TENNESSEE VALLEY AUTHORITY	EXAMINATION SUMMARY AND RESOLUTION SHEET	REPORT NUMBER: R-P0106

PROJECT: *WBN* UNIT: *2*	CYCLE *00*		COMPONENT ID: *RCS-3-6*		
EXAMINATION METHOD			SYSTEM: ~~RX~~ RCS	ISI DWG NO: *ISI-2068-W-02* Rev 0	
MT ☐	PT ☐	UT ☑	VT ☐	12/22/08 CONFIGURATION:	CATEGORY
PROCEDURE: *N-UT-33*	REV 11	TC: N/A	*BRCN* TO *P*		*B-J*

EXAMINER:	EXAMINER:	EXAMINER:	EXAMINER:
Jose Alejandro	Ben T. McDonald	Ardell Stoll	N A
LEVEL: II	LEVEL: UT Limited	LEVEL: Trainee	LEVEL:

Total coverage calculated to be approximately 50 %

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

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

The examination was limited from one side due to branch connection configuration.

No indications were observed recordable

50% examination volume coverage achieved.

RESOLUTION BY:	REVIEWED BY:	ANII:
Jose Alejandro		DATE: 2/4/09
LEVEL II DATE: 12-11-08	LEVEL: III DATE: 12/22/08	Page: 1 OF 6

ACCESS: FORMS DATABASE R-10/04/01

TENNESSEE VALLEY AUTHORITY	DIGITAL ULTRASONIC CALIBRATION DATA SHEET	REPORT NUMBER R-P0106

PROJECT *WBN* UNIT/CYCLE *2/00*
PROCEDURE: *N-UT-33* REV: 11 TC: N/A

TRANSDUCER
MANUFAC SWRI MODEL: TVA #1
ELEMENTS: 2 SHAPE: Rectangle
S/N 2952 SIZE: .5 x 1.0 FREQ: 1.0 MHz
CONTOUR: N/A FOCUS: N/A
CABLE TYPE RG174 LENGTH: 6' # CNT: N/A

MODE: ☐ SHEAR ☐ LONG ☒ RL

CALIBRATION DATE: 12-11-08
CALIBRATION BLOCK NO. WB60 TEMP: 72.1°F
SIMULATOR BLOCK: DSC Block
THERMOMETER S/N: 558271 DUE DATE: 06-24-09
COUPLANT: Ultrasel II BATCH: 07225E

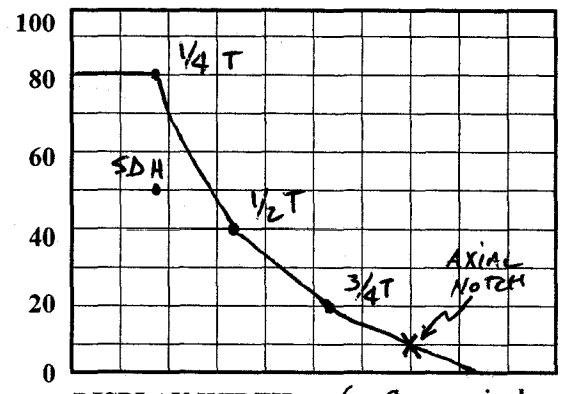
ANGLE VERIFICATION
BLOCK TYPE DSC Block S/N: A03671
NOMINAL ANGLE: 45 RL ACTUAL ANGLE 45 RL

INSTRUMENT
MANUFACTURER: Krautkramer DUE DATE: 06-23-09
MODEL NO.: USN60 S/N: E36304

REFLECTOR			REFERENCE SENSITIVITY	MEMORY NUMBER
SCAN DIRECT.	NTC	SDH		
AXIAL	☒	☐	54.3 dB	45RL-CCSS
CIRC.	☐	☐	N/A dB	N/A

RANGE: 60 inches *FREQ: 1.0 MHz
PROBE DELA 14.2909 msec *RECTIFY: Full wave
VELOCITY .2470 msec DUAL ☒ ON ☐ OFF
DISP DELAY: 0.000 *REJECT: 0 %
*ENERGY: High *DISP. START: IP
*DAMPING: 1K ohms DET: ☒ Peak ☐ Flank
*PRR/PRF: Auto High TCG: ☐ ON ☒ OFF
ANGLE: 45 RL deg
ZERO: N/A msec *PULSER: Dual

DAC



DISPLAY WIDTH 6.0 inches

REF. REFLECTOR: DSC Block SDH GAIN: 47.8 dB
AMPLITUDE: 50 % METAL PATH: 1.06

CALIBRATION TIMES
INITIAL TIME: 1105 FINAL TIME: 1330

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 1139 and 1152	RCS-3-6

EXAMINER: Jose Alejandro LVL.: II
EXAMINER: Ardell Stoll LVL.: II
REVIEWER: LVL.: III DATE: 12/22/08

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-P0106

PROJECT *WBN* UNIT/CYCLE *2/ 00*
PROCEDURE: *N-UT-33* REV: 11 TC: *N/A*

TRANSDUCER

MANUFAC *SwRI* MODEL: *TVA #1*
ELEMENTS: *2* SHAPE: *Rectangle*
S/N *2952* SIZE: *.5X1.0* FREQ: *1.0* MHz
CONTOUR: *N/A* FOCUS: *N/A*
CABLE TYPE *RG174* LENGTH: *6'* # CNT: *N/A*

MODE: ☐ SHEAR ☐ LONG ☒ RL

CALIBRATION DATE: *12-11-08*
CALIBRATION BLOCK NO. *WB60* TEMP: *72.1* °F
SIMULATOR BLOCK: *DSC Block*
THERMOMETER S/N: *558271* DUE DATE: *06-24-09*
COUPLANT: *ULTRAGEL II* BATCH: *07225E*

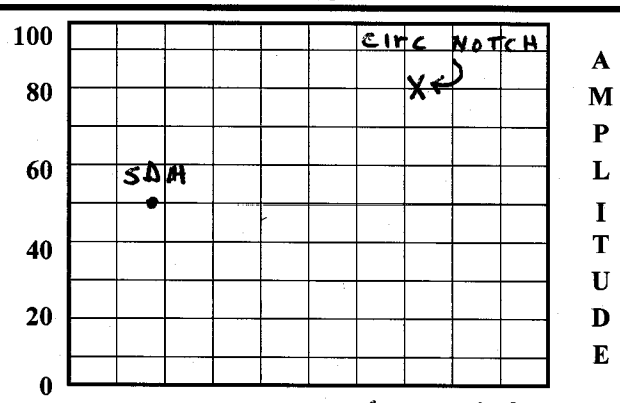
ANGLE VERIFICATION

BLOCK TYPE *DSC Block* S/N: *A03671*
NOMINAL ANGLE: *45RL* ACTUAL ANGLE *45RL*

INSTRUMENT

MANUFACTURER: *Krautkramer* DUE DATE: *06-23-09*
MODEL NO.: *USN60* S/N: *E36304*

DAC



DISPLAY WIDTH *6.0* inches

REFLECTOR SCAN DIRECT.	NTC	SDH	REFERENCE SENSITIVITY	MEMORY NUMBER
AXIAL	☐	☐	*N/A* dB	*N/A*
CIRC.	☒	☐	*69.2* dB	*45RL-CCSS*

RANGE: *6.0* inches
PROBE DELA *14.2909* msec
VELOCITY *.2470* msec
DISP DELAY: *0.000*
*ENERGY: *High*
*DAMPING: *1k* ohms
*PRR/PRF: *Autohigh*
ANGLE: *45RL* deg
ZERO: *N/A* msec

*FREQ: *1.0* MHz
*RECTIFY: *Fullwave*
DUAL ☒ ON ☐ OFF
*REJECT: *0* %
*DISP. START: *IP*
DET: ☒ Peak ☐ Flank
TCG: ☐ ON ☒ OFF
*PULSER: *Dual*

REF. REFLECTOR: *DSC Block SDH* GAIN: *47.8* dB
AMPLITUDE: *50* % METAL PATH: *1.06*

CALIBRATION TIMES

INITIAL TIME: *1105* FINAL TIME: *1330*

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 1139 and 1152	RCS-3-6

EXAMINER: *Jose Alejandro* [signature] LVL.: *II*
EXAMINER: *Ardell Stoll* [signature] LVL.: *JR*
REVIEWER: [signature] LVL.: *III* DATE: *12/22/08*

ANII: [signature]
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-P0106

PROJECT: WBN UNIT/CYCLE 2 / 00
SYSTEM: RCS
WELD I.D.: RCS-3-6
CONFIG.: BRCN TO P
FLOW

EXAMINATION DATE 12-11-08
START TIME: 1140 END TIME: 1151
EXAM SURFACE ☐ ID ☒ OD
MATERIAL TYPE: ☐ CS ☐ SS ☐ CSCL ☒ CCSS
SURFACE TEMP.: 75.3 PYRO NO. 558271

PROCEDURE: N-UT-33 REV: 11 TC: N/A
Wo REFERENCE: Fusion line at main run pipe
Lo REFERENCE: Upstream in line main run pipe

EXAMINATION ANGLE	45RL DEG.	N/A DEG.
AXIAL SCAN SENSITIVITY	55.7 dB	dB
CIRC. SCAN SENSITIVITY	73.0 dB	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					
								4	45RL	☒	
								5	45RL	☒	
								6	45RL	☒	
										☐	
										☐	
										☐	

REMARKS/LIMITATIONS No exam scans from branch connection side. Examination was performed maintaining 10-25% ID roll.

EXAMINER: Jose Alejandro [illegible] LEVEL: II
EXAMINER: Ardell Stoll LEVEL: II
REVIEWED BY: [illegible] LEVEL: III DATE: 12/22/08

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

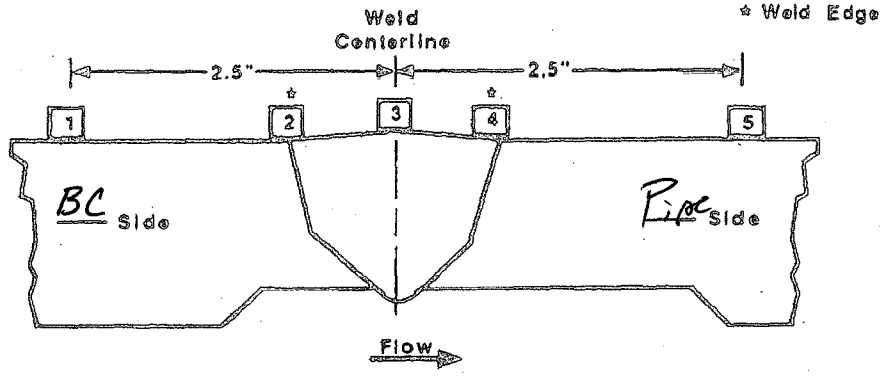
ACCESS: FORMS DATABASE 10/18/01

TVA	WALL THICKNESS PROFILE SHEET	REPORT NO: R-P0106

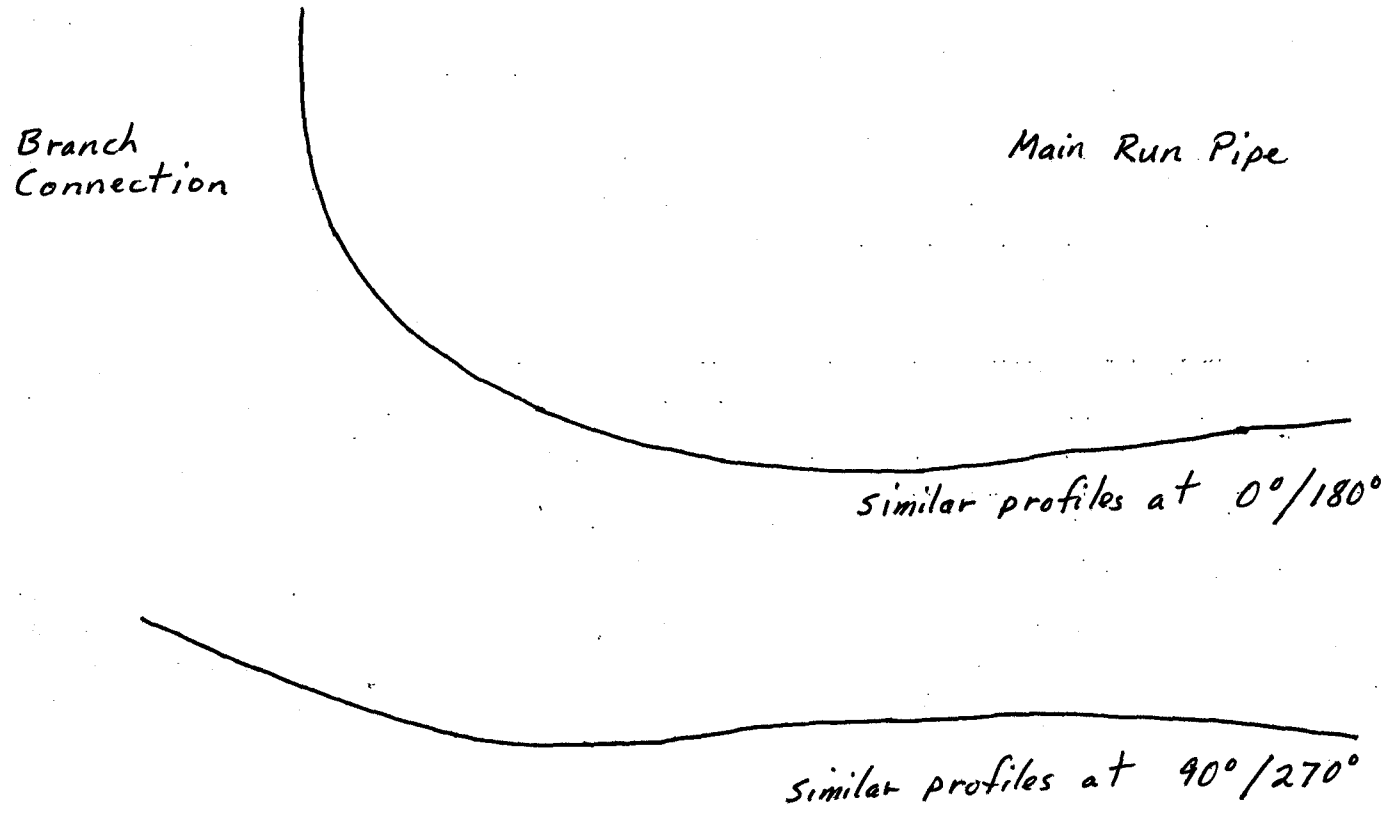
PROJECT: WBN
UNIT: 2
WELD NO: RCS-3-6
SYSTEM: RCS

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

Position	0°	90°	180°	270°
1	N/A	N/A	N/A	N/A
2	N/A	N/A	N/A	N/A
3	2.41	2.42	2.39	2.42
4	2.44	2.59	2.35	2.43
5	2.45	2.49	2.41	2.44



CROWN HEIGHT: Flush
CROWN WIDTH: 2.4-2.5
DIAMETER: 6.0
WELD LENGTH: 56.0



* thickness measurements on main run pipe only.

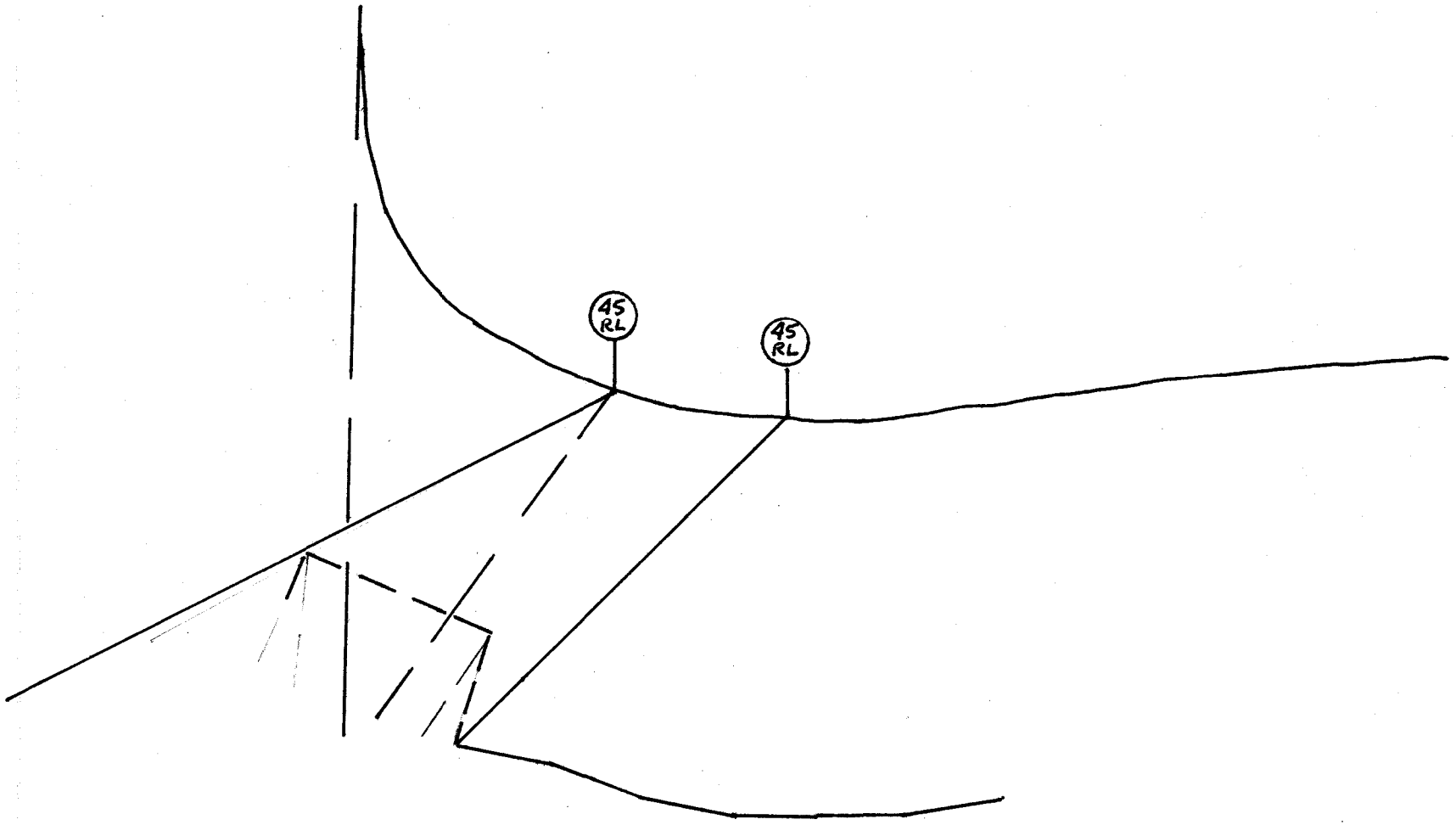
EXAMINER: Jose Alejandro Jiménez Alejandro
LEVEL: II
DATE: 12-09-08

REVIEWED BY: [signature]
LEVEL: III
DATE: 12/22/08

ANII: [signature]
DATE: 2/4/09
PAGE 5 OF 6

TVA 19668 (NP-5-89) 1-108-999-44

TVA Office of Nuclear Power	PROJECT: WBN SYSTEM: RCS UNIT: 2 WELD NO: RCS-3-6	REPORT NO.: R-P0106



BY: Jose Alejandro LEVEL: II DATE: 12-09-08 PAGE 6 OF 6

R. P0106

Attachment 4
(Page 1 of 1)

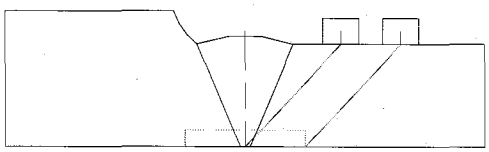
AUSTENITIC PIPING WELDS SINGLE SIDE ACCESS - SUPPLEMENT 2

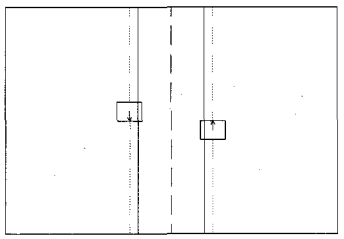
Required and obtained examination volume coverage work sheet

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.





W = RCS-3-6 W = 1.25 H = .7 L = 50

Item	Description	Value
	REQUIRED EXAMINATION VOLUME	
1	Required examination volume in sq in. (width x height) for single scan stroke	.875
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)	3.5
4	Total length of weld	50
5	Total required examination volume in cubic inches (Item 3 * Item 4)	175
	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	0
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	43.75
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	21.875
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	21.875
10	Determine the achieved examination volume by adding Items 6, 7, 8. and 9	87.5
11	Examination volume percentage [(Item 10 / item 5) X 100]	(.50) = 50%

INFORMATION ONLY