TENNESSEE VALLEY AUTHORITY	EXAMINATION SUMMARY AND RESOLUTION SHEET	REPORT NUMBER: R-P0766

PROJECT: *WBN* UNIT: *2* CYCLE *00*				COMPONENT ID: *RHRF-D031-13*	
EXAMINATION METHOD				SYSTEM: RHRS	ISI DWG NO: *ISI-2074-W-01* REV
MT ☐	PT ☐	UT ☑	VT ☐	CONFIGURATION:	CATEGORY
PROCEDURE: *N-UT-84*		REV *0*	TC: *N/A*	*VLV* TO *P*	*B-J*

EXAMINER:	EXAMINER:	EXAMINER:	EXAMINER:
Jason Nissen	N	N	N
LEVEL: II	LEVEL: A	LEVEL: A	LEVEL: A

Total coverage calculated to be approximately 83.39 %

A phased array ultrasonic examination was performed to meet the requirements of ASME Section XI preservice inspection.

A phased array 1.5 MHz, 16 element probe with a 25°-75° shear wave sector scan display was utilized to perform the examination.

A phased array 1.5 MHz, dual 15 element probe with a 40°-70° refracted longitudinal wave sector scan display was utilized as a supplement to ensure adequate examination results.

83.39 % examination volume achieved due to valve configuration.

No recordable indications.

RESOLUTION BY:	REVIEWED BY:	ANII:
Jason Nissen		DATE: 8/25/09
LEVEL II DATE: 8-6-09	LEVEL: III DATE: 8-11-09	Page: 1 OF 6

ACCESS: FORMS DATABASE R-10/04/01

TENNESSEE VALLEY AUTHORITY	PHASED ARRAY ULTRASONIC CALIBRATION DATA SHEET	REPORT NUMBER: R-P0766

PROJECT: WBN UNIT 2	CYCLE: N/A	CALIBRATION DATE: 08/06/09	
PROC.: N-UT-86 84	REV: 00	TC: N/A	CALIBRATION BLOCK NO.: WB83 TEMP: 71.9 °F
INSTR. MFG: GEIT	DUE DATE: 12/19/09	SIMULATOR BLOCK NO: N/A	
MODEL/TYPE: Phasor XS	M & TE ID: E41378	THERMOMTER S/N: 562776	DUE DATE: 12/22/09
SOFTWARE REVISION: 1.2		COUPLANT Ultragel II	BATCH: 06225 F
EXAM TYPE: SHEAR ☒ LONG ☐ RL ☐		EXAM: ISI ☐ PSI ☒	LIMITATIONS: Y ☒ N ☐
CABLE TYPE: 1D	LENGTH: 2m	#CNT: 0	

ANGLE VERIFICATION

BLOCK TYPE: Alt Block	S/N: WB83	NOMINAL ANGLE		ACTUAL ANGLE	
REFLECTOR		LOW: 25	HIGH: 70	LOW: 25	HIGH: 70

SCAN DIRECTION	NOTCH DEPTH	SDH. DEPTH	REF. SENS/AMPL	ANGLE / METAL PATH	EXAM SENS.
AXIAL	1.500	N/A	2.0 / 80%	45° / 2.172	16
CIRCUMFERENTAIL	1.500	N/A	2.0 / 80%	45° / 2.172	20

INSTRUMENT SETTINGS

GAIN TOGGLE:	dBD: 0	dBA: 16

PROBE DATA

PROBE MFG: GEIT	MODEL: 115-000-441	TYPE: Sector	ANGLE START: 25°
S/N: 01RLFK	APERTURE SIZE: 0.630	FOCAL POINT: unfocused	ANGLE STOP: 75°
ELEMENTS: 16	PITCH: 0.040	WAVE TYPE: Shear	ANGLE STEP: 1
FREQ: 1.5 mhz	ELEVATION: 0.472	RL FOCAL LAW: N/A	
CONFIGURATION: Array	SHAPE: Rect	LEG: 1.0	MATERIAL THICKNESS: 1.500

SCAN DATA

ELECTRONIC	SCAN PATTERN

WEDGE DATA

PROBE CHECK: ☒ PRE-EXAM ☒ POST EXAM

WEDGE MFG: GEIT	VELOCITY: 0.0920	NUMBER OF STEPS: 1	FIRST ELEMENT: 1
MODEL: 360-141-162	X OFFSET: 0.472	APERTURE SIZE: 16	APERTURE STEP: 1
WEDGE ANGLE: 38°	Z OFFSET: 0.512	DISPLAY DATA	ANGLE CORRECTION ☒ ON ☐ OFF
CONTOUR: Flat	ELEMENT 1 POSITION: Low end		

APERTURE

UT DATA

BASE	PULSER	RECIEVER	NRM/TCG
DELAY: 0.000	VOLT: 150	FREQ: BB 0.6-6.5	CYC GAIN CNTL 0.000
	WIDTH: 330	ASCAN RECT: Fullwave	
MATERIAL: 55	PRF VALUE: Auto high		

PART DATA

MATERIAL: 55	VELOCITY: .1220

CALIBRATION TIMES

INITIAL TIME: 0930	FINAL TIME: 1155		
VERF. TIMES	1000	1020	N/A N/A

LINEARITY CHECK

VERTICAL											
SIGNAL 1	100	90	80	70	60	50	40	30	20	10	
SIGNAL 2	50	45	40	35	30	25	20	15	10	5	

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

COMMENTS:	WELDS/ITEMS EXAMINED:
	RHRF-D031-13

EXAMINER:	EXAMINER:	REVIEWER:	ANII:
LEVEL: II	N/A LEVEL:	LEVEL: II DATE: 8-11-09	DATE: 8/25/09
			PG. 2 OF 6

TENNESSEE VALLEY AUTHORITY	PHASED ARRAY ULTRASONIC CALIBRATION DATA SHEET	REPORT NUMBER: R-P0766

PROJECT: WBN UNIT 2 CYCLE: N/A	CALIBRATION DATE: 08/06/09
PROC.: N-UT-84 REV: 00 TC: N/A	CALIBRATION BLOCK NO.: WB83 TEMP: 71.9°F
INSTR. MFG: GEIT DUE DATE: 12/19/09	SIMULATOR BLOCK NO: N/A
MODEL/TYPE: Phasor X5 M & TE ID: E41378	THERMOMTER S/N: 562776 DUE DATE: 12/22/09
SOFTWARE REVISION: 1.2	COUPLANT Ultragel II BATCH: 06225F
EXAM TYPE: SHEAR☐ LONG☐ RL☒	EXAM: ISI☐ PSI☒ LIMITATIONS: Y☒ N☐
CABLE TYPE: 2D LENGTH: 2m #CNT: 0	

ANGLE VERIFICATION

BLOCK TYPE: Alt. Block	S/N: WB83		NOMINAL ANGLE		ACTUAL ANGLE
REFLECTOR			LOW: 40 HIGH: 70		LOW: 40 HIGH: 70
SCAN DIRECTION	NOTCH DEPTH	SDH. DEPTH	REF. SENS/AMPL	ANGLE / METAL PATH	EXAM SENS.
AXIAL	1.500	N/A	14.0 / 80%	45° / 2.105	22
CIRCUMFERENTAIL	N/A	N/A	N/A / N/A	N/A / N/A	N/A

INSTRUMENT SETTINGS

GAIN TOGGLE:	dBD: 0	dBA: 22

PROBE DATA		SCAN DATA	
		ELECTRONIC	SCAN PATTERN
PROBE MFG: GEIT	MODEL: 115-000-481	TYPE: Sector	ANGLE START: 40
S/N: 01TCT16	APERTURE SIZE: 0.748	FOCAL POINT: 1.500	ANGLE STOP: 70
ELEMENTS: 2(3x5)	PITCH: (4x0.150)	WAVE TYPE: Long.	ANGLE STEP: 1
FREQ: 1.5 mHz	ELEVATION: (2x0.472)	RL FOCAL LAW: D12F150	
CONFIGURATION: Array	SHAPE: Rect	LEG: 1.0	MATERIAL THICKNESS: 1.500

WEDGE DATA		APERTURE	
PROBE CHECK: ☒ PRE-EXAM ☒ POST EXAM			
WEDGE MFG: GEIT	VELOCITY: 0.0920	NUMBER OF STEPS: 1	FIRST ELEMENT: 1
MODEL: 360-151-028	X OFFSET: 0.591	APERTURE SIZE: 10	APERTURE STEP: 1
WEDGE ANGLE: 18°	Z OFFSET: 0.472	DISPLAY DATA / ANGLE CORRECTION	☒ON ☐OFF
CONTOUR: Flat	ELEMENT 1 POSITION: Low end	UT DATA	

PART DATA		BASE	PULSER	RECIEVER	NRM/TCG
MATERIAL: 55	VELOCITY: Custom	DELAY: 0.000	VOLT: 150	FREQ: BB 0.6-6.5	CYC GAIN CNTL 0.000
CALIBRATION TIMES			WIDTH: 330	ASCAN RECT: Fullwave	
INITIAL TIME: 0925	FINAL TIME: 1200	MATERIAL: Custom	PRF VALUE: Autohigh		
VERF. TIMES 1025 1038 N/A N/A					

LINEARITY CHECK

VERTICAL											
SIGNAL 1	100	90	80	70	60	50	40	30	20	10	
SIGNAL 2	50	45	40	35	30	25	20	15	10	5	

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

COMMENTS:	WELDS/ITEMS EXAMINED:
	RHRF-D031-13

EXAMINER:	EXAMINER:	REVIEWER:	ANII:
LEVEL: II	LEVEL: N/A	LEVEL: III DATE: 8-11-09	DATE: 8/25/09
			PG. 3 OF 6

TENNESSEE VALLEY AUTHORITY	MANUAL ULTRASONIC PIPING EXAMINATION DATA SHEET	REPORT NUMBER R-P0766

PROJECT: WBN UNIT/CYCLE 2/00
SYSTEM: RHRS
WELD I.D.: RHRF-D031-13
CONFIG.: VLV TO P
FLOW →

EXAMINATION DATE 8-6-09
START TIME: 1002 END TIME: 1037
EXAM SURFACE ☐ ID ☒ OD
MATERIAL TYPE: ☐ CS ☒ SS ☐ CSCL ☐ CCSS
SURFACE TEMP.: 79.5 PYRO NO. 562776

PROCEDURE: N-UT-84 REV: 0 TC: N/A
Wo REFERENCE: Weld ℄
Lo REFERENCE: TDC

EXAMINATION ANGLE	Shear DEG.	RL DEG.
AXIAL SCAN SENSITIVITY	35/70 16.0 dB	40/70 22.0 dB
CIRC. SCAN SENSITIVITY	25/70 20.0 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	35/70	☒	
								4	35/70	☒	
								5	25/70	☒	
								6	25/70	☒	
								3	40/70	☒	
								4	40/70	☒	

REMARKS/LIMITATIONS Scan ~~4~~ 3 JPN 8-6-09 limited due to valve configuration. 83.39 examination volume achieved.
Scanned across the weld, maintained 5-20% ID Roll.
No recordable indications

EXAMINER: [signature] LEVEL: II
EXAMINER: N/A LEVEL: N/A
REVIEWED BY: [signature] LEVEL: III DATE: 8-11-09

ANII: [signature]
DATE: 8/25/09
PAGE 4 OF 6

ACCESS: FORMS DATABASE 10/18/01

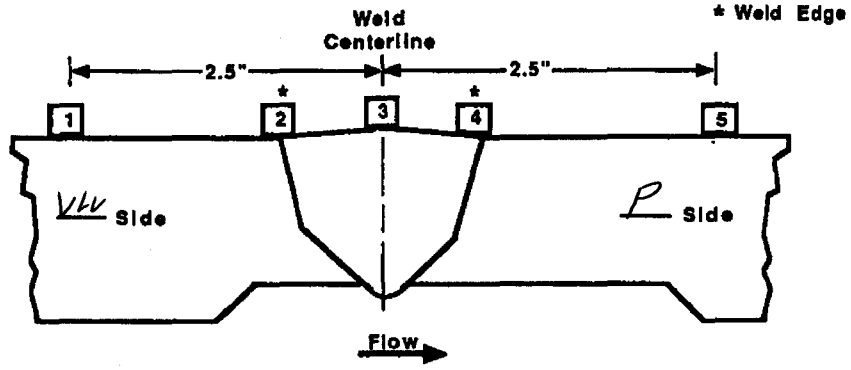
TVA	WALL THICKNESS PROFILE SHEET	REPORT NO: R-P0766

PROJECT: WBN
UNIT: 2

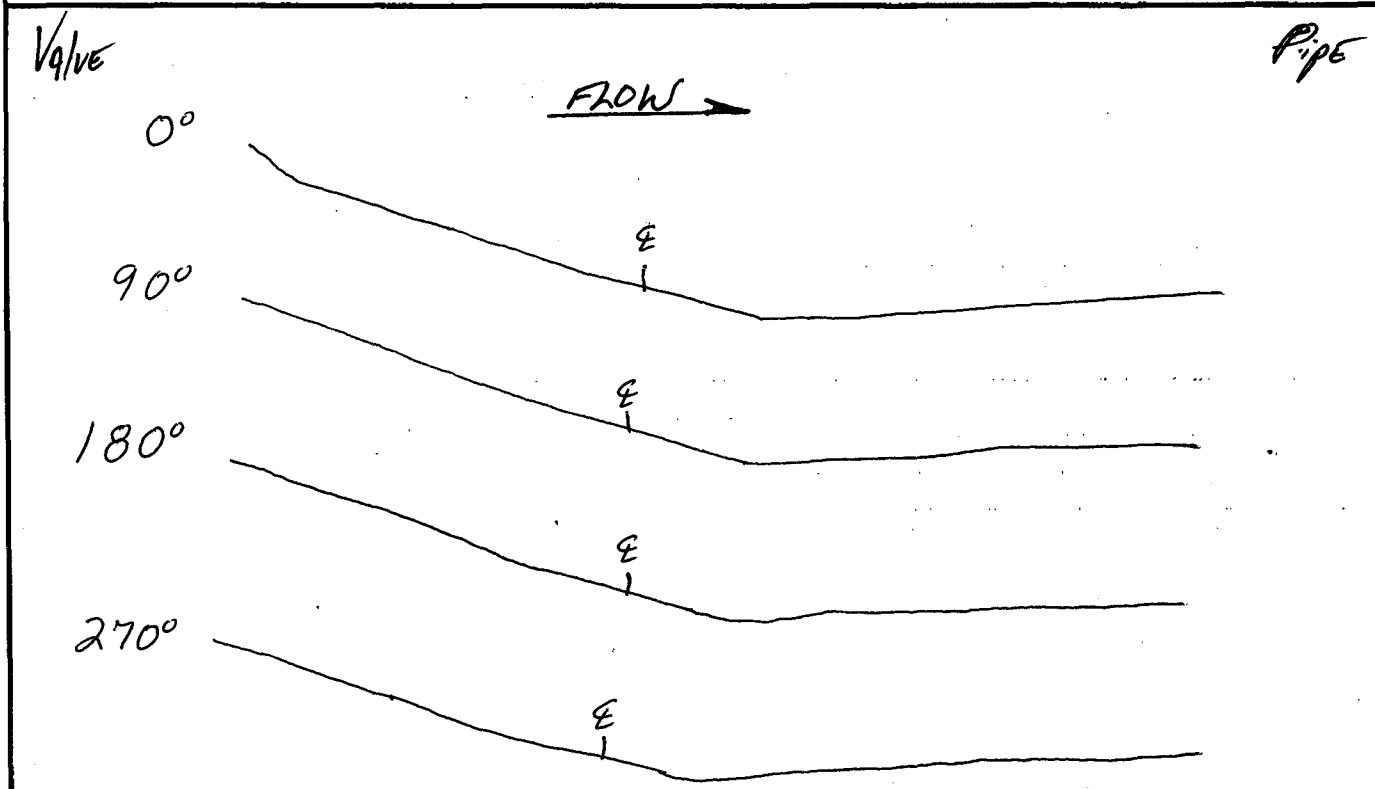
WELD NO: RHRF-D031-13
SYSTEM: RHR

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

Position	0°	90°	180°	270°
1	1.95	1.91	1.92	2.05
2	1.59	1.44	1.43	1.51
3	1.52	1.27	1.31	1.44
4	1.20	1.15	1.15	1.14
5	1.20	1.15	1.16	1.14



CROWN HEIGHT: Flush
DIAMETER: 14"
CROWN WIDTH: 1.3
WELD LENGTH: 45.25



EXAMINER: Keith Bull	REVIEWED BY: [signature]	ANII: [signature]
LEVEL: II	LEVEL: III DATE: 8-11-09	DATE: 8/25/09
DATE: 7-30-09		PAGE 5 OF 6

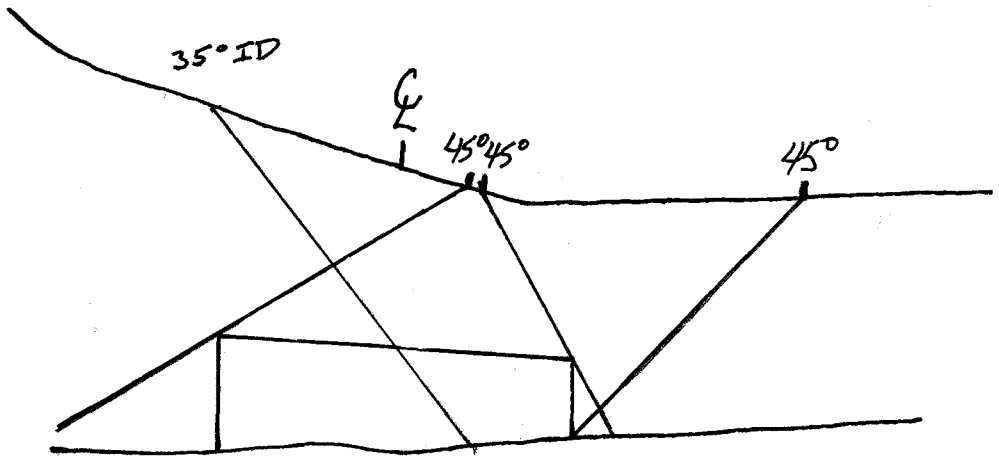
TVA 19668 (NP-5-89) 1-108-999-44

TVA Office of Nuclear Power	PROJECT: WBN SYSTEM: RHR UNIT: 2 WELD NO: RHRF-0031-13	REPORT NO.: R-P0766

Valve

Pipe

FLOW →



Phased array angles used 25°-70°, phased array RL angles used 40°-70°

BY: Keith Bull LEVEL: II DATE: 7-30-09 PAGE 6 OF 6

R. P0566

Watts Bar Unit 2

TVA Procedure N-GP-31
Attachments 3 & 4

Worksheet Version 1.0 dated 07/01/09

WELD NUMBER RHRF-D031-13

		Measured Fields		Calculated Fields	
Item 1	Required examination Volume in sq. in. **(width x height)**	1.8	0.535	0.963	sq. in.
Item 2	Number of **scan directions**			4	directions
Item 3	Total Scan **volume** in sq. in.			3.852	sq. in.
Item 4	Total **length** of weld			45.25	inches
Item 5	Total required **exam volume** in cubic inches			174.303	cu. in.
Item 6	**Exam volume acheived** (sq. in.) in direction 1 X **length of weld achieved**	0.963	45.25	43.57575	cu. In.
Item 7	**Exam volume acheived** (sq. in.) in direction 2 X **length of weld achieved**	0.963	45.25	43.57575	cu. In.
Item 8	**Exam volume acheived** (sq. in.) in direction 3 X **length of weld achieved**	0.963	45.25	43.57575	cu. In.
Item 9	**Exam volume acheived** (sq. in.) in direction 4 X **length of weld achieved**	0.323	45.25	14.61575	cu. In.
Item 10	Determined the **acheived exam volume** add 6, 7, 8 & 9			145.343	cu. In.
Item 11	Exam **volume percentage** item 10/item 5 x 100			**83.39**	%

Limitation due to Valve configuration

INFORMATION ONLY

Initials JPN

Date 08/06/2009