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 AUTH. NAME AUTHOR AFFILIATION
 PARRISH, J.V. Washington Public Power Supply System
 RECIP. NAME RECIPIENT AFFILIATION
 Document Control Branch (Document Control Desk)

SUBJECT: Forwards results of exam & evaluation of flaw in
 recirculation piping weld 20RRC(6)-8. Concludes that
 structural integrity of weld will be maintained during next
 operating cycle. Weld will remain in GL 88-01 category F.

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WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352-0968 • (509) 372-5000

May 15, 1995
GO2-95-097

Docket No. 50-397

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, D.C. 20555

Gentlemen:

Subject: WNP-2, OPERATING LICENSE NPF-21
REPORT ON FLAW IN REACTOR RECIRCULATION PIPING

- References:
- 1) Letter GO2-94-135, dated June 9, 1994, JV Parrish (SS) to NRC, "Report on Flaw in Reactor Recirculation Piping"
 - 2) Letter GI2-94-203, dated July 15, 1994, JW Clifford (NRC) to JV Parrish (SS), "Reactor Recirculation Piping Weld Flaw Reinspection Results Review at Washington Public Power Supply System Nuclear Project No. 2 (TAC NO. M89635)"
 - 3) Letter GO2-91-096, dated May 5, 1991, GC Sorensen (SS) to NRC, "Report on Flaw in Reactor Recirculation Piping, (TAC No. 80358)"
 - 4) Letter GO2-91-098, dated May 15, 1991, GC Sorensen (SS) to NRC, "Report on Flaw in Reactor Recirculation Piping, Additional Information (TAC No. 80358)"

The Supply System hereby transmits the results of the examination and evaluation of the flaw in recirculation piping weld 20RRC(6)-8 as discussed in References 1 and 2. Attachments 1 and 2 provide the evaluation and examination results, respectively.

Based on the examination results and evaluation, the Supply System concludes that the structural integrity of weld 20RRC(6)-8 will be maintained during the next operating cycle. The weld will remain in Generic Letter 88-01 category "F". Therefore staff review and approval is requested by May 26, 1995, to support startup following the R-10 refueling outage.

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PDR ADDCK 05000397
P PDR

ADD 1

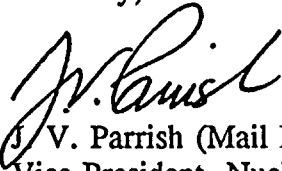
2000

Page 2

REPORT ON FLAW IN REACTOR RECIRCULATION PIPING

Should you have any questions or desire additional information regarding this matter, please call me or D. A. Swank at (509) 377-4563.

Sincerely,



J. V. Parrish (Mail Drop 1023)
Vice-President, Nuclear Operations

DPR/ml

Attachments (1) Results and Evaluation
(2) Examination Data Report

cc: LJ Callan - NRC RIV
KE Perkins, Jr. - NRC RIV, Walnut Creek Field Office
NS Reynolds - Winston & Strawn
JW Clifford - NRC
DL Williams - BPA/399
NRC Sr. Resident Inspector - 927N



100

100

ATTACHMENT 1
REPORT ON FLAW IN REACTOR RECIRCULATION PIPING

The indication in ISI weld number 20RRC(6)-8, as discussed in Reference 1, was reexamined May 4, 1995, at refueling outage R10, for the forth consecutive outage. No significant changes in the flaw depth nor signal characteristics were noted. The flaw depth was found to be 0.187 inches (0.184 inches at R9). The signal characteristics are not typical of intergranular stress corrosion cracking (IGSCC). These examination results (Attachment 2) verify that the indication remains bounded by the initial evaluation documented in References 3 and 4 and rereviewed as described in Reference 1.

Summary of Weld 20RRC(6)-8 Examination Results

Outage	Depth(inch)	Length(inch)	Examination Method
R6	0.15	4.5 (CE-2 method ¹)	manual
R7	0.17	3.6 (Reference gain method ²)	manual
R7	0.15	3.6 (Reference gain method)	mechanized
R8	0.175	3.6 (Reference gain method)	mechanized
R9	0.184	3.6 (Reference gain method)	mechanized
R10	0.187	3.6 (Reference gain method)	mechanized

The results from R10 are still bounded within the analysis that was performed at R6. This analysis predicted a maximum acceptable flaw depth of 0.62 inch after six years before repair/overlay is necessary. The potential crack growth rates are also bounded by the crack growth calculation. The final crack depth at the end of the next fuel cycle will not exceed the maximum allowable crack depth.

Based on the examination results of this outage, the past three refueling outages and the bounding calculation analysis, the Supply System concludes that the structural integrity of ISI weld number 20RRC(6)-8 will be maintained during the next operating cycle of WNP-2.

¹ Length based on CE-2 signal disappearing into the baseline.

² Length based on reference gain



ATTACHMENT 2

Examination data report R-R10-001 (Page 1 of 18)



GE Nuclear Energy

EXAMINATION SUMMARY SHEET

REPORT NO.:

R-R10-001

PROJECT: WNP2 RFO10
1D782

SYSTEM: RECIRCULATION

WELD NO.: 20RRC(6)-8

CONFIGURATION: PIPE TO VALVE

EXAMINER: TOLLIE PERRY LEVEL: II

EXAMINER: N/A LEVEL: N/A

EXAMINER: N/A LEVEL: N/A

PROCEDURE: UT-WNP2-208V0 REV: 0 FRR: N/A
N/A
N/AUT-WNP2-207V0 REV: 0 FRR: N/A
N/A
N/AN/A REV: N/A FRR: N/A
N/A
N/A☐ MT ☐ PT ☒ UT ☐ VT☒ CIRCUMFERENTIAL

WELD TYPE:

☐ LONGITUDINAL ☐ OTHER N/A

DATA SHEET NO.(S): DA-R10-001 & 002

CAL SHEET NO.(S): CA-R10-001 & 002

During the ultrasonic examination of the above referenced weld, one (1) reportable ID connected planar indication was recorded with the "Smart 2000" system utilizing a 45° shear wave and 60° refracted longitudinal wave search units. This indication has the following parameters:

Ind. No.	Distance from Zero Reference	Total Length	Thru Wall Dimension	Remaining Ligament	Side of Weld	Type of Reflector	Search Unit
* 1.	-1.00"	3.60"	18.7%	.80"	UPST	CIRC	45°S / 60°RL

* The reflector face appears to be smooth and non-faceted without the presence of axial components, which is not typical of IGSCC type indications. This indication straddles "Lo" reference and starts at 1.0" counterclockwise from top dead center.

Supplemental relooks and thru-wall depth sizing were performed with the "Smart 2000" system utilizing the 60° RL search unit. The thru-wall depth of this reflector was determined by the high angle absolute arrival time tip diffraction method. The length of this indication was determined by measurements taken from the "Smart 2000" 60° RL data with allowances for beam spread. This indication was sized per NUREG 0313 requirements which are more stringent than ASME Section XI. This indication has not exhibited any noticable thru-wall propagation since it was sized during the previous ISI outage in 1994.

The 45° shear also recorded non-relevant indications and beam redirect, along with the above referenced indication, from the upstream side of the weld.

The 60° RL also recorded inside surface geometry, along with the above referenced indication, from the upstream side of the weld.

No examination was performed downstream due to the valve configuration.

Previous data was reviewed prior to this summary.

One hundred percent code coverage of the exam volume was achieved.

☒ EXAM COMPLETE☐ PARTIALLY EXAMINED (EXPLAIN IN COMMENTS)☐ EXAM COMPLETE IN COMBINATION WITH DATA SHEETS BELOW

ADDITIONAL DATA SHEETS: N/A

COMPARED TO: ☐ PSI ☒ ISI REPORT NO.(S): R-R9-001☒ NO CHANGE

NO. OF RECORDABLE INDICATIONS: 1

RWP NO.: 157

EXAMINATION RESULTS: ☐ ACCEPTABLE☒ UNACCEPTABLE

NO. OF REPORTABLE INDICATIONS: 1

TOTAL DOSE

744 MAN REM

SUMMARY BY

LEVEL III

DATE 5/4/95

UTILITY REVIEW

DATE 5-4-95

GE REVIEWED BY

LEVEL III

DATE 5-4-95

ANII REVIEW

DATE 5-4-95

PAGE: 1 OF: 15

FORM UT-00 REV. 5





GE Nuclear Energy

WALL THICKNESS PROFILE SHEET

SITE: WNP UNIT: 2

REPORT NO.:

PROJECT: 1D782

R-R10-001

SYSTEM: RECIRCULATION

COMPONENT ID NO.: 20RRC(6)-8

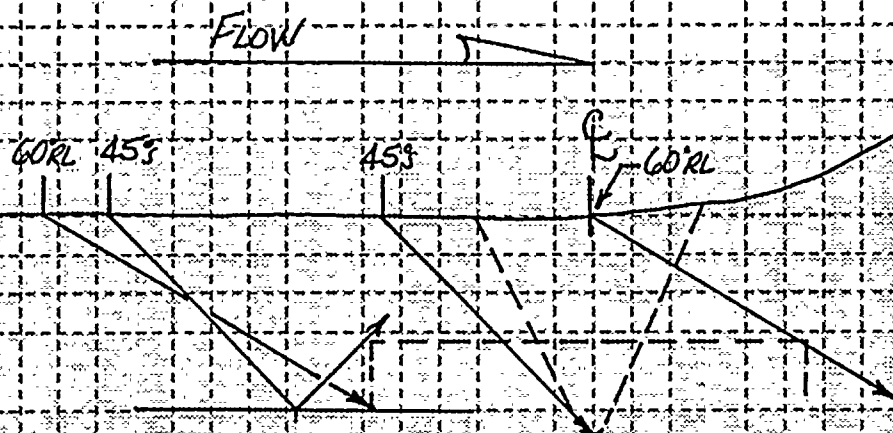
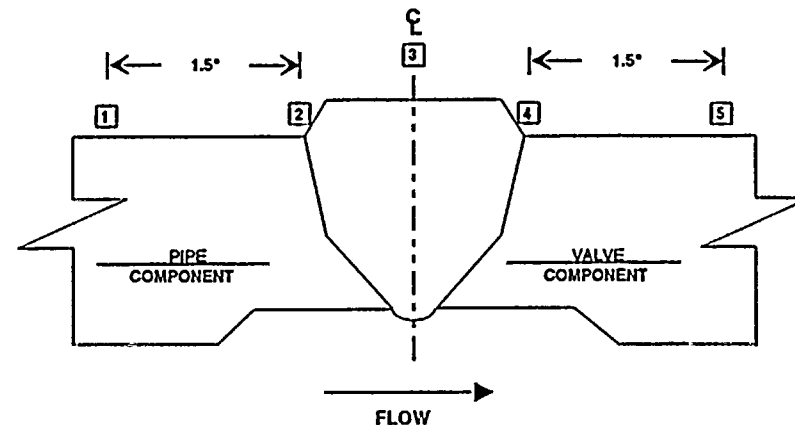
POSITION	0°	90°	180°	270°
1	1.00"	N/A	N/A	N/A
2	.98"	N/A	N/A	N/A
3	1.13"	N/A	N/A	N/A
4	N/A	N/A	N/A	N/A
5	2.06"	N/A	N/A	N/A

CROWN HEIGHT: FLUSH

CROWN WIDTH: 1.2"

NOM DIAMETER: 20.0"

WELD LENGTH: 63.0"



45° SHEAR & 60°RL COVERAGE PLOT

TAKEN FROM 1998 GE DATA

DRAWN BY

LEVEL

DATE

GE REVIEWED BY

LEVEL

DATE

UTILITY REVIEW

DATE

ANII REVIEW

DATE

PAGE: 2 OF: 15

FORM UT-01 REV 4





GE Nuclear Energy

INDICATION PLOT SHEET

SITE: WNP UNIT: 2

REPORT NO.: R-R10-001

PROJECT: 1D782

SYSTEM: RECIRCULATION

COMPONENT ID NO.: 20BRC(6)-8

CONFIGURATION: PIPE FLOW VALVE

FLOW

①

45° SHEAR

①

NON-GEOMETRIC INDICATION (PLANAR INDICATION #1)

Arnold Willett
DRAWN BY
MR. [Signature]
GE REVIEWED BY

III 5/4/95
LEVEL DATE
III 5-4-95
LEVEL DATE

[Signature] 5-4-95
UTILITY REVIEW DATE

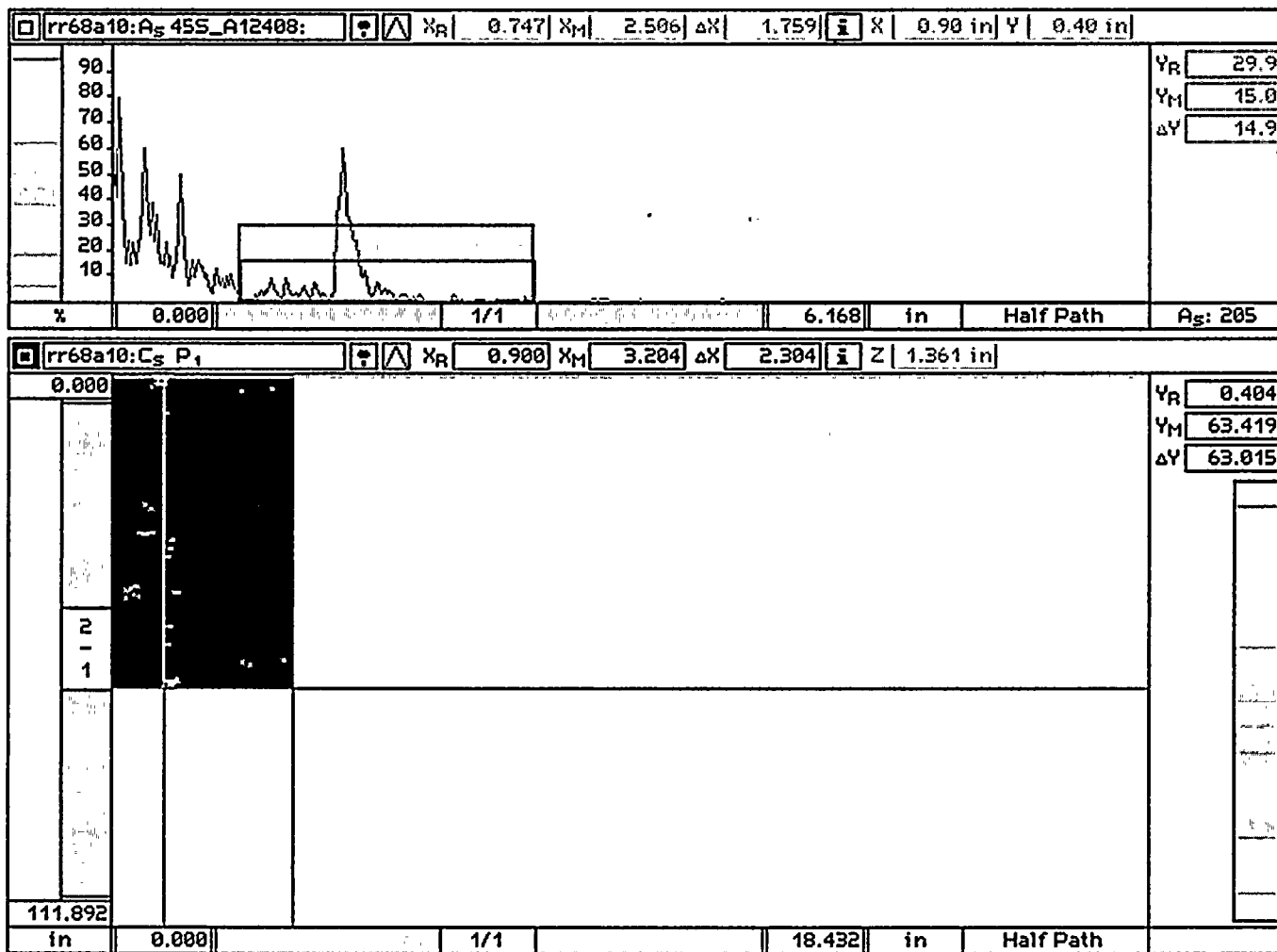
Curt F. [Signature] 5/4/95
ANII REVIEW DATE

PAGE: 3 OF: 15
FORM UT-02 REV 5



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



Non-Geometric Indication (Planar Indication #1)

SITE: WNP UNIT: 2 PROJECT NO.: 10782 REPORT NO.: R-R10-001
WELD NO.: 20RRC(6)-8 SEARCH UNIT: 45°/SHR INDICATION NO.: 1 PAGE: 4 OF: 15





GE Nuclear Energy

INDICATION PLOT SHEET

SITE: WNP UNIT: 2

REPORT NO.:

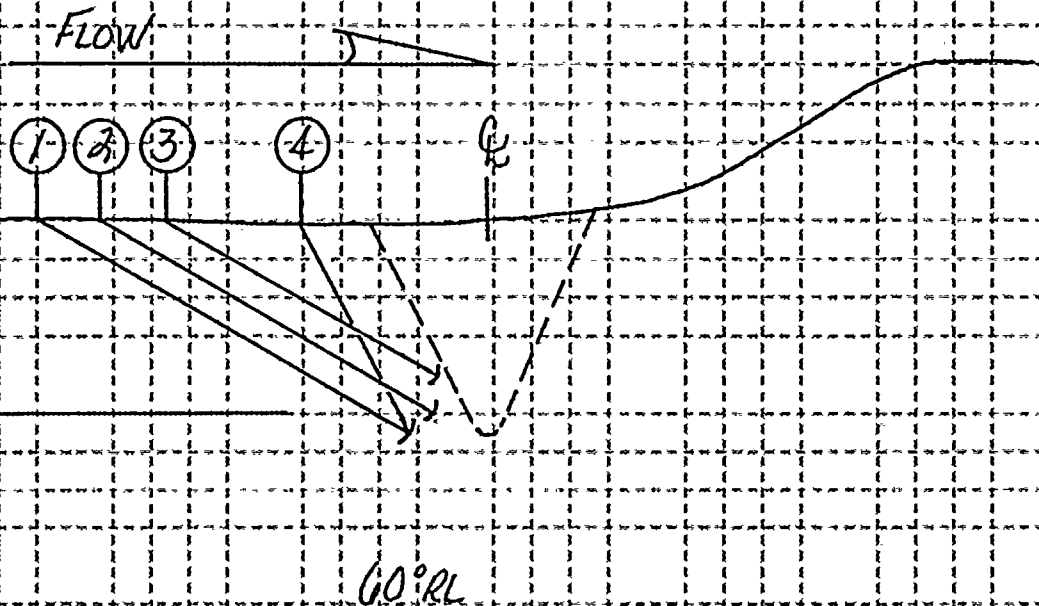
PROJECT: 1D782

R-R10-001

SYSTEM: RECIRCULATION

COMPONENT ID NO.: 20BRC(6)-8

CONFIGURATION: PIPE FLOW VALVE



- ① — NON-GEOMETRIC INDICATION (PLANAR INDICATION #1 - BASE REFLECTOR)
- ② — INSIDE SURFACE GEOMETRY
- ③ — NON-GEOMETRIC INDICATION (PLANAR INDICATION #1 - TIP REFLECTOR)
- ④ — SHEAR COMPONENT TO NON-GEOMETRIC INDICATION (PLANAR INDICATION #1 - BASE REFLECTOR)

David W. Miller
DRAWN BY
MTB
GE REVIEWED BY

III 5/4/95
LEVEL DATE
III 5-4-95
LEVEL DATE

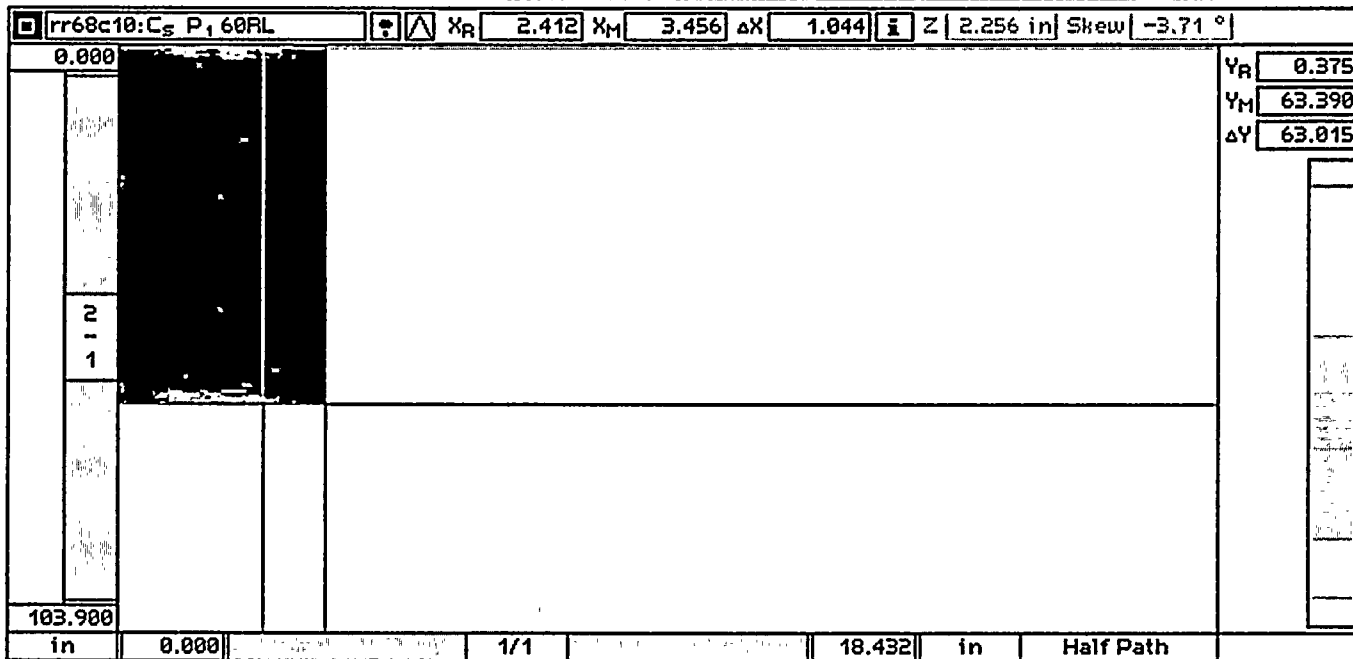
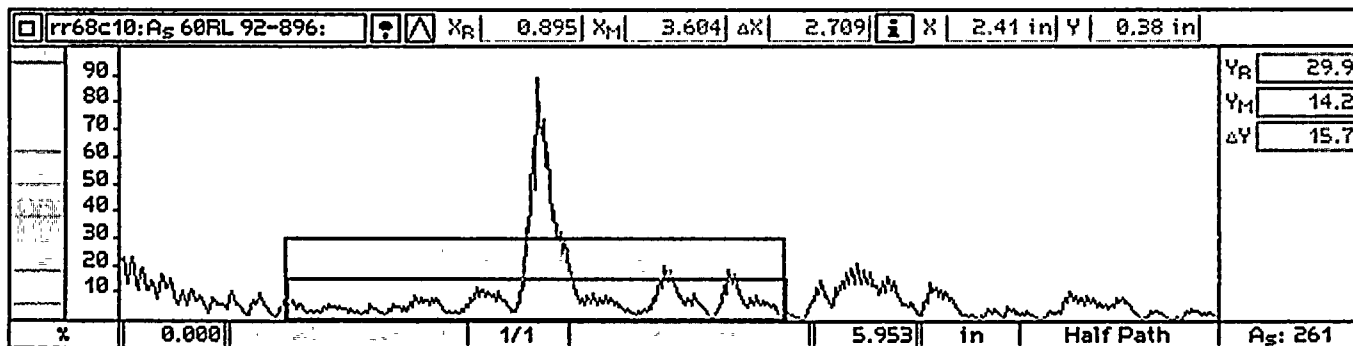
Con Uhlh 5-4-95
UTILITY REVIEW DATE

Carl Z. Jones 5/4/95
ANTI REVIEW DATE



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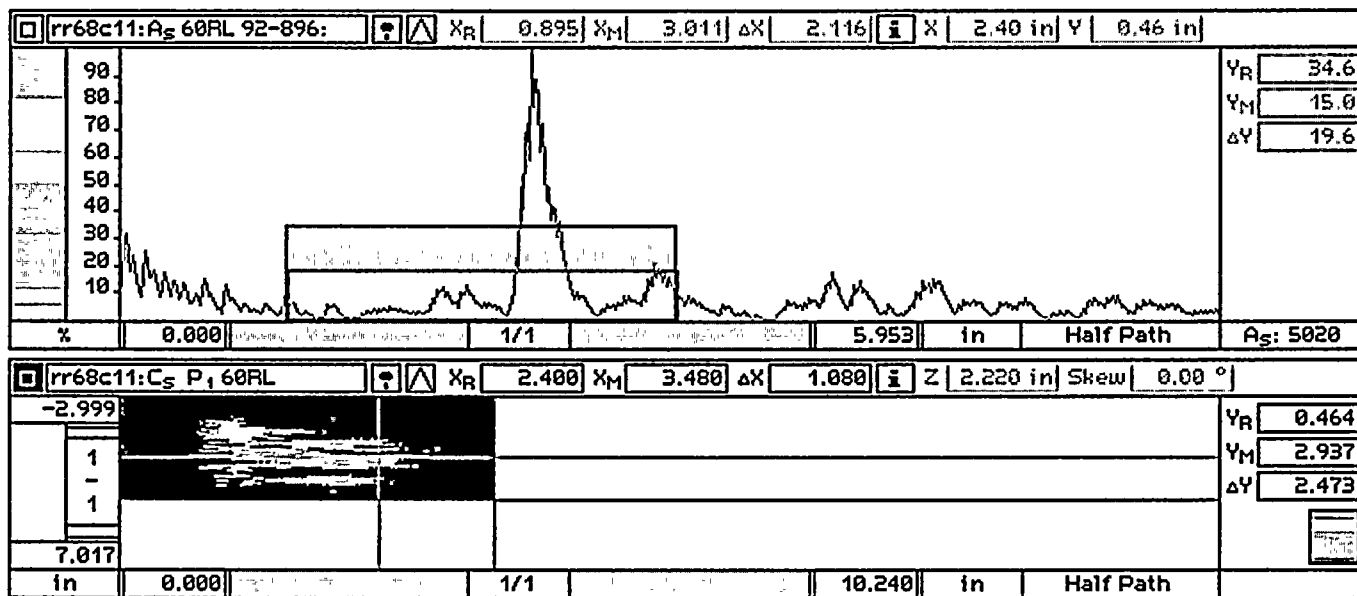
Non-Geometric Indication (Planar Indication #1 Base Reflector)

SITE: WNP UNIT: 2 PROJECT NO.: 10782 REPORT NO.: R-R10-001
WELD NO.: 20RRC(6)-8 SEARCH UNIT: 60°/RL INDICATION NO.: 1 PAGE: 6 OF: 15



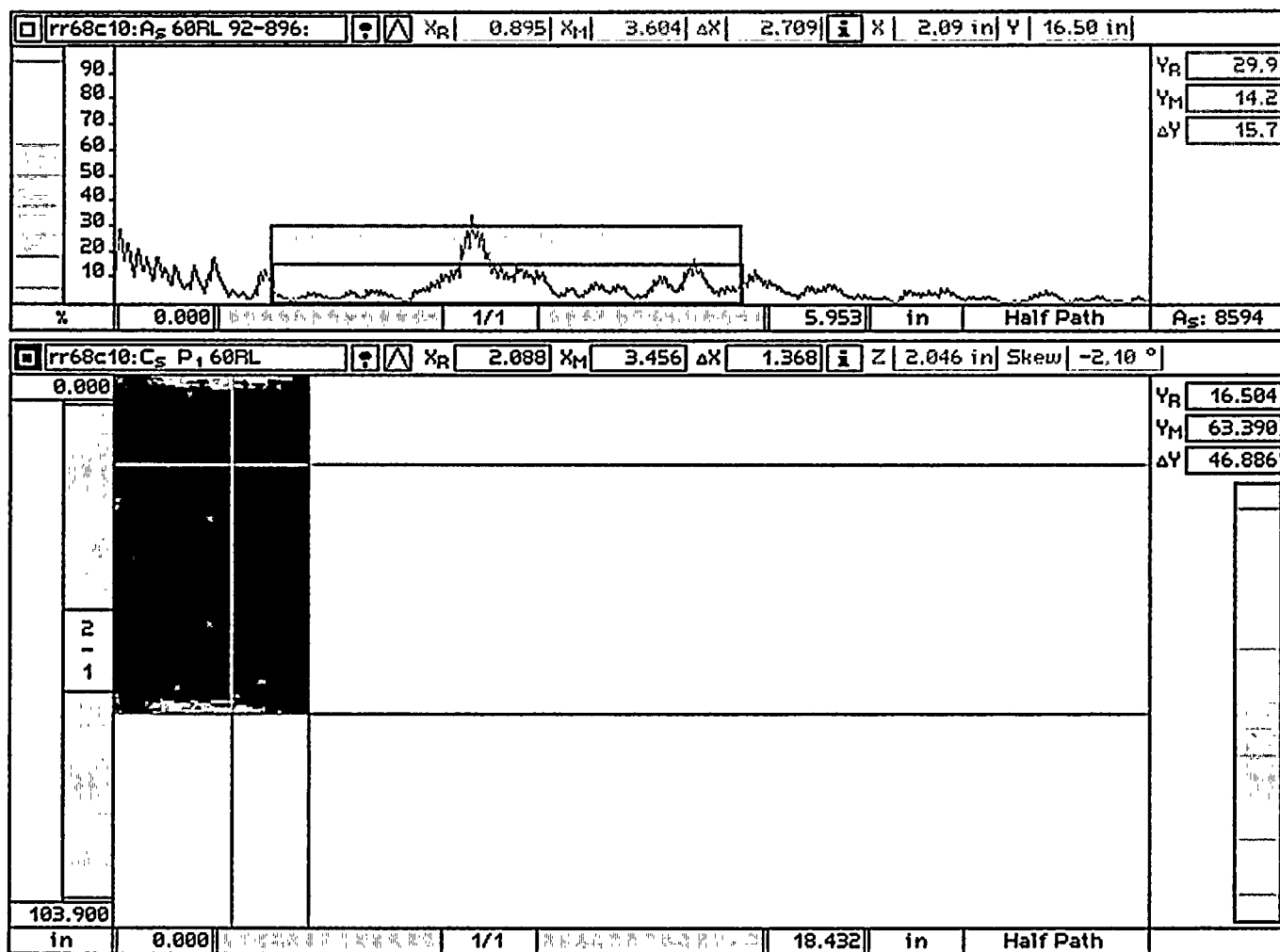
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ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



Non-Geometric Indication (Planar Indication #1 Base Reflector)

SITE: WNP UNIT: 2 PROJECT NO.: 1D782 REPORT NO.: R-R10-001
WELD NO.: 20RRC(6)-8 SEARCH UNIT: 60°/RL INDICATION NO.: 1 PAGE: 7 OF: 15



Inside Surface Geometry



ULTRASONIC SCAN DATA PRINT SHEET

(AUTOMATED WITH *Smart 2000*)



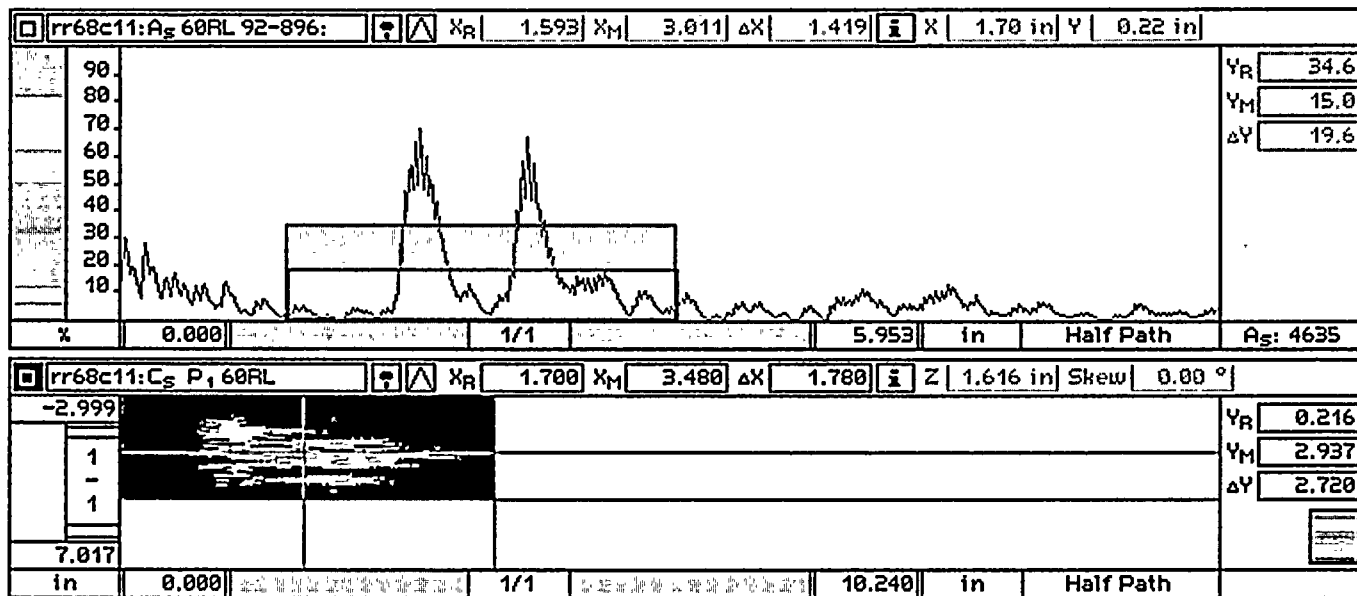
SITE: WNP UNIT: 2 PROJECT NO.: 1D782 REPORT NO.: R-R10-001
WELD NO.: 20RRC(6)-8 SEARCH UNIT: 60" / RL INDICATION NO.: 3 PAGE: 9 OF: 15





GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



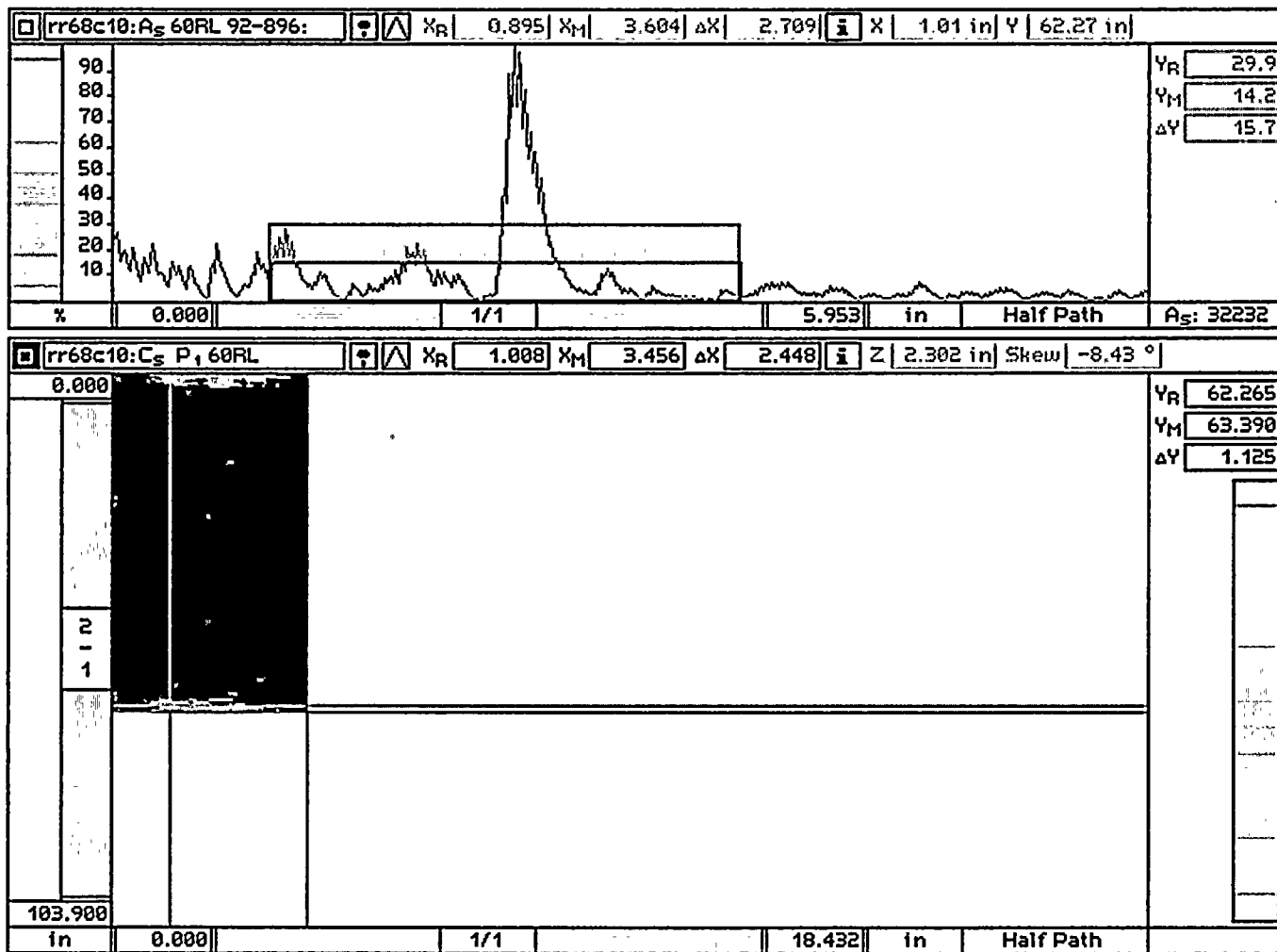
Non-Geometric Indication (Planar Indication #1 Tip Reflector)

SITE: WNP UNIT: 2 PROJECT NO.: 10782 REPORT NO.: R-R10-001
WELD NO.: 20RRC(6)-8 SEARCH UNIT: 60°/RL INDICATION NO.: 3 PAGE: 10 OF: 15



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



Shear Component to Non-Geometric Indication (Planar Indication #1 Base Reflector)

SITE: WNP UNIT: 2 PROJECT NO.: 10782 REPORT NO.: R-R10-001
WELD NO.: 20RRC(6)-8 SEARCH UNIT: 60°/RL INDICATION NO.: 4 PAGE: 11 OF: 15



GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET
(AUTOMATED WITH Smart 2000)SITE: WNP
UNIT: 2
PROJECT NO.: 1D782PROCEDURE NO.: UT-WNP2-208V0
REVISION NO.: 0
FRR NO.: N/AREPORT NO.: R-R10-001
DATA SHEET NO.: DA-R10-001
CALIBRATION SHEET NO.: CA-R10-001SYSTEM: RECIRCULATION EXAM SURFACE TEMP: 85 °F COUPLANT: ULTRAGEL II EXAM START: 21:33
WELD ID: 20RRC(6)-8 THERMOMETER S/N: 148482 BATCH NO.: 094041 EXAM END: 23:59
SEARCH UNIT: 45° / SHR EXAMINATION SURFACE: QD COMPONENT: PIPE FLOW VALVESCAN: A10 SCAN DIRECTION: AXUP GAIN(dB): 26.0DISK/SIDE: D-01/A FILENAME(S): RR68A10
EXAMINATION RESULTS: N/A

- | | |
|--|---|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☐ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☒ NON-GEOMETRIC INDICATIONS |
| ☒ NON-RELEVANT INDICATIONS | ☒ OTHER: <u>BEAM REDIRECT</u> |

COMMENTS:

N/ASCAN: A11 SCAN DIRECTION: AXUP GAIN(dB): 24.0DISK/SIDE: D-01/A FILENAME(S): RR68A11
EXAMINATION RESULTS: N/A

- | | |
|--|---|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☐ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☒ NON-GEOMETRIC INDICATIONS |
| ☒ NON-RELEVANT INDICATIONS | ☒ OTHER: <u>BEAM REDIRECT</u> |

COMMENTS:

Supplemental scan to enhance indication.SCAN: A12 SCAN DIRECTION: AXUP GAIN(dB): 26.0DISK/SIDE: D-01/A FILENAME(S): RR68A12
EXAMINATION RESULTS: N/A

- | | |
|--|---|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☐ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☒ NON-GEOMETRIC INDICATIONS |
| ☒ NON-RELEVANT INDICATIONS | ☒ OTHER: <u>BEAM REDIRECT</u> |

COMMENTS:

Supplemental scan to enhance indication.SCAN: A13 SCAN DIRECTION: AXUP GAIN(dB): 26.0DISK/SIDE: D-01/A FILENAME(S): RR68A13
EXAMINATION RESULTS: N/A

- | | |
|--|---|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☐ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☒ NON-GEOMETRIC INDICATIONS |
| ☒ NON-RELEVANT INDICATIONS | ☒ OTHER: <u>BEAM REDIRECT</u> |

COMMENTS:

Supplemental scan to enhance indication.SCAN: A50 SCAN DIRECTION: CWUP GAIN(dB): 26.0DISK/SIDE: D-01/A FILENAME(S): RR68A50
EXAMINATION RESULTS: N/A

- | | |
|--|--|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☐ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☐ NON-GEOMETRIC INDICATIONS |
| ☒ NON-RELEVANT INDICATIONS | ☐ OTHER: <u>N/A</u> |

COMMENTS:

N/ASCAN: A70 SCAN DIRECTION: CCUP GAIN(dB): 26.0DISK/SIDE: D-01/A FILENAME(S): RR68A70
EXAMINATION RESULTS: N/A

- | | |
|--|--|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☐ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☐ NON-GEOMETRIC INDICATIONS |
| ☒ NON-RELEVANT INDICATIONS | ☐ OTHER: <u>N/A</u> |

COMMENTS:

N/AREMARKS: Note 1: No examination was performed downstream due to the valve configuration.

EXAMINER

II 5-3-95
LEVEL DATE

GE REVIEWED BY

III 5-4-95
LEVEL DATE

UTILITY REVIEW

ANIL REVIEW

5-4-95
DATE5-4-95
DATEPAGE: 12 OF: 15

FORM UT-07 REV. 6



GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET
(AUTOMATED WITH Smart 2000)SITE: WNP
UNIT: 2
PROJECT NO.: 1D782PROCEDURE NO.: UT-WNP2-208V0
REVISION NO.: 0
FRR NO.: N/AREPORT NO.: R-R10-001
DATA SHEET NO.: DA-R10-002
CALIBRATION SHEET NO.: CA-R10-002SYSTEM: RECIRCULATION EXAM SURFACE TEMP: 85 °F COUPLANT: ULTRAGEL II EXAM START: 01:00
WELD ID: 20RRC(6)-8 THERMOMETER S/N: 148482 BATCH NO.: 094041 EXAM END: 01:44
SEARCH UNIT: 60°/RL EXAMINATION SURFACE: QD COMPONENT: PIPE FLOW: VALVESCAN: C10 SCAN DIRECTION: LKDN GAIN(dB): 36.0°DISK/SIDE: D-01/A FILENAME(S): RR68C10
N/A

EXAMINATION RESULTS:

- | | |
|--|---|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☒ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☒ NON-GEOMETRIC INDICATIONS |
| ☒ NON-RELEVANT INDICATIONS | ☒ OTHER: <u>SHEAR COMPONENT</u> |

COMMENTS:

See note 1SCAN: C11 SCAN DIRECTION: LKDN GAIN(dB): 36.0°DISK/SIDE: D-01/A FILENAME(S): RR68C11
N/A

EXAMINATION RESULTS:

- | | |
|---|---|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☐ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☒ NON-GEOMETRIC INDICATIONS |
| ☐ NON-RELEVANT INDICATIONS | ☒ OTHER: <u>SHEAR COMPONENT</u> |

COMMENTS:

Supplemental scan to enhance indication.
See note 1SCAN: N/A SCAN DIRECTION: N/A GAIN(dB): N/ADISK/SIDE: N/A FILENAME(S): N/A

EXAMINATION RESULTS:

- | | |
|---|--|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☐ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☐ NON-GEOMETRIC INDICATIONS |
| ☐ NON-RELEVANT INDICATIONS | ☐ OTHER: <u>N/A</u> |

COMMENTS:

N/ASCAN: N/A SCAN DIRECTION: N/A GAIN(dB): N/ADISK/SIDE: N/A FILENAME(S): N/A

EXAMINATION RESULTS:

- | | |
|---|--|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☐ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☐ NON-GEOMETRIC INDICATIONS |
| ☐ NON-RELEVANT INDICATIONS | ☐ OTHER: <u>N/A</u> |

COMMENTS:

N/ASCAN: N/A SCAN DIRECTION: N/A GAIN(dB): N/ADISK/SIDE: N/A FILENAME(S): N/A

EXAMINATION RESULTS:

- | | |
|---|--|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☐ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☐ NON-GEOMETRIC INDICATIONS |
| ☐ NON-RELEVANT INDICATIONS | ☐ OTHER: <u>N/A</u> |

COMMENTS:

N/ASCAN: N/A SCAN DIRECTION: N/A GAIN(dB): N/ADISK/SIDE: N/A FILENAME(S): N/A

EXAMINATION RESULTS:

- | | |
|---|--|
| ☐ NO RECORDED INDICATIONS | ☐ ACOUSTIC INTERFACE |
| ☐ ROOT GEOMETRY | ☐ INSIDE SURFACE GEOMETRY |
| ☐ COUNTERBORE GEOMETRY | ☐ NON-GEOMETRIC INDICATIONS |
| ☐ NON-RELEVANT INDICATIONS | ☐ OTHER: <u>N/A</u> |

COMMENTS:

N/AREMARKS: No examination was performed downstream due to the valve configuration.Note 1: Scan performed at gain level below primary reference sensitivity in order to maintain 10-30% baseline noise level.

EXAMINER

IL 5-4-95
LEVEL DATE

UTILITY REVIEW

5-4-95
DATE

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III 5-4-95
LEVEL DATE

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5-4-95
DATEPAGE: 13 OF: 15

FORM UT-07 REV. 6



GE Nuclear Energy

ULTRASONIC SCAN PARAMETER SHEET
(AUTOMATED WITH Smart 2000)

SITE: WNP PROCEDURE NO.: UT-WNP2-208V0 REPORT NO.: R-R10-001
UNIT: 2 REVISION NO.: 0 DATA SHEET NO.: DA-R10-001
PROJECT NO.: ID782 FRR NO.: N/A CALIBRATION SHEET NO.: CA-R10-001

SYSTEM: RECIRCULATION WELD ID: 20RRC(6)-8 MOTOR STEPS: CIR: 485.22/in TRA: 500.00/in
WELD REFERENCE, (GE-ADM-1005): Lo: TOP DEAD CENTER Wo: WELD CENTERLINE SEARCH UNIT: 45°/SHR

EXAMINATION SETUP

COMPONENT DIA: 20.0" WELD LENGTH: 63.0" TRACK DIA: 24.0" ARM LENGTH: 12.0" TRACK LOCATION: 9.0" UPST FROM WELD CENTERLINE

SCAN PARAMETERS

SCAN: <u>A10</u>	SCAN DIRECTION: <u>AXUP</u>	SKEW: <u>0±10°</u>	SCAN: <u>A11</u>	SCAN DIRECTION: <u>AXUP</u>	SKEW: <u>0°</u>
<u>SCANNING "X": INDEXING "Y":</u>			<u>SCANNING "X": INDEXING "Y":</u>		
START: <u>0"</u>	<u>0"</u>	<u>SCANNER ZERO POSITIONS:</u>	START: <u>0"</u>	<u>0"</u>	<u>SCANNER ZERO POSITIONS:</u>
SIZE: <u>3.25"</u>	<u>63.5"</u>		SIZE: <u>3.25"</u>	<u>9.0"</u>	
OFFSET: <u>0"</u>	<u>0"</u>	CIR: <u>TOP DEAD CENTER</u>	OFFSET: <u>0"</u>	<u>-4.0"</u>	CIR: <u>4.0" CCW FROM TOP DEAD CENTER</u>
RESOLUTION: <u>0380"</u>	<u>2020"</u>	TRA: <u>WELD CENTERLINE</u>	RESOLUTION: <u>0200"</u>	<u>1236"</u>	TRA: <u>WELD CENTERLINE</u>
MOTOR DIR.: <u>INVERSE</u>	<u>NORMAL</u>	ROT: <u>LOOKING DOWNSTREAM</u>	MOTOR DIR.: <u>INVERSE</u>	<u>NORMAL</u>	ROT: <u>LOOKING DOWNSTREAM</u>
SCAN: <u>A12</u>	SCAN DIRECTION: <u>AXUP</u>	SKEW: <u>0°</u>	SCAN: <u>A13</u>	SCAN DIRECTION: <u>AXUP</u>	SKEW: <u>0±10°</u>
<u>SCANNING "X": INDEXING "Y":</u>			<u>SCANNING "X": INDEXING "Y":</u>		
START: <u>0"</u>	<u>0"</u>	<u>SCANNER ZERO POSITIONS:</u>	START: <u>0"</u>	<u>0"</u>	<u>SCANNER ZERO POSITIONS:</u>
SIZE: <u>3.25"</u>	<u>8.0"</u>		SIZE: <u>3.25"</u>	<u>6.0"</u>	
OFFSET: <u>0"</u>	<u>-3.0"</u>	CIR: <u>3.0" CCW FROM TOP DEAD CENTER</u>	OFFSET: <u>0"</u>	<u>-3.0"</u>	CIR: <u>3.0" CCW FROM TOP DEAD CENTER</u>
RESOLUTION: <u>0200"</u>	<u>1236"</u>	TRA: <u>WELD CENTERLINE</u>	RESOLUTION: <u>0200"</u>	<u>1236"</u>	TRA: <u>WELD CENTERLINE</u>
MOTOR DIR.: <u>INVERSE</u>	<u>NORMAL</u>	ROT: <u>LOOKING DOWNSTREAM</u>	MOTOR DIR.: <u>INVERSE</u>	<u>NORMAL</u>	ROT: <u>LOOKING DOWNSTREAM</u>
SCAN: <u>A50</u>	SCAN DIRECTION: <u>CWUP</u>	SKEW: <u>50±10°</u>	SCAN: <u>A70</u>	SCAN DIRECTION: <u>CCUP</u>	SKEW: <u>-50±10°</u>
<u>SCANNING "X": INDEXING "Y":</u>			<u>SCANNING "X": INDEXING "Y":</u>		
START: <u>0"</u>	<u>25"</u>	<u>SCANNER ZERO POSITIONS:</u>	START: <u>0"</u>	<u>25"</u>	<u>SCANNER ZERO POSITIONS:</u>
SIZE: <u>63.5"</u>	<u>2.35"</u>		SIZE: <u>63.5"</u>	<u>2.35"</u>	
OFFSET: <u>0"</u>	<u>0"</u>	CIR: <u>TOP DEAD CENTER</u>	OFFSET: <u>0"</u>	<u>0"</u>	CIR: <u>TOP DEAD CENTER</u>
RESOLUTION: <u>0350"</u>	<u>2400"</u>	TRA: <u>WELD CENTERLINE</u>	RESOLUTION: <u>0350"</u>	<u>2400"</u>	TRA: <u>WELD CENTERLINE</u>
MOTOR DIR.: <u>NORMAL</u>	<u>INVERSE</u>	ROT: <u>LOOKING DOWNSTREAM</u>	MOTOR DIR.: <u>NORMAL</u>	<u>INVERSE</u>	ROT: <u>LOOKING DOWNSTREAM</u>

REMARKS: * No skew oscillation during scans A11 and A12 to enhance indication signal response.

No examination was performed downstream due to the valve configuration.

48" Shear scans zeroed .25" upstream from actual weld centerline location.

EXAMINER

II
LEVEL5-3-95
DATE

UTILITY REVIEW

5-4-95
DATE

GE REVIEWED BY

III
LEVEL5-4-95
DATE

ANII REVIEW

5-4-95
DATE

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GE Nuclear Energy

ULTRASONIC SCAN PARAMETER SHEET
(AUTOMATED WITH Smart 2000)

SITE: <u>WNP</u>	PROCEDURE NO.: <u>UT-WNP2-208V0</u>	REPORT NO.: <u>R-R10-001</u>
UNIT: <u>2</u>	REVISION NO.: <u>0</u>	DATA SHEET NO.: <u>DA-R10-002</u>
PROJECT NO.: <u>1D782</u>	FRR NO.: <u>N/A</u>	CALIBRATION SHEET NO.: <u>CA-R10-002</u>

SYSTEM: RECIRCULATION WELD ID: 20RRC(6)-8 MOTOR STEPS: CIR: 485.22 / in TRA: 500.00 / in
WELD REFERENCE, (GE-ADM-1005): Lo: TOP DEAD CENTER Wo: WELD CENTERLINE SEARCH UNIT: 60° / RL

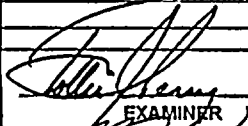
EXAMINATION SETUP

COMPONENT DIA: 20.0" WELD LENGTH: 63.0" TRACK DIA: 24.0" ARM LENGTH: 12.0" TRACK LOCATION: 9.0" UPST FROM WELD CENTERLINE

SCAN PARAMETERS

SCAN: <u>C10</u>	SCAN DIRECTION: <u>LKDN</u>	SKEW: <u>0±10°</u>	SCAN: <u>C11</u>	SCAN DIRECTION: <u>LKDN</u>	SKEW: <u>0°</u>
SCANNING "X": INDEXING "Y":			SCANNING "X": INDEXING "Y":		
START: <u>0"</u>	<u>0"</u>	SCANNER ZERO POSITIONS:	START: <u>0"</u>	<u>0"</u>	SCANNER ZERO POSITIONS:
SIZE: <u>3.5"</u>	<u>63.5"</u>		SIZE: <u>3.5"</u>	<u>6.0"</u>	
OFFSET: <u>0"</u>	<u>0"</u>	CIR: <u>TOP DEAD CENTER</u>	OFFSET: <u>0"</u>	<u>-3.0"</u>	CIR: <u>3.0" CCW FROM TOP DEAD CENTER</u>
RESOLUTION: <u>0360°</u>	<u>1875"</u>	TRA: <u>WELD CENTERLINE</u>	RESOLUTION: <u>0200°</u>	<u>1236"</u>	TRA: <u>WELD CENTERLINE</u>
MOTOR DIR.: <u>INVERSE</u>	<u>NORMAL</u>	ROT: <u>LOOKING DOWNSTREAM</u>	MOTOR DIR.: <u>INVERSE</u>	<u>NORMAL</u>	ROT: <u>LOOKING DOWNSTREAM</u>
SCAN: <u>N/A</u>	SCAN DIRECTION: <u>N/A</u>	SKEW: <u>N/A</u>	SCAN: <u>N/A</u>	SCAN DIRECTION: <u>N/A</u>	SKEW: <u>N/A</u>
SCANNING "X": INDEXING "Y":			SCANNING "X": INDEXING "Y":		
START: <u>N/A</u>	<u>N/A</u>	SCANNER ZERO POSITIONS:	START: <u>N/A</u>	<u>N/A</u>	SCANNER ZERO POSITIONS:
SIZE: <u>N/A</u>	<u>N/A</u>		SIZE: <u>N/A</u>	<u>N/A</u>	
OFFSET: <u>N/A</u>	<u>N/A</u>	CIR: <u>N/A</u>	OFFSET: <u>N/A</u>	<u>N/A</u>	CIR: <u>N/A</u>
RESOLUTION: <u>N/A</u>	<u>N/A</u>	TRA: <u>N/A</u>	RESOLUTION: <u>N/A</u>	<u>N/A</u>	TRA: <u>N/A</u>
MOTOR DIR.: <u>N/A</u>	<u>N/A</u>	ROT: <u>N/A</u>	MOTOR DIR.: <u>N/A</u>	<u>N/A</u>	ROT: <u>N/A</u>
SCAN: <u>N/A</u>	SCAN DIRECTION: <u>N/A</u>	SKEW: <u>N/A</u>	SCAN: <u>N/A</u>	SCAN DIRECTION: <u>N/A</u>	SKEW: <u>N/A</u>
SCANNING "X": INDEXING "Y":			SCANNING "X": INDEXING "Y":		
START: <u>N/A</u>	<u>N/A</u>	SCANNER ZERO POSITIONS:	START: <u>N/A</u>	<u>N/A</u>	SCANNER ZERO POSITIONS:
SIZE: <u>N/A</u>	<u>N/A</u>		SIZE: <u>N/A</u>	<u>N/A</u>	
OFFSET: <u>N/A</u>	<u>N/A</u>	CIR: <u>N/A</u>	OFFSET: <u>N/A</u>	<u>N/A</u>	CIR: <u>N/A</u>
RESOLUTION: <u>N/A</u>	<u>N/A</u>	TRA: <u>N/A</u>	RESOLUTION: <u>N/A</u>	<u>N/A</u>	TRA: <u>N/A</u>
MOTOR DIR.: <u>N/A</u>	<u>N/A</u>	ROT: <u>N/A</u>	MOTOR DIR.: <u>N/A</u>	<u>N/A</u>	ROT: <u>N/A</u>

REMARKS: * No skew oscillation during scan C11 to enhance indication signal response.
No examination was performed downstream due to the valve configuration.

 EXAMINER	<u>II</u> LEVEL	<u>5-4-95</u> DATE	 UTILITY REVIEW	<u>5-4-95</u> DATE
 GE REVIEWED BY	<u>III</u> LEVEL	<u>5-4-95</u> DATE	 ANII REVIEW	<u>5/4/95</u> DATE

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GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET (AUTOMATED WITH Smart 2000)

SITE: WNP UNIT: 2 CALIBRATION SHEET NO.: CA-R10-001
PROJECT NO.: 1D782 LINEARITY SHEET NO.: L-003

PROCEDURE NO.: UT-WNP2-208V0 REVISION: 0 FRR: N/A

Instrument TECRAD / TOMOSCAN TTS10090114
Manufacturer / Model System Serial No.
Search Unit KBA A12408 500" 2.25 MHz 45° / SHR 500"
Manufacturer Serial No. Size Freq. Angle/Mode Incident to wedge front
Cable RG-58, RG-58, RG-174 250', 25', 3' 4
Type Length No. of Connectors
Calibration Standard UT-09 SS 1.031" 75 °F
Serial No. Material Thickness Temp.
Thermometer 148482
Serial No.
Couplant ULTRAGEL II 094041
Type Batch No.

CALIBRATION

ORIENTATION: CIRC AXIAL
TYPE: ID / OD / ID ID NOTCH
DEPTH: 1.15" / 2.30" / 3.45" 1.150"
AMPLITUDE: 80% / 25.2% / 6.3% 80%
SWEEP: 1.70" / 3.25" / 4.72" 1.723"
GAIN: (dB) 24.0 24.0
☐ TIME ☐ DEPTH ☒ METAL PATH

BASIC SETTINGS

1. DELAY: .5391 in
2. TIMEBASE: 6.1682 in
3. FREQUENCY: (MHz) 5.00
4. RATE: /S 50.0
5. UNITS: ☐ DISTANCE ☒ HALF PATH ☐ TIME
6. VELOCITY: 120472 in/s
7. SAMPLES: 512

FIELD SIMULATOR: RHOMPAS S/N: CAL-RHOM-021

REFLECTOR:	NEAR SDH	FAR SDH
MAX AMPLITUDE:	80%	80%
SWEEP:	.482"	1.072"
GAIN: (dB)	20.0	19.0

PULSER / RECEIVER

1. MODE: ☒ PULSE ECHO ☐ THRU-TRANSMISSION
2. PULSER: P1 TO P1
3. VOLTAGE: (v) 400
4. WIDTH: (Ns) 228
5. FILTER: ☐ NONE ☐ 0.5 - 2 MHz ☒ 1 - 5 MHz
☐ 2 - 10 MHz ☐ 5 - 15 MHz
6. RECTIFICATION: ☐ NONE ☐ UNIPOLAR + ☐ UNIPOLAR -
☒ BIPOLAR
7. SMOOTHING: ☐ NONE ☐ FAST ☐ MEDIUM ☒ SLOW

CALIBRATION VERIFICATION

	TIME	DATE	OPER.	COMP. ID	REPORT NO
INITIAL	17:55	05/03/95	<u>TGP</u>	20RRC(8)-8	R-R10-001
VERIFIED					
VERIFIED					
VERIFIED					
VERIFIED					
FINAL	00:30	05/04/95	<u>TGP</u>	20RRC(8)-8	R-R10-001

Cherry II 5-3-95
EXAMINER LEVEL DATE
ME 5-4-95
GE REVIEWED BY LEVEL DATE

Con Ullrich 5-4-95
UTILITY REVIEW DATE
Paul F. L... 5-4-95
ANII REVIEW DATE



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET
(AUTOMATED WITH Smart 2000)

SITE: WNP UNIT: 2

CALIBRATION SHEET NO.: CA-R10-002

PROJECT NO.: 1D782

LINEARITY SHEET NO.: L-004

PROCEDURE NO.: UT-WNP2-208V0 REVISION: 0 FRR: N/A

Instrument TECRAD / TOMOSCAN TTS10090114
Manufacturer / Model System Serial No.

Search Unit RTD 92-896 2(10x18)mm 2.00 60° / RL .500"
Manufacturer Serial No. Size Freq. Angle/Mode Incident to wedge front

Cable 2(RG-58, RG-58, RG-174) 2(250', 25', 3') 8
Type Length No. of Connectors

Calibration Standard UT-09 SS 1.031" 75 °F
Serial No. Material Thickness Temp.

Thermometer 148482
Serial No.

Couplant ULTRAGEL II 094041
Type Batch No.

CALIBRATION

ORIENTATION: CIRC AXIAL

TYPE: ID NOTCH ID NOTCH

DEPTH: 1.150" 1.150"

AMPLITUDE: 80% 80%

SWEEP: 2.220" 2.220"

GAIN: (dB) 39.0 37.0

☐ TIME ☐ DEPTH ☒ METAL PATH

BASIC SETTINGS

1. DELAY: 1.1626 in

2. TIMEBASE: 5.9525 in

3. FREQUENCY: (MHz) 10.0

4. RATE: /S 50.0

5. UNITS: ☐ DISTANCE ☒ HALF PATH ☐ TIME

6. VELOCITY: 232519 in/s

7. SAMPLES: 512

FIELD SIMULATOR: RHOMPAS S/N: CAL-RHOM-021

REFLECTOR:	NEAR SDH	FAR SDH
MAX AMPLITUDE:	80%	80%
SWEEP:	.639"	1.418"
GAIN: (dB)	27.0	25.0

PULSER / RECEIVER

1. MODE: ☐ PULSE ECHO ☒ THRU-TRANSMISSION

2. PULSER: P2 TO R2

3. VOLTAGE: (v) 400

4. WIDTH: (Ns) 228

5. FILTER: ☐ NONE ☐ 0.5 - 2 MHz ☒ 1 - 5 MHz
☐ 2 - 10 MHz ☐ 5 - 15 MHz

6. RECTIFICATION: ☐ NONE ☐ UNIPOLAR + ☐ UNIPOLAR -
☒ BIPOLAR

7. SMOOTHING: ☐ NONE ☐ FAST ☐ MEDIUM ☒ SLOW

CALIBRATION VERIFICATION

	TIME	DATE	OPER.	COMP. ID	REPORT NO
INITIAL	00:35	05/04/95	TGP	20RRC(8)-8	R-R10-001
VERIFIED					
VERIFIED					
VERIFIED					
VERIFIED					
FINAL	01:50	05/04/95	TGP	20RRC(8)-8	R-R10-001

EXAMINER

LEVEL II DATE 5-4-95

UTILITY REVIEW

DATE 5-4-95

GE REVIEWED BY

LEVEL II DATE 5-4-95

ANII REVIEW

DATE 5-4-95

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