TENNESSEE VALLEY AUTHORITY	EXAMINATION SUMMARY AND RESOLUTION SHEET	REPORT NUMBER: R-P0108

PROJECT: *WBN* UNIT: *2* CYCLE *00*				COMPONENT ID: *RCW-02*	
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:	EXAMINER:	EXAMINER:	EXAMINER:
JASON NISSEN	N/A	N/A	N/A
LEVEL: II	LEVEL:	LEVEL:	LEVEL:

Total coverage calculated to be approximately 43.9 %

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 CONFIGURATION.

NO INDICATIONS WERE OBSERVED RECORDABLE.

43.9% 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-P0108

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

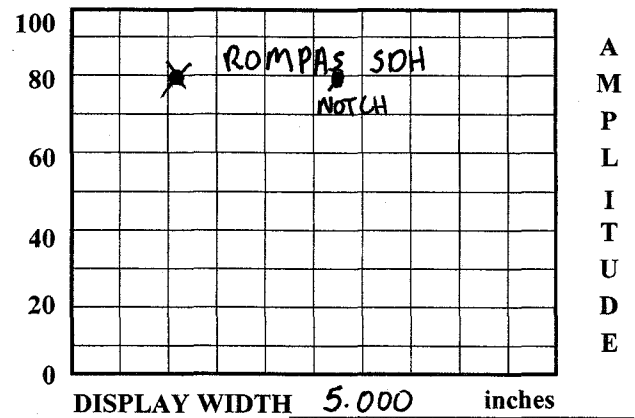
TRANSDUCER
MANUFAC KBA MODEL: COMP G
ELEMENTS: 1 SHAPE: ROUND
S/N 00W40H SIZE: .375 * FREQ: 2.25 MHz
CONTOUR: N/A FOCUS: N/A
CABLE TYPE RG-174 LENGTH: 6' # CNT: N/A
MODE: ☒ SHEAR ☐ LONG ☐ RL

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

DAC



DISPLAY WIDTH 5.000 inches

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

RANGE: 5.000 inches *FREQ: 2.25 MHz
PROBE DELA 5.0228 msec *RECTIFY: FULLWAVE
VELOCITY 0.1225 msec DUAL ☐ ON ☒ OFF
DISP DELAY: 0.000 *REJECT: 0 %
*ENERGY: HIGH *DISP. START: IP
*DAMPING: 1K ohms DET: ☐ Peak ☒ Flank
*PRR/PRF: AUTOHIGH TCG: ☐ ON ☒ OFF
ANGLE: 44 deg *PULSER: SINGLE
ZERO: N/A msec

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
* This is a 4" nominal diameter branch connection. Actual diameter of branch is ≈ 7.5". Therefore 3/8 Transducer was utilized. Darren Dowdy	RCW-02
⊗ verification check 1439 and 1459 12-10-08	

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

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

ACCESS: FORMS DATABASE 07-25-07

TENNESSEE VALLEY AUTHORITY	DIGITAL ULTRASONIC CALIBRATION DATA SHEET	REPORT NUMBER R-P0108

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

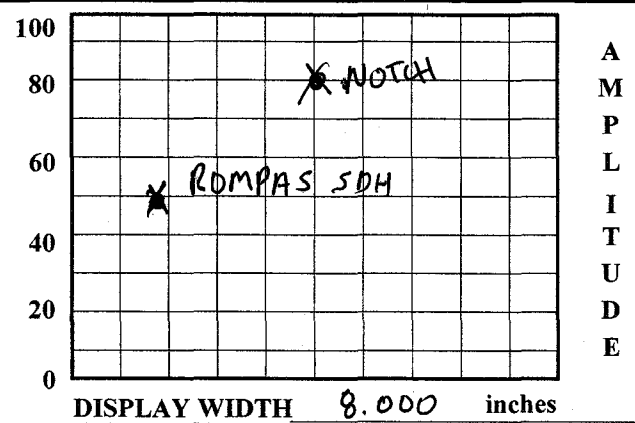
TRANSDUCER
MANUFAC RTD MODEL: TRLA
ELEMENTS: 2 SHAPE: RECTANGLE
S/N 95-853 SIZE: 2.0 x 14 FREQ: 2.0 MHz
CONTOUR: N/A FOCUS: N/A
CABLE TYPE RG-174 LENGTH: 6' # CNT: N/A
MODE: ☐ SHEAR ☐ LONG ☒ RL

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: 60 RL ACTUAL ANGLE 60 RL

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

DAC



DISPLAY WIDTH 8.000 inches

REFLECTOR			REFERENCE SENSITIVITY	MEMORY NUMBER
SCAN DIRECT.	NTC	SDH		
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: 1 K ohms DET: ☒ Peak ~~☒ Flank~~ 12/15/08 JPN
*PRR/PRF: AUTOHIGH TCG: ~~☒ ON~~ JPN 12/15/08 ☒ 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 1439 and 1459	RCW-02

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

ANII: JW
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-P0108

PROJECT: WBN UNIT/CYCLE 2/00
SYSTEM: RCS
WELD I.D.: RCW-02
CONFIG.: BRCN TO P
FLOW

EXAMINATION DATE 12/10/08
START TIME: 1440 END TIME: 1458
EXAM SURFACE ☐ID ☒OD
MATERIAL TYPE: ☐CS ☒SS ☐CSCL ☐CCSS
SURFACE TEMP.: 74.8 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	54 dB	72 dB
CIRC. SCAN SENSITIVITY	54 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: 12/22/08

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

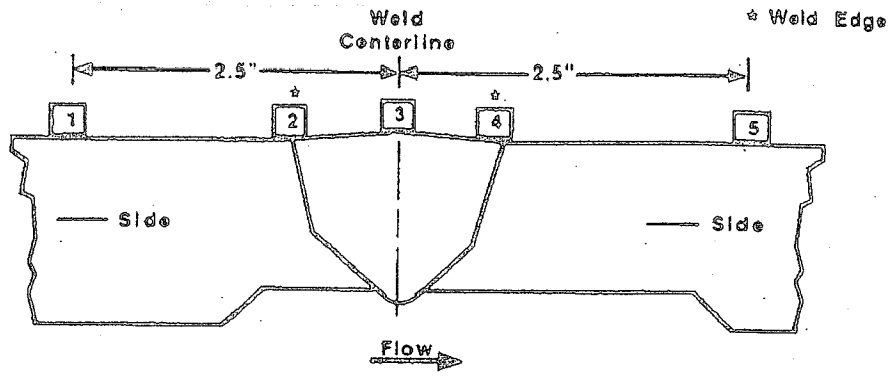
ACCESS: FORMS DATABASE 10/18/01

TVA	WALL THICKNESS PROFILE SHEET	REPORT NO: R-P0108

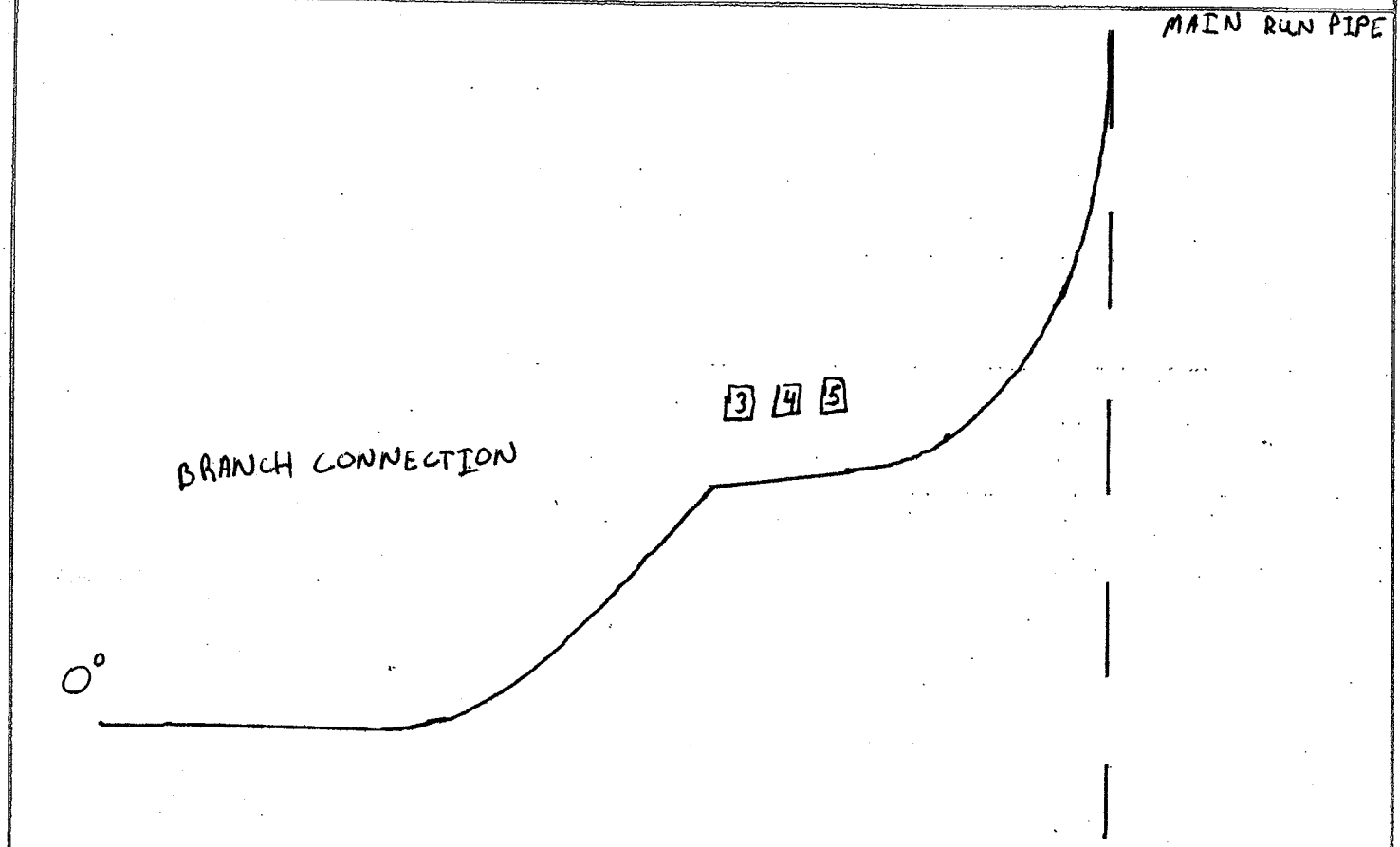
PROJECT: WBN
UNIT: 2
WELD NO: RCW-02
SYSTEM: RCS

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

Position	0°	90°	180°	270°
1				
2				
3	2.08"	2.02	1.99	1.98
4	1.99	1.97	2.0	2.0
5	2.1	2.0	1.99	1.99



CROWN HEIGHT: FLUSH
CROWN WIDTH: 2.0"
DIAMETER: 4"
WELD LENGTH: 40"



* 90°, 180° and 270° SIMILAR PROFILE

EXAMINER: JASON NISSEN
LEVEL: II
DATE: 10-08-08

REVIEWED BY:
LEVEL: III
DATE: 12/29/08

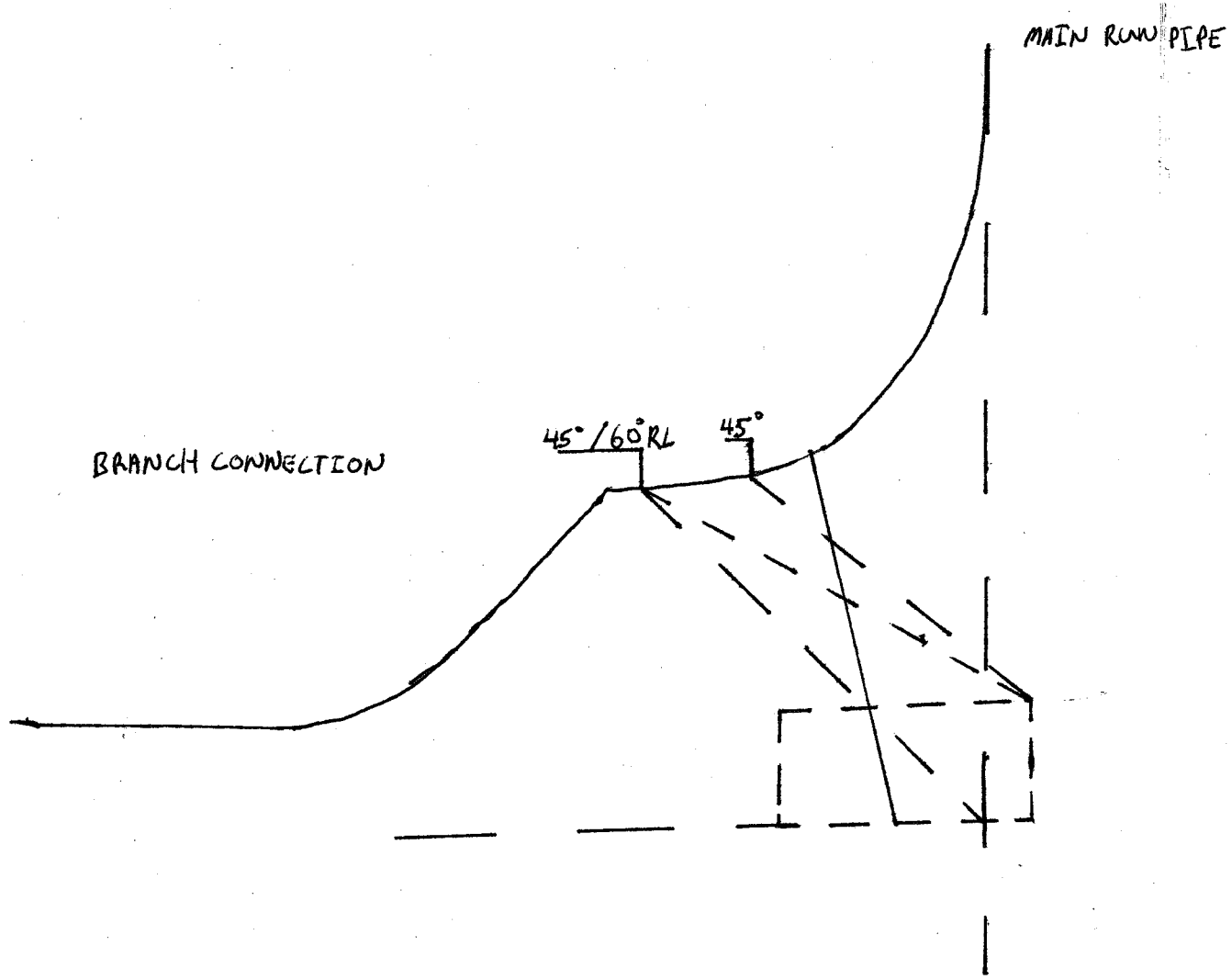
ANII:
DATE: 2/4/09

PAGE 5 OF 6

TVA 19668 (NP-5-89)

1-108-999-4

TVA Office of Nuclear Power	PROJECT: WBN SYSTEM: RCS UNIT: 2 WELD NO: RCW-02	REPORT NO.: R-P0108



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

R·P0108

Attachment 4
(Page 1 of 1)

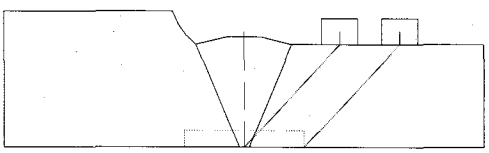
AUSTENITIC PIPING WELDS SINGLE SIDE ACCESS - SUPPLEMENT 2

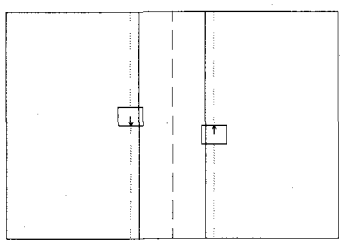
Required and obtained examination volume coverage work sheet

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-02 W=1.4 H=.7 L=40

Item	Description	Value
	REQUIRED EXAMINATION VOLUME	
1	Required examination volume in sq in. (width x height) for single scan stroke	.98
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)	3.92
4	Total length of weld	40
5	Total required examination volume in cubic inches (Item 3 * Item 4)	156.80
	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]	(.41)=41%

INFORMATION ONLY