Duke Power Company
Catawba Nuclear Generation Department
4800 Concord Road
York, SC 29745

William R. McCollum, Jr.
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DUKE POWER

December 12, 1996

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

Subject: Duke Power Company
Catawba Nuclear Station, Unit 1
Docket No. 50-413

Request for Relief from 1989 edition of ASME Boiler and Pressure Vessel Code, Section XI.
Serial No. 96-04

Pursuant to 10 CFR 50.55a (a) (3) (ii), Duke Power Company requests relief from the 1989 edition of ASME Boiler and Pressure Vessel Code, Section XI for Catawba Units 1.

Complete coverage of two welds in the Safety Injection System was not obtained during Unit 1 end-of-cycle 9 refueling outage. Complete coverage was not possible due to component thickness and geometric configurations. Duke Power Company believes that with the limited coverage obtained, an acceptable level of quality and safety has been achieved and public health and safety will not be endangered by allowing relief from the code requirements.

The attached Enclosure 1, Relief Request 96-04, provides a detailed description and justification for this request.

Should there be any questions concerning this request, please call D. Tower at (803) 831-3419.

Very truly yours,

William R. McCollum, Jr.

A047 1/1

Attachment

xc:

S.D. Ebneter, Regional Administrator
Region II

R.J. Freudenberger, Senior Resident Inspector
Catawba Nuclear Station

P.S. Tam, Senior Project Manager
ONRR

ENCLOSURE 1

RELIEF REQUEST 96-04

ENCLOSURE 1

RELIEF REQUEST 96-04

DUKE POWER COMPANY

STATION CATAWBA UNIT 1

10-YEAR INTERVAL REQUEST FOR RELIEF NO. 96-04

I. System/Component(s) for Which Relief is Requested:

ASME Section XI Code Class: 1
Examination Category: B-J
Circumferential Piping Welds - Safety Injection System

Weld Number	Item Number
1NI148-10	B09.011.163
1NI148-11	B09.011.164

II. Code Requirement:

ASME Section XI, 1989 Edition, Examination Category B-J Pressure Retaining Welds In Piping , Table IWB-2500-1, Figure Number IWB-2500-8. Item Number B09.011 requires a volumetric examination of essentially 100% of the weld length and adjacent base material for all piping welds.

III. Code Requirement from which Relief is Requested:

Relief is requested for the above identified Class 1 Circumferential Piping Welds from meeting the coverage requirements as defined in ASME Section XI, Appendix III, Article III-4000, III-4420.

IV. Basis for Relief:

During the ultrasonic examination of the welds shown in Attachment 1, two directional coverage required by ASME Section XI, Appendix III as modified by Code Case N-460 could not be obtained. Causes of these limitations are single sided access and austenitic weld material. Where possible, a combination of angles and wave modes were used to maximize the coverage obtained. The weld and base metal at the component inside surface was covered from at least one direction with a minimum of one angle. The examinations were perfomed with a procedure and personnel qualified in accordance with ASME Section XI, Appendix VIII, 1992 Edition with 1993 Addenda. This procedure has been qualified for detection of far side flaws when examining through austenitic weld metal.

V. Alternate Examinations or Testing:

No additional examinations are planned for Weld ID Numbers 1NI148-10 and 1NI148-11. The use of radiography as an alternate volumetric examination method for Weld ID Numbers 1NI148-10 and 1NI148-11 is not practical due to component thicknesses and geometric configurations. Other restrictions making radiography impractical are the necessity to use double wall techniques due to inaccessibility of the ID surface and physical barriers prohibiting access for placement of source, film, number bands, etc. Duke Power Company will continue to use the most current ultrasonic techniques available to obtain maximum coverage for future examinations of these weld numbers.

VI. Justification for the Granting of Relief:

Although the coverage requirements of ASME Section XI, as defined in Appendix III could not be met, the amount of coverage obtained for these examinations provides an acceptable level of quality and integrity. Based on these evaluations, it is Duke Power Company's opinion that the limited coverage will not endanger the health and safety of the general public. Duke Power Company will perform UT examinations to the extent practical using procedures and personnel qualified in accordance with ASME Section XI, Appendix VIII, 1992 Edition with 1993 Addenda.

VII. Implementation Schedule:

These examinations will continue to be scheduled in accordance with the requirements of ASME Section XI for future Inspection Intervals at Catawba Nuclear Station, Unit 1.

NDE Level III Review By: James J. McArdle **Date** 11/20/96

Evaluated By: James E. Henry **Date** 11/20/96

Reviewed By: J. C. Barbour **Date** 11/20/96

Attachment 1 Description Table

Attachment 2 UT Examination Data

ASME Class 1 Inservice Inspection Request For Relief No. 96-04
For Catawba Unit 1 Based On ASME Section XI - 1989 Code

Item No.	Exam Category /Figure No.	System Or Component	Area To Be Examined	Reason For Request	Licensee Proposed Alternate Examination
B09.011.163	B-J IWB-2500-8	(NI) Safety Injection System	Class 1 Circumferential Piping Weld	Limited scan due to geometric configuration. Actual coverage obtained = 59.85%	None
B09.011.164	B-J IWB-2500-8	(NI) Safety Injection System	Class 1 Circumferential Piping Weld	Limited scan due to geometric configuration. Actual coverage obtained = 61.00%	None

REQUEST FOR RELIEF 16-0-
ATTACHMENT 2 PG 1 OF 9

DUKE POWER COMPANY

ULTRASONIC CALIBRATION/EXAMINATION RECORD FOR NDT-136 INSTRUMENTS

FORM NDE-UT-1G
REVISION 5

Station: Catawba	Unit: 1	Date: 6/18/96	Sheet Number: 9601018
Procedure: NDE-600	Rev: 7 FC: N/A	Couplant: ULTRAGEL II	Batch Number: 093001
Examiner: Jay A. Eaton	Level: II	Manufacturer: STAVELEY	Pyrometer S/N: MCNDE 27025
Examiner: B. Dale Jolly	Level: I	Serial No: 975K	Cal Due: 10/3/96

REFERENCE BLOCK

ID: ROMPAS
S/N: A09319 Material: SS

SIMULATOR BLOCK

Search Unit # 1: ID: A09319 Reflector Type: RADIUS; Metal Path: 1"
Search Unit # 2: ID: A09319 Reflector Type: RADIUS; Metal Path: 1"

CABLES

RG58 ☐ RG174 ☒
# of connectors 0
Length 6 FT

Initial Cal Time
s.u.#1 1406 s.u.#2 1350

Cal Checks

Date	Time s.u.#1	Time s.u.#2	Initials
6/18/96	1418	1405	
6/18/96	1430	1441	
6/18/96	1440	1450	
	FINAL		

Search Unit # 1

Type: Single ☒ Dual ☐
Size: .5
Freq: 2.25 Mhz
Manuf: KBA
Ser no: 42967
Meas. ∠ 45°
Wedge: MSW-QC
Wave Mode: Long. ☐ Shear ☒
Bi-Modal ☐
1 Major Screen Div = 0.25 inches
Scan: axial ☐ circ. ☒
Dual ☐ Pulse Echo ☒

Settings

Range	2.5
Delay	0.341
Velocity	0.126
Units	IN
Display	FILT1
Freq	2.25
Reject	OFF
Pulse	222
Damping	500
Rep Rate	2000

Jack: T ☒ R ☐

Search Unit # 2

Type: Single ☒ Dual ☐
Size: .5
Freq: 2.25 Mhz
Manuf: KBA
Ser no: 43072
Meas. ∠ 60°
Wedge: MSW-QC
Wave Mode: Long. ☐ Shear ☒
Bi-Modal ☐
1 Major Screen Div = 0.5 inches
Scan: axial ☒ circ. ☐
Dual ☐ Pulse Echo ☒

Settings

Range	5.0
Delay	0.523
Velocity	0.124
Units	IN
Display	FILT1
Freq	2.25
Reject	OFF
Pulse	222
Damping	500
Rep Rate	2000

Jack: T ☒ R ☐

Item No:	Record Indications yes	Record Indications no	Limitations yes	Limitations no	Scanning dB s.u.#1	Scanning dB s.u.#2	Scan Direction Axial	Scan Direction Circ.	Exam Date and Time Start	Exam Date and Time End	Surface Temp °
B09.011.165	☐	☒	☐	☒	45	50	YES	YES	6/18/96 1350	6/18/96 1418	72°F
B09.011.166	☐	☒	☐	☒	45	50	YES	YES	6/18/96 1350	6/18/96 1418	72°F
B09.011.163	☐	☒	☒	☐	45	50	YES	YES	6/18/96 1430	6/18/96 1450	72°F
B09.012.163	☐	☒	☒ 11-27-96	☒	45	50	YES	YES	6/18/96 1430	6/18/96 1450	72°F

Reviewer: Larry Mauldin — Level: II — Date: 6/19/96
Authorized Inspector: — Date: 6.26.96

DUKE POWER COMPANY

ULTRASONIC CALIBRATION/EXAMINATION RECORD FOR NDT-136 INSTRUMENTS

FORM NDE-UT-1G
REVISION 5

Station: Catawba	Unit: 1	Date: 6/18/96	Sheet Number: 9601019
Procedure: NDE-600 Rev: 7 FC: N/A		Couplant: ULTRAGEL II	Batch Number: 093001
Examiner: Jay A. Eaton	Level: II	Manufacturer: STAVELEY	Pyrometer S/N: MCNDE 27025
Examiner: B. Dale Jolly	Level: I	Serial No: 975K	Cal Due: 10/3/96

REFERENCE BLOCK

ID: ROMPAS
S/N: A09319 Material: SS

SIMULATOR BLOCK

Search Unit # 1
ID: A09319 Reflector Type: RADIUS
Metal Path: 1"

Search Unit # 2
ID: A09319 Reflector Type: RADIUS
Metal Path: 1"

CABLES

RG58 ☐ RG174 ☒
# of connectors 0
Length 6 FT

Initial Cal Time
s.u.#1 1406 s.u.#2 1350

Cal Checks

Date	Time s.u.#1	Time s.u.#2	Initials
6/18/96	1430	1441	
6/18/96	1440	1450	
	FINAL		

Search Unit # 1

Type: Single ☒ Dual ☐
Size: .5
Freq: 2.25 Mhz
Manuf: KBA
Ser no: 42967
Meas. ∠ 45°
Wedge: MSW-QC
Wave Mode: Long. ☐ Shear ☒
Bi-Modal ☐
1 Major Screen Div = 0.25 inches
Scan: axial ☐ circ. ☒
Dual ☐ Pulse Echo ☒

Settings

Range	2.5
Delay	0.341
Velocity	0.126
Units	IN
Display	FILT1
Freq	2.25
Reject	OFF
Pulse	222
Damping	500
Rep Rate	2000

Jack: T ☒ R ☐

Search Unit # 2

Type: Single ☒ Dual ☐
Size: .5
Freq: 2.25 Mhz
Manuf: KBA
Ser no: 43072
Meas. ∠ 60°
Wedge: MSW-QC
Wave Mode: Long. ☐ Shear ☒
Bi-Modal ☐
1 Major Screen Div = 0.5 inches
Scan: axial ☒ circ. ☐
Dual ☐ Pulse Echo ☒

Settings

Range	5.0
Delay	0.523
Velocity	0.124
Units	IN
Display	FILT1
Freq	2.25
Reject	OFF
Pulse	222
Damping	500
Rep Rate	2000

Jack: T ☒ R ☐

Item No:	Record Indications yes	Record Indications no	Limitations yes	Limitations no	Scanning dB s.u.#1	Scanning dB s.u.#2	Scan Direction Axial	Scan Direction Circ.	Exam Date and Time Start	Exam Date and Time End	Surface Temp °
B09.011.164	☐	☒	☒	☐	45	50	YES	YES	6/18/96 1430	6/18/96 1450	72°F
B09.012.164	☐	☒	☒ 11-1-96	☒	45	50	YES	YES	6/18/96 1430	6/18/96 1450	72°F

10/1/96

Reviewer: Larry Mauldin	Level: III	Date: 6/19/96	Authorized Inspector:	Date: 6-26-96

REQUEST FOR RELIEF 96-04
ATTACHMENT 2 PG 3 OF 9

DUKE POWER COMPANY

ULTRASONIC CALIBRATION/EXAMINATION RECORD FOR NDT-136 INSTRUMENTS

FORM NDE-UT-1G
REVISION 5

Station: Catawba	Unit: 1	Date: 6/18/96	Sheet Number: 9601020
Procedure: NDE-600 Rev: 7 FC: N/A		Couplant: ULTRAGEL II	Batch Number: 093001
Examiner: Jay A. Eaton	Level: II	Manufacturer: STAVELEY	Pyrometer S/N: MCNDE 27025
Examiner: B. Dale Jolly	Level: I	Serial No: 975K	Cal Due: 10/3/96

REFERENCE BLOCK

ID: ROMPAS
S/N: A09319 Material: SS

SIMULATOR BLOCK

Search Unit # 1: ID: A09319 Reflector Type: RADIUS; Metal Path: 1"

Search Unit # 2: ID: N/A Reflector Type: N/A; Metal Path: N/A

CABLES

RG58 ☐ RG174 ☒

# of connectors: 0

Length: 6 FT

Initial Cal Time

s.u.#1 1451 s.u.#2

Cal Checks

Date	Time s.u.#1	Time s.u.#2	Initials
6/18/96	1500		
	FINAL		

Search Unit # 1

Type: Single ☐ Dual ☒
Size: 14x8mm
Freq: 2.0 Mhz
Manuf: Sigma
Ser no: 2244-93001
Meas. ∠ 60°L
Wedge: INT
Wave Mode: Long. ☒ Shear ☐
Bi-Modal ☐
1 Major Screen Div = 0.5 inches
Scan: axial ☒ circ. ☐
Dual ☒ Pulse Echo ☐

Settings

Range	5.0
Delay	0.770
Velocity	0.227
Units	IN
Display	FILT1
Freq	2.25
Reject	OFF
Pulse	222
Damping	500
Rep Rate	2000

Jack: T ☒ R ☒

Search Unit # 2

Type: Single ☐ Dual ☐
Size:
Freq: Mhz
Manuf:
Ser no: ~~2244-93001~~
Meas. ∠
Wedge:
Wave Mode: Long. ☐ Shear ☐
Bi-Modal ☐
1 Major Screen Div = inches
Scan: axial ☐ circ. ☐
Dual ☐ Pulse Echo ☐

Settings

Range	
Delay	
Velocity	
Units	
Display	
Freq	
Reject	
Pulse	
Damping	
Rep Rate	

Jack: T ☐ R ☐

Item No:	Record Indications yes	Record Indications no	Limitations yes	Limitations no	Scanning dB s.u.#1	Scanning dB s.u.#2	Scan Direction Axial	Scan Direction Circ.	Exam Date and Time Start	Exam Date and Time End	Surface Temp °
B09.011.163	☐	☒	☒	☐	67		YES		6/18/96 1451	6/18/96 1500	72°F
B09.011.164	☐	☒	☒	☐	67		YES		6/18/96 1451	6/18/96 1500	72°F

Reviewer: Lance Maulden Level: III Date: 6-19-96

Authorized Inspector: Robert McGill Date: 6-26-96

10/15/96

REQUEST FOR RELIEF 96-04
ATTACHMENT 2 PG 4 OF 9

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1NI148-10 | Item No: B09.011.163 | Remarks:

Limitation 1 — Remarks: < WELD TAPER

- ☒ NO SCAN
- ☐ LIMITED SCAN

SURFACE: ☒ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☒ 2 ☐ cw ☐ ccw
FROM L _____ to L _____
INCHES FROM WO C/L to 0.7"
ANGLE: ☐ 0 ☐ 45 ☒ 60 ☒ Other 60°L
FROM 0 DEG to 360 DEG

Limitation 2 — Remarks: < VALVE CONFIGURATION

- ☒ NO SCAN
- ☐ LIMITED SCAN

SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☒ 1 ☐ 2 ☐ cw ☐ ccw
FROM L _____ to L _____
INCHES FROM WO C/L to BEYOND
ANGLE: ☐ 0 ☐ 45 ☒ 60 ☒ Other 60°L
FROM 0 DEG to 360 DEG

Limitation 3

- ☐ 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

Limitation 4

- ☐ 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: Jay Eaton | Level: II | Date: 6/18/96 | Sketch(s) attached ☒ yes ☐ no | Sheet 1 of 3

Reviewed By: Larry Mauldin | Date: 6/19/96 | Authorized Inspector: Robert McGill | Date: 7-24-96

7/24/96

Request for Relief 96-04
Attachment 2 Pg 5 of 9

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
.42" X 1.85" = .777 sq. in. = .78 sq.in.	.78 sq. in. X 34.4" = 26.83 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
Axial	45/60L	2	.72	34.4	24.77	26.83	92.32
Circ.	45	CW	.34	34.4	11.7	26.83	43.61
Circ.	45	CCW	.34	34.4	11.7	26.83	43.61
					48.17 ÷	80.49 x 100 =	59.85%

Item No: B09.011.163

Prepared By: Jay Eaton	Level: II	Date: 7/22/96
Reviewed By: Larry Mauldin	Level: III	Date: 7/22/96

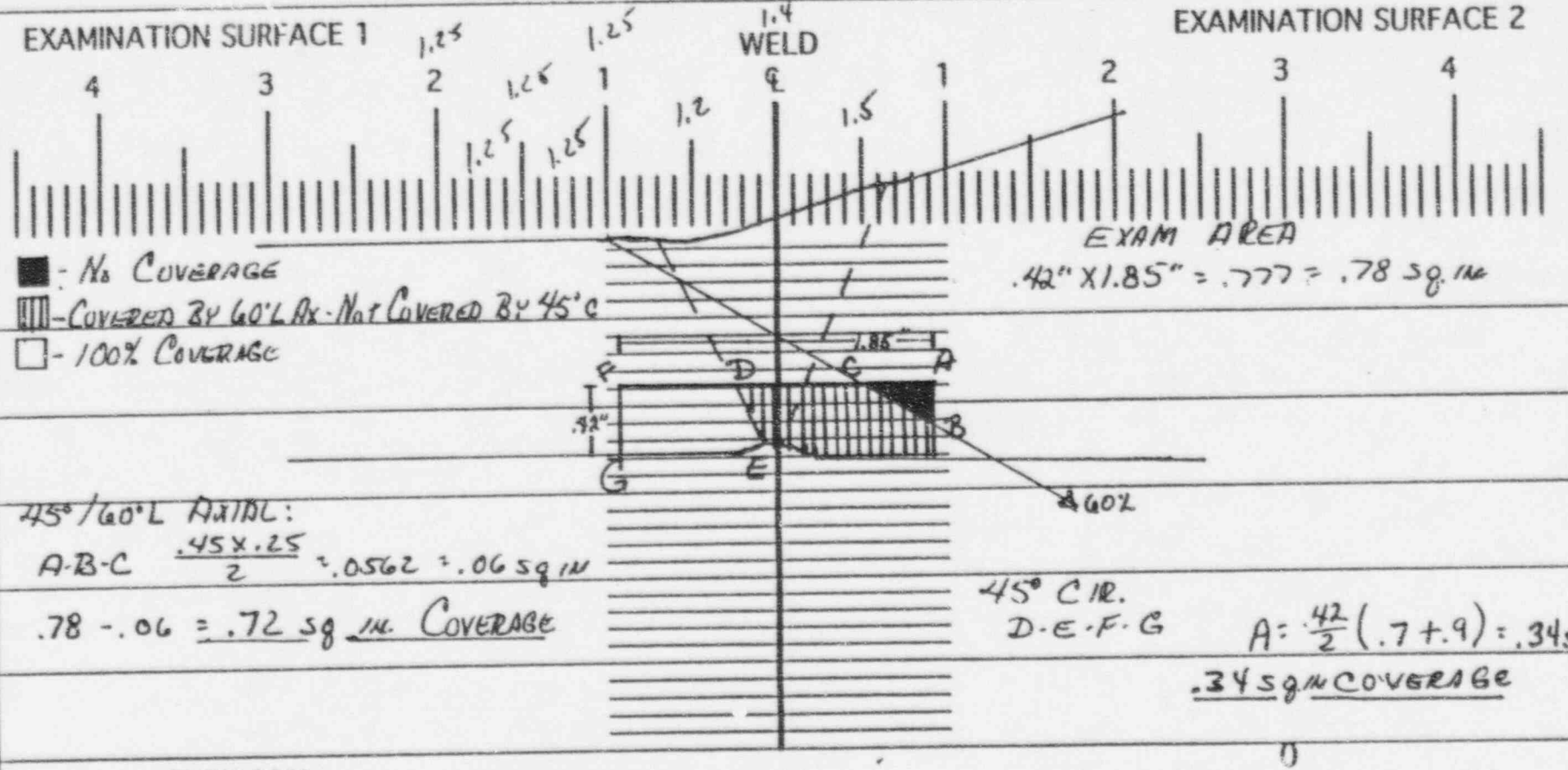
10/28/96

E-13

REQUEST FOR RELIEF 96-04
ATTACHMENT 2 PG 6 OF 9

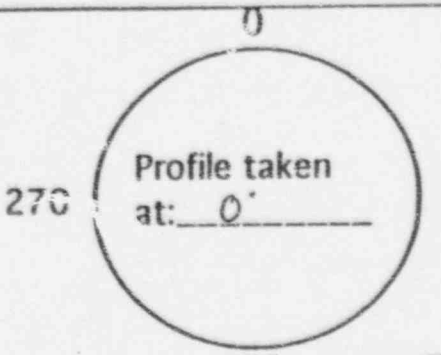
DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-UT-5
Revision 1



Component ID/Weld No. 1 N.I 148-10

Remarks:



Item No: B09.011.163

Examiner:	Level: II	Date: 7/22/96
Reviewed By: Larry Brayton	Level: III	Date: 7-22-96
Authorized Inspector: Robert McGrath		Date: 7-24-96

Sheet 3 of 3

RJC 1/28/97

Request For Relief 96-04

Attachment 2 Pg 7 of 9

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1NI148-11 | Item No: B09.011.164 | Remarks:

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☒ 1 ☐ 2

BEAM DIRECTION: ☐ 1 ☒ 2 ☐ cw ☐ ccw

FROM L _____ to L _____

INCHES FROM WO C/L to 0.7"

ANGLE: ☐ 0 ☐ 45 ☒ 60 ☒ Other 60°L

FROM 0 DEG to 360 DEG

Remarks: < WELD TAPER

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☒ 2

BEAM DIRECTION: ☒ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____

INCHES FROM WO C/L to BEYOND

ANGLE: ☐ 0 ☐ 45 ☒ 60 ☒ Other 60°L

FROM 0 DEG to 360 DEG

Remarks: < VALVE 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 _____

Prepared By: Jay Eaton Level: II Date: 6/18/96 | **Sketch(s) attached** ☒ yes ☐ no | Sheet 1 of 3

Reviewed By: Larry Mauldin Date: 6/19/96 | Authorized Inspector: Date: 7-24-96

REQUEST FOR RELIEF 96-04
ATTACHMENT 2 PG 8 OF 9

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
.33" X 1.6" = .528 sq. in. = .53 sq.in	.53 sq. in. X 34.4" = 18.23 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
Axial	45/60L	1	.45	34.4	15.48	18.23	84.91
Circ.	45	CW	.26	34.4	8.94	18.23	49.04
Circ.	45	CCW	.26	34.4	8.94	18.23	49.04

33.36 ÷ 54.69 X 100 = 61%

Item No: B09.011.164

Prepared By: Jay Eaton Level: II Date: 7/22/96

Reviewed By: Larry Mauldin Level: III Date: 7/22/96

10/28/96

REQUEST FOR RELIEF 96-04

ATTACHMENT 2 PG 9 OF 9

DUKE POWER COMPANY

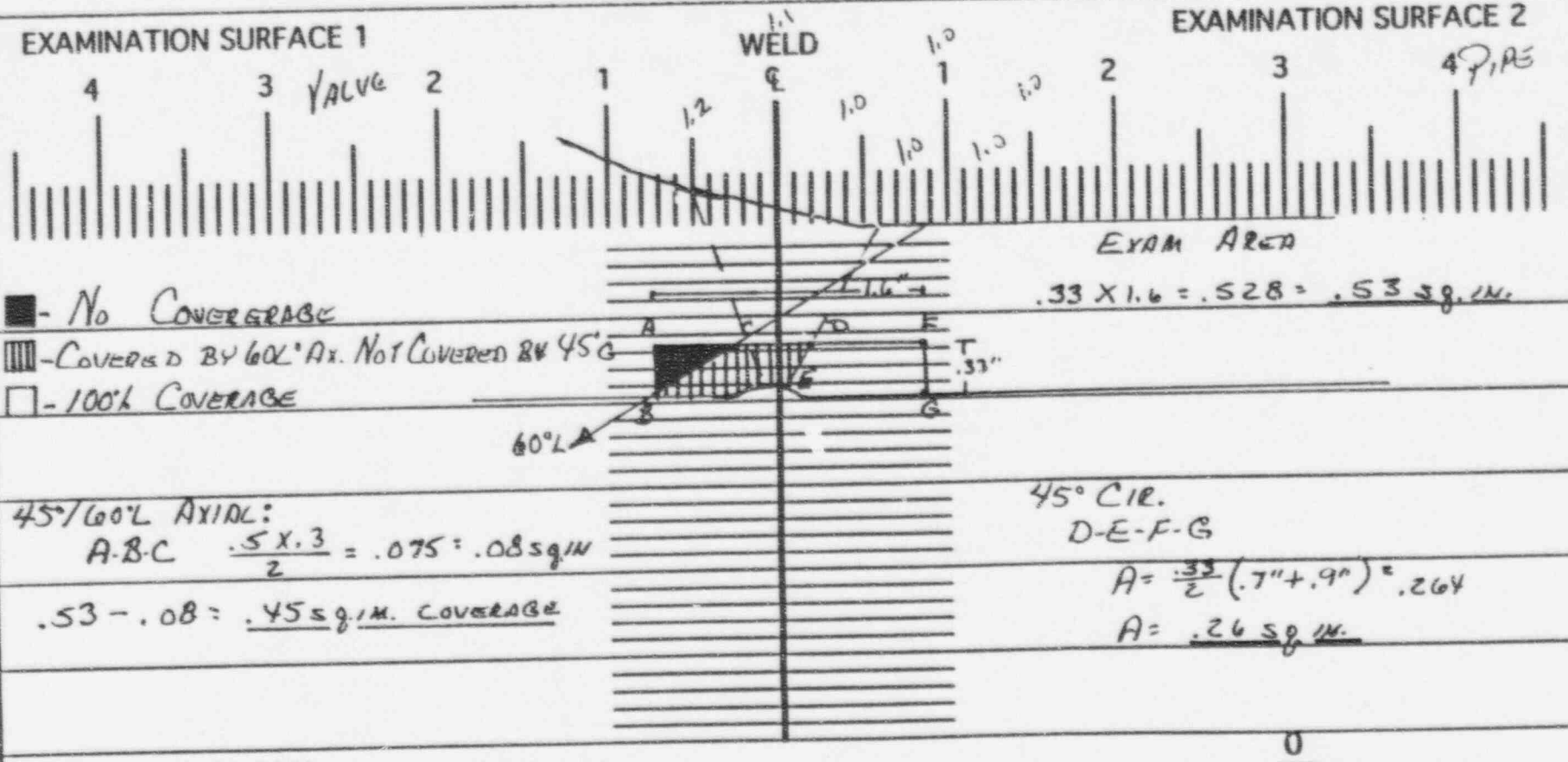
UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1

EXAMINATION SURFACE 1

EXAMINATION SURFACE 2



■ - No Coverage

▥ - Covered by 60°L Ax. Not Covered by 45°G

□ - 100% Coverage

EXAM AREA

.33 X 1.6 = .528 = .53 sq. in.

45°/60°L AXIAL:

A-B-C $\frac{.5 \times .3}{2}$ = .075 = .08 sq in

.53 - .08 = .45 sq. in. coverage

45° Cir.

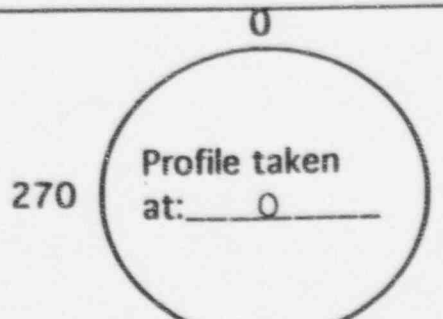
D-E-F-G

A = $\frac{.33}{2}$ (.7" + .9") = .264

A = .26 sq. in.

Component ID/Weld No. 1NI148-11

Remarks:



Item No: B09.011.164

Examiner:	Level: II	Date: 7/22/96
Reviewed By:	Level: III	Date: 7-22-96
Authorized Inspector:		Date: 7-24-96

Sheet 3 of 3

7/24/96