TENNESSEE VALLEY AUTHORITY	EXAMINATION SUMMARY AND RESOLUTION SHEET	REPORT NUMBER: R-P0107

PROJECT: *WBN* UNIT: *2* CYCLE *00*				COMPONENT ID: *RCW-01*	
EXAMINATION METHOD				SYSTEM: RCS	ISI DWG NO: *ISI-2068-W-02 Rev 0*
MT ☐	PT ☐	UT ☑	VT ☐	CONFIGURATION:	CATEGORY
PROCEDURE: *N-UT-64*		REV 11	TC: *N/A*	*BRCN TO P*	*B-J*
EXAMINER: JASON NISSEN		EXAMINER: ~~N A~~		EXAMINER: ~~N A~~	EXAMINER: ~~N A~~
LEVEL: II		LEVEL:		LEVEL:	LEVEL:

Total coverage calculated to be approximately 48.1 %

An Ultrasonic examination was performed to meet the preservice requirements of ASME Section XI.

A 45° shear and 60° refracted longitudinal wave was calibrated and used for this examination.

The examination was limited due to branch connection configration.

No indications were observed recordable.

48.1% examination volume coverage achieved.

RESOLUTION BY:	REVIEWED BY:	ANII:
JASON NISSEN		DATE: 2/4/09
LEVEL II DATE: 12/11/08	LEVEL ~~III~~ DATE: 12/23/08	Page: 1 OF 6

ACCESS: FORMS DATABASE R-10/04/01

TENNESSEE VALLEY AUTHORITY	DIGITAL ULTRASONIC CALIBRATION DATA SHEET	REPORT NUMBER R-P0107

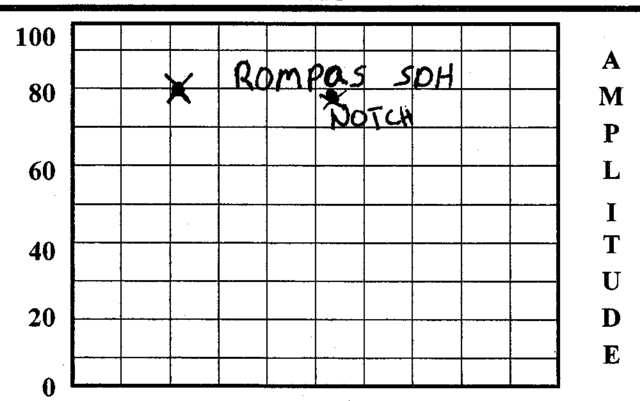
PROJECT: WBN UNIT/CYCLE: 2/ 00
PROCEDURE: N-UT-64 REV: 11 TC: N/A

TRANSDUCER

MANUFAC: KBA MODEL: COMP G
ELEMENTS: 1 SHAPE: ROUND
S/N: 00W40H SIZE: .375 * FREQ: 2.25 MHz
CONTOUR: N/A FOCUS: N/A
CABLE TYPE: RG - 174 LENGTH: 6' # CNT: N/A

MODE: ☒ SHEAR ☐ LONG ☐ RL

DAC



DISPLAY WIDTH 5.000 inches

CALIBRATION DATE: 12/10/08
CALIBRATION BLOCK NO. WB 83 TEMP: 76 °F
SIMULATOR BLOCK: ROMPAS
THERMOMETER S/N: 562773 DUE DATE: 06/20/09
COUPLANT: ULTRAGEL II BATCH: 06225F

ANGLE VERIFICATION

BLOCK TYPE: ROMPAS S/N: 790390
NOMINAL ANGLE: 45° ACTUAL ANGLE: 44°

INSTRUMENT

MANUFACTURER: KRAUTKRAMER DUE DATE: 08/18/09
MODEL NO.: USN-60 S/N: E37690

REFLECTOR SCAN DIRECT.	NTC	SDH	REFERENCE SENSITIVITY	MEMORY NUMBER
AXIAL	☒	☐	25.8 dB	45 225
CIRC.	☒	☐	25.8 dB	45 225

RANGE: 5.000 inches
PROBE DELA: 5.0238 msec
VELOCITY: 0.1225 msec
DISP DELAY: 0.000
*ENERGY: HIGH
*DAMPING: 1K ohms
*PRR/PRF: AUTOHIGH
ANGLE: 44 deg
ZERO: N/A msec

*FREQ: 2.25 MHz
*RECTIFY: FULLWAVE
DUAL ☐ ON ☒ OFF
*REJECT: 0 %
*DISP. START: IP
DET: ☐ Peak ☒ Flank
TCG: ☐ ON ☒ OFF
*PULSER: SINGLE

REF. REFLECTOR: ROMPAS SDH GAIN: 39.6 dB
AMPLITUDE: 80 % METAL PATH: 1.026"

CALIBRATION TIMES

INITIAL TIME: 1322 FINAL TIME: 1530

VERIFICATION TIMES	1) ⊗N/A	2) ⊗N/A	3) N/A	4) N/A	5) N/A	6) N/A	7) N/A	8) N/A	9) N/A

***PDI QUALIFIED INSTRUMENT SETTINGS:**
VERIFY INSTRUMENT SETTINGS AND CALIBRATION SEQUENCE ARE IN ACCORDANCE WITH TABLE 2 OF THE APPLICABLE PDI QUALIFICATION IMPLEMENTATION PROCEDURE!

LINEARITY CHECK

VERTICAL										
SIGNAL 1	100	90	80	70	60	50	40	30	20
SIGNAL 2	50	45	40	35	30	25	20	15	10

ATTENUATOR	GAIN	SET	-6 dB	-12dB	SET	+12	SET	+6
	AMP	80%	32 TO 48	16 TO 24	20%	64 TO 96	40%	64 TO 96
			40	20		80		80

COMMENTS	WELD / ITEMS EXAMINED
* 4" nominal diameter of pipe	RCW-01
The branch connection diameter	
is ≈ 1.5" therefore .375 Ø	
Transducer was utilized	
⊗ Verification check 1417 and 1431 [signature] 12-10-08	

EXAMINER: JASON NISSEN [signature] LVL.: II
EXAMINER: Jose Alejandro [signature] LVL.: II
REVIEWER: [signature] LVL.: III DATE: 12/23/08

ANII: [signature]
DATE: 2/4/09
PAGE 2 OF 6

TENNESSEE VALLEY AUTHORITY

DIGITAL ULTRASONIC CALIBRATION DATA SHEET

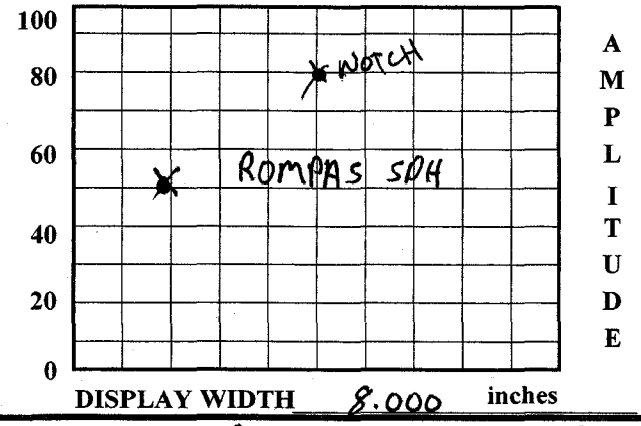
REPORT NUMBER R-P0107

PROJECT *WBN* UNIT/CYCLE *2/00*
PROCEDURE: *N-UT-64* REV: *11* TC: *N/A*

TRANSDUCER
MANUFAC *RTD* MODEL: *TRLA*
ELEMENTS: *2* SHAPE: *RECTANGLE*
S/N *95-853* SIZE: *2(8 x 14)* FREQ: *2.0* MHz
CONTOUR: *N/A* FOCUS: *N/A*
CABLE TYPE *RG-174* LENGTH: *6'* # CNT: *N/A*

MODE: ☐ SHEAR ☐ LONG ☒ RL

DAC



CALIBRATION DATE: *12/16/08*
CALIBRATION BLOCK NO. *WB 83* TEMP: *76* °F
SIMULATOR BLOCK: *ROMPAS*
THERMOMETER S/N: *562773* DUE DATE: *06/20/09*
COUPLANT: *ULTRAGEL II* BATCH: *06225F*

ANGLE VERIFICATION
BLOCK TYPE *ROMPAS* S/N: *790390*
NOMINAL ANGLE: *60 RL* ACTUAL ANGLE *60 RL°*

INSTRUMENT
MANUFACTURER: *KRAUTKRAMER* DUE DATE: *08/18/09*
MODEL NO.: *USN-60* S/N: *E37690*

REFLECTOR SCAN DIRECT.	NTC	SDH	REFERENCE SENSITIVITY	MEMORY NUMBER
AXIAL	☒	☐	*57.4* dB	*95-853*
CIRC.	☐	☐	*N/A* dB	*N/A*

RANGE: *8.000* inches *FREQ: *2.0* MHz
PROBE DELA *1.4754* msec *RECTIFY: *FULLWAVE*
VELOCITY *2329* msec DUAL ☒ ON ☐ OFF
DISP DELAY: *0.000* *REJECT: *0* %
*ENERGY: *HIGH* *DISP. START: *IP*
*DAMPING: *1k* ohms DET: ☒ Peak ~~☒ Flank~~ JPW 12/5/03
*PRR/PRF: *AUTOHIGH* TCG: ☐ ON ☒ OFF
ANGLE: *60 RL* deg *PULSER: *DUAL*
ZERO: *N/A* msec

REF. REFLECTOR: *ROMPAS SDH* GAIN: *59* dB
AMPLITUDE: *50* % METAL PATH: *1.386*

CALIBRATION TIMES
INITIAL TIME: *1337* FINAL TIME: *1533*

VERIFICATION TIMES	1) *N/A	2) *N/A	3) *N/A	4) *N/A	5) *N/A	6) *N/A	7) *N/A	8) *N/A	9) *N/A

***PDI QUALIFIED INSTRUMENT SETTINGS:**
VERIFY INSTRUMENT SETTINGS AND CALIBRATION SEQUENCE ARE IN ACCORDANCE WITH TABLE 2 OF THE APPLICABLE PDI QUALIFICATION IMPLEMENTATION PROCEDURE!

LINEARITY CHECK

VERTICAL	SIGNAL 1	100	90	80	70	60	50	40	30	20	
	SIGNAL 2	50	45	40	35	30	25	20	15	10	
ATTENUATOR	GAIN	SET	-6 dB		-12dB		SET	+12		SET	+6
	AMP	80%	32 TO 48		16 TO 24		20%	64 TO 96		40%	64 TO 96
			40		20			80			80

COMMENTS	WELD / ITEMS EXAMINED
*verification check 1417 and 1431	RCW-01

EXAMINER: JASON NISSEN LVL.: II
EXAMINER: Jose Alejandro LVL.: II
REVIEWER: LVL.: III DATE: 12/23/08

ANII: W
DATE: 2/4/09
PAGE 3 OF 6

ACCESS: FORMS DATABASE 07-25-07

TENNESSEE VALLEY AUTHORITY	MANUAL ULTRASONIC PIPING EXAMINATION DATA SHEET	REPORT NUMBER R-P0107

PROJECT: *WBN* UNIT/CYCLE *2/00*
SYSTEM: *RCS*
WELD I.D.: ~~*RCW-02*~~ JPN 12/15/08 *RCW-01*
CONFIG.: *BRCN* TO *P*
FLOW

EXAMINATION DATE 12/10/08
START TIME: 1418 END TIME: 1430
EXAM SURFACE ☐ ID ☒ OD
MATERIAL TYPE: ☐ CS ☒ SS ☐ CSCL ☐ CCSS
SURFACE TEMP.: 74.5 PYRO NO. 562773

PROCEDURE: *N-UT-64* REV: 11 TC: N/A
Wo REFERENCE: EDGE OF BOSS
Lo REFERENCE: UPSTREAM inline Main run PIPE

EXAMINATION ANGLE	45 DEG.	60 RL	DEG.
AXIAL SCAN SENSITIVITY	50 dB	72	dB
CIRC. SCAN SENSITIVITY	50 dB	N/A	dB

IND NO.	L (in) FROM REF.			AT MAX AMP			MAX AMP % DAC	EXAM NO. 3-14	NOM. ANG.	NRI	INDICATION INFORMATION: TYPE, DAMPING, ETC.
	L1	L Max	L2	W MAX	MP MAX	D MAX					
								3	60° RL	☒	
								3	45°	☒	
								5	45°	☒	
								6	45°	☒	
										☐	
										☐	

REMARKS/LIMITATIONS
EXAM LIMITED DUE TO BRANCH CONNECTION CONFIGURATION. NO EXAM SCANS FROM MAIN RUN OF PIPE. MAINTAINED 5% - 20% ID ROLL.

EXAMINER: JASON NISSEN LEVEL: II
EXAMINER: Jose Alejandro LEVEL: II
REVIEWED BY: LEVEL: III DATE: 12/23/08

ANII:
DATE: 2/4/09

TVA

WALL THICKNESS PROFILE SHEET

REPORT NO: R-P0107

PROJECT: WBN

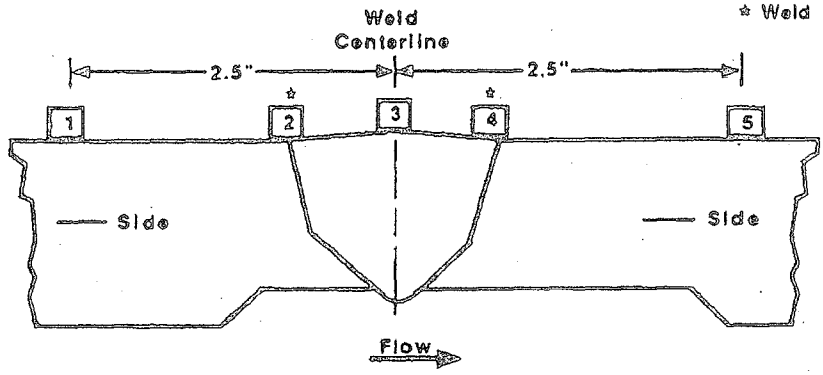
UNIT: 2

WELD NO: RCW-01

SYSTEM: RCS

Record Thickness Measurements As Indicated, Including Weld Width, Edge-To-Edge At 0°

Position	0°	90°	180°	270°
1				
2				
3	2.0"	1.85"	2.1"	2.0"
4	2.0"	2.0"	1.97"	1.99"
5	1.96"	2.0"	2.1"	2.0"

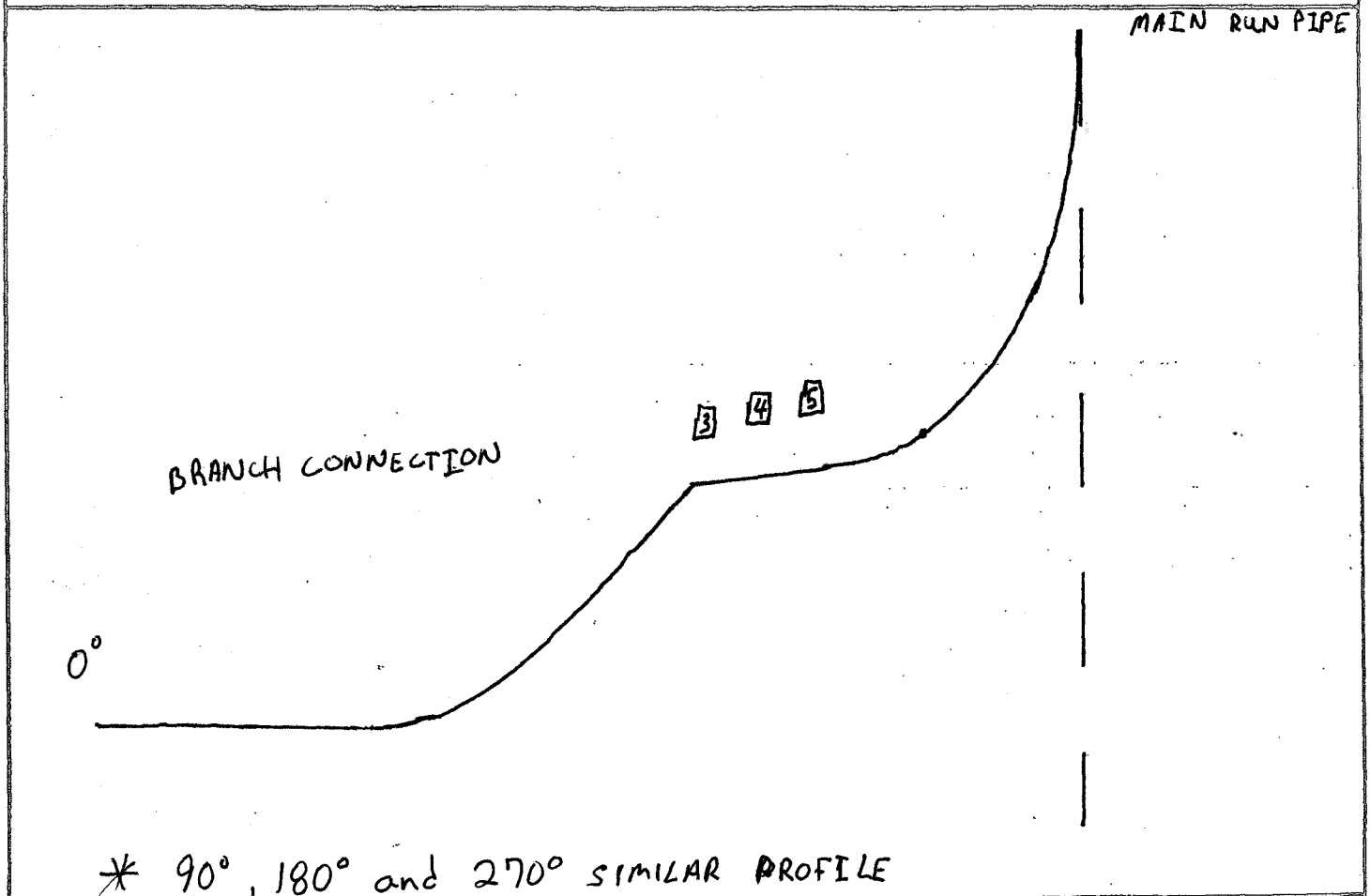


CROWN HEIGHT: FLUSH

CROWN WIDTH: 2.0"

DIAMETER: 4"

WELD LENGTH: 40"



* 90°, 180° and 270° SIMILAR PROFILE

EXAMINER: JASON NISSEN Jason Nissen

LEVEL: II

DATE: 10-08-08

REVIEWED BY:

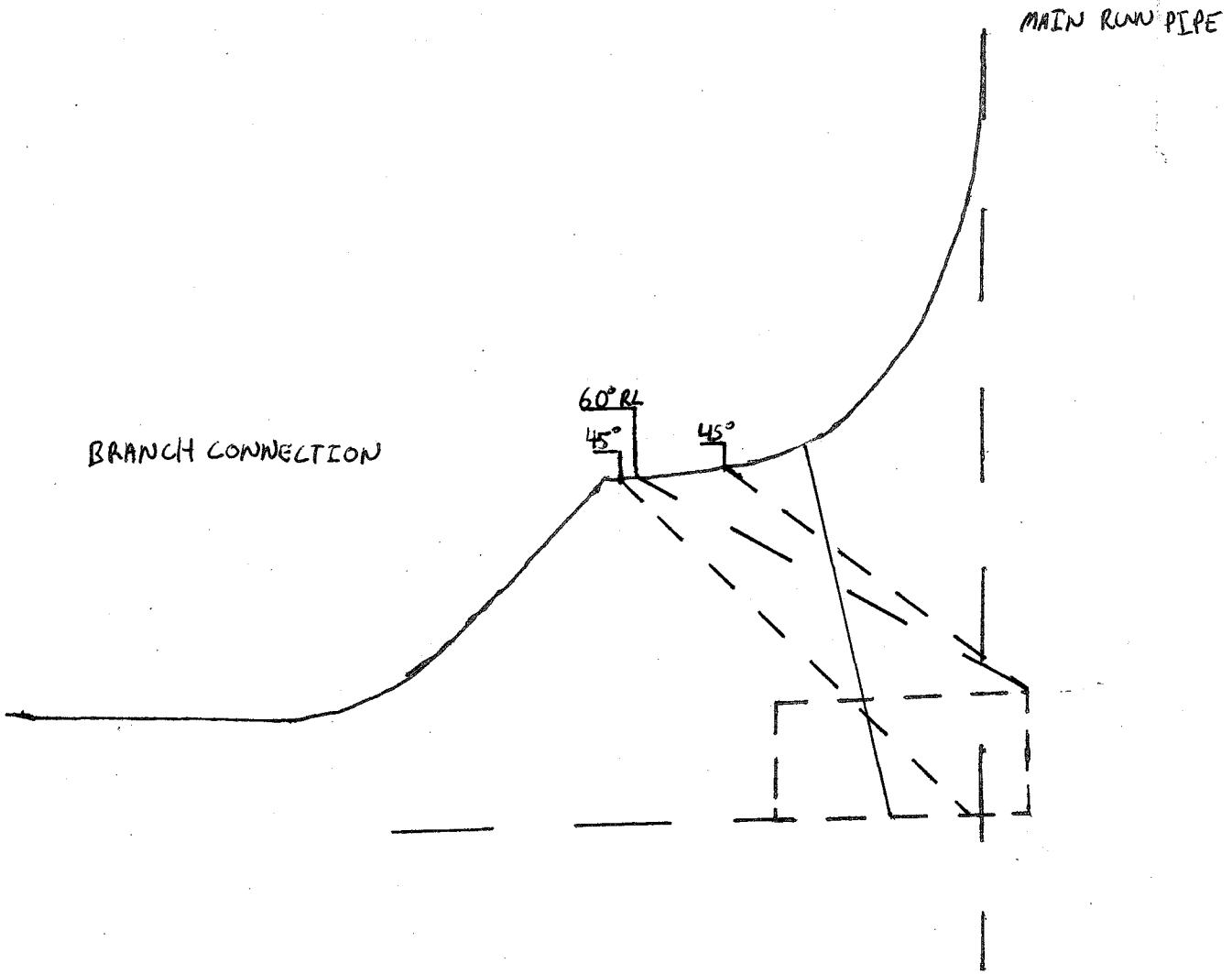
LEVEL: III DATE: 12/23/08

ANII:

DATE: 2/4/09

PAGE 5 OF 6

TVA Office of Nuclear Power	PROJECT: WBN SYSTEM: RCS UNIT: 2 WELD NO: RCW-01	REPORT NO.: R-P0107



BY: Jason Nissen LEVEL: II DATE: 12/11/08 PAGE 6 OF 6

R. P0107

Attachment 4
(Page 1 of 1)

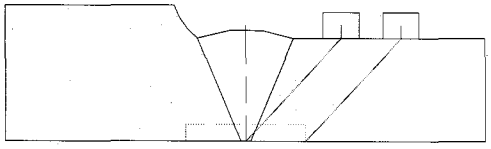
AUSTENITIC PIPING WELDS SINGLE SIDE ACCESS - SUPPLEMENT 2

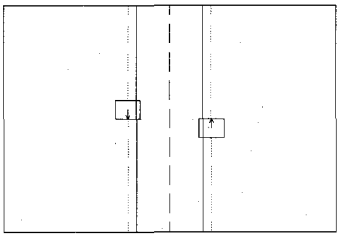
Required and obtained examination volume coverage work sheet

Below is a typical example of examination coverage plots although are not to be considered inclusive of all situations.

Typical example of a single sided access examination of an austenitic piping weld, examination credit can not be taken beyond the weld centerline when the beam is directed through the weld material. Although examinations are required to be performed with the ultrasonic beam directed through the weld material, however they can not be considered totally effective or creditable.

Note: Typically a one-sided austenitic weld examination with no circumferential restrictions would be indicated as 75% examination coverage or 50% if circumferential scans were limited to one side.





Weld # RCW-01 W= 1.36" H= .65" L= 40"

Item	Description	Value
	REQUIRED EXAMINATION VOLUME	
1	Required examination volume in sq in. (width x height) for single scan stroke	.884
2	Number of scan directions (normally 4; i.e. upst,dnst, cw, & ccw))	4
3	Total scan volume in sq inches (Item 1 * Item 2)	3.54
4	Total length of weld	40
5	Total required examination volume in cubic inches (Item 3 * Item 4)	141.44
	OBTAINED EXAMINATION VOLUME	
6	Examination volume achieved (sq in for single scan stroke) in 1 axial scanning direction (i.e. upst) multiplied by the length of weld examined	Ø
7	Examination volume achieved (sq in for single scan stroke) in 1 axial scanning direction (i.e. dnst) multiplied by the length of weld examined	25.2
8	Examination volume achieved (sq in for single scan stroke) in 1 circumferential scanning direction (i.e. cw) multiplied by the length of weld examined	19.6
9	Examination volume achieved (sq in for single scan stroke) in 1 circumferential scanning direction (i.e. ccw) multiplied by the length of weld examined	19.6
10	Determine the achieved examination volume by adding Items 6, 7, 8. and 9	64.4
11	Examination volume percentage [(Item 10 / item 5) X 100]	(.455) = 46%

INFORMATION ONLY