W Max W	W Max MP	Forward Of Max W1	Forward Of Max MP	Backward Of Max W2	Backward Of Max MP	L1 Of Max	L Max	L2 Of Max	RBR Amp.	Remarks
S1	1	100	1.4	1.7	N/A	N/A	N/A	N/A	360°	0"	Int.	N/A	

Examiner Eaton, Jay A.	Level III	Signature	Date 9/20/2003	Reviewer Gayle E Houser Level III	Signature	Date 9/25/2003
Examiner	Level	Signature	Date	Site Review	Signature	Date
Other	Level	Signature	Date	ANII Review	Signature	Date 9-27-03

RIGR 10-1-03

RR 04-NN-004
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Supplemental Report

Report No.: UT-03-133

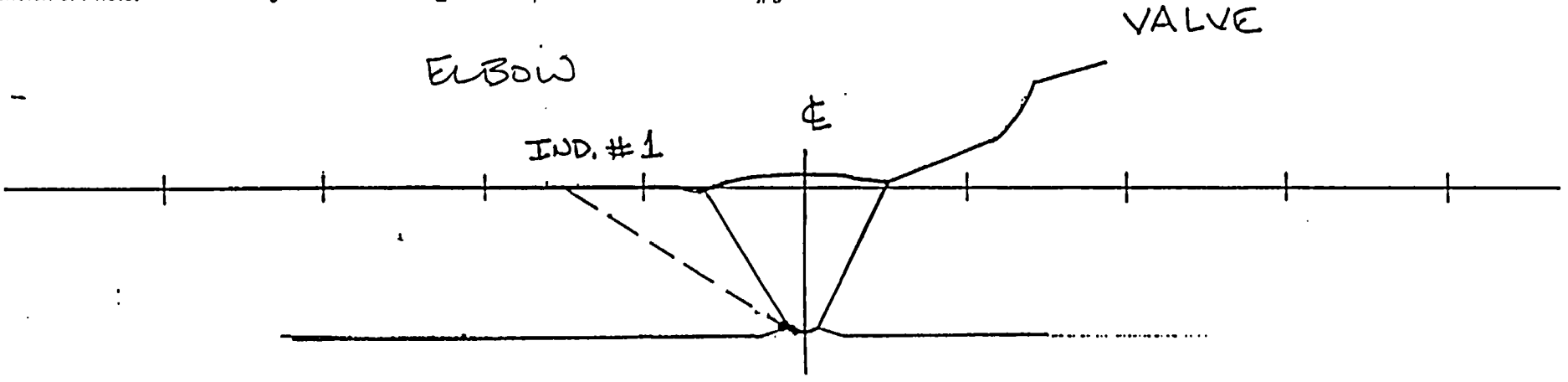
Page: 3 of 4

Summary No.: C05.011.168

Examiner:	Eaton, Jay A.	Level:	III	Reviewer:	Gayle E Houser Level III	Date:	9/25/2003
Examiner:		Level:		Site Review:		Date:	
Other:		Level:		ANII Review:		Date:	9-27-03

Comments: Indication # 1-60°L is a geometric reflector from the weld root / counterbore configuration. This was confirmed by review of RT film.

Sketch or Photo: \\ngofs1\IDDeal7\Iddeal_Server\Graphics\Common\ProfileLine2.jpg



RLee 10-1-03

RR 04-MN-004
ATTACHMENT-4
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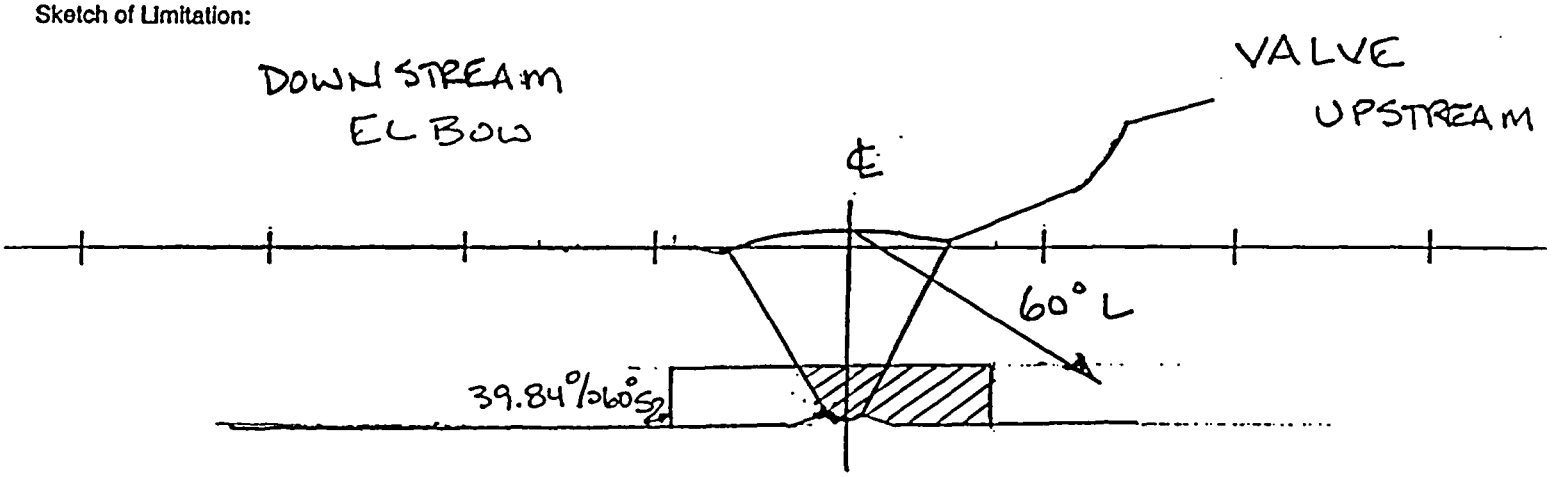
Limitation Record

Site/Unit:	McGuire / 2	Procedure:	NDE-600	Outage No.:	MN2EOC15
Summary No.:	C05.011.168	Procedure Rev.:	15	Report No.:	UT-03-133
Workscope:	ISI	Work Order No.:	98536824	Page:	4 of 4

Description of Limitation:

Limited due to valve configuration on the Upstream side from the weld C/L + 0.5" and Beyond (360°).

Sketch of Limitation:



ANGLE	SCAN	COVERAGE
60°L	UP S.	0%/~~100%~~ ℄ 12/2/03 RBK 12-3-03 SUPPLEMENTAL (60° L FROM DS SIDE) NO CREDIT CLAIMED
45°/60° S	DOWN S.	39.84% ~~100%~~ ℄ 12/2/03 RBK 12-3-03
45°	CW	50% (NO SCAN UPS SIDE
45°	CCW	50% (NO SCAN UPS SIDE
		139.84% ~~300~~ ÷ 4 = 34.96% ~~75%~~ AGGREGATE COVERAGE
		℄ 12/2/03 RBK 12-3-03

Limitations removal requirements:

N/A

Radiation field: N/A

Examiner	Level III	Signature	Date	Reviewer		Signature	Date
Eaton, Jay A.			9/20/2003	Gayle E Houser Level III		DE Houser	9/25/2003
Examiner	Level	Signature	Date	Site Review		Signature	Date
er	Level	Signature	Date	ANII Review		Signature	Date

R/04 10-1-03