TENNESSEE VALLEY AUTHORITY	EXAMINATION SUMMARY AND RESOLUTION SHEET	REPORT NUMBER: R-P0226

PROJECT: *WBN* UNIT: *2* CYCLE *00*				COMPONENT ID: *RCF-D145-08*	
EXAMINATION METHOD				SYSTEM: RCS	ISI DWG NO: *ISI-2068-W-05 Rev. 0*
MT ☐	PT ☐	UT ☑	VT ☐	CONFIGURATION:	CATEGORY
PROCEDURE: *N-UT-64*		REV *11*	TC: *N/A*	*VLV TO EL*	*B-J*

EXAMINER:	EXAMINER:	EXAMINER:	EXAMINER:
Jose Alejandro	N	N	N
LEVEL: II	LEVEL: A	LEVEL: A	LEVEL: A

Total coverage calculated to be approximately 50 %

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

A 45° shear wave and a 60° ~~refra~~ JH 03-09-09 refracted longitudinal wave were calibrated and used for this examination.

Examination was limited due to valve geometry. Examination was performed from the elbow side.

No recordable indications observed.

50% examination volume coverage achieved.

RESOLUTION BY:	REVIEWED BY:	ANII:
Jose Alejandro	Darlene Queen	DATE: 3/16/09
LEVEL II DATE: 03-09-09	LEVEL: III DATE: 3-10-09	Page: 1 OF 6

ACCESS: FORMS DATABASE R-10/04/01

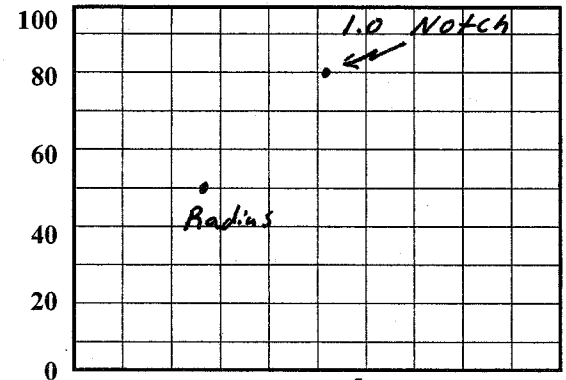
TENNESSEE VALLEY AUTHORITY	DIGITAL ULTRASONIC CALIBRATION DATA SHEET	REPORT NUMBER R-P0226

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

TRANSDUCER
MANUFAC RTD MODEL: TRL2
ELEMENTS: 2 SHAPE: Rectangle
S/N 95-853 SIZE: 2(8x14) FREQ: 2.0 MHz
CONTOUR: N/A FOCUS: N/A
CABLE TYPE RG174 LENGTH: 72.0 # CNT: N/A

MODE: ☐ SHEAR ☐ LONG ☒ RL

DAC



DISPLAY WIDTH 4.0 inches

CALIBRATION DATE: 03-09-09
CALIBRATION BLOCK NO. WB83 TEMP: 72.9 °F
SIMULATOR BLOCK: Rompas
THERMOMETER S/N: 558271 DUE DATE: 06-24-09
COUPLANT: Ultra Gel II BATCH: 07225 E

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

INSTRUMENT
MANUFACTURER: KrautKramer DUE DATE: 06-23-09
MODEL NO.: USN 60 S/N: E36304

REFLECTOR			REFERENCE SENSITIVITY	MEMORY NUMBER
SCAN DIRECT.	NTC	SDH		
AXIAL	☒	☐	66.5 dB	60RL-4.in
CIRC.	☒	☐	66.5 dB	60RL-4.in

RANGE: 4.0 inches *FREQ: 2.25 MHz
PROBE DELA 8.1322 msec *RECTIFY: Full WAVE
VELOCITY 0.2295 msec DUAL ☒ ON ☐ OFF
DISP DELAY: 0.00 *REJECT: 0 %
*ENERGY: High *DISP. START: IP
*DAMPING: 1k ohms DET: ☐ Peak ☒ Flank
*PRR/PRF: Auto High TCG: ☐ ON ☒ OFF
ANGLE: 60RL deg *PULSER: Dual
ZERO: N/A msec

REF. REFLECTOR: Rompas Radius GAIN: 39.5 dB
AMPLITUDE: 50 % METAL PATH: 1.065

CALIBRATION TIMES
INITIAL TIME: 0921 FINAL TIME: 1251

VERIFICATION TIMES	1) 1055	2) 1100	3) 1146	4) 1151	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
	RCF-D145-05C
	RCF-D145-08

EXAMINER: Jose Alejandro LVL.: II
EXAMINER: Eddie Reed LVL.: I
REVIEWER: Darlene Dudley LVL.: III DATE: 3/6/09

ANII: 3/7/09
DATE: 3/6/09

ACCESS: FORMS DATABASE 07-25-07

TENNESSEE VALLEY AUTHORITY	DIGITAL ULTRASONIC CALIBRATION DATA SHEET	REPORT NUMBER R-0026

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: 00DPPM SIZE: .250 FREQ: 2.25 MHz
CONTOUR: N/A FOCUS: N/A
CABLE TYPE: RG/174 LENGTH: 72.0 # CNT: N/A

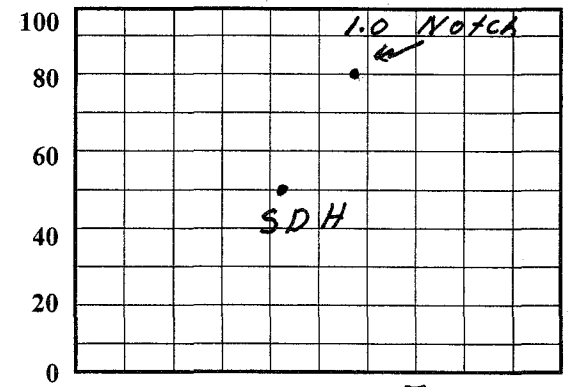
MODE: ☒ SHEAR ☐ LONG ☐ RL

CALIBRATION DATE: 03-09-09
CALIBRATION BLOCK NO.: WB 83 TEMP: 72.9 °F
SIMULATOR BLOCK: Rompas
THERMOMETER S/N: 558271 DUE DATE: 06-24-09
COUPLANT: Ultra Gel II BATCH: 07225 E

ANGLE VERIFICATION
BLOCK TYPE: Rompas S/N: 790390
NOMINAL ANGLE: 45° ACTUAL ANGLE: 45 °

INSTRUMENT
MANUFACTURER: Krautkramer DUE DATE: 06-23-09
MODEL NO.: USN 60 S/N: E36304

DAC



DISPLAY WIDTH: 2.5 inches

REFLECTOR SCAN DIRECT.	NTC	SDH	REFERENCE SENSITIVITY	MEMORY NUMBER
AXIAL	☒	☐	36.4 dB	45°-4.in-55
CIRC.	☒	☐	36.4 dB	45°-4.in-55

RANGE: 2.5 inches *FREQ: 2.25 MHz
PROBE DELA: 4.7150 msec *RECTIFY: Full WAVE
VELOCITY: 0.1309 msec DUAL ☐ ON ☒ OFF
DISP DELAY: 0.00 *REJECT: 0 %
*ENERGY: High *DISP. START: IP
*DAMPING: 1k ohms DET: ☐ Peak ☒ Flank
*PRR/PRF: Auto High TCG: ☐ ON ☒ OFF
ANGLE: 45 deg *PULSER: Single
ZERO: 0 msec

REF. REFLECTOR: Rompas SDH GAIN: 44.2 dB
AMPLITUDE: 50 % METAL PATH: 1.066

CALIBRATION TIMES
INITIAL TIME: 0930 FINAL TIME: 1255

VERIFICATION TIMES	1) 1027	2) 1035	3) 1111	4) 1143	5) 1152	6) 1202	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
	RCF-D145-08
	RCF-D145-05C
	RCF-D145-05
	RCF-D145-04
	RCF-D145-02B

EXAMINER: Jose Alejandro Jaramillo LVL.: II
EXAMINER: Ellis Reed LVL.: I
REVIEWER: Darlene Dudley LVL.: III DATE: 3-10-09

ANII: [signature] DATE: 3/16/09

PAGE 3 OF 6

ACCESS: FORMS DATABASE 07-25-07

TENNESSEE VALLEY AUTHORITY	MANUAL ULTRASONIC PIPING EXAMINATION DATA SHEET	REPORT NUMBER R-P0026

PROJECT: WBN UNIT/CYCLE 2/00
SYSTEM: RCS
WELD I.D.: RCF-D145-08
CONFIG.: VLV TO EL
FLOW

PROCEDURE: N-UT-64 REV: 11 TC: N/A
Wo REFERENCE: Q of weld
Lo REFERENCE: TDC

EXAMINATION DATE 03-09-09
START TIME: 1153 END TIME: 1201
EXAM SURFACE ☐ ID ☒ OD
MATERIAL TYPE: ☐ CS ☒ SS ☐ CSCL ☐ CCSS
SURFACE TEMP.: 70.6 PYRO NO. 558271

EXAMINATION ANGLE	45 DEG.	60 RL DEG.
AXIAL SCAN SENSITIVITY	44.3 dB	59.5 dB
CIRC. SCAN SENSITIVITY	47.3 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					
								4	45°	☒	
								5	45°	☒	
								6	45°	☒	
								4	60 RL	☒	
										☐	
										☐	

REMARKS/LIMITATIONS No exam scans up stream side due to valve. Examination scans from elbow side maintaining 5-20% IO roll was performed. Scanned across the weld up to valve taper.

EXAMINER: Jose Alejandro [signature] LEVEL: II
EXAMINER: Edward Reed [signature] LEVEL: I
REVIEWED BY: Darlene Dudley LEVEL: III DATE: 3-10-09

ANII: [signature]
DATE: 3/16/09

TVA

WALL THICKNESS PROFILE SHEET

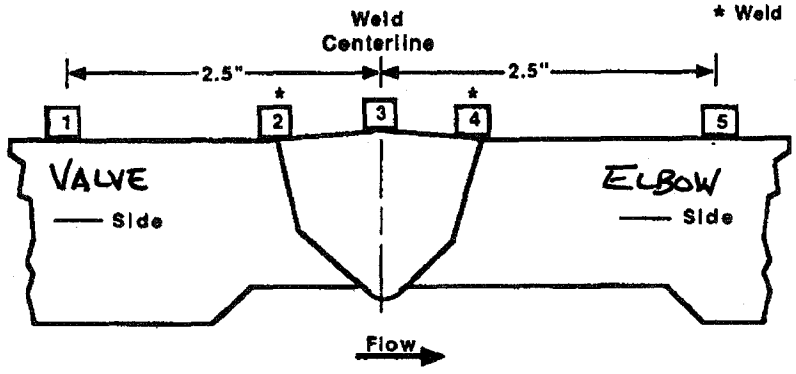
REPORT NO: R-P0226

PROJECT: WATTS BAR NUCLEAR
UNIT: 2

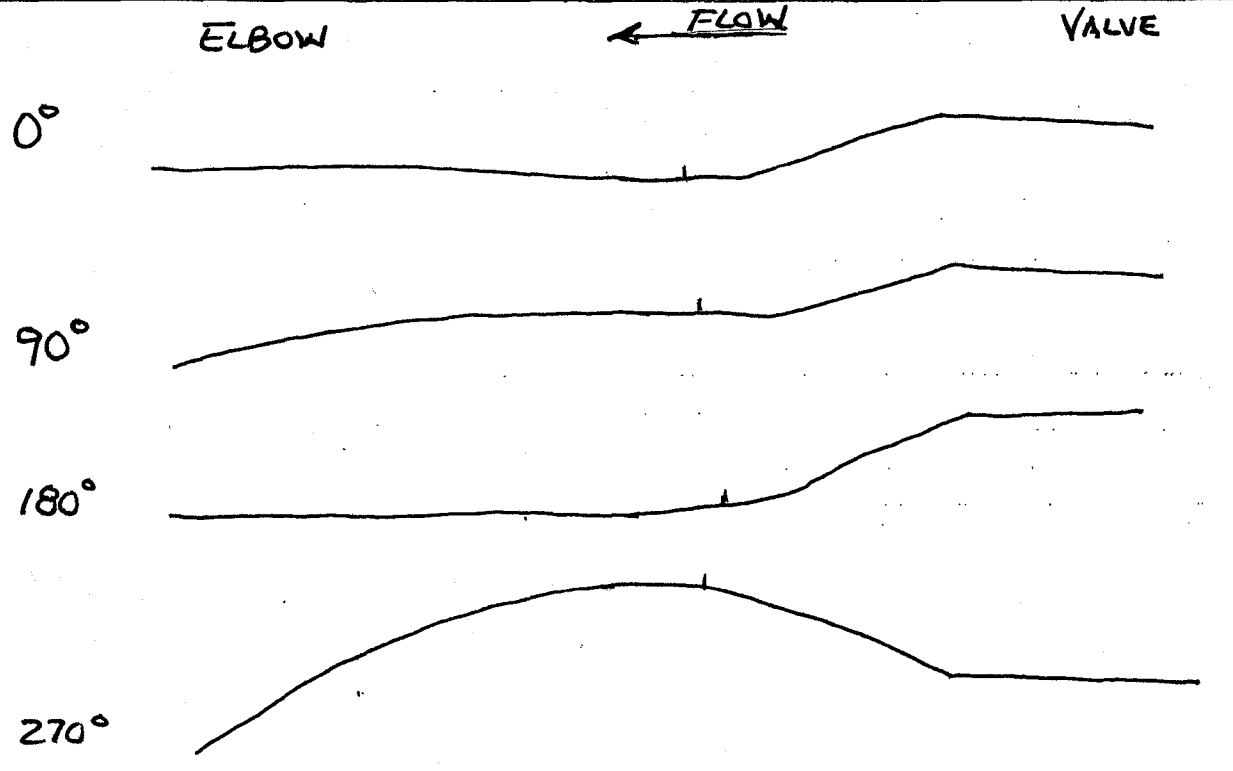
WELD NO: RCF-D145-08
SYSTEM: 068 (RCS)

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

Position	0°	90°	180°	270°
1	*	*	*	*
2	*	*	*	*
3	.572	.526	.544	.579
4	.543	.543	.551	.669
5	.602	.539	.576	.649



CROWN HEIGHT: FLUSH
CROWN WIDTH: .750 INCH
DIAMETER: 4 INCH
WELD LENGTH: 14.5 INCH



* - NO READINGS TAKEN ON VALVE SIDE

EXAMINER: Jose Alejandro
LEVEL: II
DATE: 03-03-09

REVIEWED BY: David Dudley
LEVEL: III DATE: 3-10-09

ANII:
DATE: 3/11/09

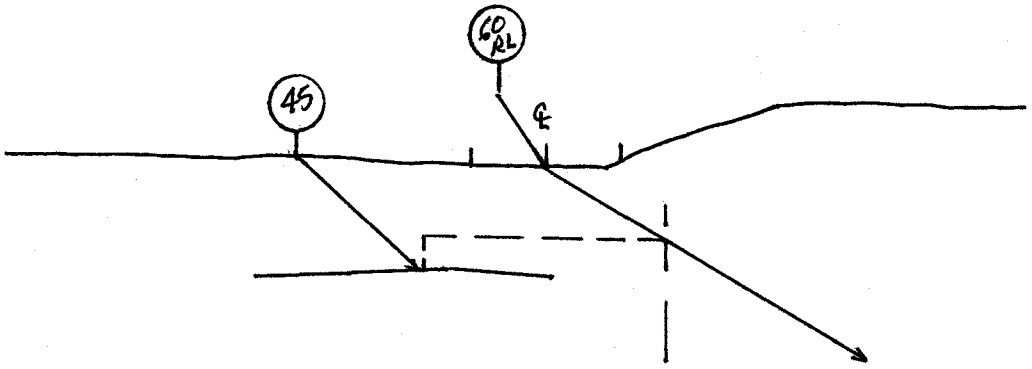
PAGE 5 OF 6

TVA Office of Nuclear Power	PROJECT: WBN SYSTEM: RCS UNIT: 2 WELD NO: RCF-D145-08	REPORT NO.: R.P0226

FLOW

ELBOW

VALVE



BY: Jose Alejandro LEVEL: II DATE: 03-03-09 PAGE 6 OF 6

R-P0226

Attachment 4
(Page 1 of 1)

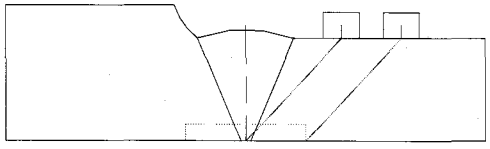
AUSTENITIC PIPING WELDS SINGLE SIDE ACCESS - SUPPLEMENT 2

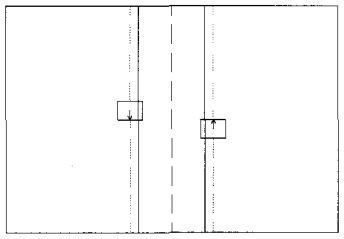
Required and obtained examination volume coverage work sheet

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 # RCF-D145-08 W=1.3 H=.2 L=14.5

Item	Description	Value
	REQUIRED EXAMINATION VOLUME	
1	Required examination volume in sq in. (width x height) for single scan stroke	.26
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)	1.04
4	Total length of weld	14.5
5	Total required examination volume in cubic inches (Item 3 * Item 4)	15.08
	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	3.77
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	1.885
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	1.885
10	Determine the achieved examination volume by adding Items 6, 7, 8. and 9	7.54
11	Examination volume percentage [(Item 10 / item 5) X 100]	(.50) = 50%

JA

INFORMATION ONLY