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
7.0" / 2 (1.375" + .85") = 7.79 = 7.8 sq.in.	7.8 sq.in. x 21.5" = 167.7 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	NA	7.8	6.5	50.7	167.7	30.23
2	35	1	7.8	6.5	50.7	167.7	30.23
3	35	2	7.8	6.5	50.7	167.7	30.23
4	45	1	7.8	6.5	50.7	167.7	30.23
5	45	2	7.8	6.5	50.7	167.7	30.23
6	35	CW	7.8	6.5	50.7	167.7	30.23
7	35	CCW	7.8	6.5	50.7	167.7	30.23
8	45	CW	7.8	6.5	50.7	167.7	30.23
9	45	CCW	7.8	6.5	50.7	167.7	30.23

456.3 / 1509.3 X100 = 30.2 %

Examination from the inside clad surface is impractical because of high radiation exposure.

James J. McArdle
Level III UT

Item No: B01.022.003

Prepared By: David Zimmerman Level: II Date: 4/2/97

Reviewed By: Larry Mauldin Level: III Date: 4/17/97

4 of 7

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
7.0" / 2 (3.5"+3.8")+7.0" / 2 (3.5" + 3.8") = 51.1 sq.in.	51.1 sq.in. x 21 in. = 1098.65 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	NA	51.1	6.5	332.15	1098.65	30.23
2	35/45	1	51.1	6.5	332.15	1098.65	30.23
3	35/45	2	51.1	6.5	332.15	1098.65	30.23
4	35/45	CW	51.1	6.5	332.15	1098.65	30.23
5	35/45	CCW	51.1	6.5	332.15	1098.65	30.23

1660.75 / 5493.25 X 100 = 30.2 %

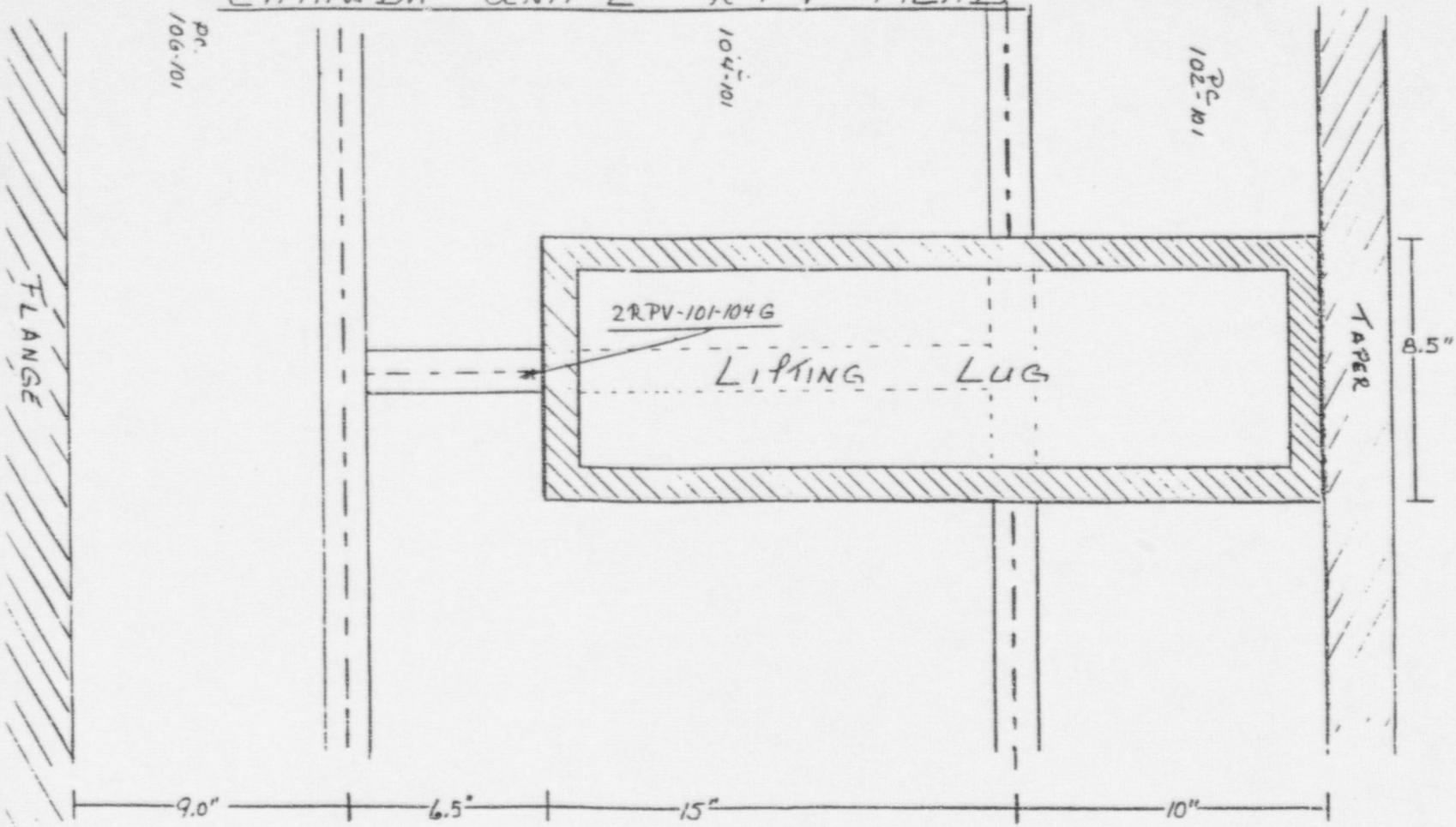
Item No: B01.022.003

Prepared By: David Zimmerman Level: II Date: 4/2/97

Reviewed By: Larry Mauldin Level: III Date: 4/17/97

5-8-97

CATAWBA UNIT 2 RPV HEAD



REDUCED to 77%

SCALE 1/4" = 1.0"

I.D.# 2RPV-101-104G

ITEM# B01.022.003

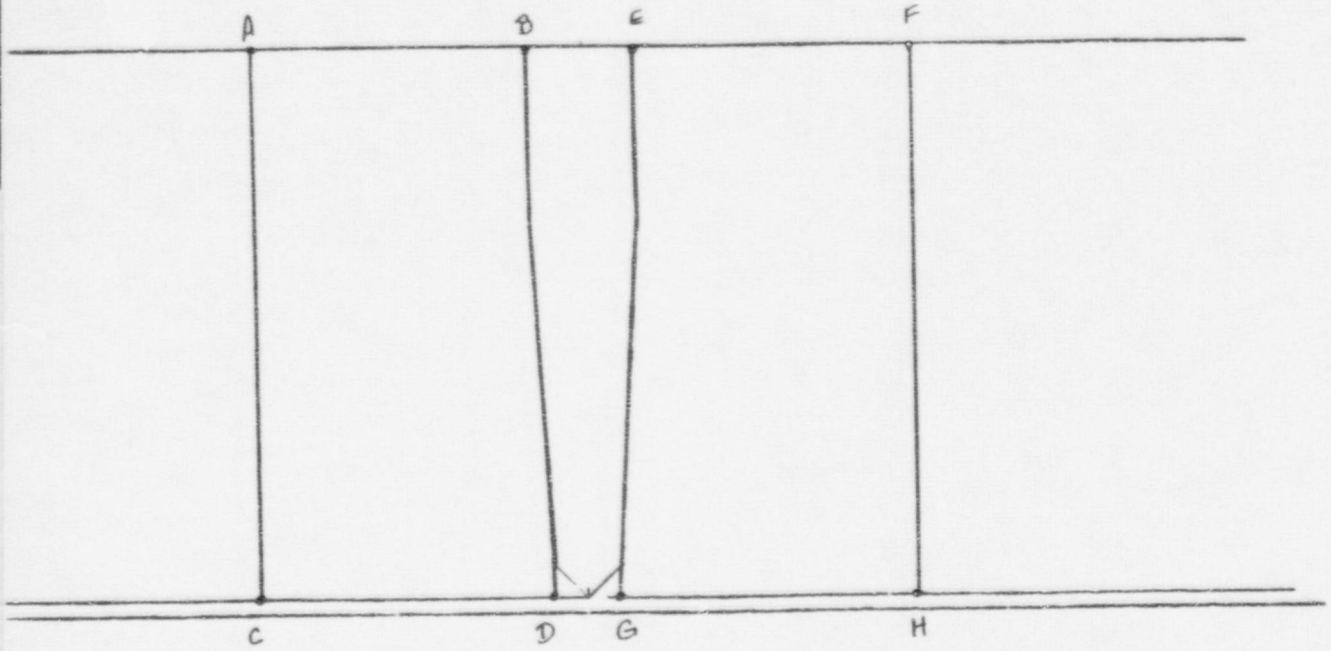
BY: [signature]

DATE: 4/17/97

L. Marbler III

4-16-97

CATAWBA UNIT #2 RPV HEAD
MERIDIONAL WELD



EXAM AREAS:

BASE MAT'L

A-B-C-D $\frac{7.0}{2}(3.5+3.8) = 25.55$

E-F-G-H $\frac{7.0}{2}(3.5+3.9) = 25.55$

51.158 in.

WELD MAT'L

B-E-D-G $\frac{7.0}{2}(1.375+.85) = 7.79 =$

7.858 in.

LENGTH INSPECTED 6.5"

LENGTH NOT INSPECTED 15.0"

TOTAL LENGTH 21.5"

REDUCED to 17%

SCALE 1/2" = 1.0"

I.D.# 2RPV-101-104CB

ITEM# B01.022.003

BY: David K. Zimmerman

DATE: 4/17/97

Larry Mauldin III

4-16-97

REQUEST FOR RELIEF
97-03
ATTACHMENT 3

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 12:52 | NDE-UT-3A
Exam Finish: 13:18 | Revision 2

Station: Catawba | Unit: 2 | Component/Weld ID: 2BNSHX-3-5 | Date: 4/4/97

Nominal Material Thickness (in): 0.75 | Weld Length (in.): 165.63' | Surface Temperature: 75 Deg F

Measured Material Thickness (in): .809 | Lo: NORTH SIDE | Pyrometer S/N: MCNDE 27025

Surface Condition: AS WELDED | Calibration Sheet No: 9702034 | Cal Due: 9/20/97

Examiner: Winfred C. Leeper Level: II | Configuration: Shell to Flange

Examiner: Gayle E. Houser Level: II | SHELL Flow FLANGE

Procedure: NDE-640 Rev: 1 FC: * | S1 to S2

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														

Remarks: * 95-18, 95-19

Limitations: see NDE-UT-4 ☒ None: ☐ | Sheet 1 of 5

Reviewed By: Larry Mauldin Level: III Date: 4/15/97 | Authorized Inspector: Robert McGill Date: 5-7-97 | Item No: C01.010.008

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 13:20 | Exam Finish: 14:30 | Form NDE-UT-2A | Revision 4

Station: Catawba | Unit: 2 | Component/Weld ID: 2BNSHX-3-5 | Date: 4/4/97

Weld Length (in.): 165.63' | Surface Condition: As Welded | Lo: N Side

Surface Temperature: 75 ° F

Examiner: Gayle E. Houser Gayle Houser Level: II

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

Pyrometer S/N: MCNDE 27025

Cal Due: 9/20/97

Procedure: NDE-630 Rev: 2

FC: N/A

Calibration Sheet No: 9702035, 9702036, 9702037

Scans:

45 ☒ 33.5 dB 70 ☐ ____ dB

45T ☒ 43 dB 70T ☐ ____ dB

60 ☐ ____ dB

60T ☐ ____ dB

Other: 45°L --72 dB

Configuration: Shell to Flange

SHELL Flow FLANGE

S1 to S2

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: NA

IND #	4	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															

Remarks:

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

Sheet 2 of 5

Reviewed By: Larry Mauldin Level: III Date: 4/15/97

Authorized Inspector: Robert McGill Date: 5-7-97

Item No: C01.010.008

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2BNSHX-3-5 | Item No: C01.010.008 | Remarks:

☒ NO SCAN
☐ LIMITED SCAN

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

FROM L NA to L NA | INCHES FROM WO .85" to BEYOND

ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other 45°L | FROM 0 DEG to 360 DEG

Remarks: DUE TO FLANGE

☐ NO SCAN
☒ LIMITED SCAN

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

FROM L NA to L NA | INCHES FROM WO CL to .85"

ANGLE: ☐ 0 ☒ 45 ☐ 60 ☐ Other 45°L | FROM 0 DEG to 360 DEG

Remarks: DUE TO AS WELDED CAP CONDITION. SCAN STOPPED AT TOE OF WELD.

☐ 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: Gayle Houser Gayle Houser Level: II Date: 4/4/97 | **Sketch(s) attached** ☒ yes ☐ no | Sheet 3 of 5

Reviewed By: Larry Mauldin Larry Mauldin Date: 4/15/97 | Authorized Inspector: Robert McGill Date: 5-7-97

DUKE POWER COMPANY

Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

4 of 5

Examination Volume/Area Defined

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

Area Calculation	Volume Calculation
1.0" x 2.7"- (.2" x .25" / 2)-(.3" x .25") = 2.7 "sq. - (.025" sq.)-(.075"sq.) = 2.7"sq. - (.10"sq.) = 2.6"sq.	2.6"sq. x 165.63" = 430.64"cu. (Area) (Length)

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	0	0	0	430.64	0.00
2	45	1	.4	165.63	66.3	430.64	15.40
3	45	CCW	2.6	165.63	430.64	430.64	100.00
4	45	CW	2.6	165.63	430.64	430.64	100.00

927.58 / 1722.56 X 100 = 53.85%

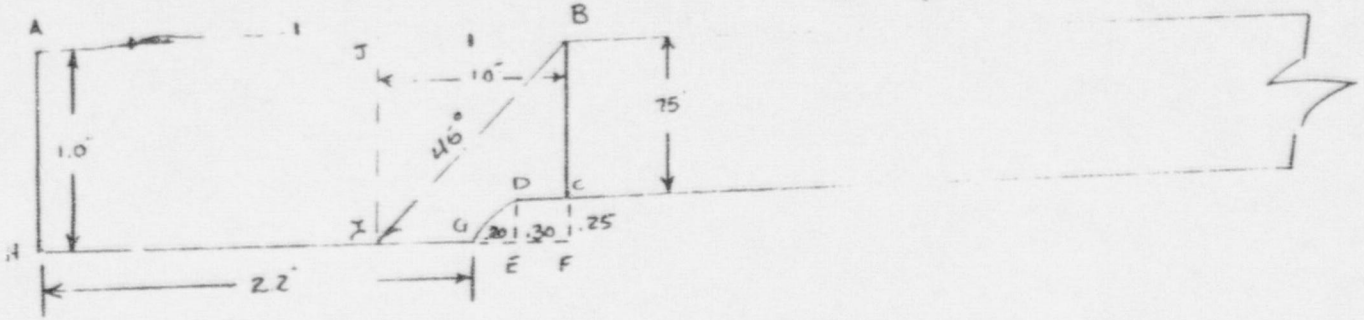
Item No: C01.010.008

Prepared By: Gayle Houser Gayle Houser Level: II Date: 4/4/97

Reviewed By: Larry Mauldin Larry Mauldin Level: III Date: 4/15/97

FLANGE (SUR. 2)

SHELL (SUR. 1)



NOTE: SCANNING ON WELD CAP WAS NOT POSSIBLE DUE TO "AS WELDED" CONDITION (AXIAL DIRECTION)

O.D. CAP ON WELD HAS RIPPLES ½" WIDE ENABLING CIRC SCAN.

EXAM. AREA

ABEH - (GDE) - (CDEF): $1.0in \times 2.7in - \left(\frac{.20in \times .25in}{2}\right) - (.30in \times .25in)$

$2.7in^2 - (.025in^2) - (.075in^2) = 2.6in^2$

INSP. AREA

BFIJ - (GDE) - (CDEF) $\frac{1.0in \times 1.0in}{2} - \left(\frac{.20in \times .25in}{2}\right) - (.30in \times .25in)$

$0.5in^2 - (.025in^2) - (.075in^2) = 0.4in^2$

PERCENT OF COVERAGE

$0.4in^2 \div 2.6in^2 = 0.154 = 15.4\%$

SCALE: 1" = 1"

C01.010.008

2BNSHX-3-5

Gayle Hauser II 4/4/97