



Commonwealth Edison
Dresden Nuclear Power Station
6500 North Dresden Road
Morris, Illinois 60450
Telephone 815/942-2920

June 14, 1994

Mr. William T. Russell, Director
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, D. C. 20555

Attn: Document Control Desk

Subject: Ultrasonic Data Reports and Flaw Indication Maps for
the H5 Welds at Dresden, Unit 3, and Quad Cities, Unit 1
NRC Docket No. 50-249 and 50-254

- References:
- (a) D. Lister letter to T. Murley, dated June 6, 1994, Providing Response to Request for Additional Information Concerning Core Shroud Cracking at Dresden, Units 2 and 3, and Quad Cities, Units 1 and 2.
 - (b) Conference Call Between NRR and ComEd on 6-13-94, Regarding Resolution of Core Shroud Issues at Dresden, Unit 3, and Quad Cities, Unit 1.

Dear Mr. Russell

In reference (a) Commonwealth Edison (ComEd) submitted the results of the core shroud visual examinations performed at Dresden, Unit 3 and Quad Cities, Unit 1 to the NRC staff. This submittal also included the results of supplemental ultrasonic examinations used to determine the extent of the cracking observed visually at the H5 weld location at both Units. In the reference (b) conference call a request was made by NRR (Mr. Bob Herman) for a graphic representation of the areas ultrasonically examined at the H5 weld location, and the results of those examinations.

The purpose of this letter is to provide the NRC staff with a copy of the data reports for the ultrasonic examinations performed at both Dresden Unit 3, and Quad Cities Unit 1, for their information. Additionally, graphic representations of the extent and results of the examinations performed at both units are enclosed, as requested.

9407120032 940614
PDR ADDOCK 05000249
PDR

ADD

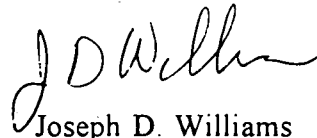
Mr. Russell

- 2 -

June 15, 1994

If there are any questions concerning this matter, please contact this office.

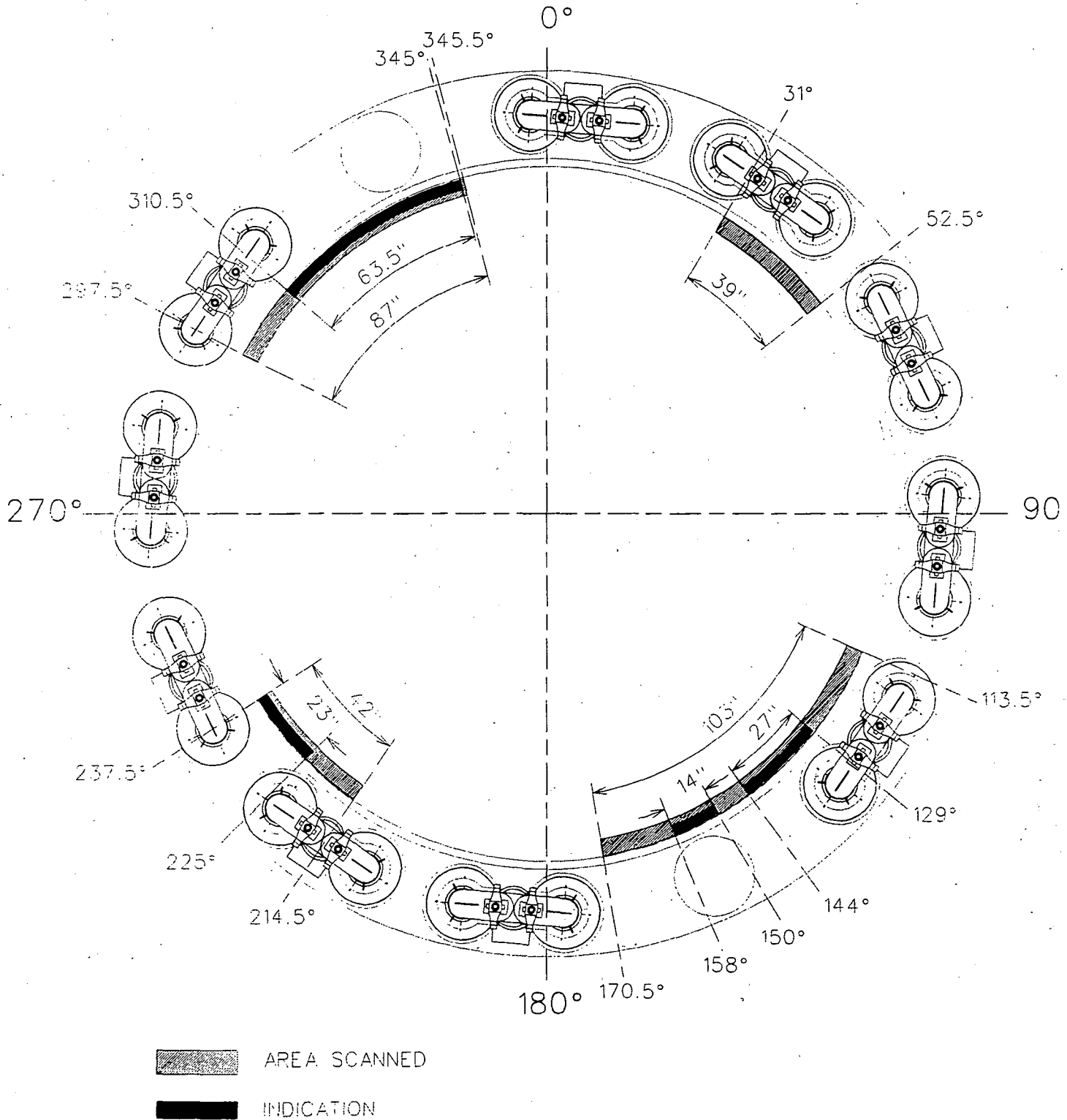
Sincerely,

A handwritten signature in cursive script, appearing to read "J D Williams".

Joseph D. Williams
Commonwealth Edison Company
Core Shroud Project Manager

cc: J. F. Stang, Project Manager - NRR
C. P. Patel, Project Manager - NRR

Dresden Unit 3
H5 Shroud Weld Ultrasonic Examination Status



50-249

DRESDEN 3

CEC

EXAMINATION SUMMARY SHEET ULTRASONIC DATA REPORTS
AND FLAW INDICATION MAPS FOR H5 WELDS

REC'D W/LTR DTD 6/14/94...9407120032

-NOTICE-

THE ATTACHED FILES ARE OFFICIAL
RECORDS OF THE INFORMATION &
REPORTS MANAGEMENT BRANCH.
THEY HAVE BEEN CHARGED TO YOU
FOR A LIMITED TIME PERIOD AND
MUST BE RETURNED TO THE RE-
CORDS & ARCHIVES SERVICES SEC-
TION P1-22 WHITE FLINT. PLEASE DO
NOT SEND DOCUMENTS CHARGED
OUT THROUGH THE MAIL. REMOVAL
OF ANY PAGE(S) FROM DOCUMENT
FOR REPRODUCTION MUST BE RE-
FERRED TO FILE PERSONNEL.

-NOTICE-



GE Nuclear Energy

EXAMINATION SUMMARY SHEET

REPORT NO.:

R-S01

PROJECT: DRESDEN UNIT 3
1EXY9

SYSTEM: SHROUD VESSEL

WELD NO.: H-5

CONFIGURATION: CIRC WELD SEAM

EXAMINER: T. ROCKWOOD LEVEL: II

EXAMINER: A. CONTI / S. ALGER LEVEL: II / II

EXAMINER: L. BOWNE LEVEL: II

PROCEDURE: GE-UT-503

REV: 0

FRR: N/A

N/A

N/A

N/A

REV: N/A

FRR: N/A

N/A

N/A

N/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): D-S01 THRU D-S03

CAL SHEET NO.(S): C-S01 THRU C-S04

During the examination of the referenced weld, four (4) indications associated with IGSCC were recorded by the Smart 2000 system utilizing 45° shear wave and 60° refracted longitudinal wave search units.

These indications have the following parameters:

Indication Number	Distance From Lo	Total Length	Remaining* Ligament	Flaw Depth	Side of Weld	Flaw Type	Search Unit
1	128.93°/233.04"	14.84°/26.82"	2.55"	.45"	Lower	IGSCC	60°RL
2	150.11°/271.32"	7.85°/14.19"	2.70"	.30"	Lower	IGSCC	60°RL
3	225.11°/406.89"	12.61°/22.79"	2.53"	.47"	Lower	IGSCC	60°RL
4	310.41°/561.07"	35.16°/63.55"	2.16"	.84"	Lower	IGSCC	60°RL

The indications above, though recorded separately due to limitations, are considered the same indication.

* Remaining Ligament is the thruwall subtracted from the plate thickness (2.0") plus the 1.0" fillet weld on the inside surface.

This examination was performed from both sides of the weld which covered 270.75" (41.6%) of the 650.69" total weld length. The sum of the indications recorded above extend for a total length of 127.35" (19.5%).

The 45° shear wave search unit also recorded non-relevant indications, inside surface and outside surface weld crown geometry, and welding discontinuities from both the upper and lower sides of the weld.

The 60° RL also recorded non-relevant indications, inside surface weld crown geometry, and welding discontinuities from both the upper and lower sides of the weld.

No examination was performed from 0° to 31°, 52.5° to 113.5°, 170.5° to 214.5°, 237.7° to 297.5°, 345.6° to 360° due to one of the following limitations: Guide rods, Instrumentation lines, or Core Spray Downcomers.

Circumferential (L) dimensions for all the examinations were recorded in angular units. The conversion factor for inches to degrees is 1.8075 inches per degree.

☐ EXAM COMPLETE

☒ PARTIALLY EXAMINED (EXPLAIN IN COMMENTS)

☐ EXAM COMPLETE IN COMBINATION WITH DATA SHEETS BELOW

RWP NO.: 40704

ADDITIONAL DATA SHEETS: N/A

NO. OF RECORDABLE INDICATIONS: 4

COMPARED TO: ☐ PSI ☐ ISI REPORT NO.(S): N/A

☐ NO CHANGE

TOTAL DOSE

EXAMINATION RESULTS: ☐ ACCEPTABLE

☐ UNACCEPTABLE

NO. OF REPORTABLE INDICATIONS: 4

.010 MAN REM

SUMMARY BY

LEVEL

DATE

GE REVIEWED BY

LEVEL

DATE

UTILITY ISI ENGINEER REVIEW

DATE

UTILITY QA REVIEW

DATE

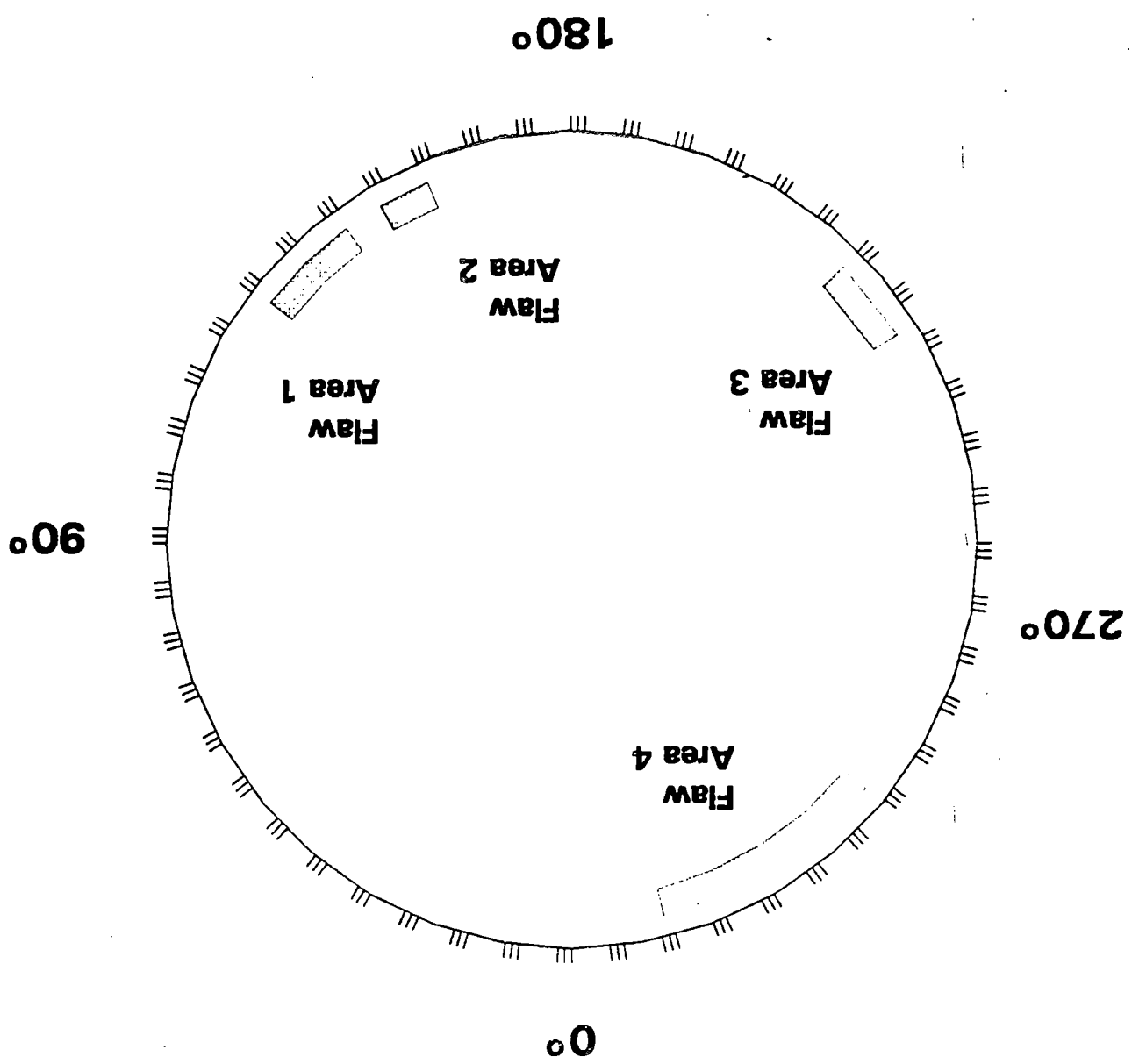
ANII REVIEW

DATE

PAGE: 1 OF: 37

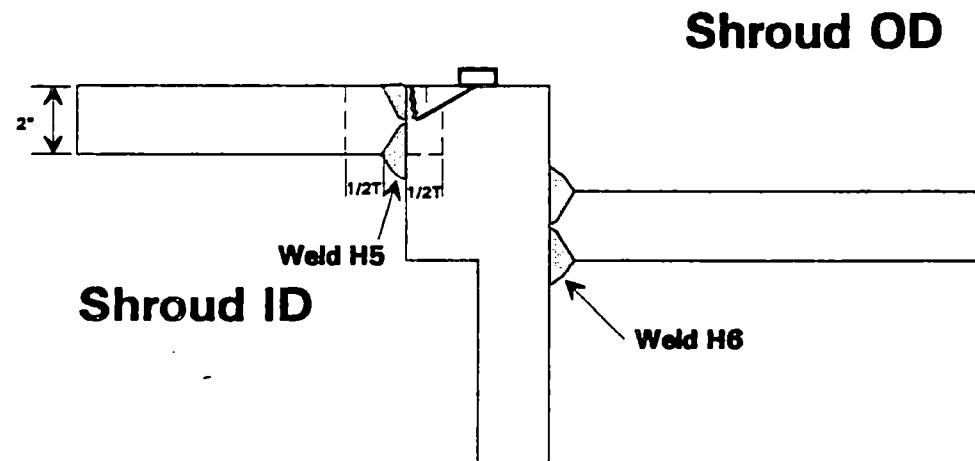
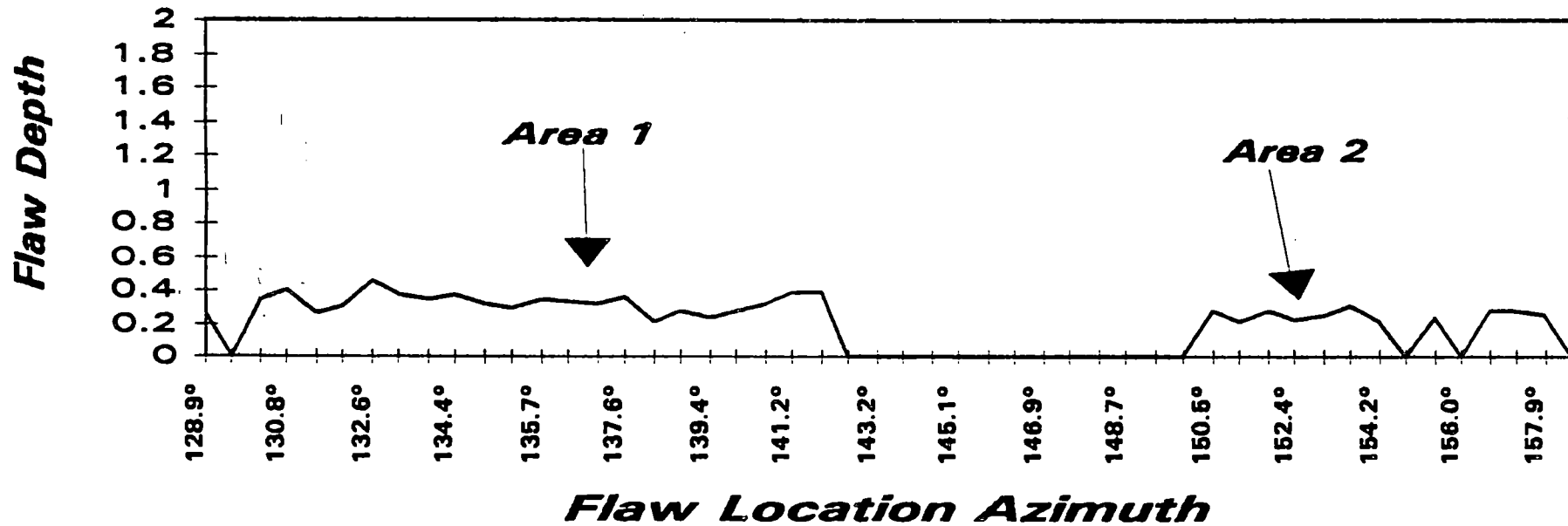
FORM UT-09 REV 1

Dresden 3 Shroud Weld H5 Flaw Location By Azimuth



Dresden 3 Shroud Weld H5

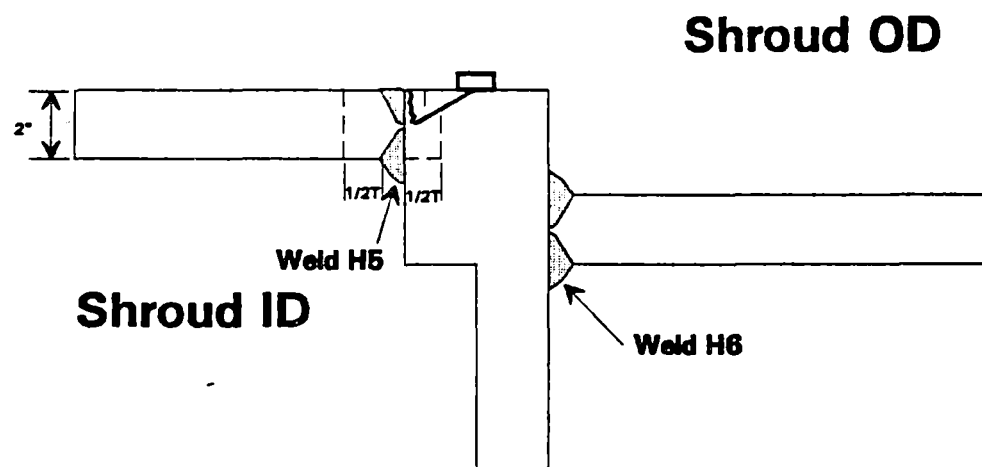
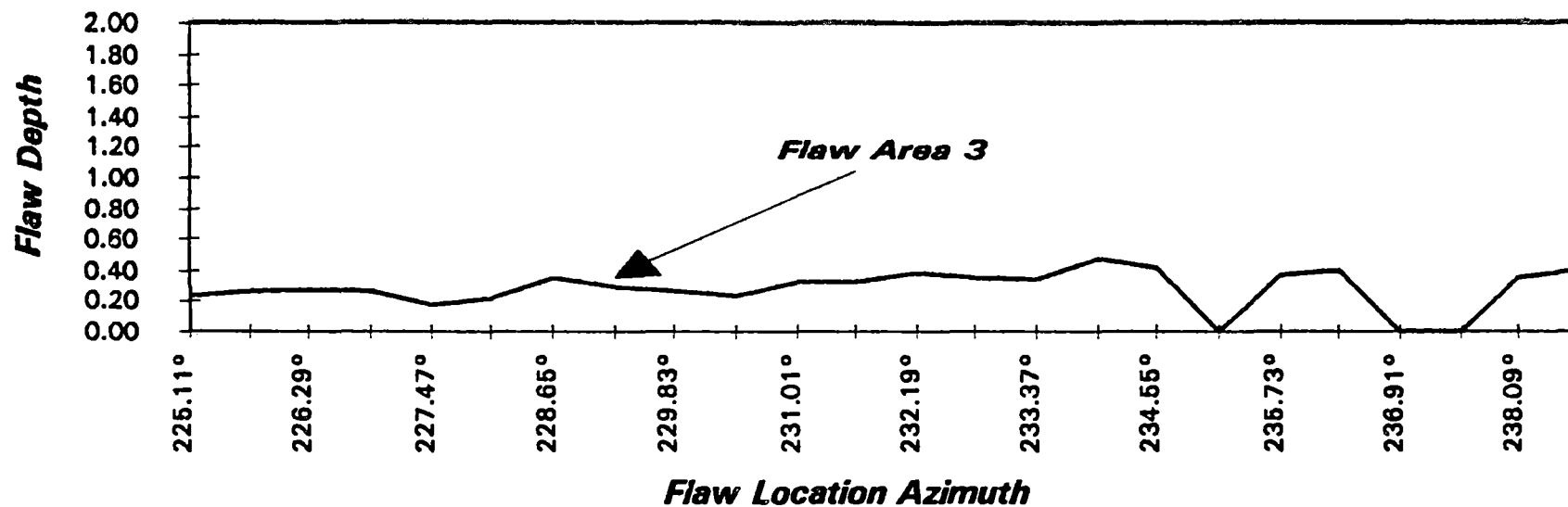
Azimuths 128° to 158°



R-501

Dresden 3 Shroud Weld H5

Azimuths 225° to 239°

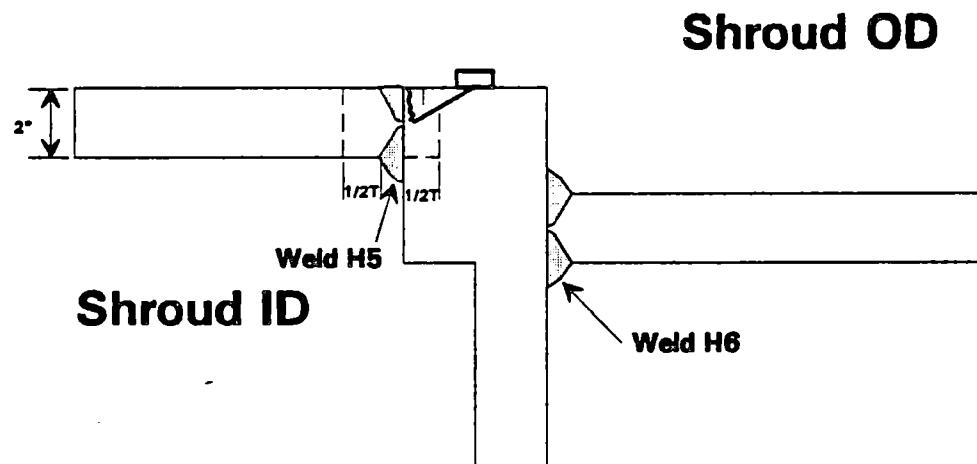
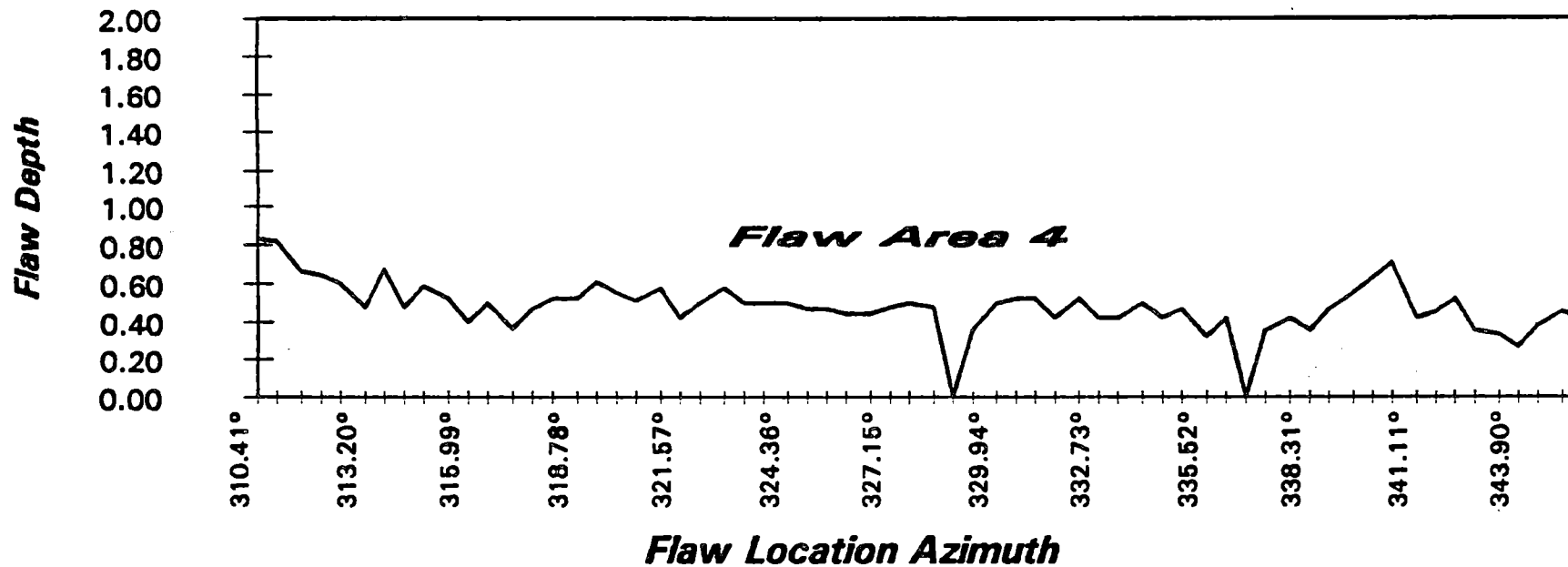


R-501

4 OF 37

Dresden 3 Shroud Weld H5

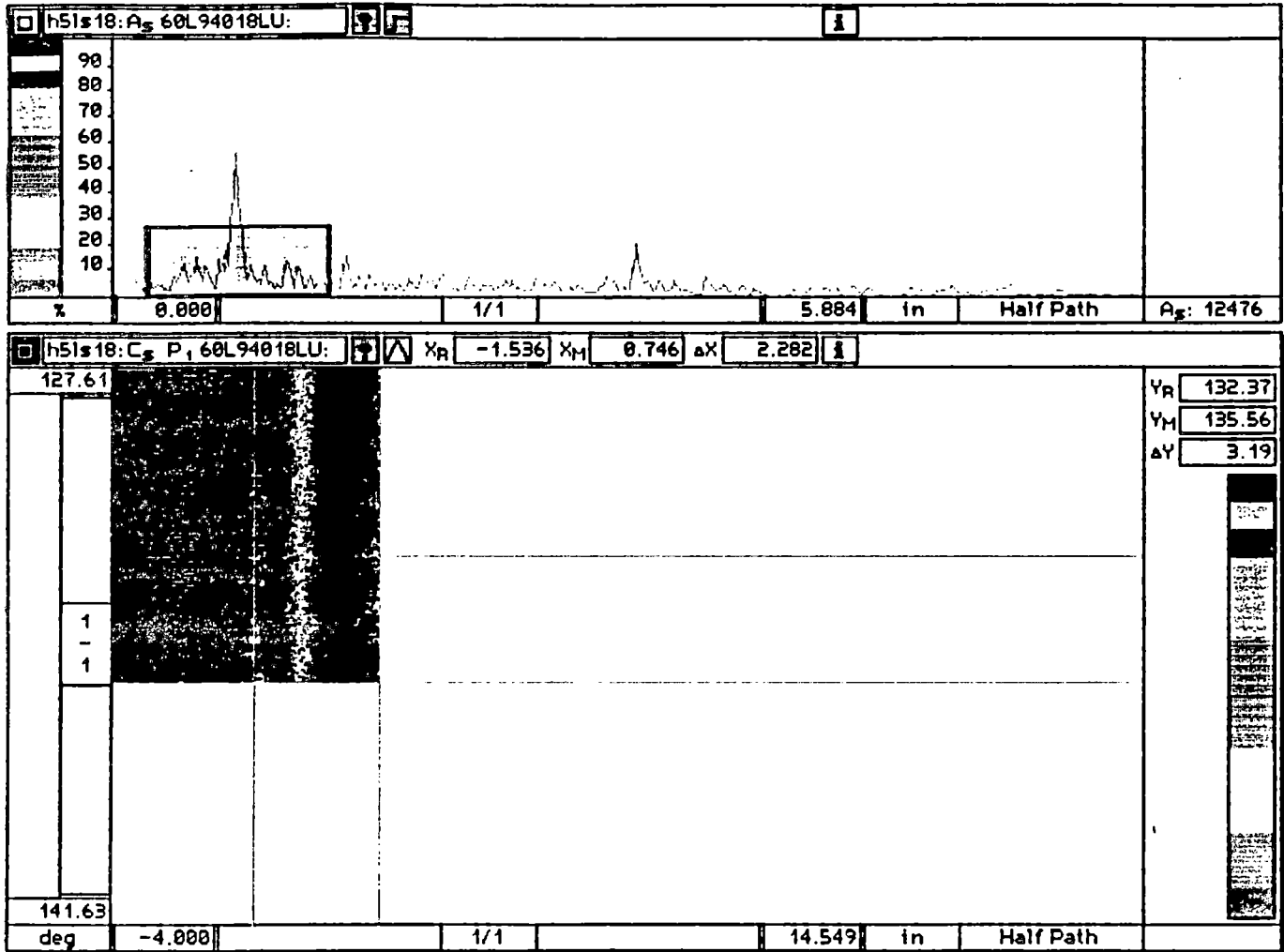
Azimuths 310° to 345°





GE Nuclear Energy

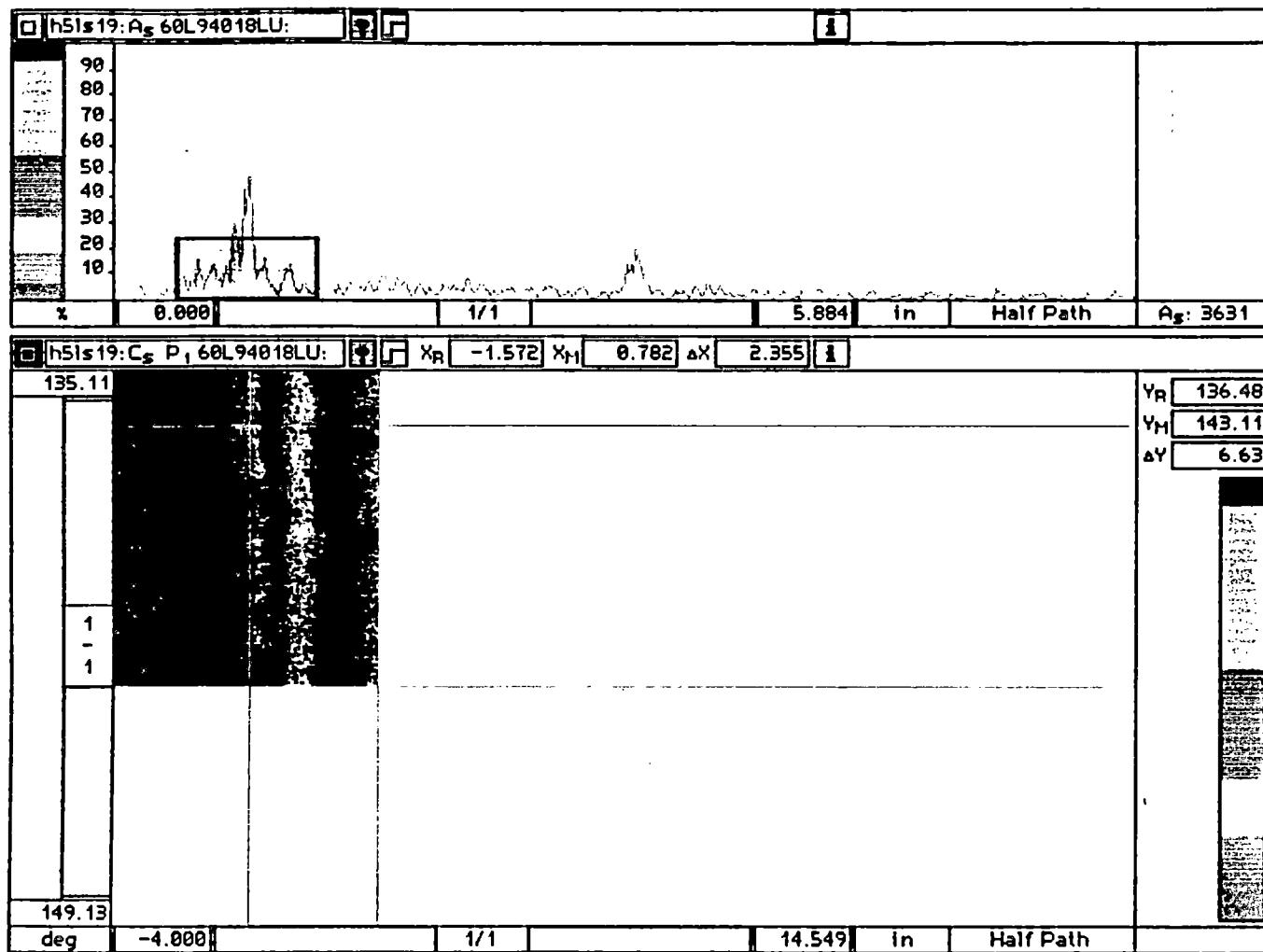
ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



SITE: DRESDEN	UNIT: 3	PROJECT NO.: 1EXY9	REPORT NO.: R-S01
WELD NO.: SHROUD H-5	SEARCH UNIT: 60L	INDICATION NO.: 1	PAGE 6 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET
(AUTOMATED WITH Smart 2000)

SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9

REPORT NO.: R-S01

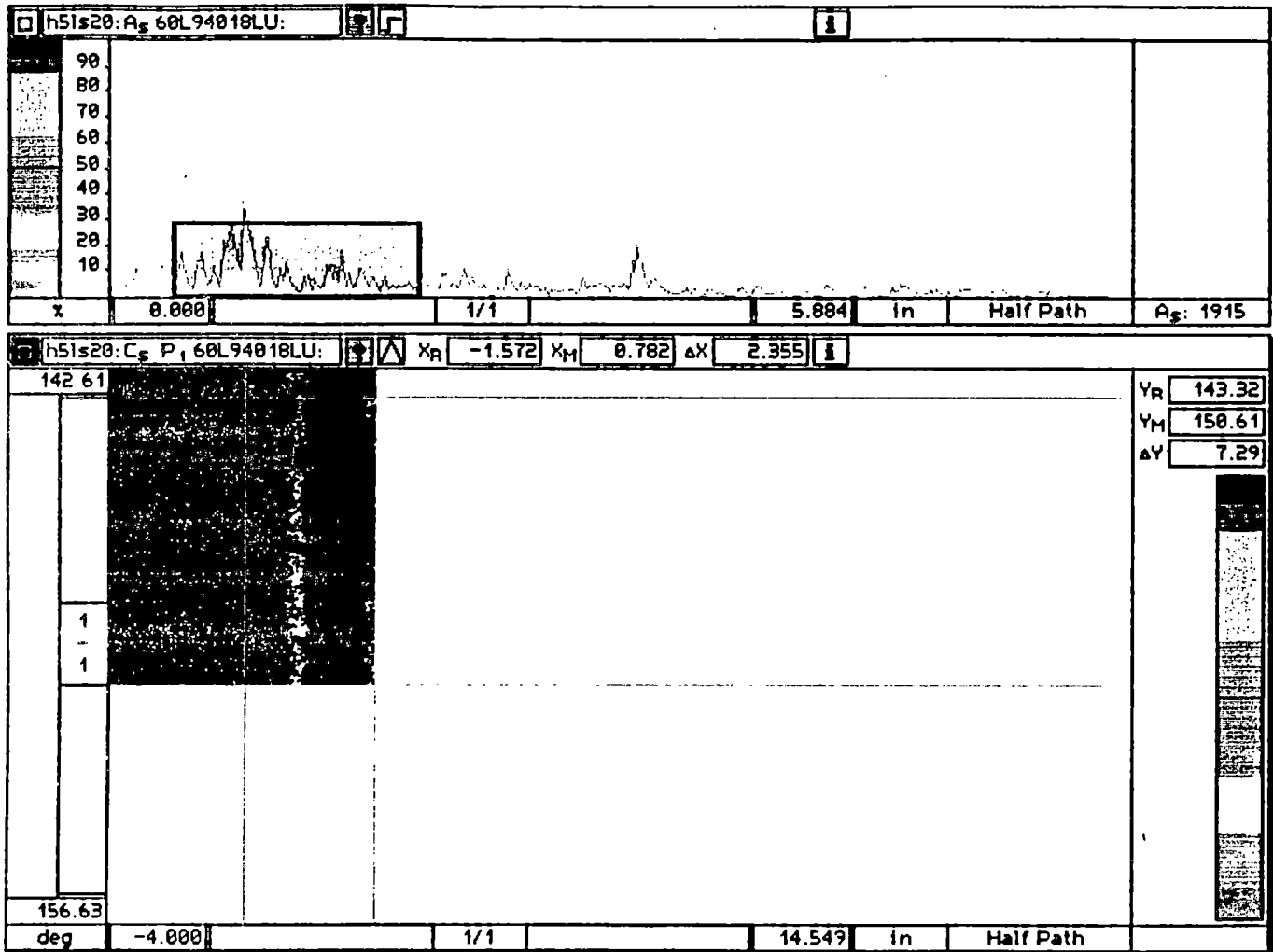
WELD NO.: SHROUD H-5 SEARCH UNIT: 60°RL INDICATION NO.: 1

PAGE 7 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9

REPORT NO.: R-S01

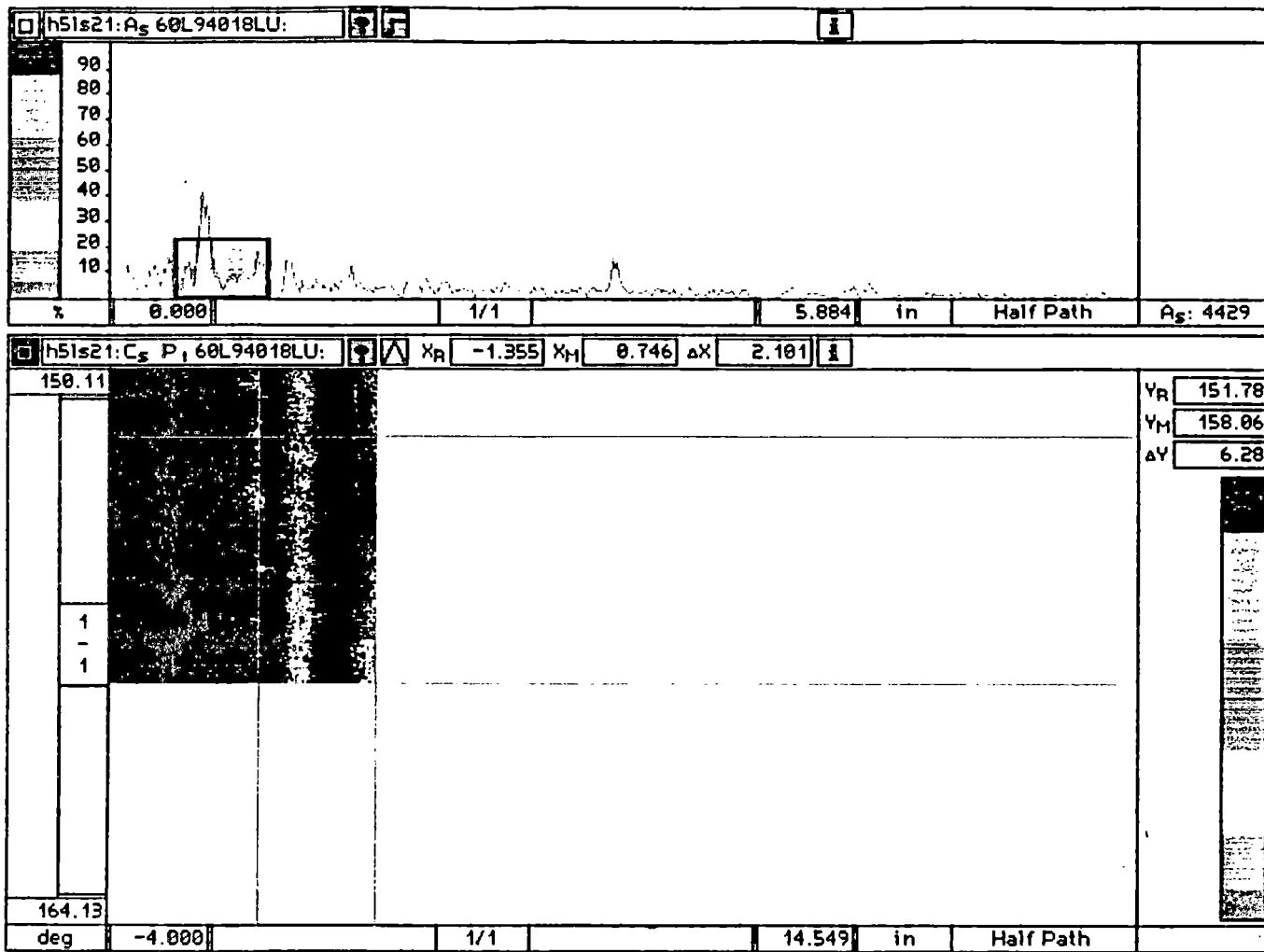
WELD NO.: SHROUD H-5 SEARCH UNIT: 60°RL INDICATION NO.: 1

PAGE 8 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)

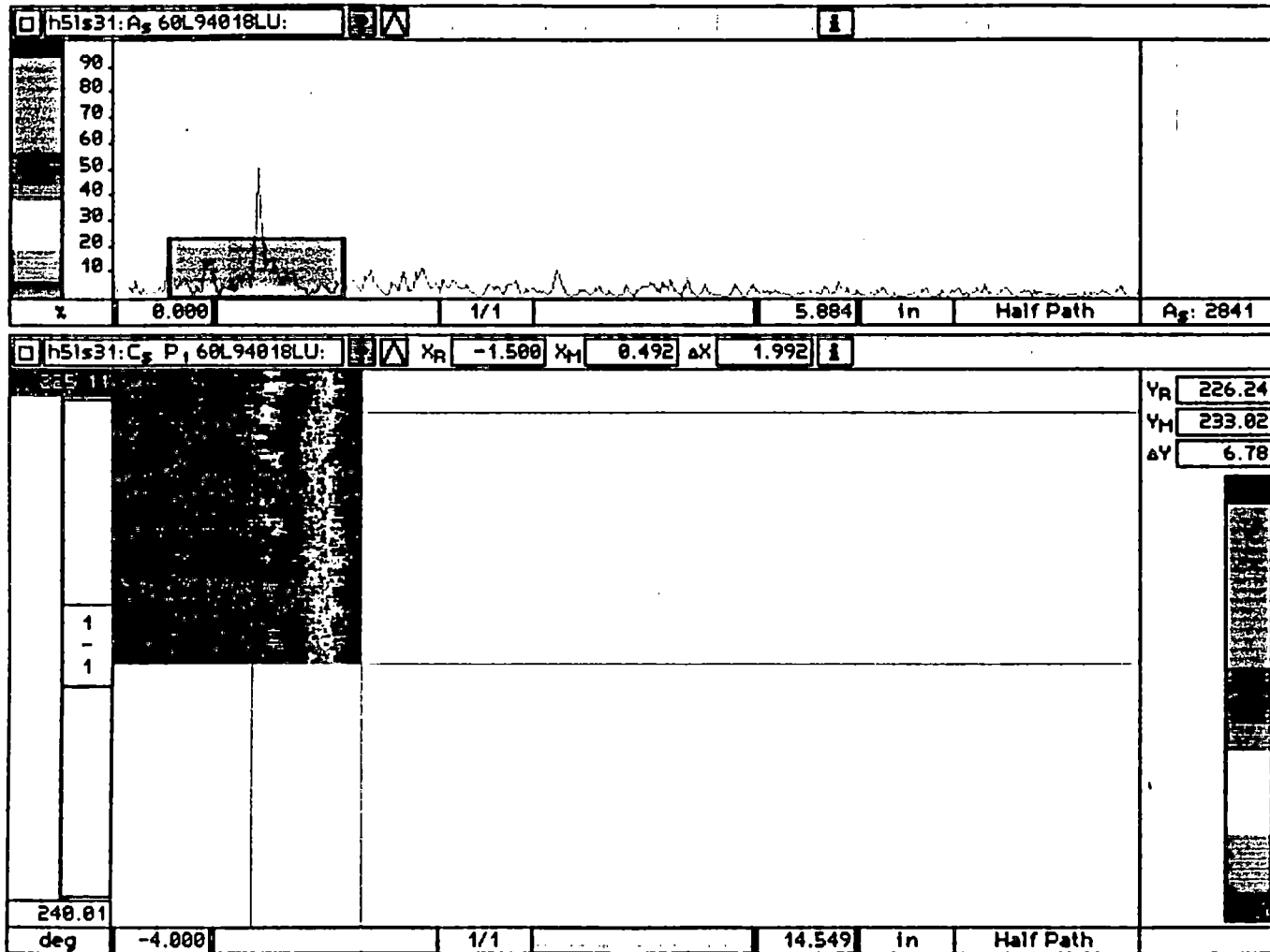


SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9 REPORT NO.: R-S01
WELD NO.: SHROUD H-5 SEARCH UNIT: 60 L INDICATION NO.: 2 PAGE 9 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)

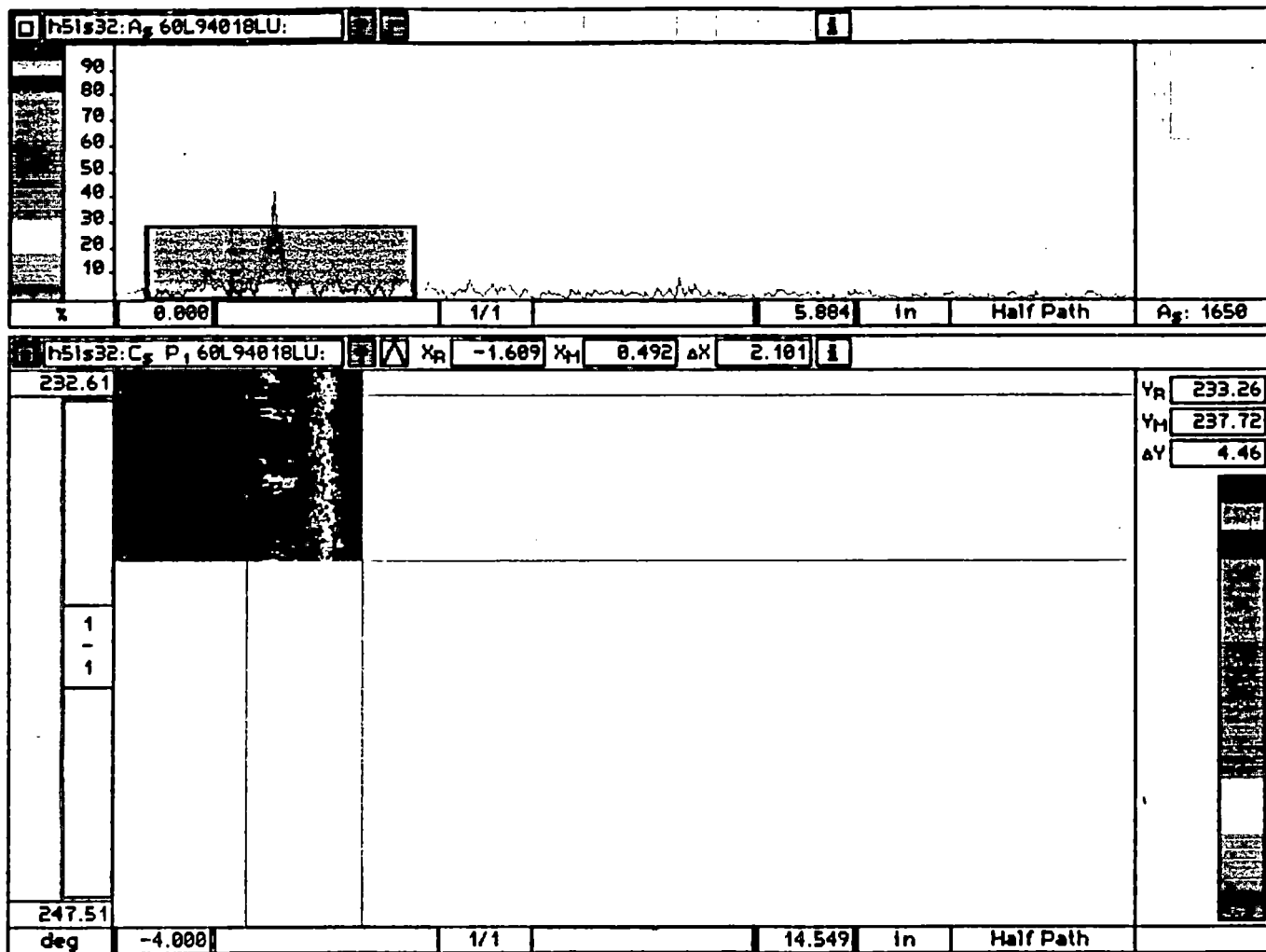


SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9 REPORT NO.: R-S01
WELD NO.: SHROUD H-5 SEARCH UNIT: 60L INDICATION NO.: 3 PAGE 10 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)

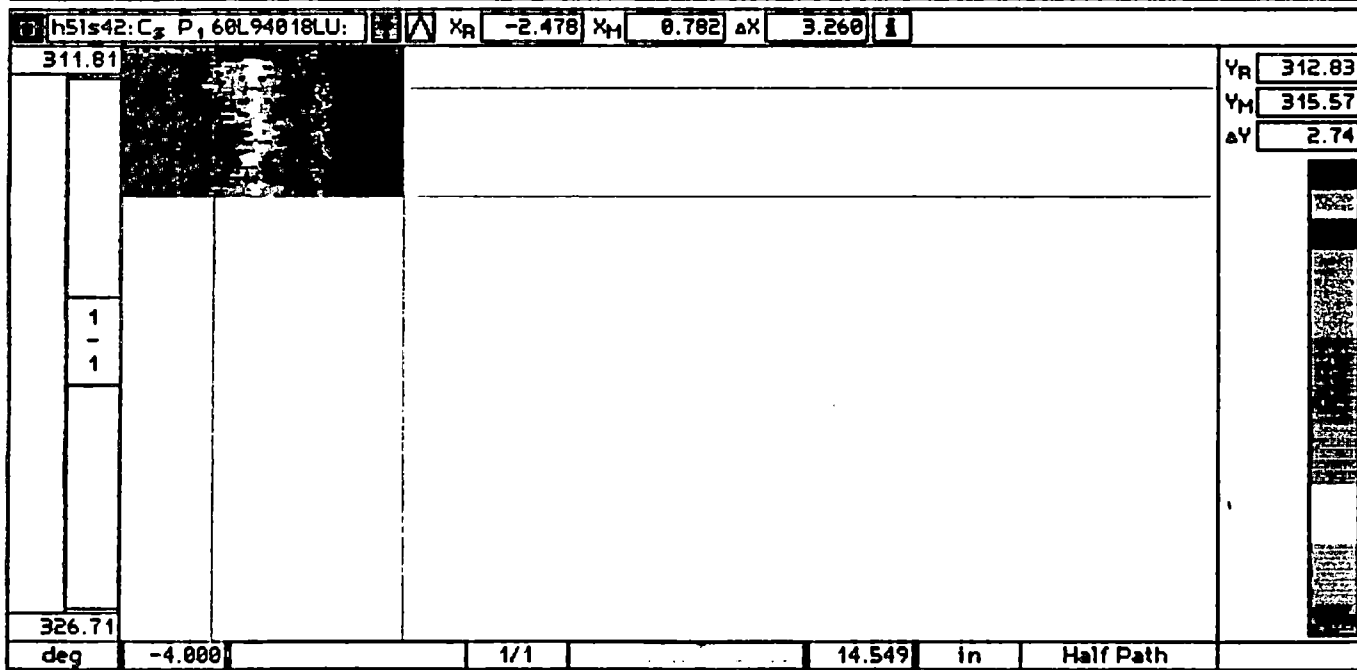
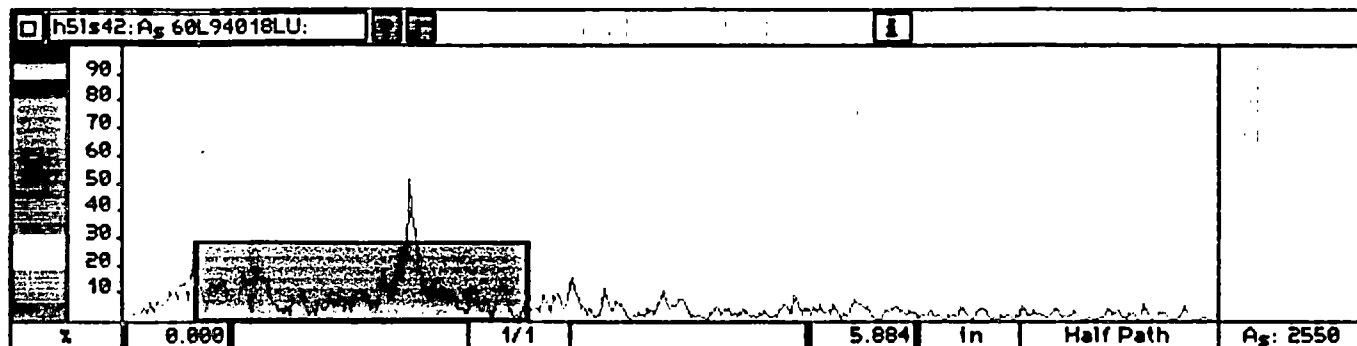


SITE: DRESDEN	UNIT: 3	PROJECT NO.: 1EXY9	REPORT NO.: R-S01
WELD NO.: SHROUD H-5	SEARCH UNIT: 60°RL	INDICATION NO.: 3	PAGE 11 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9

REPORT NO.: R-S01

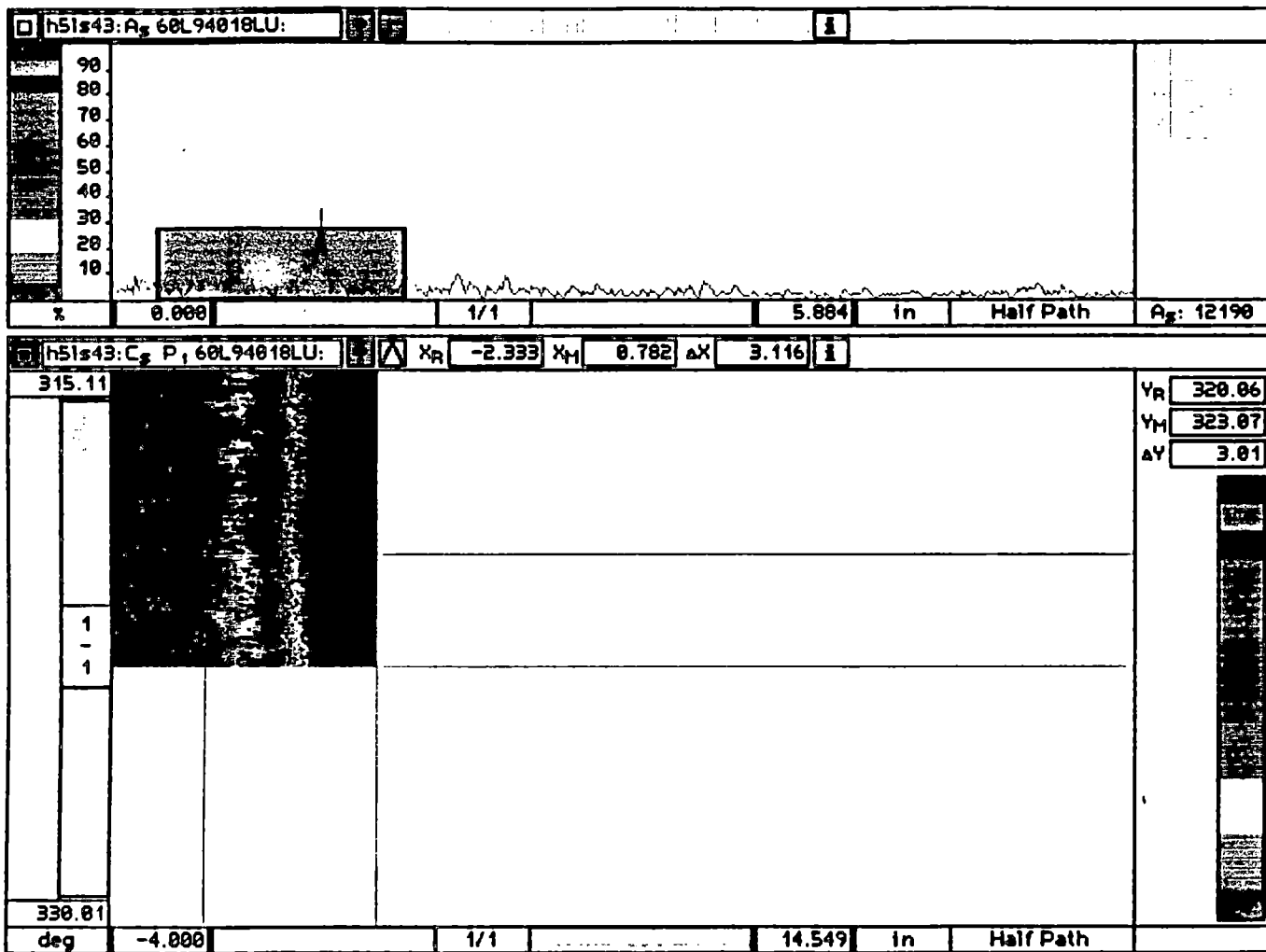
WELD NO.: SHROUD H-5 SEARCH UNIT: 60°RL INDICATION NO.: 4

PAGE 12 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9

REPORT NO.: R-S01

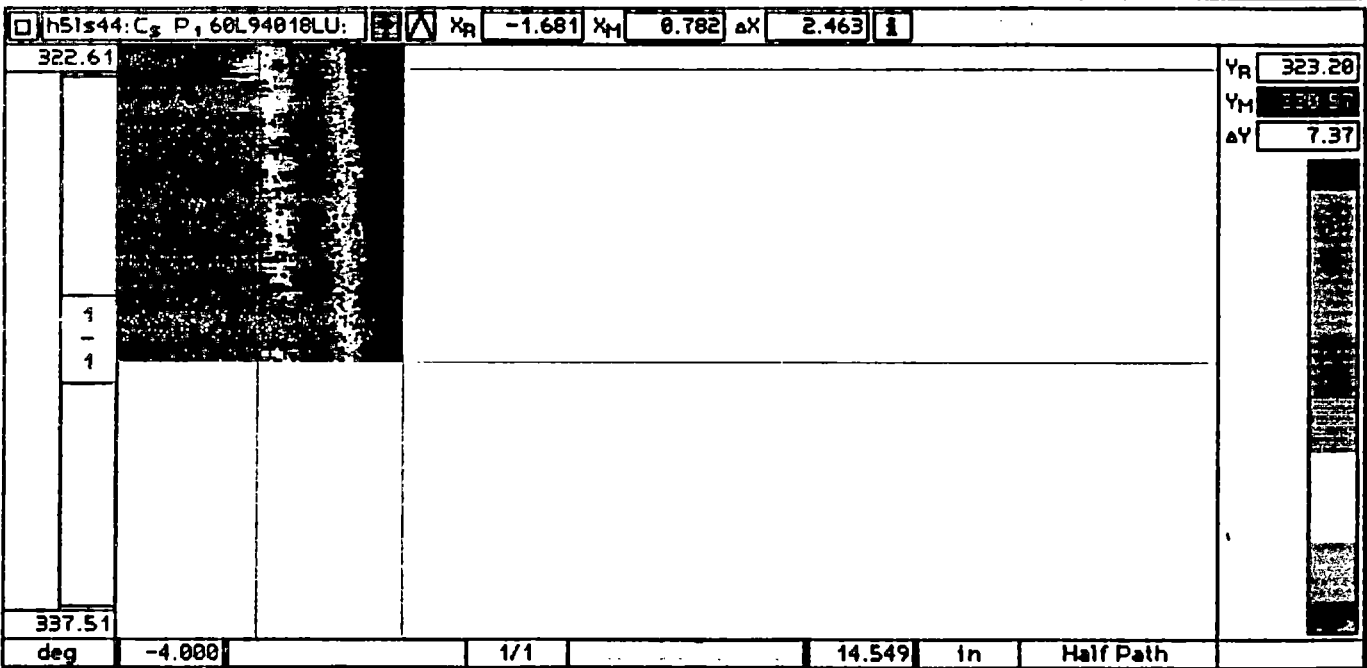
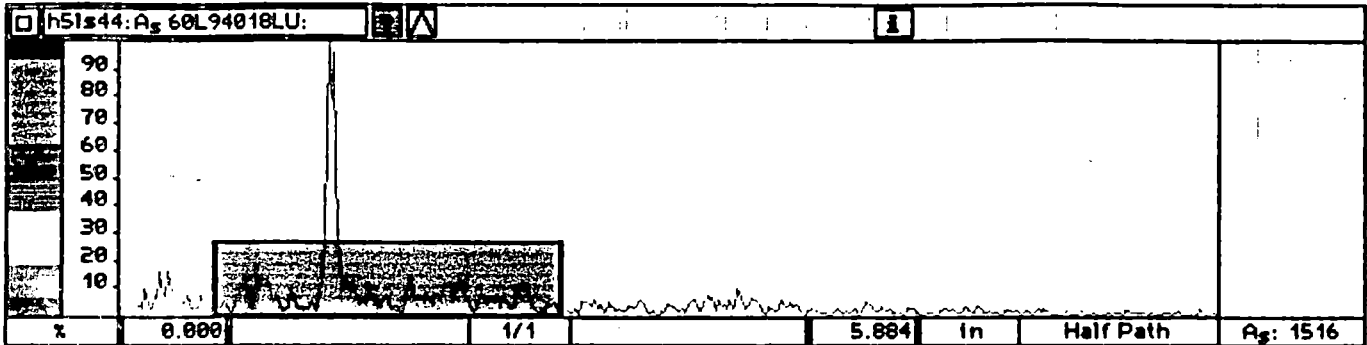
WELD NO.: SHROUD H-5 SEARCH UNIT: 60°RL INDICATION NO.: 4

PAGE 13 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)

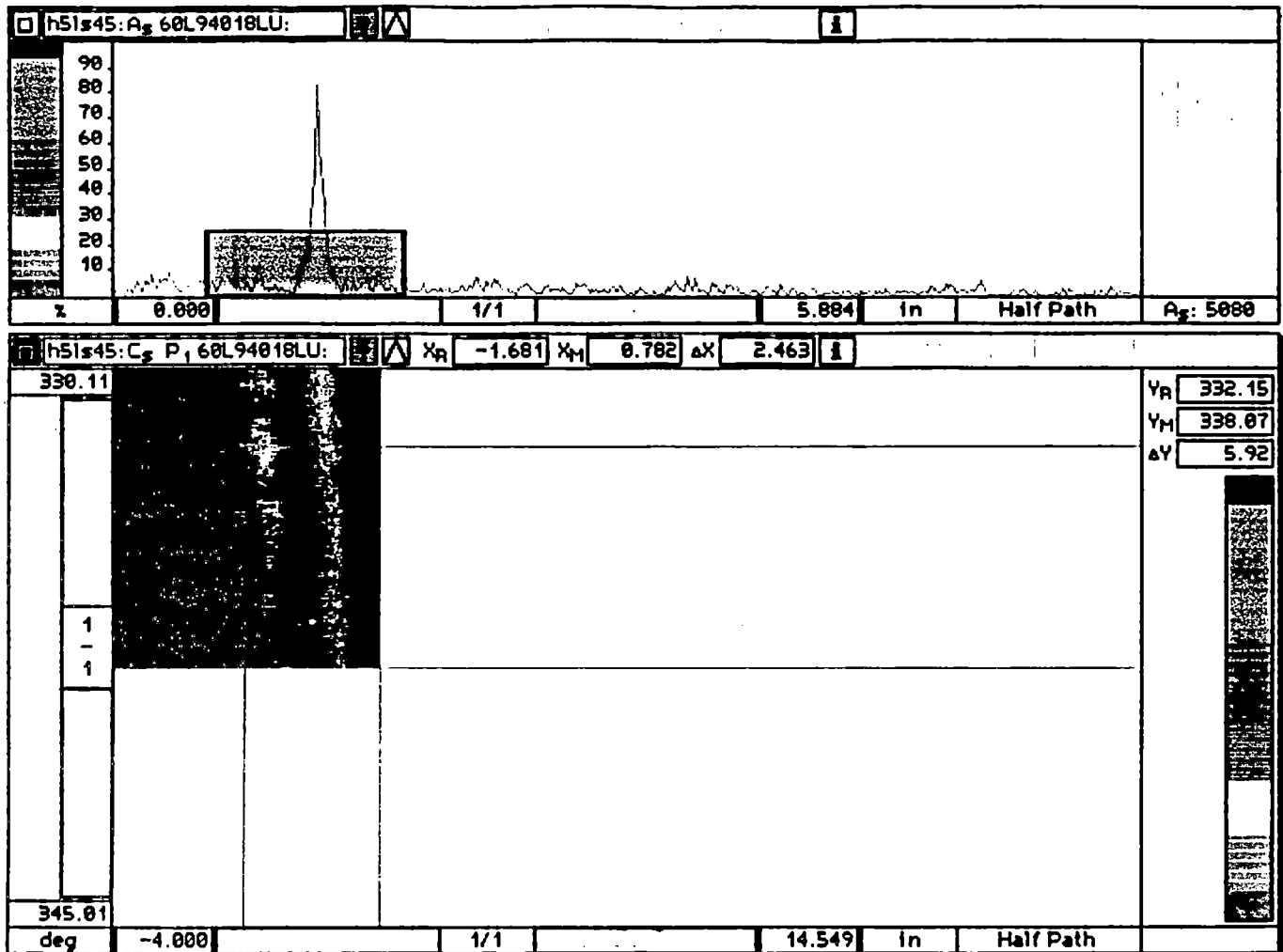


SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9 REPORT NO.: R-S01
WELD NO.: SHROUD H-5 SEARCH UNIT: 60 L INDICATION NO.: 4 PAGE 14 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9

REPORT NO.: R-S01

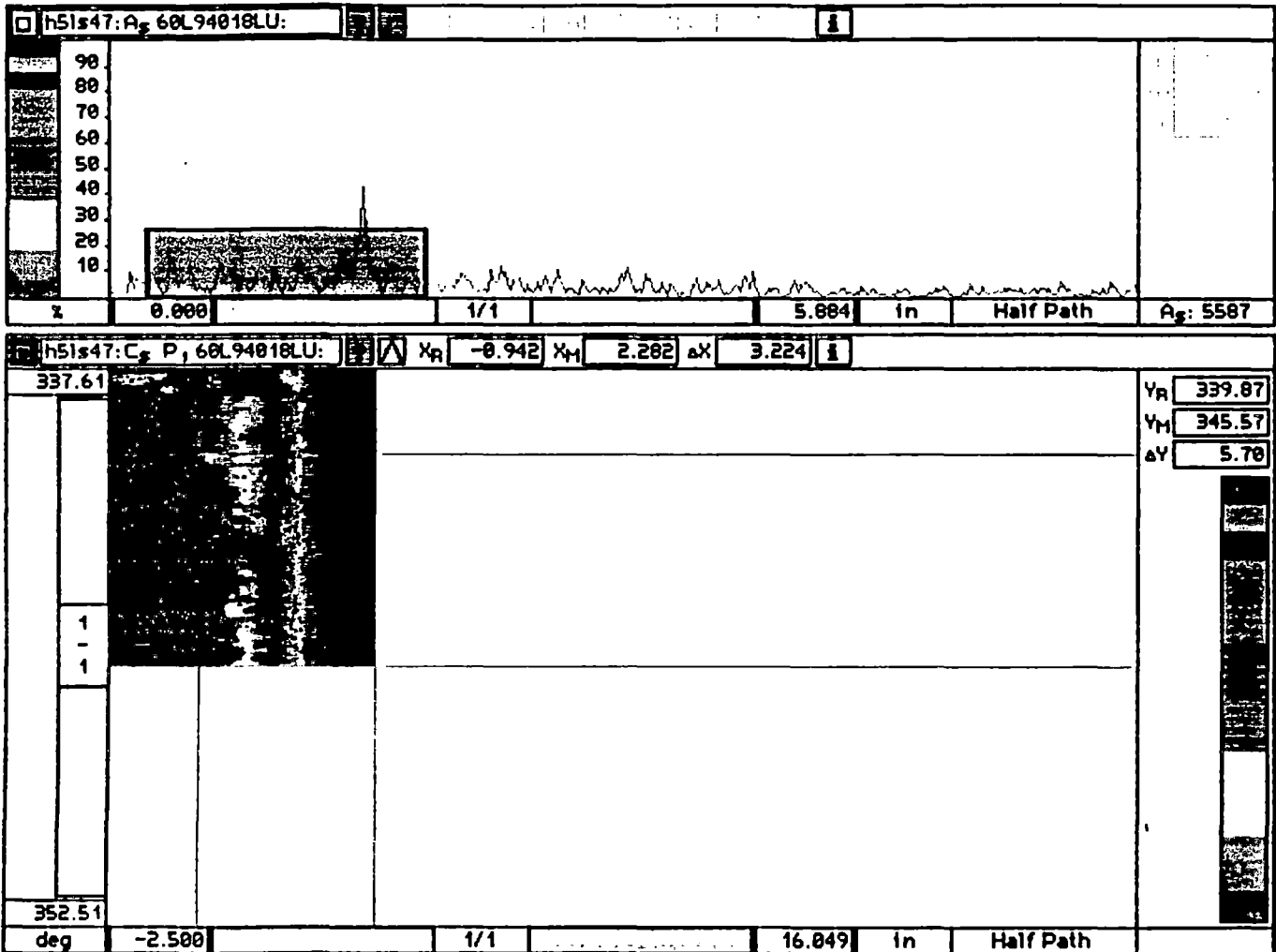
WELD NO.: SHROUD H-5 SEARCH UNIT: 60°RL INDICATION NO.: 4

PAGE 15 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



SITE: DRESDEN

UNIT: 3

PROJECT NO.: 1EXY9

REPORT NO.: R-S01

WELD NO.: SHROUD H-5

SEARCH UNIT: 60°RL INDICATION NO.: 4

PAGE 16 OF 37



GE Nuclear Energy

INDICATION PLOT SHEET

SITE: DRESDEN UNIT: 3

REPORT NO.:

PROJECT: 1EXY9

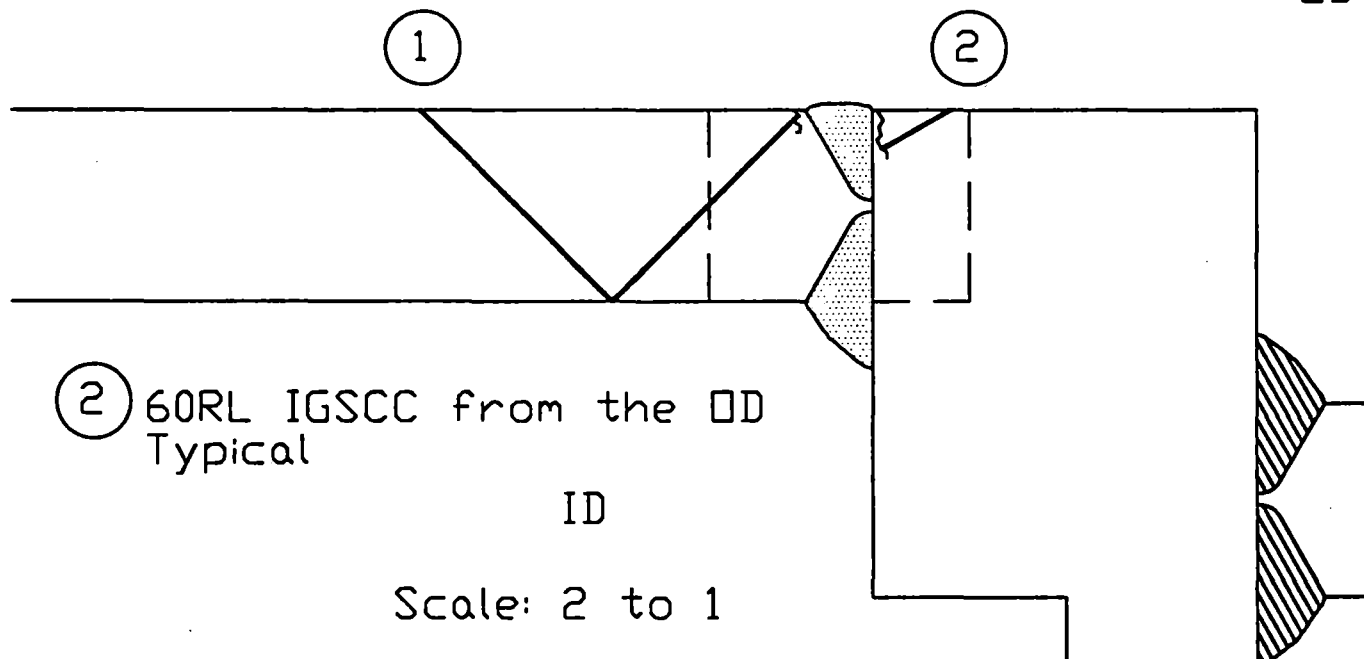
R-S01

SYSTEM: RPV

COMPONENT ID SHROUD WELD H-5

CONFIGURATION: SHROUD PLATE FLOW RING FLANGE

① 45 shear IGSCC from the OD
Typical



Stephen W. Shepard
DRAWN BY

III 5-20-94
LEVEL DATE

George E. H. [Signature]
REVIEWED BY

III 5-21-94
LEVEL DATE

REVIEWED

TITLE

DATE

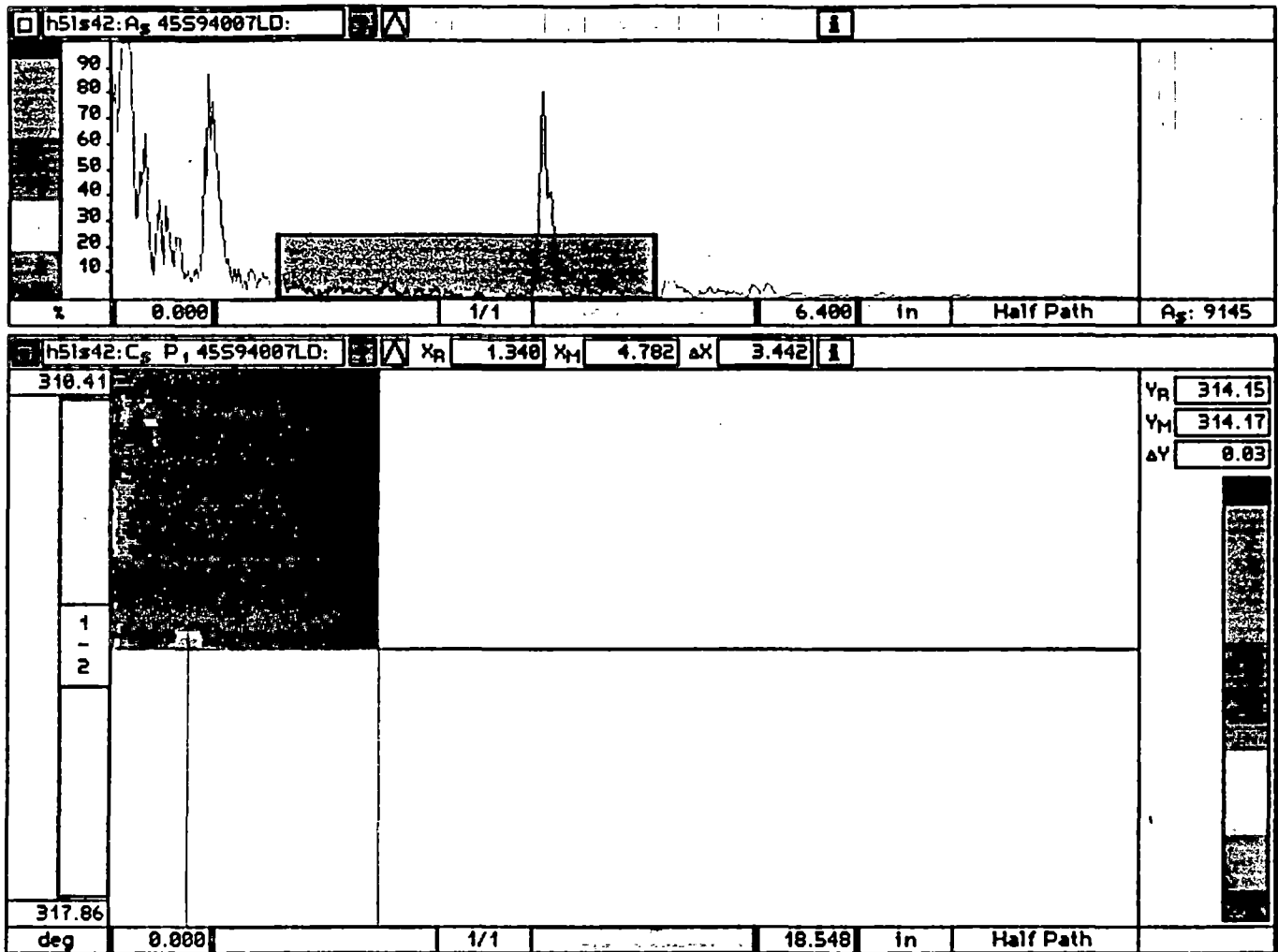
PAGE: 17 OF 37

FORM UT-02 REV. 0



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)

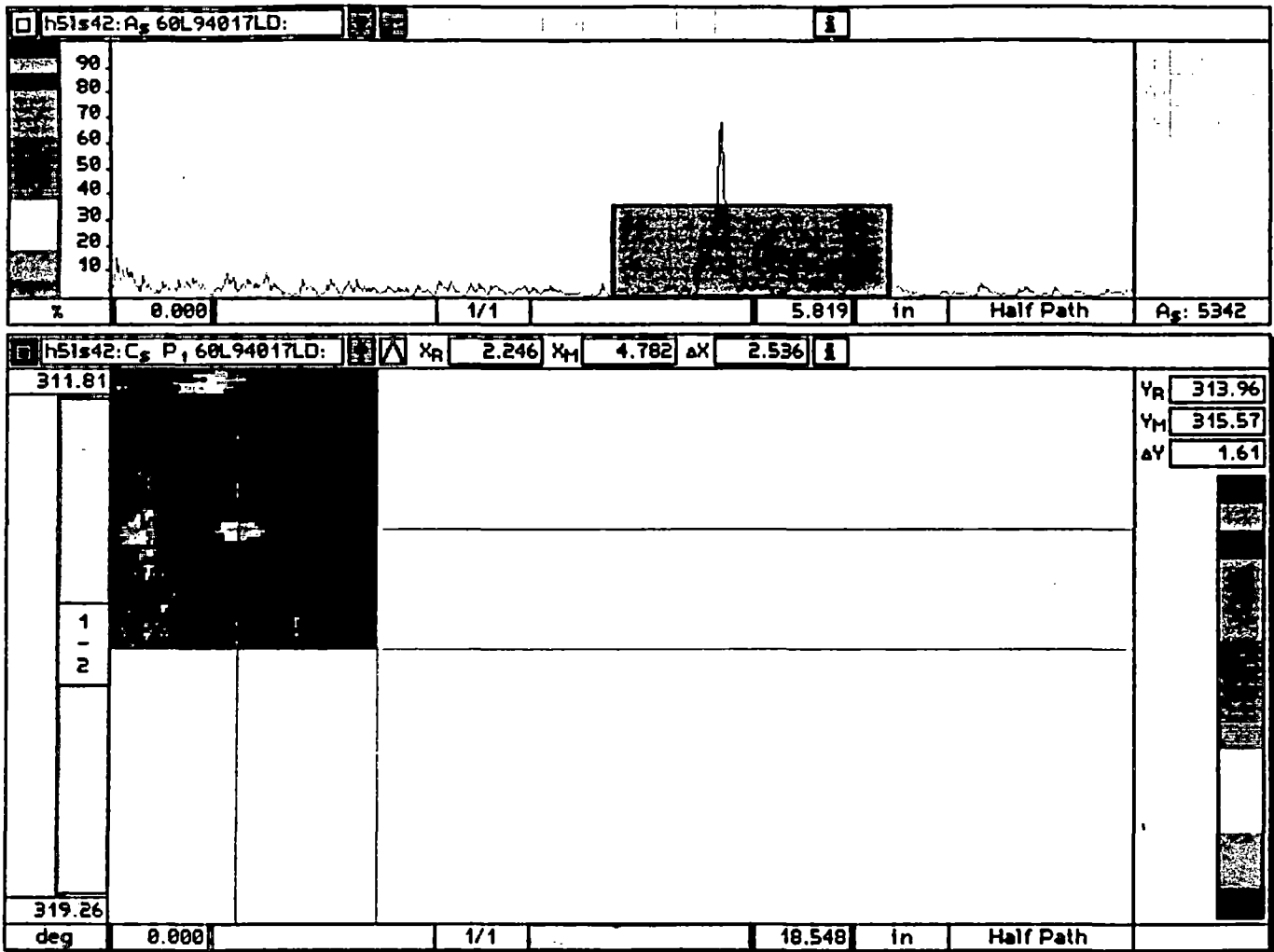


SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9 REPORT NO.: R-S01
WELD NO.: SHROUD H-5 SEARCH UNIT: 45 S INDICATION NO.: 5A PAGE 18 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)

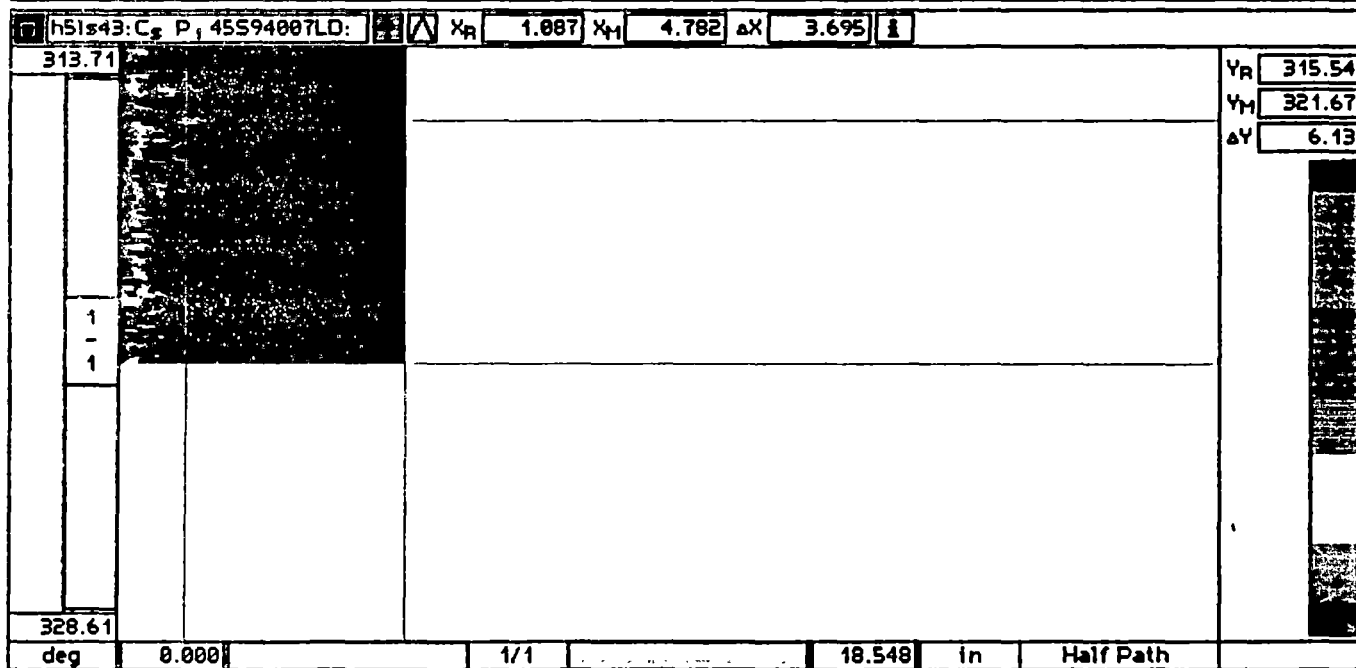
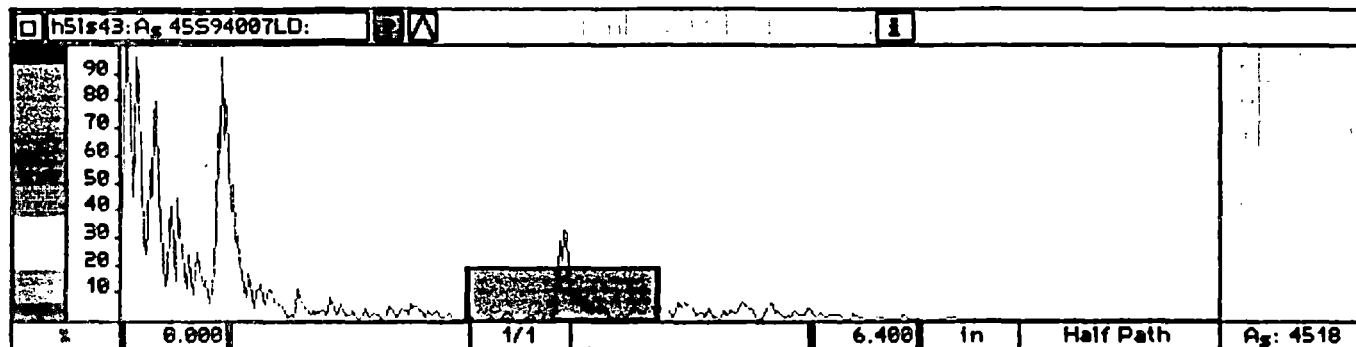


SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9 REPORT NO.: R-S01
WELD NO.: SHROUD H-5 SEARCH UNIT: 60 L INDICATION NO.: 5B PAGE 19 OF 37



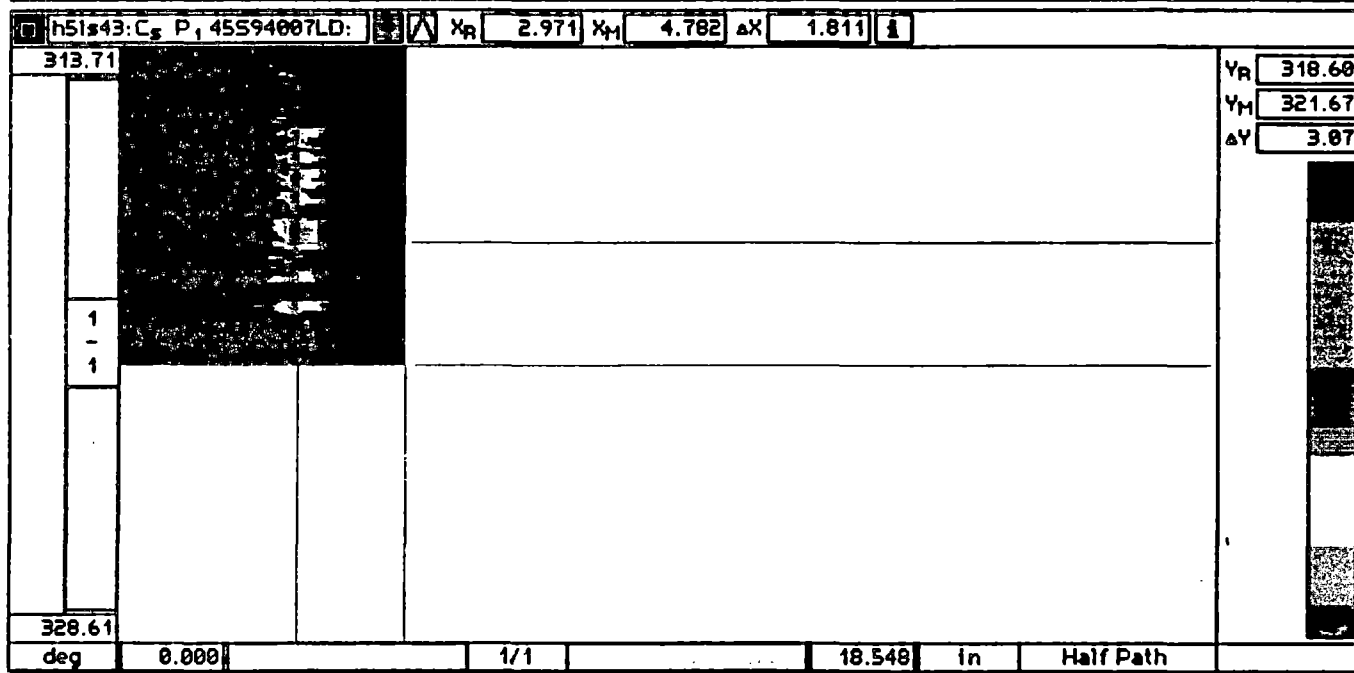
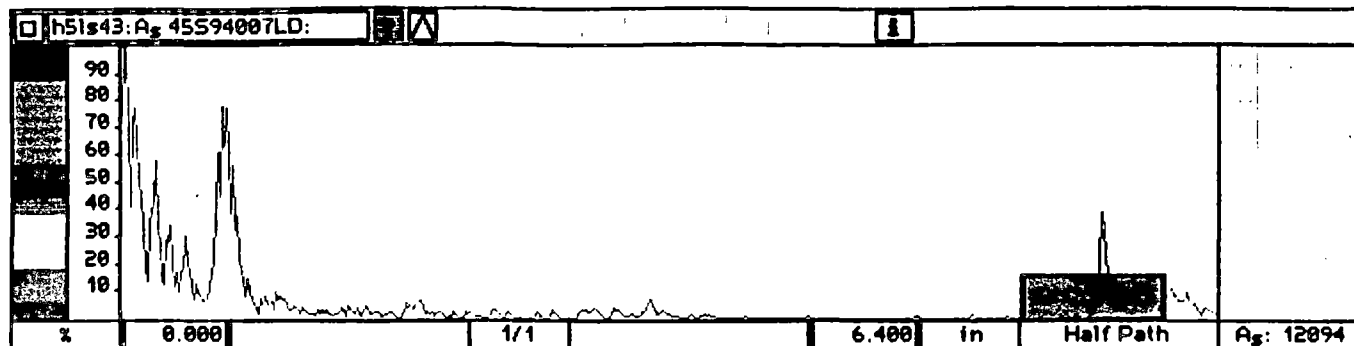
GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET
(AUTOMATED WITH Smart 2000)





GE Nuclear Energy

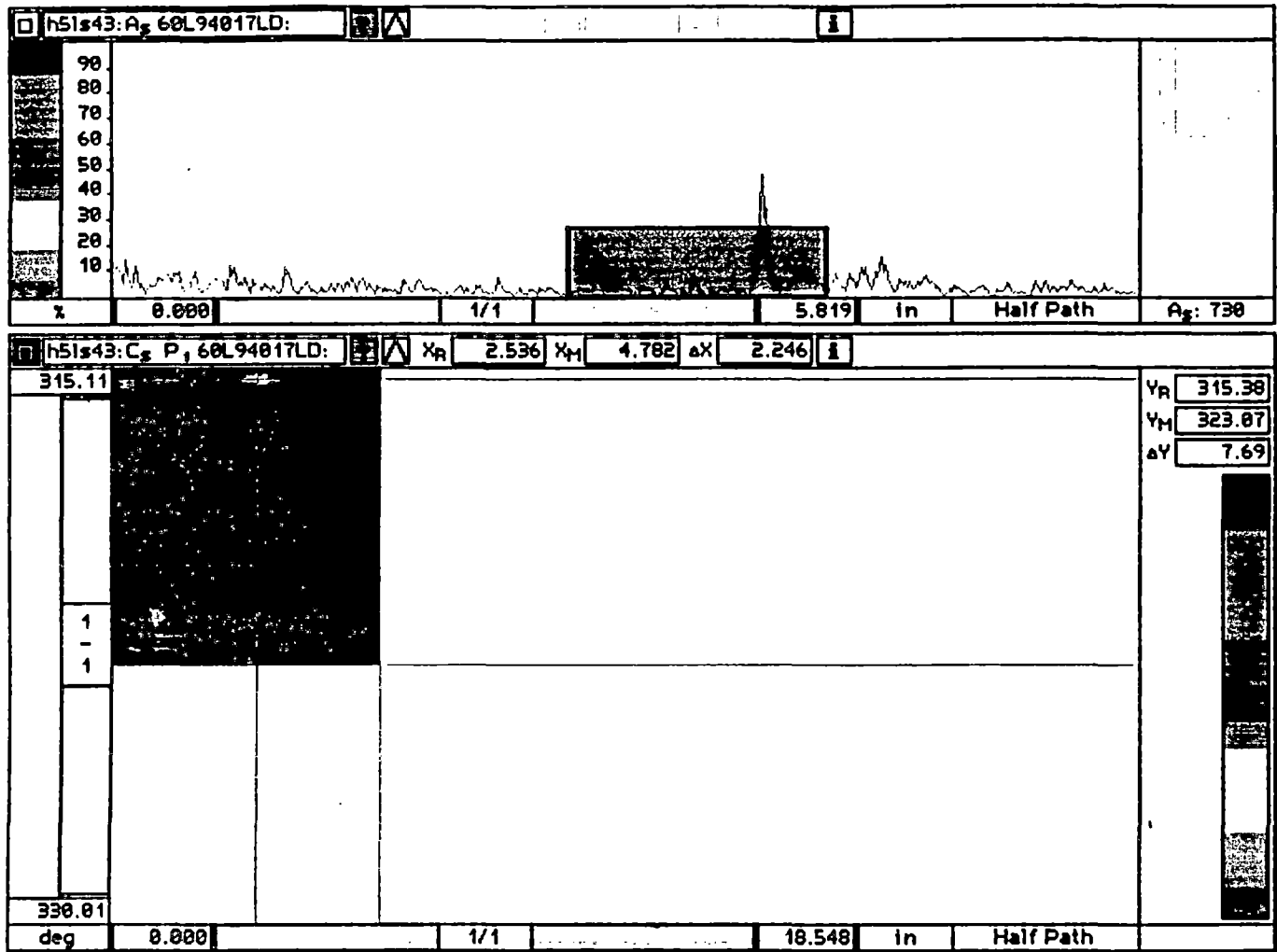
ULTRASONIC SCAN DATA PRINT SHEET
(AUTOMATED WITH Smart 2000)

SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9 REPORT NO.: R-S01
WELD NO.: SHROUD H-5 SEARCH UNIT: 45 S INDICATION NO.: 6A PAGE 21 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)

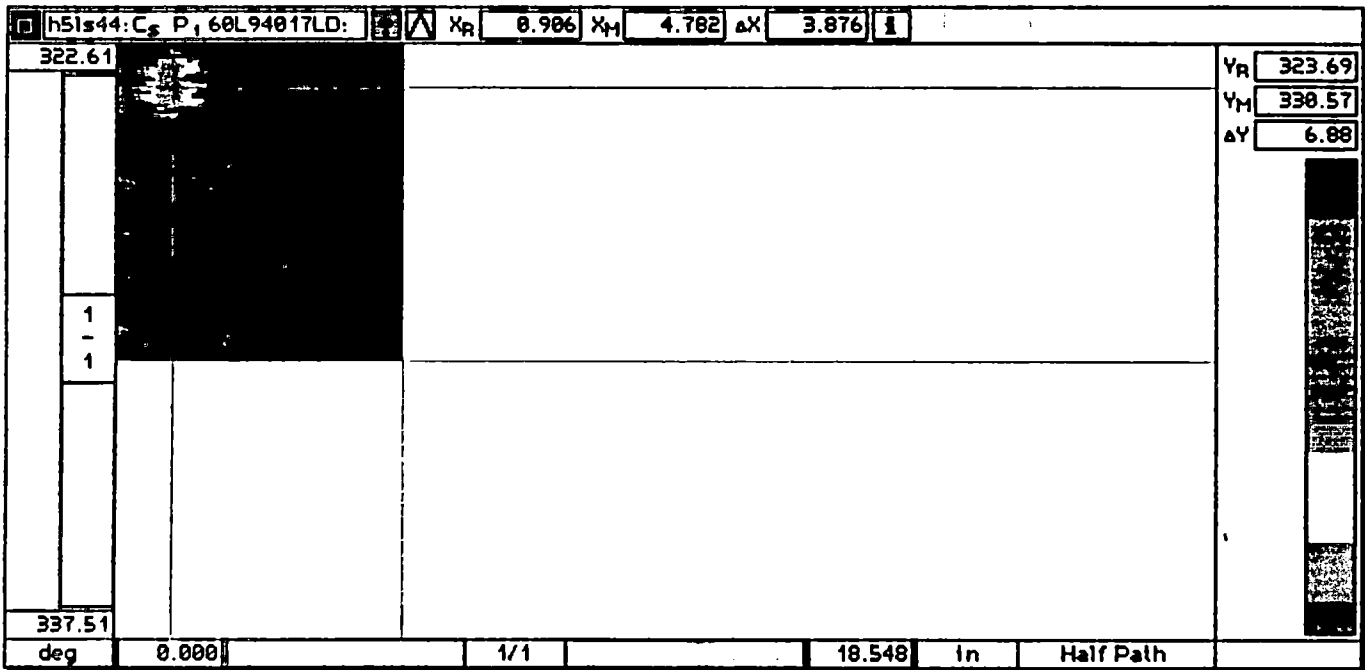
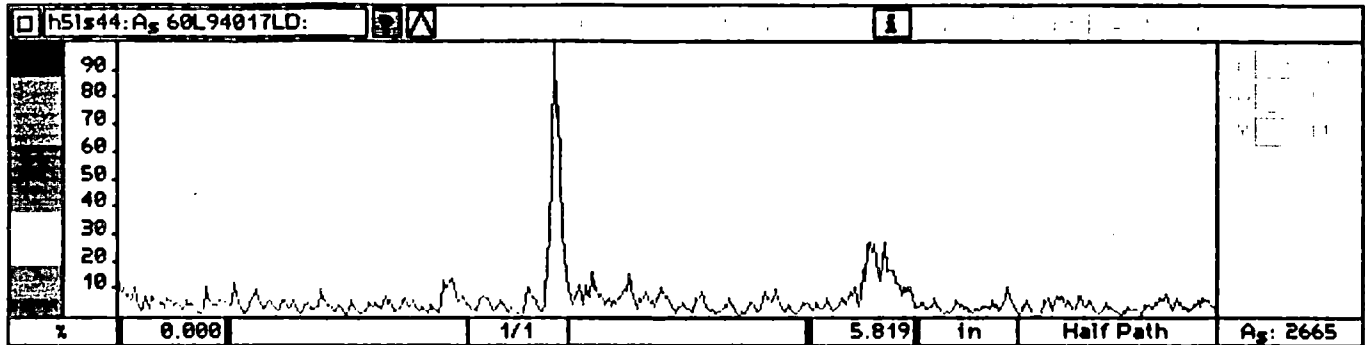


SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9 REPORT NO.: R-S01
WELD NO.: SHROUD H-5 SEARCH UNIT: 60 L INDICATION NO.: 6B PAGE 22 OF 37



GE Nuclear Energy

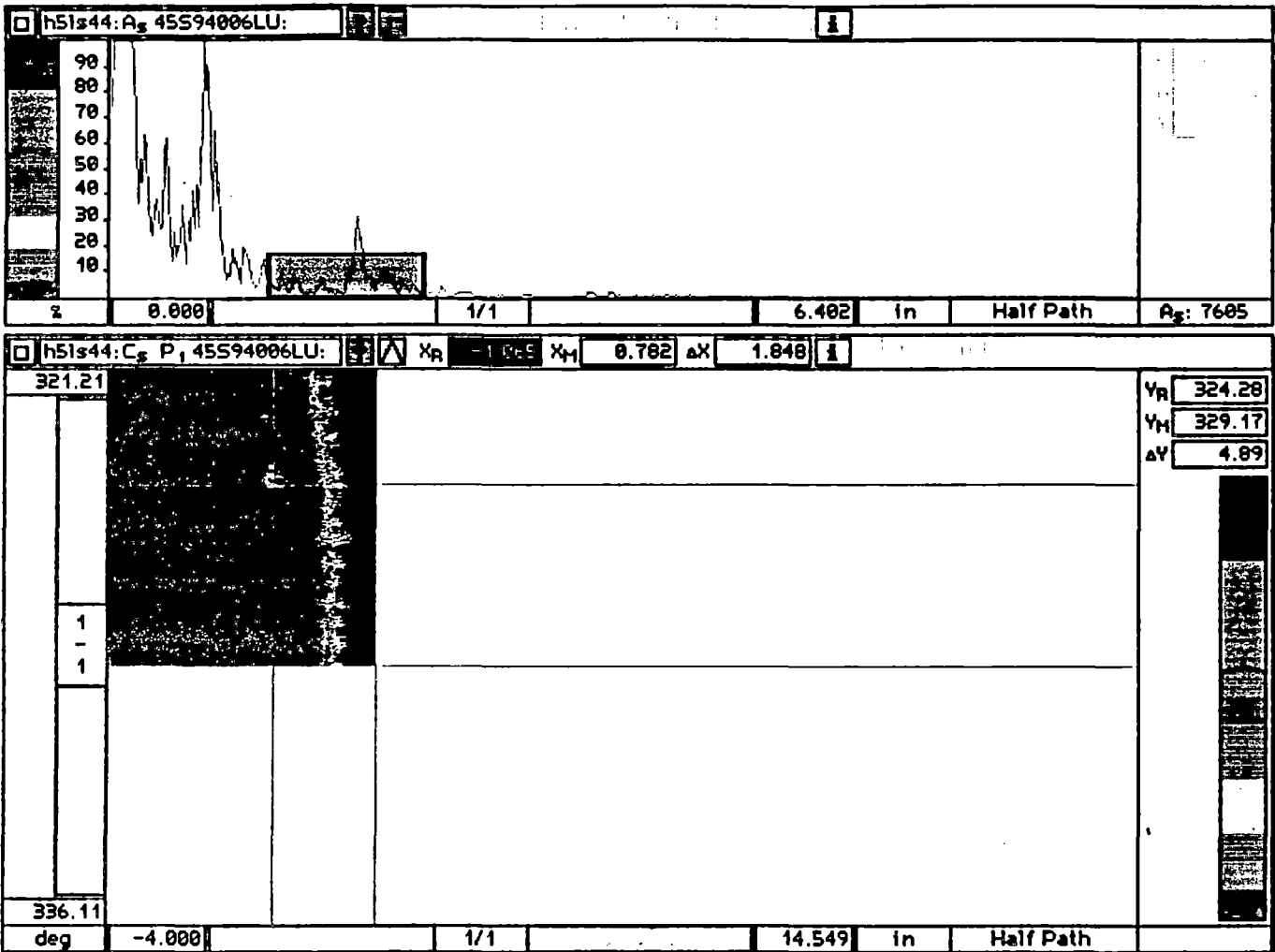
ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)





GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)

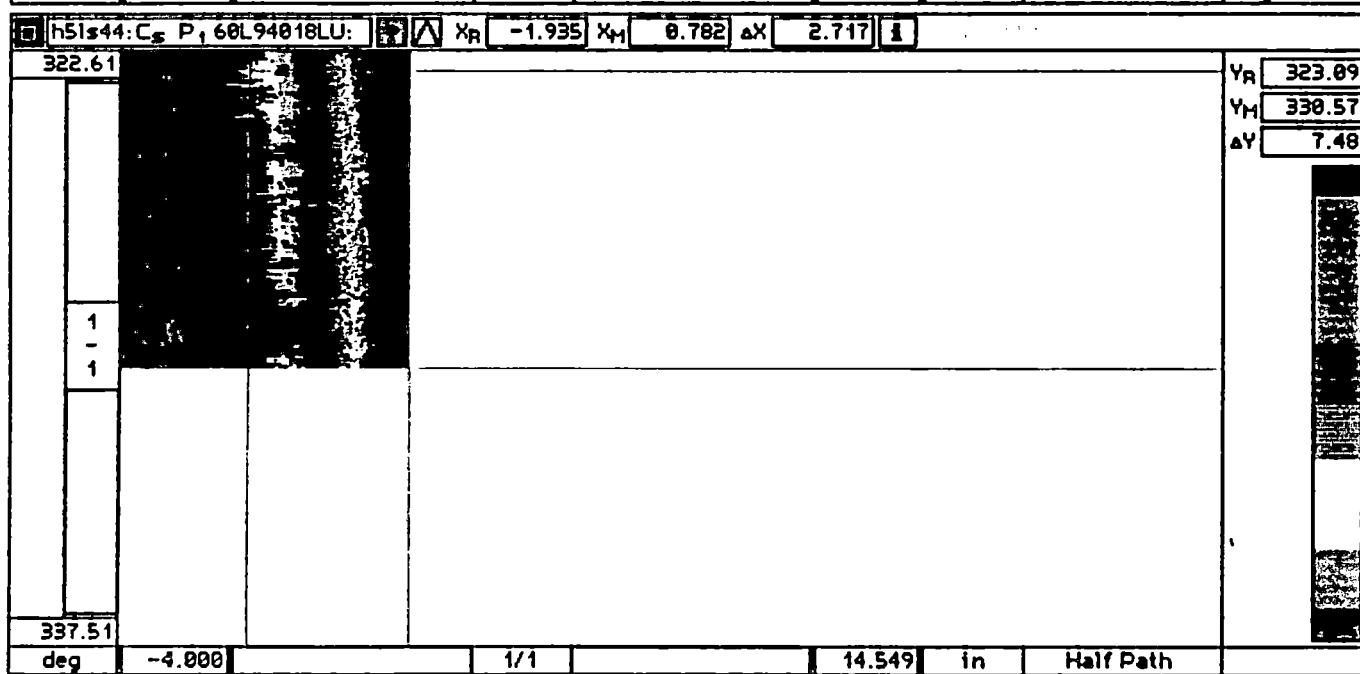
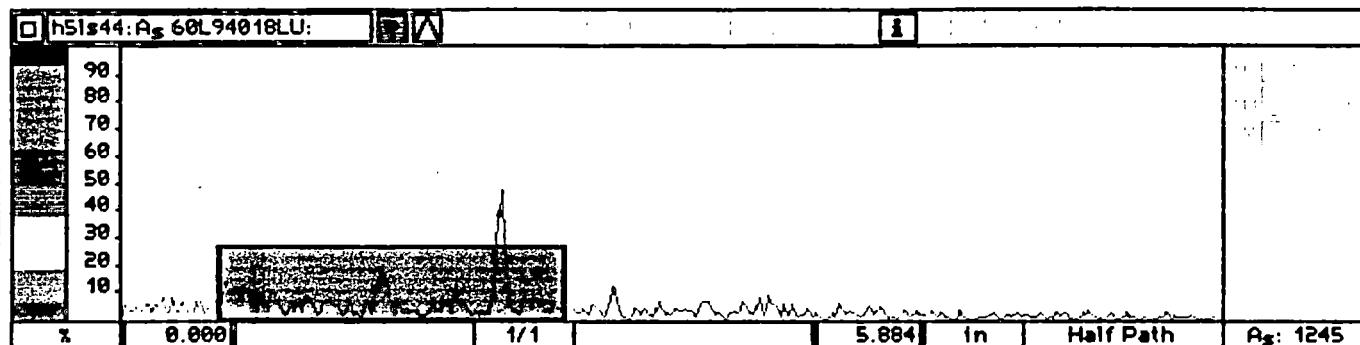


SITE: DRESDEN UNIT: 3 PROJECT NO.: 1EXY9 REPORT NO.: R-S01
WELD NO.: SHROUD H-5 SEARCH UNIT: 45 S INDICATION NO.: 7B PAGE 24 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)

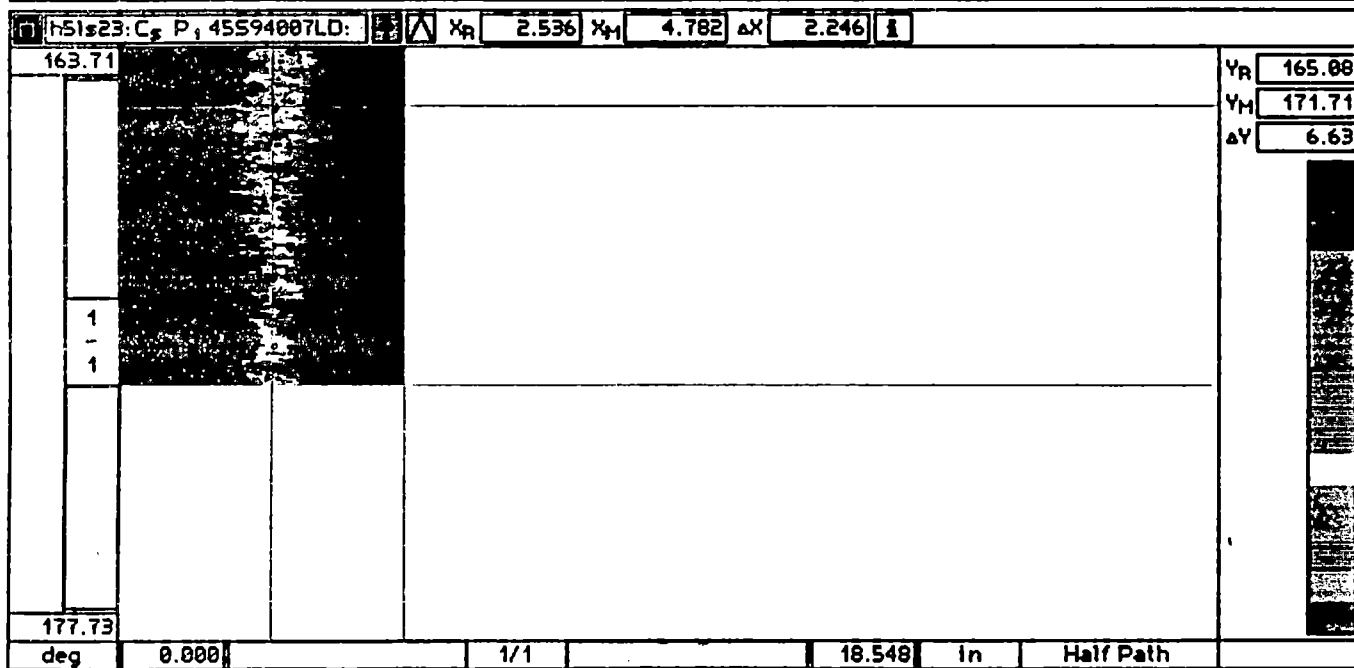
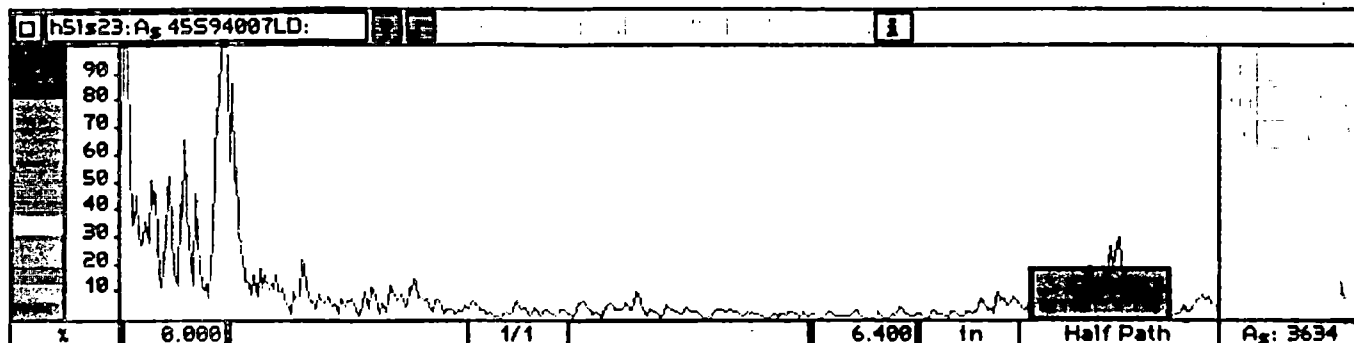


SITE: DRESDEN	UNIT: 3	PROJECT NO.: 1EXY9	REPORT NO.: R-S01
WELD NO.: SHROUD H-5	SEARCH UNIT: 60 L	INDICATION NO.: 7C	PAGE 25 OF 37



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)

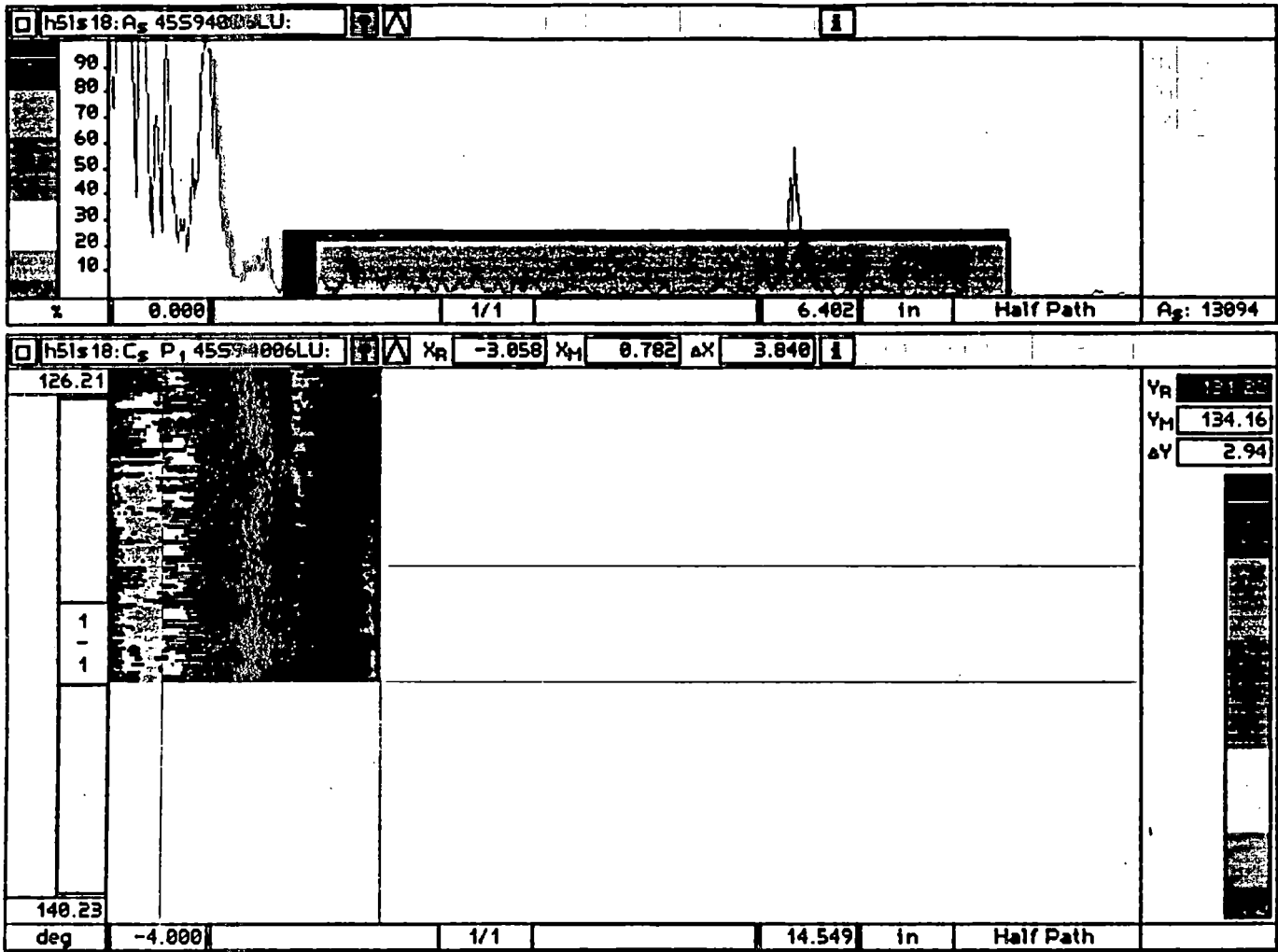


SITE: DRESDEN	UNIT: 3	PROJECT NO.: 1EXY9	REPORT NO.: R-S01
WELD NO.: SHROUD H-5	SEARCH UNIT: 45 S	INDICATION NO.: 8	PAGE 26 OF 37



GE Nuclear Energy

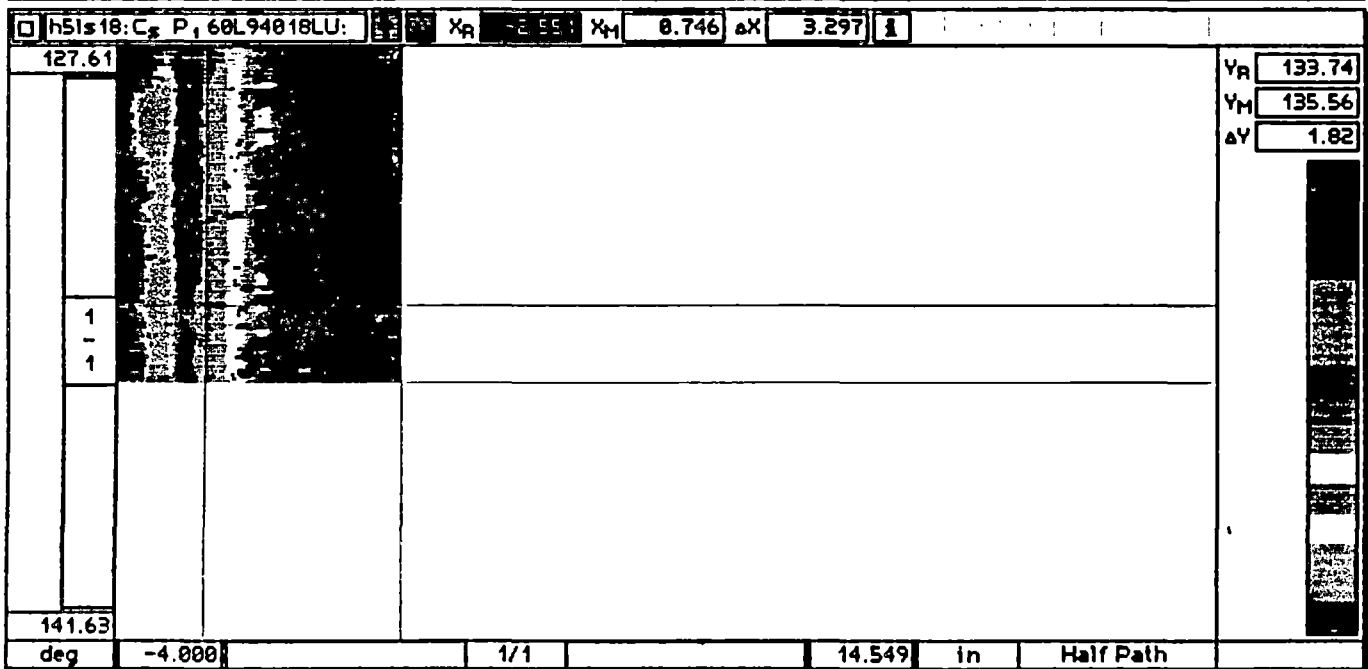
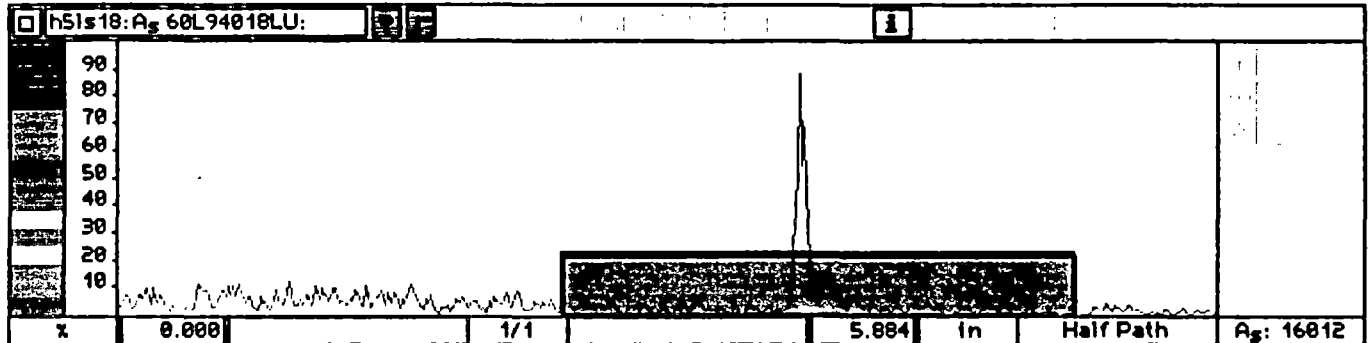
ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)





GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



SITE: DRESDEN	UNIT: 3	PROJECT NO.: 1EXY9	REPORT NO.: R-S01
WELD NO.: SHROUD H-5	SEARCH UNIT: 60_L	INDICATION NO.: 10	PAGE 28 OF 37



GE Nuclear Energy

INDICATION PLOT SHEET

SITE: DRESDEN UNIT: 3

REPORT NO.:

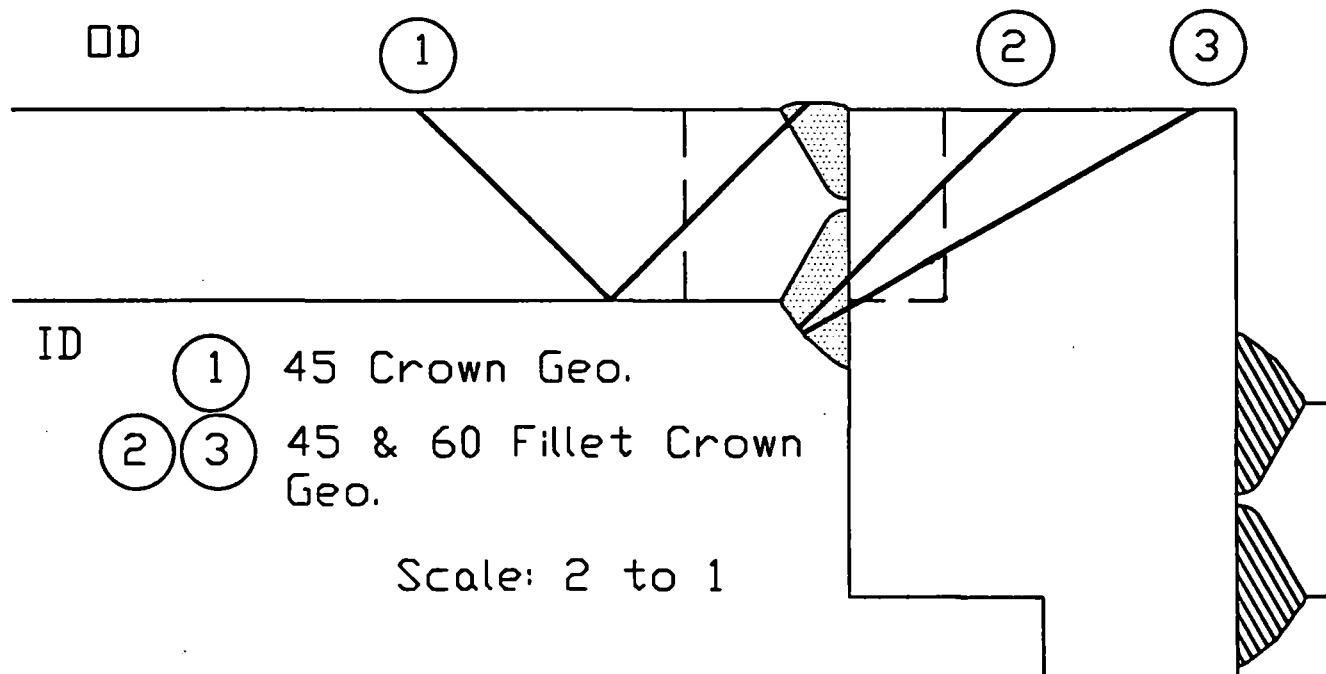
PROJECT: 1EXY9

R-S01

SYSTEM: RPV

COMPONENT ID SHROUD WELD H-5

CONFIGURATION: SHROUD PLATE FLOW RING FLANGE



Joseph W. Hays
DRAWN BY

III 5-20-94
LEVEL DATE

Joseph E. Hays
REVIEWED BY

III 5-21-94
LEVEL DATE

REVIEWED

TITLE

DATE

PAGE: 29 OF 37

FORM UT-02 REV. 0



GE Nuclear Energy

INDICATION PLOT SHEET

SITE: DRESDEN

UNIT: 3

REPORT NO.:

PROJECT: 1EXY9

R-S01

SYSTEM: RPV

COMPONENT ID

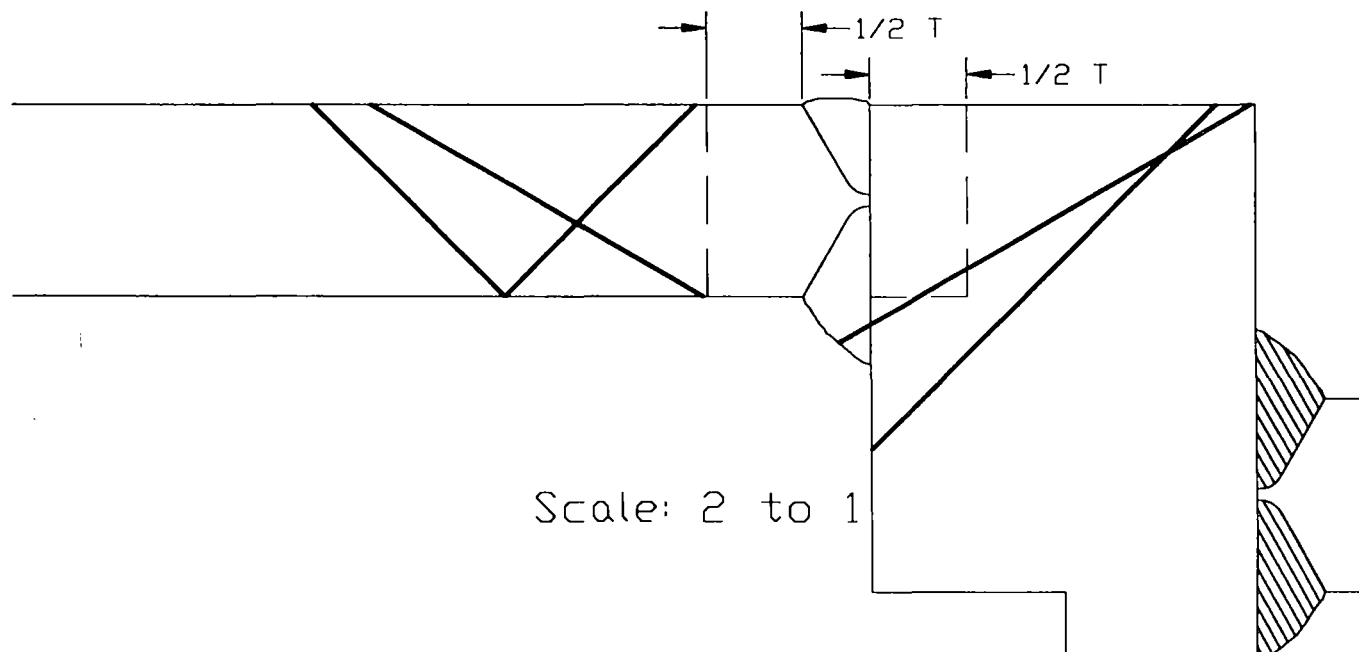
SHROUD WELD H-5

CONFIGURATION: SHROUD PLATE

FLOW

RING FLANGE

Typical weld coverage 45 & 60



Scale: 2 to 1

Stephen W. Stanford
DRAWN BY

III 5-20-94
LEVEL DATE

George E. DeRosa
REVIEWED BY

III 5-21-94
LEVEL DATE

REVIEWED

TITLE

DATE

PAGE: 30 OF 37

FORM 112/REV 11



GE Nuclear Energy

SHROUD ULTRASONIC EXAMINATION DATA SHEET (AUTOMATED with Smart 2000)

SITE: DRESDEN

PROCEDURE NO.: GE-UT-503

REPORT NO.: R-S01

UNIT: 3

REVISION NO.: 0

DATA SHEET NO.: D-S01

PROJECT NO.: 1EXY9

FRR NO.: N/A

CALIBRATION SHEET NO.: C-S01 THRU S04

WELD ID: SHROUD WELD H-5 EXAMINATION SURFACE: OD EXAM START: 08:00 EXAM END: 04:00

WELD CROWN WIDTH: 1.0" (NOMINAL) SEARCH UNIT SEPARATION (FRONT TO FRONT): 4.0"

LUG or CELL #:	SCAN ° START STOP:	SEARCH UNIT:	SCAN dB:	FILE NAME:	DISK/ SIDE:	DATE:	RESULTS:	COMMENTS:	EXAMINER'S INITIALS:
6	35.21 45.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS6	S-03/A	05/15	C, FH C, EH C C, EH	Achieve 1° more CCW -4.00" offset Longseam	<i>JS</i>
7	43.71 49.03	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS7	S-03/A	05/15	C, FH C, EH C C, EH	-4.00" offset	<i>JS</i>
7S	43.71 49.03	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS7S	S-03/A	05/15	C, FH C, EH C C, EH	-4.00" offset	<i>JS</i>
18	126.21 135.56	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS18	S-03/A	05/16	C, FH C, EH C B, C, EH	-4.00" offset	<i>JS</i>
19	133.71 143.06	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS19	S-03/A	05/16	C, FH C, EH C B, C, EH	-4.00" offset	<i>JS</i>
20	141.21 150.56	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS20	S-03/A	05/16	C, FH C, EH C B, C, EH	-4.00" offset	<i>JS</i>
21	148.71 158.06	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS21	S-03/A	05/16	C, FH C, EH C B, C, EH	-4.00" offset	<i>JS</i>
22	156.21 165.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS22	S-03/A	05/16	C, FH C, EH C C, EH	-4.00" offset	<i>JS</i>
23	163.71 171.71	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS23	S-03/B	05/16	C, FH C, EH C C, EH	Zero off by .68" to the lower side -4.00" offset	<i>JS</i>

CALIBRATION GAIN: 45° LKDN 36
45° LKUP 36
60° LKDN 60
60° LKUP 58.5

A - NO RECORDABLE
B - NON-GEOMETRIC
C - NON-RELEVANT

* EXAMINATION

D - ACOUSTIC INTERFACE G - WELD DEFECTS
E - INSIDE SURFACE GEOMETRY H - WELD CROWN
F - OUTSIDE SURFACE J - OTHER (SEE COMMENTS)

REMARKS: EXAMINATION DATES: START 5/14/94 END 5/16/94

Adam J. Smith
EXAMINER
Stephen J. Stanford
GE REVIEWED BY

II 5-16-94
LEVEL DATE
III 5-20-94
LEVEL DATE

GE QC REVIEW

DATE

ANII REVIEW

DATE

UTILITY REVIEW

DATE

PAGE: 31 OF: 37



GE Nuclear Energy

SHROUD ULTRASONIC EXAMINATION DATA SHEET (AUTOMATED with Smart 2000)

SITE: DRESDEN

PROCEDURE NO.: GE-UT-503

REPORT NO.: R-S01

UNIT: 3

REVISION NO.: 0

DATA SHEET NO.: D-S02

PROJECT NO.: 1EXY9

FRR NO.: N/A

CALIBRATION SHEET NO.: C-S01 THRU S04

WELD ID: SHROUD WELD H-5

EXAMINATION SURFACE: OD

EXAM START: 08:00

EXAM END: 04:00

WELD CROWN WIDTH: 1.0" (NOMINAL)

SEARCH UNIT SEPARATION (FRONT TO FRONT): 4.0"

LUG or CELL #:	SCAN ° START STOP:	SEARCH UNIT:	SCAN dB:	FILE NAME:	DISK/ SIDE:	DATE:	RESULTS:	COMMENTS:	EXAMINER'S INITIALS:
24	173.49 178.49	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS24	S-03/B	05/15	C, FH C, EH C C, EH	Limited to 5° due to instrumentation lines -4.00" offset	TSR
31	223.71 233.02	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS31	S-04/A	05/15	C, FH C, EH C B, C, EH	-4.00" offset	AC
31S	223.71 233.02	45° LKDN 45° LKUP 60° LKDN 60° LKUP	48 48 65 68	H5LS31S	S-04/A	05/15	C, FH C, EH C B, C, EH	Added 3dB -4.00" offset	AC
32	231.21 237.72	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS32	S-04/A	05/17	C, FH C, EH C B, C, EH	Only achieve 4° additional to scan LS31 due to instrumentation lines -4.00" offset	AC
42	310.41 315.57	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS42	S-02/A	05/15	C, FH, G C, EH C, G B, C, EH, G	Liftoff at beginning of scan from instrumentation lines -4.00" offset Weld Defect	AC
43	313.71 321.67	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS43	S-02/A	05/15	B, C, FH, G C, EH C, G B, C, EH	-4.00" offset Weld Defect	TSR
44	321.21 330.52	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS44	S-02/A	05/15	C, FH, G C, EH C, G B, C, EH	-4.00" offset Weld Defect	TSR
45	328.71 338.02	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS45	S-02/A	05/15	C, FH C, EH C B, C, EH	-4.00" offset	TSR
46	336.21 345.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 62 60	H5LS46	S-01/B	05/15	C, FH C, EH C B, C, EH		TSR
CALIBRATION GAIN:				* EXAMINATION					
				A - NO RECORDABLE		D - ACOUSTIC INTERFACE		G - WELD DEFECTS	
				B - NON-GEOMETRIC		E - INSIDE SURFACE GEOMETRY		H - WELD CROWN	
				C - NON-RELEVANT		F - OUTSIDE SURFACE		J - OTHER (SEE COMMENTS)	

REMARKS: * EXAMINATION DATES: START 5/14/94, END 5/16/94

EXAMINER: *[Signature]* II 5-17-94
LEVEL DATE
GE REVIEWED BY: *[Signature]* III 5-26-94
LEVEL DATE

GE QC REVIEW

DATE

ANII REVIEW

DATE

UTILITY REVIEW

DATE

PAGE: 32 OF: 37



GE Nuclear Energy

SHROUD ULTRASONIC EXAMINATION DATA SHEET (AUTOMATED with Smart 2000)

SITE: DRESDEN	PROCEDURE NO.: GE-UT-503	REPORT NO.: R-S01
UNIT: 3	REVISION NO.: 0	DATA SHEET NO.: D-S03
PROJECT NO.: 1EXY9	FRR NO.: N/A	CALIBRATION SHEET NO.: C-S01 THRU S04

WELD ID: SHROUD WELD H-5 EXAMINATION SURFACE: OD EXAM START: 08:00 EXAM END: 04:00
WELD CROWN WIDTH: 1.0" (NOMINAL) SEARCH UNIT SEPARATION (FRONT TO FRONT): 4.0"

LUG or CELL #:	SCAN ° START STOP:	SEARCH UNIT:	SCAN dB:	FILE NAME:	DISK/ SIDE:	DATE:	RESULTS:	COMMENTS:	EXAMINER'S INITIALS:
47	173.49 345.57	45° LKDN 45° LKUP 60° LKDN 60° LKUP	40 40 62 60	H5LS47	S-01/B	05/15	C, FH C, EH C B, C, EH	3.00" offset	<i>JS</i>
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							
		45° LKDN 45° LKUP 60° LKDN 60° LKUP							

CALIBRATION GAIN:	45° LKDN	36	* EXAMINATION D - ACOUSTIC INTERFACE G - WELD DEFECTS E - INSIDE SURFACE GEOMETRY H - WELD CROWN F - OUTSIDE SURFACE J - OTHER (SEE COMMENTS)
	45° LKUP	36	
	60° LKDN	60	
	60° LKUP	58.5	

REMARKS: * EXAMINATION DATES START 5/14/94 ; END 5/16/94

<i>Stephen W. Stanford</i> EXAMINER	II LEVEL	5-15-94 DATE	GE QC REVIEW	DATE	ANII REVIEW	DATE
GE REVIEWED BY	III LEVEL	5-20-94 DATE	UTILITY REVIEW	DATE	PAGE: 33 OF: 37	



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET
(AUTOMATED WITH Smart 2000)

SITE: DRESDEN UNIT: 3

CALIBRATION SHEET NO.: C-S01

PROJECT NO.: 1EXY9

LINEARITY SHEET NO.: L-01

PROCEDURE NO.: GE-UT-503

REVISION: 3

FRR: N/A

Instrument TECRAD / TOMOSCAN

TTS10090114

Search Unit SIGMA

Manufacturer / Model

2290-94017

System Serial No

2(.6" x .23")

4.0

MHz

60 LONG

45"

Cable 2(RG-174, RG-174, RG-174)

Manufacturer

Serial No.

Size

Freq

Angle/Mode

Incident to wedge front

2(150', 20', 28")

8

Calibration Standard CAL-SHRD-20

Type

Length

No. of Connectors

STAINLESS

2.0"

.73

°F

Thermometer 131849

Serial No

Material

Thickness

Temp.

Couplant DEMIN. WATER

Serial No

N/A

Type

Batch No

CALIBRATION

BASIC SETTINGS

ORIENTATION: CIRC N/A

TYPE: OD NOTCH TIP N/A

DEPTH: 1.0" N/A

AMPLITUDE: .80% N/A

SWEEP: 1.966" N/A

GAIN: (dB) 60 dB N/A

☐ TIME ☐ DEPTH ☒ METAL PATH

1. DELAY: 1.0173"

2. TIMEBASE: 5.8195"

3. FREQUENCY: (MHz) 10

4. RATE: /S 20

5. UNITS: ☐ DISTANCE ☒ HALF PATH ☐ TIME

6. VELOCITY: 227322

7. SAMPLES: 512

FIELD SIMULATOR: ROMPUS S/N: CAL-RHOM-002

PULSER / RECEIVER

REFLECTOR: FAR SDH NEAR SDH

MAX AMPLITUDE: 48% FSH 52% FSH

SWEEP: 1.409" .693"

GAIN: 36 dB 36 dB

1. MODE: ☐ PULSE ECHO ☒ THRU-TRANSMISSION

2. PULSER: P1 TO R1

3. VOLTAGE: (V) 400

4. WIDTH: (Ns) 122

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.	REPORT NO
INITIAL	20 00	05/13/94	BSX	SHROUD WELD H-5	R-S01
VERIFIED	14 00	05/16/94	BSR	SHROUD WELD H-5	R-S01
VERIFIED					
VERIFIED					
VERIFIED					
FINAL	07 00	05/17/94	BSR	SHROUD WELD H-5	R-S01

BSR
EXAMINER

II
LEVEL

5-17-94
DATE

Stephen D. Steyer
REVIEWED BY

REVIEWED BY

III
LEVEL

5-20-94
DATE

TITLE

DATE

PAGE: 34 OF 37

FORM UT-06 REV. 2



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET

(AUTOMATED WITH Smart 2000)

SITE: DRESDEN UNIT: 3
PROJECT NO.: 1EXY9

CALIBRATION SHEET NO.: C-S02
LINEARITY SHEET NO.: L-02

PROCEDURE NO.: GE-UT-503 REVISION: 3 FRR: N/A

Instrument TECRAD / TOMOSCAN IIS10090114
Search Unit SIGMA Manufacturer / Model 3511-94007 System Serial No 4" X .38" 2.25 MHz 45 SHEAR .60"
Cable RG-174, RG-174, RG-174 Manufacturer 150' 20' 28" Serial No 4 Size Freq Angle/Mode Incident to wedge front
Calibration Standard CAL-SHRD-20 Type Length No of Connectors 2.0" 73 °F
Thermometer 131849 Serial No Material Thickness Temp
Couplant DEMIN. WATER Type N/A Batch No

CALIBRATION

BASIC SETTINGS

ORIENTATION: CIRC CIRC
TYPE: ID NOTCH TIP ID NOTCH BASE
DEPTH: .5" .20"
AMPLITUDE: 80% 80%
SWEEP: 2.112" 2.838"
GAIN: (dB) 35 dB 16.5 dB
TIME DEPTH METAL PATH

1. DELAY: .6563"
2. TIMEBASE: 6.400"
3. FREQUENCY: (MHz) 5
4. RATE: /S 20
5. UNITS: DISTANCE HALF PATH TIME
6. VELOCITY: 124999
7. SAMPLES: 512

FIELD SIMULATOR: ROMPUS S/N: CAL-RHOM-002

PULSER / RECEIVER

REFLECTOR: FAR SDH NEAR SDH
MAX AMPLITUDE: 80% FSH 80% FSH
SWEEP: 1.0" .412"
GAIN: 25 dB 16.5 dB

1. MODE: PULSE ECHO THRU-TRANSMISSION
2. PULSER: P2 TO P2
3. VOLTAGE: (v) 400
4. WIDTH: (Ns) 236
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.	REPORT NO
INITIAL	20 00	05/13/94	AC	SHROUD WELD H-5	R-S01
VERIFIED	14 00	05/16/94	ISR	SHROUD WELD H-5	R-S01
VERIFIED					
VERIFIED					
FINAL	07 00	05/17/94	ISR	SHROUD WELD H-5	R-S01

EXAMINER

LEVEL

5-17-94
DATE

REVIEWED BY

LEVEL

5-20-94
DATE

PAGE: 35 OF 37

REVIEWED BY

TITLE

DATE

FORM UT-06 REV. 2



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET
(AUTOMATED WITH Smart 2000)

SITE: DRESDEN UNIT: 3

CALIBRATION SHEET NO.: C-S03

PROJECT NO.: 1EXY9

LINEARITY SHEET NO.: L-03

PROCEDURE NO.: GE-UT-503

REVISION: 3

FRR: N/A

Instrument TECRAD / TOMOSCAN

TTS10090114

Search Unit SIGMA

Manufacturer / Model

2290-94018

System Serial No.

2(6"x.23")

4.0

MHz

60 LONG

.45"

Manufacturer

Serial No.

Size

Freq

Angle/Mode

Incident to wedge front

Cable 2(RG-174, RG-174, RG-174)

2(150' 20' 28")

8

Type

Length

No. of Connectors

Calibration Standard CAL-SHRD-20

STAINLESS

2.0"

73

°F

Serial No

Material

Thickness

Temp

Thermometer 131849

Serial No

Couplant DEMIN. WATER

N/A

Type

Batch No

CALIBRATION

ORIENTATION: CIRC N/A

TYPE: OD NOTCH TIP N/A

DEPTH: 1.0" N/A

AMPLITUDE: 80% N/A

SWEEP: 2.103" N/A

GAIN: (dB) 58.5 dB N/A

☐ TIME ☐ DEPTH ☒ METAL PATH

BASIC SETTINGS

1. DELAY: 1.0343"

2. TIMEBASE: 5.8840"

3. FREQUENCY: (MHz) 10

4. RATE: /S 20

5. UNITS: ☐ DISTANCE ☒ HALF PATH ☐ TIME

6. VELOCITY: 229842

7. SAMPLES: 512

FIELD SIMULATOR: ROMPUS S/N: CAL-RHOM-002

PULSER / RECEIVER

REFLECTOR: FAR SDH NEAR SDH

MAX AMPLITUDE: 50% FSH 48% FSH

SWEEP: 1.436" .713"

GAIN: 36 dB 36 dB

1. MODE: ☐ PULSE ECHO ☒ THRU-TRANSMISSION

2. PULSER: P3 TO R3

3. VOLTAGE: (v) 400

4. WIDTH: (Ns) 122

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.	REPORT NO
INITIAL	20 00	05/13/94	JS	SHROUD WELD H-5	R-S01
VERIFIED	14 00	05/16/94	TSR	SHROUD WELD H-5	R-S01
VERIFIED					
VERIFIED					
VERIFIED					
FINAL	07 00	05/17/94	TSR	SHROUD WELD H-5	R-S01

EXAMINER

LEVEL

5-17-94
DATE

REVIEWED BY

REVIEWED BY

III
LEVEL

5-20-94
DATE

TITLE

DATE

PAGE: 36 OF 37

FORM UT-06 REV. 0



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET
(AUTOMATED WITH Smart 2000)

SITE: DRESDEN UNIT: 3

CALIBRATION SHEET NO.: C-S04

PROJECT NO.: 1EXY9

LINEARITY SHEET NO.: L-04

PROCEDURE NO.: GE-UT-503

REVISION: 3

FRR: N/A

Instrument TECRAD / TOMOSCAN

TTS10090114

Manufacturer / Model

System Serial No

Search Unit SIGMA

3511-94006

4" X .38"

2.25

MHz

45 SHEAR

60"

Manufacturer

Serial No

Size

Freq

Angle/Mode

Incident to wedge front

Cable RG-174, RG-174, RG-174

150' 20' 28"

4

Type

Length

No. of Connectors

Calibration Standard CAL-SHRD-20

STAINLESS

2.0"

73

°F

Serial No

Material

Thickness

Temp

Thermometer 131849

Serial No

Couplant DEMIN. WATER

N/A

Type

Batch No

CALIBRATION

BASIC SETTINGS

ORIENTATION:

CIRC

CIRC

TYPE:

ID NOTCH TIP

ID NOTCH BASE

DEPTH:

5"

2.0"

AMPLITUDE:

80%

80%

SWEEP:

2.138"

2.851"

GAIN: (dB)

36 dB

16.5 dB

TIME

DEPTH

METAL PATH

1. DELAY: .6440"

2. TIMEBASE: .6402"

3. FREQUENCY: (MHz) 5

4. RATE: /S 20

5. UNITS:

DISTANCE

HALF PATH

TIME

6. VELOCITY: 125039

7. SAMPLES: 512

FIELD SIMULATOR: ROMPUS

S/N: CAL-RHOM-002

PULSER / RECEIVER

REFLECTOR:

FAR SDH

NEAR SDH

MAX AMPLITUDE:

80% FSH

80% FSH

SWEEP:

1.025"

.413"

GAIN:

25.5 dB

24 dB

1. MODE: PULSE ECHO

THRU-TRANSMISSION

2. PULSER: P4 TO P4

3. VOLTAGE: (V) 400

4. WIDTH: (Ns) 236

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.	REPORT NO
INITIAL	20 00	05/13/94	JS	SHROUD WELD H-5	R-S01
VERIFIED	14 00	05/16/94	JSR	SHROUD WELD H-5	R-S01
VERIFIED					
VERIFIED					
VERIFIED					
FINAL	07 00	05/17/94	JSR	SHROUD WELD H-5	R-S01

EXAMINER

LEVEL

DATE

REVIEWED BY

LEVEL

DATE

PAGE: 37 OF: 37

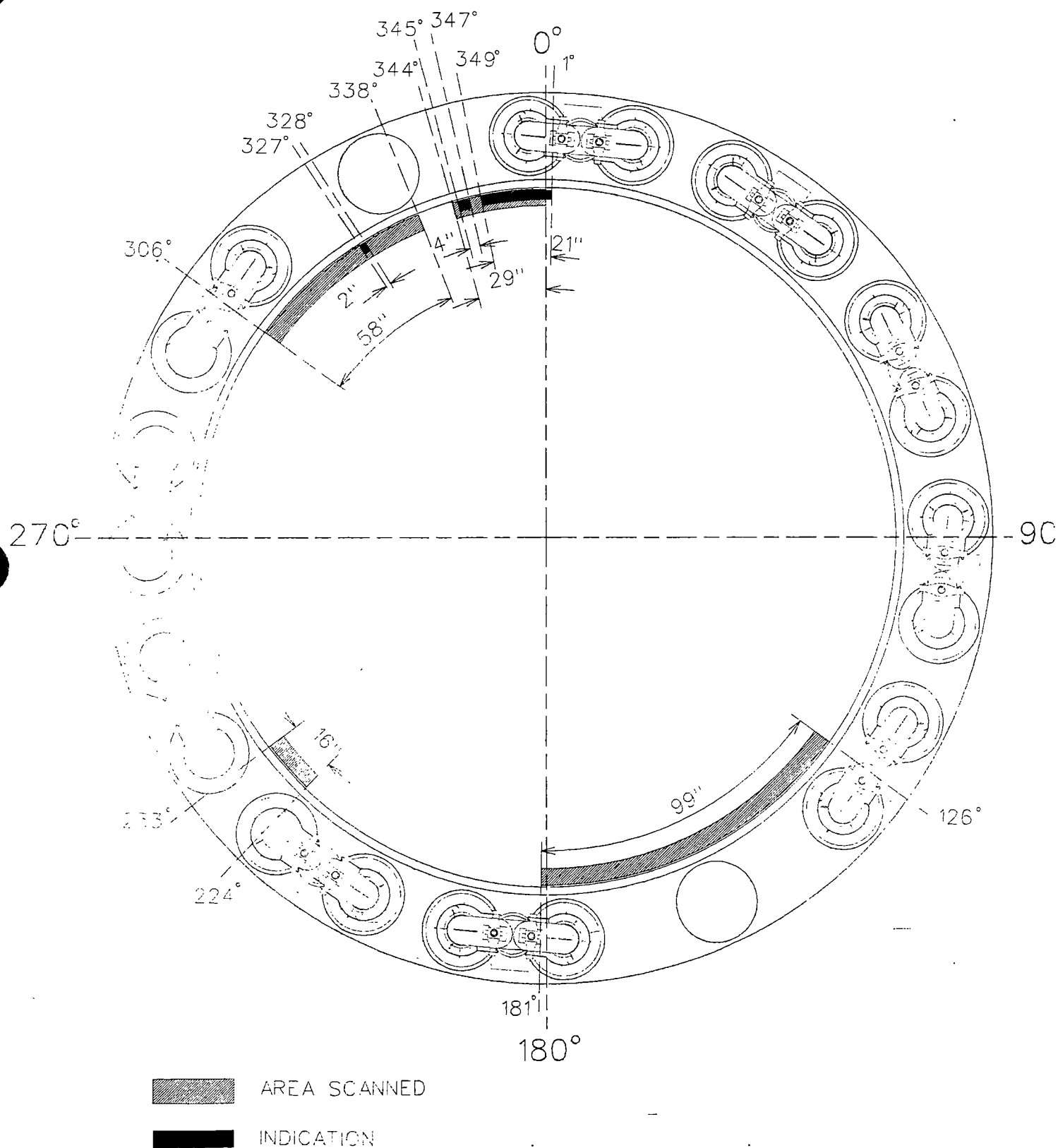
REVIEWED BY

TITLE

DATE

FORM UTOR REV C

Quad Cities Unit 1
H5 Shroud Weld Ultrasonic Examination Status





GE Nuclear Energy

EXAMINATION SUMMARY SHEET

REPORT NO.:

R-S01

PROJECT: QUAD CITIES UNIT 1
1EQ23

PROCEDURE: GE-UT-503 REV: 0 FRR: N/A
N/A
N/A

SYSTEM: SHROUD VESSEL

WELD NO.: H-5

N/A REV: N/A FRR: N/A
N/A
N/A

CONFIGURATION: CIRC WELD SEAM

N/A REV: N/A FRR: N/A
N/A
N/A

EXAMINER: T. ROCKWOOD LEVEL: II

☐ MT ☐ PT ☒ UT ☐ VT

EXAMINER: S. ALGER/L. BOWNE LEVEL: II/II

☒ CIRCUMFERENTIAL

EXAMINER: A. CONTI LEVEL: II

WELD TYPE: ☐ LONGITUDINAL ☐ OTHER N/A

DATA SHEET NO.(S): D-S01, D-S02

CAL SHEET NO.(S): C-S01 THRU C-S04

During the examination of the referenced weld, three (3) indications associated with IGSCC were recorded by the Smart 2000 system utilizing 45° shear wave and 60° refracted longitudinal wave search units.

These indications have the following parameters:

Indication Number	Distance from Start of Scan	Total Length	Remaining* Ligament	Flaw Depth	Side of Weld	Flaw Type	Search Unit
1	326.52°/590.19"	1.03°/1.86"	1.75"	.25"	Upper	IGSCC	45°S/60°RL
2	345.11°/623.79"	2.06°/3.72"	1.61"	.39"	Lower	IGSCC	60°RL
3	348.72°/630.31"	11.82°/21.37"	1.43"	.57"	Lower	IGSCC	60°RL

* Remaining Ligament is the thruwall subtracted from the plate thickness (2.0").

This examination was performed from both sides of the weld which covered 207.14" (31.8%) of the 650.69" total weld length. The sum of the indications recorded above extend for a total length of 26.95" (4.1%).

The 45° shear wave search unit also recorded non-relevant indications, inside surface and outside surface weld crown geometry, and welding discontinuities from both the upper and lower sides of the weld.

The 60° RL also recorded non-relevant indications, inside surface weld crown geometry, and from both the upper and lower sides of the weld.

No examination was performed from 0.61° to 126.21°, 180.61° to 223.71°, 233.11° to 306.21°, 338.11° to 343.71° due to one of the following limitations: Guide roots, Instrumentation lines, or Core Spray Downcomers.

Circumferential (L) dimensions for all the examinations were recorded in angular units. The conversion factor for inches to degrees is 1.8075 inches per degree.

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

RWP NO.: 3357

ADDITIONAL DATA SHEETS: N/A

COMPARED TO: ☐ PSI ☐ ISI REPORT NO.(S): N/A ☐ NO CHANGE

NO. OF RECORDABLE INDICATIONS: 3

TOTAL DOSE

EXAMINATION RESULTS: ☒ ACCEPTABLE

☐ UNACCEPTABLE

NO. OF REPORTABLE INDICATIONS: 3

0.010 MAN REM

SUMMARY BY: *[Signature]* LEVEL: III DATE: 5-30-94

UTILITY ISI ENGINEER REVIEW

6-1-94

ANII REVIEW DATE

GE REVIEWED BY: *[Signature]* LEVEL: III DATE: 5/30/94

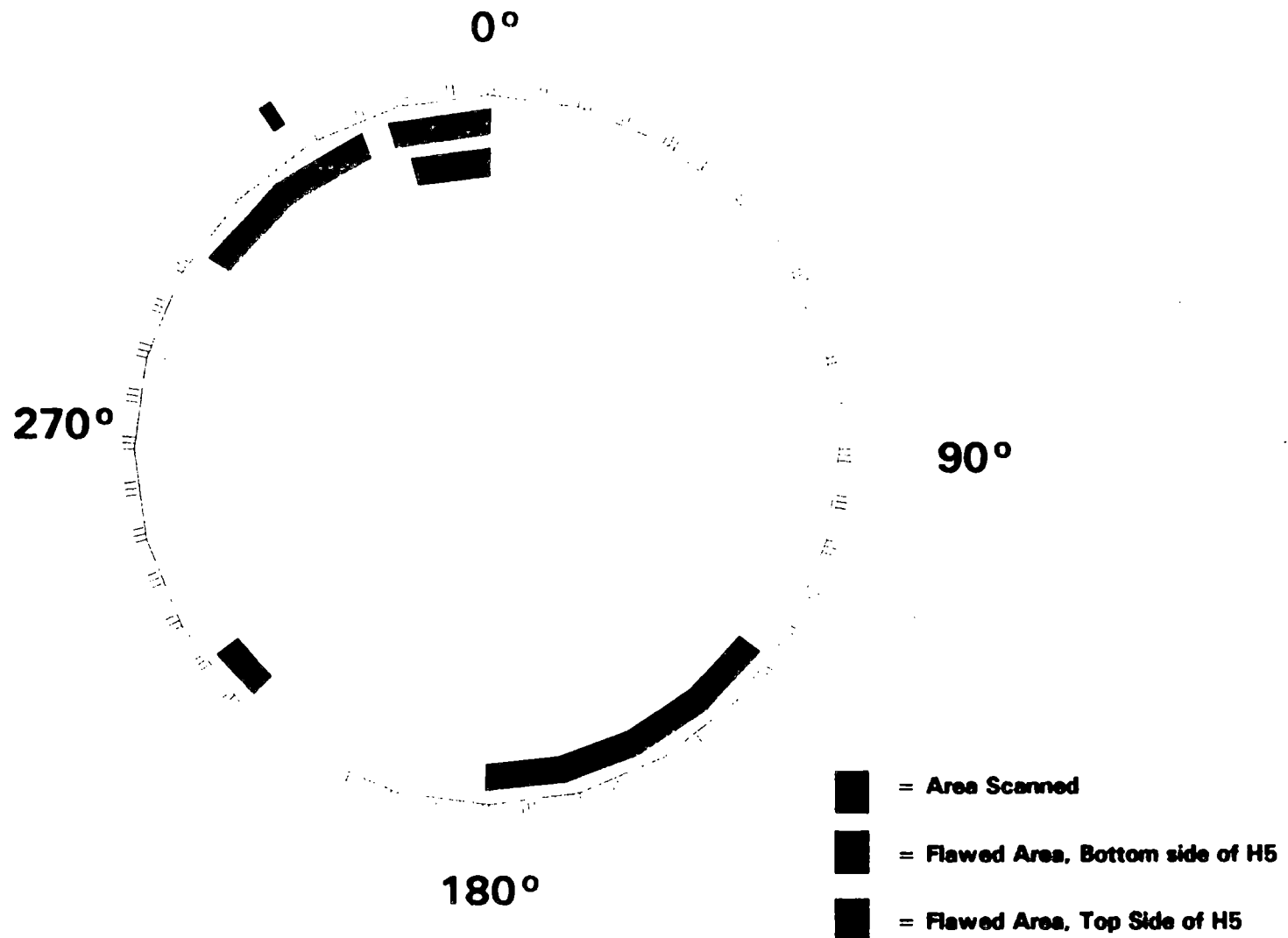
UTILITY QA REVIEW

6/4/94

PAGE: 1 OF: 14

FORM UT-09 REV 1

Quad Cities 1 Shroud Weld H5 Flaw Location By Azimuth



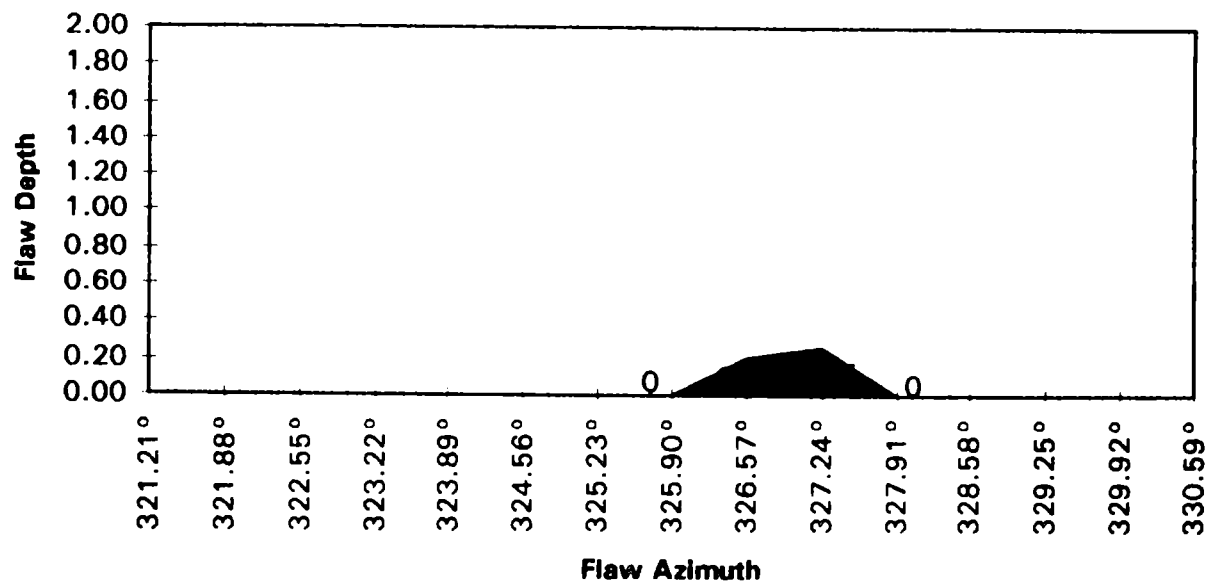
R-501

Page 2 of 14

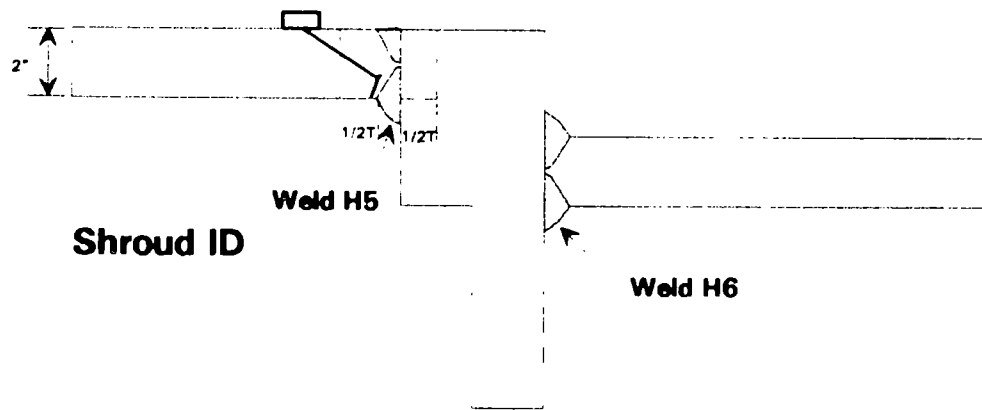
Quad Cities 1 Shroud Weld H5

Azimuths 325.9° to 327.91°

Flaw is on the top Side of Weld H5



Shroud OD



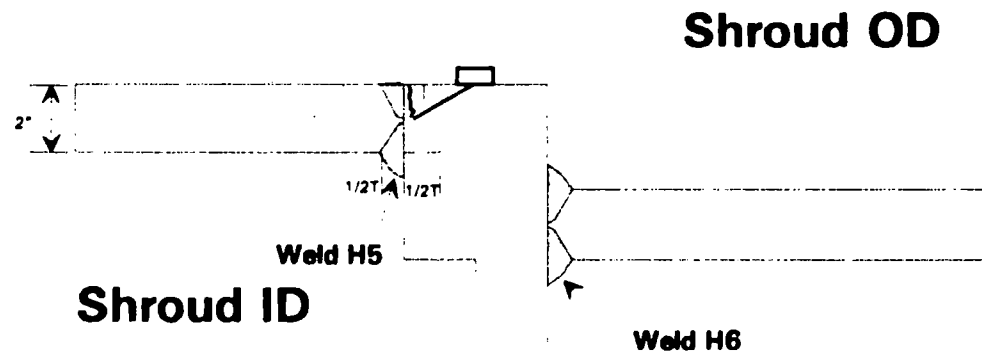
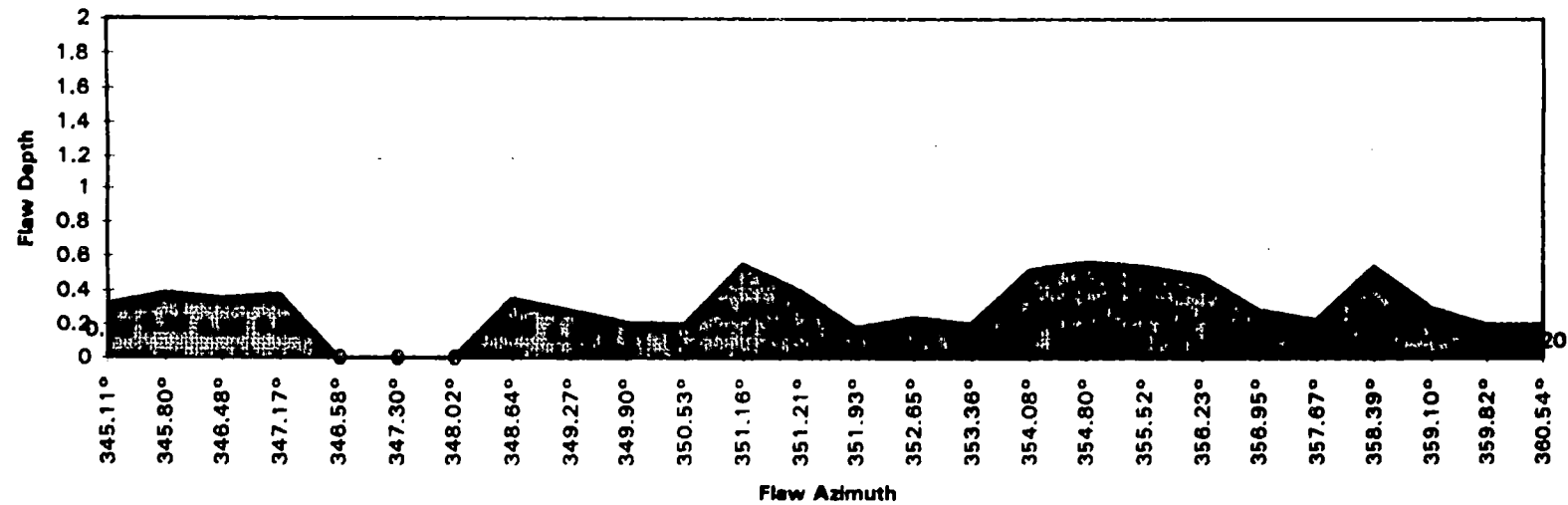
R-501

2. - 2 - id

Quad Cities 1 Shroud Weld H5

Azimuths 345.11° to 360.54°

Quad Cities Unit 1 Shroud Weld H5 Flaw Map

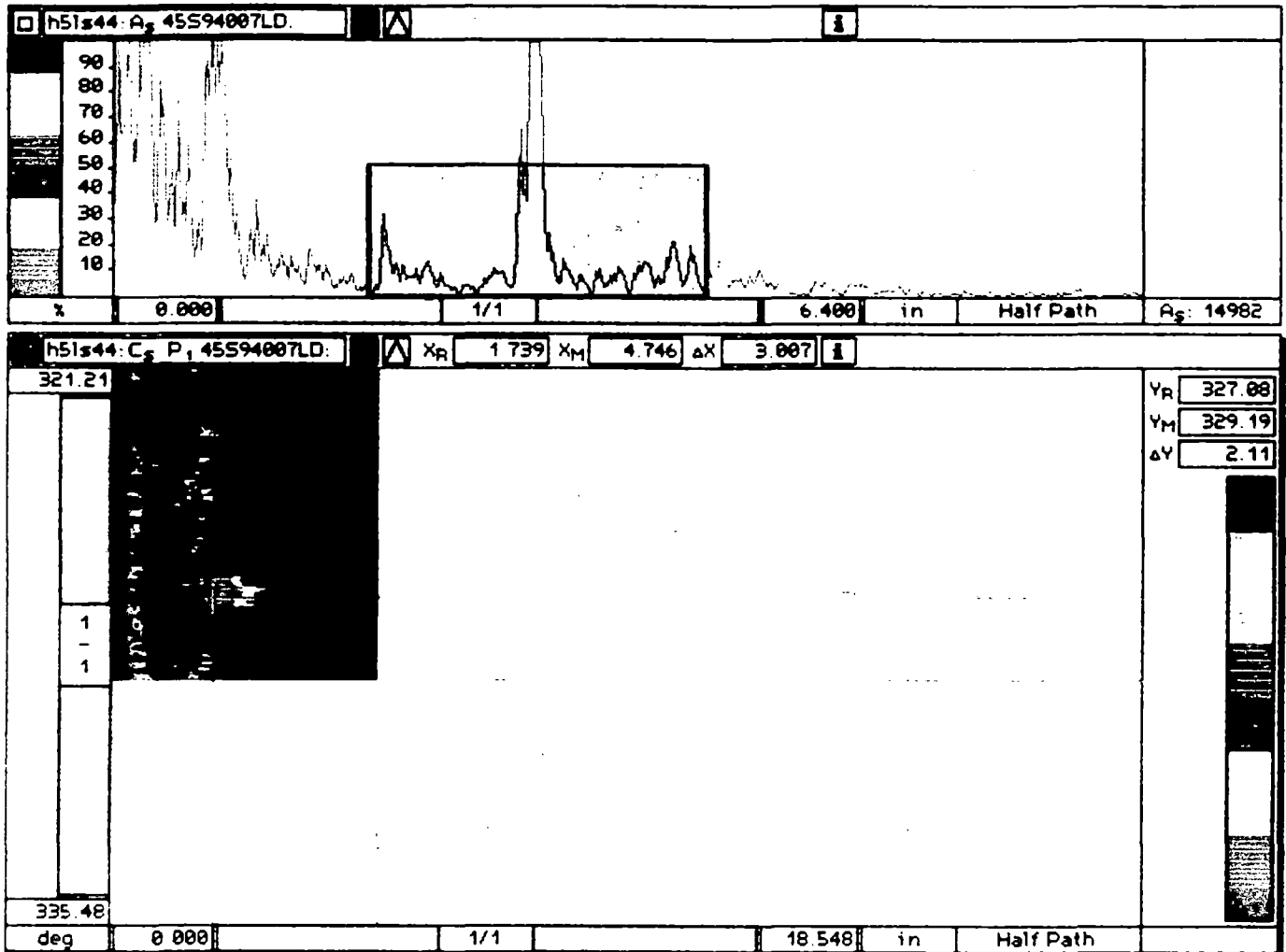


R-501
D - 1 - 14



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)

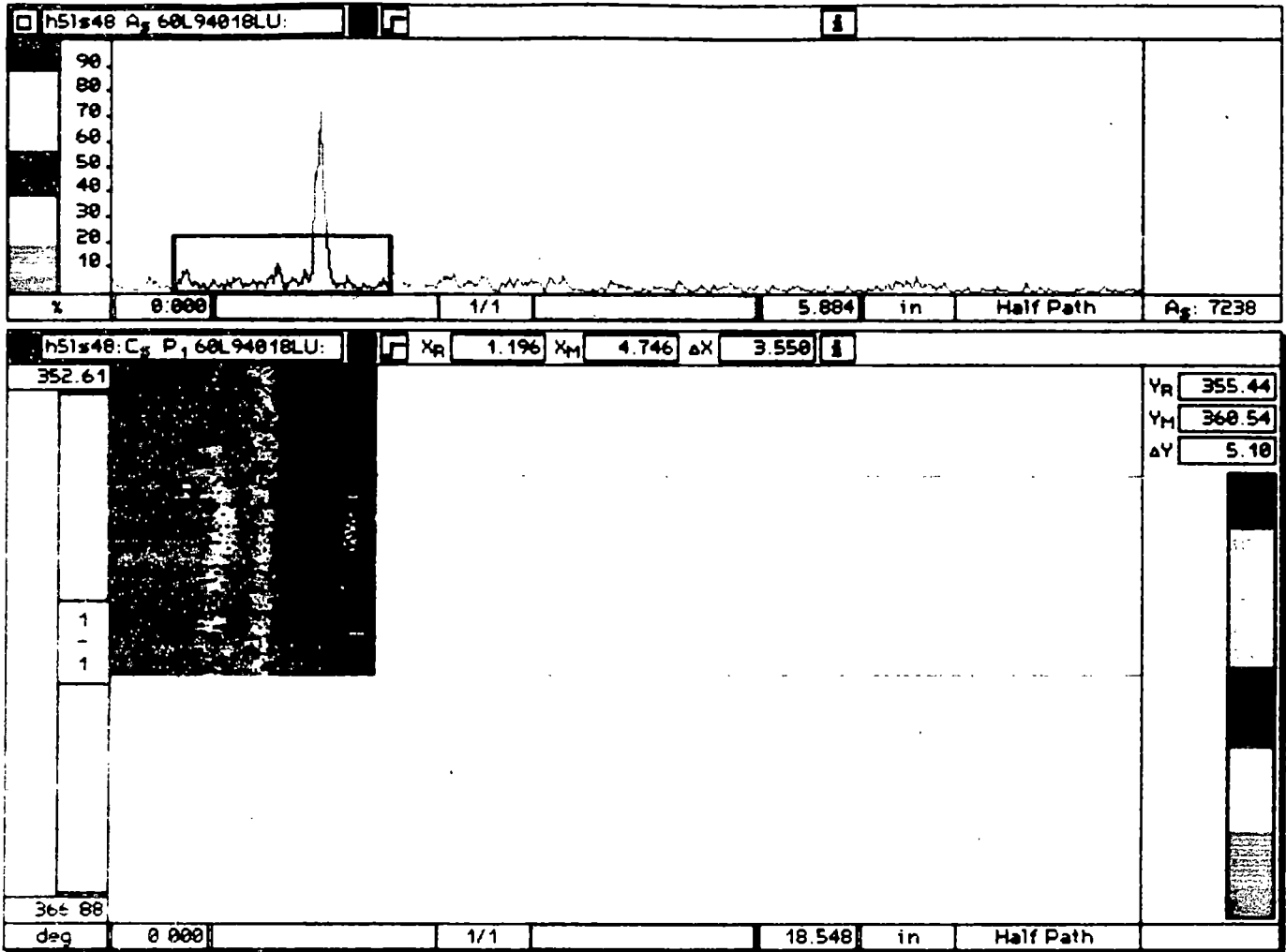


SITE: QUAD CITIES UNIT: 1 PROJECT NO.: 1EQ23 REPORT NO.: R-S01
WELD NO.: SHROUD H-5 SEARCH UNIT: 45°S INDICATION NO.: 1 PAGE 5 OF 14



GE Nuclear Energy

ULTRASONIC SCAN DATA PRINT SHEET (AUTOMATED WITH Smart 2000)



SITE: QUAD CITIES UNIT: 1 PROJECT NO.: 1EQ23 REPORT NO.: R-S01
WELD NO.: SHROUD H-5 SEARCH UNIT: 60°RL INDICATION NO.: 3 PAGE 6 OF 14



GE Nuclear Energy

INDICATION PLOT SHEET

SITE: QUAD CITIES UNIT: 1

REPORT NO.:

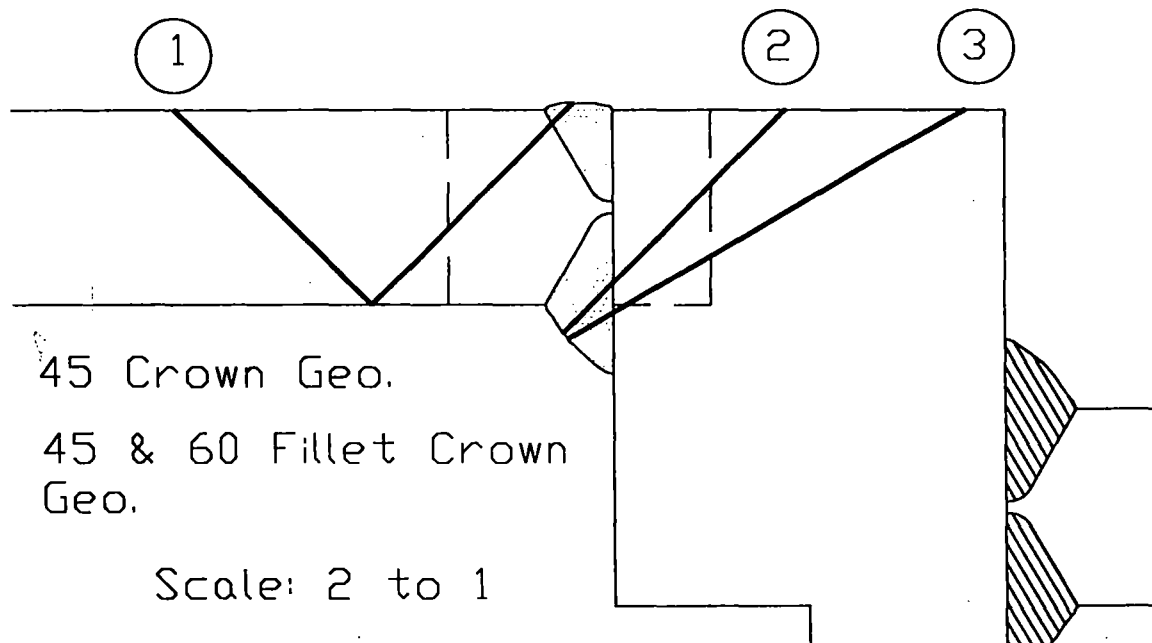
PROJECT: 1EQ23

R-S01

SYSTEM: SHROUD VESSEL

COMPONENT ID H-5

CONFIGURATION: SHROUD WALL FLOW CORE PLATE RING



George E. [Signature]
DRAWN BY

III 5-30-94
LEVEL DATE

Brian F. Wilson III 6-1-94
UTILITY REVIEW DATE

Al [Signature] IV 5/30/94
GE REVIEWED BY LEVEL DATE

Mary [Signature] VI 6/4/94
UTILITY REVIEW DATE

REVIEW

DATE

PAGE: 7 OF: 14

FORM UT-02 REV. 1



GE Nuclear Energy

INDICATION PLOT SHEET

SITE: QUAD CITIES UNIT: 1

REPORT NO.: R-S01

PROJECT: 1EQ23

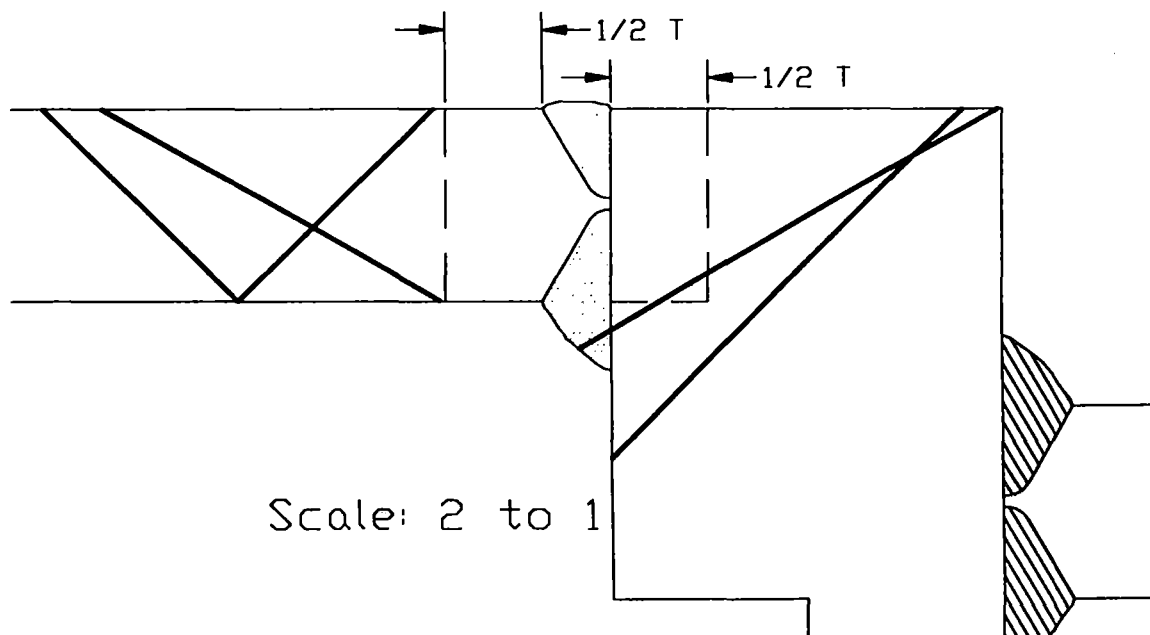
R-S01

SYSTEM: SHROUD VESSEL

COMPONENT ID H-5

CONFIGURATION: SHROUD WALL FLOW CORE PLATE RING

Typical weld coverage 45 & 60



Scale: 2 to 1

George E. Decker
DRAWN BY

III 5-30-94
LEVEL DATE

Brian F. Wilson
UTILITY REVIEW

III 6-1-94
DATE

Ala. G. ...
GE REVIEWED BY

III 5/30/94
LEVEL DATE

Mary J. Field
UTILITY REVIEW

6/14/94
DATE

REVIEW

DATE

PAGE: 8 OF: 14

FORM UT-02 REV 1



GE Nuclear Energy

SHROUD ULTRASONIC EXAMINATION DATA SHEET (AUTOMATED with Smart 2000)

SITE: QUAD CITIES

PROCEDURE NO.: GE-UT-503

REPORT NO.: R-S01

UNIT: 1

REVISION NO.: 0

DATA SHEET NO.: R-S01

PROJECT NO.: 1EQ23

FRR NO.: N/A

CALIBRATION SHEET NO.: C-S01 THRU S04

WELD ID: H-5

EXAMINATION SURFACE: OD

EXAM START: 02:35

EXAM END: 17:30

WELD CROWN WIDTH: 1.0" (NOMINAL)

SEARCH UNIT SEPARATION (FRONT TO FRONT): 4.0"

LUG or CELL #:	SCAN ° START STOP:	SEARCH UNIT:	SCAN dB:	FILE NAME:	DISK/ SIDE:	DATE:	RESULTS:	COMMENTS:	EXAMINER'S INITIALS:
18	126.21 135.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	48.5 48.5 60 60	H5LS18	S-01/A	5/26	C. FH C. EH C C. EH		TSR
18	126.21 135.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 60 60	H5LS18R	S-02/B	5/28	C. FH C. EH C C. EH	Supplemental scan - Lower dB for 45° Shear	AC
19	133.71 143.11	45° LKDN 45° LKUP 60° LKDN 60° LKUP	48.5 48.5 60 60	H5LS19	S-01/A	5/26	C. FH C. EH C C. EH		TSR
19	133.71 143.11	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 60 60	H5LS19R	S-02/B	5/28	C. FH C. EH C C. EH	Supplemental scan - Lower dB for 45° Shear	AC
20	141.21 150.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	48.5 48.5 60 60	H5LS20	S-01/A	5/26	C. FH C. EH C C. EH		TSR
20	141.21 150.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 60 60	H5LS20R	S-02/B	5/28	C. FH C. EH C C. EH	Supplemental scan - Lower dB for 45° Shear	AC
21	148.71 158.11	45° LKDN 45° LKUP 60° LKDN 60° LKUP	48.5 48.5 60 60	H5LS21	S-02/A	5/26	C. FH C. EH C C. EH	Boat sample area	TSR
22	156.21 165.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 60 60	H5LS22	S-02/B	5/28	C. FH C. EH C C. EH		AC
23	163.71 173.11	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 60 60	H5LS22*	S-03/A	5/28	C. FH C. EH C C. EH	* Scanned with LS22 offsets and filename	AC

CALIBRATION GAIN:

45° LKDN 36.5
45° LKUP 36.5
60° LKDN 59.0
60° LKUP 61.0

* EXAMINATION RESULTS:

A - NO RECORDABLE INDICATIONS D - ACOUSTIC INTERFACE G - WELD DEFECTS
B - NON-GEOMETRIC INDICATIONS E - INSIDE SURFACE GEOMETRY H - WELD CROWN GEOMETRY
C - NON-RELEVANT INDICATIONS F - OUTSIDE SURFACE GEOMETRY J - OTHER (SEE COMMENTS)

REMARKS: Exam Start Date: 5-26-94

Exam End Date: 5-28-94

EXAMINER <i>Adam C. [Signature]</i>	LEVEL II	DATE 5-28-94	CECCO REVIEW <i>Mark J. Leidl</i>	DATE 6/4/94	ANII REVIEW	DATE
GE REVIEWED BY <i>George E. [Signature]</i>	LEVEL III	DATE 5-30-94	UTILITY REVIEW <i>Brian A. Wilson</i>	DATE 6-1-94	PAGE: 9 OF: 14	



GE Nuclear Energy

SHROUD ULTRASONIC EXAMINATION DATA SHEET (AUTOMATED with Smart 2000)

SITE: QUAD CITIES

PROCEDURE NO.: GE-UT-503

REPORT NO.: R-S01

UNIT: 1

REVISION NO.: 0

DATA SHEET NO.: R-S02

PROJECT NO.: 1EQ23

FRR NO.: N/A

CALIBRATION SHEET NO.: C-S01 THRU S04

WELD ID: H-5

EXAMINATION SURFACE: OD

EXAM START: 02:35

EXAM END: 17:30

WELD CROWN WIDTH: 1.0" (NOMINAL)

SEARCH UNIT SEPARATION (FRONT TO FRONT): 4.0"

LUG or CELL #:	SCAN ° START STOP:	SEARCH UNIT:	SCAN dB:	FILE NAME:	DISK/ SIDE:	DATE:	RESULTS: *	COMMENTS:	EXAMINER'S INITIALS:
24	171.21 180.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 60 60	H5LS24	S-02/B	5/28	C. FH C. EH C C. EH	* Scanned with LS23 offsets	AC
31	223.71 233.11	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 60 60	H5LS31	S-02/B	5/28	C. FH C. EH C C. EH		TSR
42	306.21 315.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	48.5 48.5 60 60	H5LS42	S-02/A	5/26	C. FH C. EH C C. EH		AC
42	306.21 315.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	45 45 60 60	H5LS42	S-02/B	5/28	C. FH C. EH C C. EH		TSR
43	313.71 323.11	45° LKDN 45° LKUP 60° LKDN 60° LKUP	48.5 48.5 60 60	H5LS43	S-02/A	5/26	C. FH C. EH C C. EH		TSR
44	321.21 330.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	48.5 48.5 60 60	H5LS44	S-02/A	5/26	B. C. FH C. EH C C. EH		TSR
45	328.71 338.11	45° LKDN 45° LKUP 60° LKDN 60° LKUP	48.5 48.5 60 60	H5LS45	S-02/A	5/26	C. FH C. EH C C. EH		TSR
47	343.71 353.11	45° LKDN 45° LKUP 60° LKDN 60° LKUP	40 40 60 58.5	H5LS47	S-01/B	5/26	C. FH C. EH C B. C. EH		AC
48	351.21 360.61	45° LKDN 45° LKUP 60° LKDN 60° LKUP	44 44 60 58.5	H5LS48	S-01/B	5/26	C. FH C. EH C B. C. EH		AC

CALIBRATION GAIN:

45° LKDN 36.5
45° LKUP 38.5
60° LKDN 59
60° LKUP 61

* EXAMINATION RESULTS:

A - NO RECORDABLE INDICATIONS D - ACOUSTIC INTERFACE G - WELD DEFECTS
B - NON-GEOMETRIC INDICATIONS E - INSIDE SURFACE GEOMETRY H - WELD CROWN GEOMETRY
C - NON-RELEVANT INDICATIONS F - OUTSIDE SURFACE GEOMETRY J - OTHER (SEE COMMENTS)

REMARKS: Exam Start Date: 5-26-94

Exam End Date: 5-28-94

EXAMINER

LEVEL

DATE

GE REVIEWED BY

LEVEL

DATE

CECO QC REVIEW

DATE

UTILITY REVIEW

DATE

ANII REVIEW

DATE

PAGE: 10 OF: 14

FORM UT-31 REV. 2



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET
(AUTOMATED WITH Smart 2000)

SITE: QUAD CITIES UNIT: 1

CALIBRATION SHEET NO.: C-S01

PROJECT NO.: 1EQ23

LINEARITY SHEET NO.: L-01

PROCEDURE NO.: GE-UT-503 REVISION: 0 FRR: N/A

Instrument TECRAD / TOMOSCAN TTS10090114
Manufacturer / Model System Serial No.
Search Unit SIGMA 2290-94017 2(6" x 23") 4.0 MHz 60° RI .45"
Manufacturer Serial No. Size Freq. Angle/Mode Incident to wedge front
Cable 2(RG-174, RG-174, RG-174) 2(150', 20', 28") 8
Type Length No. of Connectors
Calibration Standard CAL-SHRD-20 STAINLESS 2.0" 80 °F
Serial No. Material Thickness Temp.
Thermometer 131849
Serial No.
Couplant DEMIN. WATER N/A
Type Batch No.

CALIBRATION

ORIENTATION: CIRC N/A
TYPE: OD NOTCH TIP N/A
DEPTH: 1.0" N/A
AMPLITUDE: 80% N/A
SWEEP: 1.946" N/A
GAIN: (dB) 61 dB N/A
☐ TIME ☐ DEPTH ☒ METAL PATH

BASIC SETTINGS

1. DELAY: 1.0173"
2. TIMEBASE: 5.8195"
3. FREQUENCY: (MHz) 10
4. RATE: /S 20
5. UNITS: ☐ DISTANCE ☒ HALF PATH ☐ TIME
6. VELOCITY: 227322
7. SAMPLES: 512

FIELD SIMULATOR: ROMPUS S/N: CAL-RHOM-002

REFLECTOR:	FAR SDH	NEAR SDH
MAX AMPLITUDE:	45% FSH	50% FSH
SWEEP:	1.396"	.680"
GAIN:	36 dB	36 dB

PULSER / RECEIVER

1. MODE: ☐ PULSE ECHO ☒ THRU-TRANSMISSION
2. PULSER: P1 TO R1
3. VOLTAGE: (v) 400
4. WIDTH: (Ns) 122
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.	REPORT NO
INITIAL	04:00	05/25/94	<i>tc</i>	SHROUD WELD H-5	R-S01
VERIFIED					
VERIFIED					
VERIFIED					
VERIFIED					
FINAL	18:20	05/28/94	<i>BR</i>	SHROUD WELD H-5	R-S01

EXAMINER

LEVEL

DATE

REVIEWED BY

LEVEL

DATE

REVIEWED BY

TITLE

DATE

PAGE: 11 OF 14

FORM UT-06 REV. 0



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET (AUTOMATED WITH Smart 2000)

SITE: QUAD CITIES UNIT: 1

CALIBRATION SHEET NO.: C-S02

PROJECT NO.: 1EQ23

LINEARITY SHEET NO.: L-02

PROCEDURE NO.: GE-UT-503 REVISION: 0 FRR: N/A

Instrument TECRAD / TOMOSCAN TTS10090114
 Search Unit SIGMA Manufacturer / Model 3511-94007 System Serial No. 4" X .38" 2.25 MHz 45°S 60"
 Cable RG-174, RG-174, RG-174 150', 20', 28" 4 Manufacturer Serial No. Size Freq. Angle/Mode Incident to wedge front
 Calibration Standard CAL-SHRD-20 STAINLESS 2.0" 80 °F
 Thermometer 131849 Serial No. Material Thickness Temp.
 Couplant DEMIN WATER N/A Batch No.

CALIBRATION

ORIENTATION: CIRC CIRC
 TYPE: ID NOTCH TIP ID NOTCH BASE
 DEPTH: .5" 2.0"
 AMPLITUDE: 80% 80%
 SWEEP: 2.101" 2.825"
 GAIN: (dB) 36.5 dB 17 dB
☐ TIME ☐ DEPTH ☒ METAL PATH

BASIC SETTINGS

1. DELAY: .6563"
 2. TIMEBASE: 6.400"
 3. FREQUENCY: (MHz) 5
 4. RATE: /S 20
 5. UNITS: ☐ DISTANCE ☒ HALF PATH ☐ TIME
 6. VELOCITY: 124999
 7. SAMPLES: 512

FIELD SIMULATOR: ROMPUS S/N: CAL-RHQM-002

PULSER / RECEIVER

1. MODE: ☒ PULSE ECHO ☐ THRU-TRANSMISSION
 2. PULSER: P2 TO P2
 3. VOLTAGE: (v) 400
 4. WIDTH: (Ns) 236
 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.	REPORT NO
INITIAL	04:05	05/25/94	<i>HC</i>	SHROUD WELD H-S	R-S01
VERIFIED					
VERIFIED					
VERIFIED					
VERIFIED					
FINAL	18:25	05/28/94	<i>TSR</i>	SHROUD WELD H-S	R-S01

EXAMINER

LEVEL

DATE

REVIEWED BY

LEVEL

DATE

REVIEWED BY

TITLE

DATE

PAGE: 12 OF: 14

FORM UT-06 REV 0



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET (AUTOMATED WITH Smart 2000)

SITE: QUAD CITIES UNIT: 1

CALIBRATION SHEET NO.: C-S03

PROJECT NO.: 1EQ23

LINEARITY SHEET NO.: L-03

PROCEDURE NO.: GE-UT-503 REVISION: 0 FRR: N/A

Instrument TECRAD / TOMOSCAN TTS10090114
Manufacturer / Model System Serial No.
 Search Unit SIGMA 2290-94018 2(.6"x.23") 4.0 MHz 60°RI .45"
Manufacturer Serial No. Size Freq. Angle/Mode Incident to wedge front
 Cable 2(RG-174, RG-174, RG-174) 2(150', 20', 28") 8
Type Length No. of Connectors
 Calibration Standard CAL-SHRD-20 STAINLESS 2.0" 80 °F
Serial No. Material Thickness Temp.
 Thermometer 131849
Serial No.
 Couplant DEMIN. WATER N/A
Type Batch No.

CALIBRATION

ORIENTATION: CIRC N/A
 TYPE: OD NOTCH TIP N/A
 DEPTH: 1.0" N/A
 AMPLITUDE: 80% N/A
 SWEEP: 2.099" N/A
 GAIN: (dB) 59 dB N/A
☐ TIME ☐ DEPTH ☒ METAL PATH

BASIC SETTINGS

1. DELAY: 1.0343"
 2. TIMEBASE: 5.8840"
 3. FREQUENCY: (MHz) 10
 4. RATE: /S 20
 5. UNITS: ☐ DISTANCE ☒ HALF PATH ☐ TIME
 6. VELOCITY: 229842
 7. SAMPLES: 512

FIELD SIMULATOR: ROMPUS S/N: CAL-RHOM-002

REFLECTOR:	FAR SDH	NEAR SDH
MAX AMPLITUDE:	50% FSH	48% FSH
SWEEP:	1.431"	.713"
GAIN:	36 dB	36 dB

PULSER / RECEIVER

1. MODE: ☐ PULSE ECHO ☒ THRU-TRANSMISSION
 2. PULSER: P3 TO R3
 3. VOLTAGE: (V) 400
 4. WIDTH: (Ns) 122
 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.	REPORT NO
INITIAL	04:10	05/25/94	<i>TC</i>	SHROUD WELD H-5	R-S01
VERIFIED					
VERIFIED					
VERIFIED					
VERIFIED					
FINAL	18:30	05/28/94	<i>ISR</i>	SHROUD WELD H-5	R-S01

EXAMINER

LEVEL

DATE

REVIEWED BY

LEVEL

DATE

REVIEWED BY

TITLE

DATE

PAGE: 13 OF: 14

FORM UT-05 REV D

0520 AC Mark J. Field 6/4/94



GE Nuclear Energy

ULTRASONIC CALIBRATION DATA SHEET (AUTOMATED WITH Smart 2000)

SITE: QUAD CITIES UNIT: 1

CALIBRATION SHEET NO.: C-S04

PROJECT NO.: 1EQ23

LINEARITY SHEET NO.: L-04

PROCEDURE NO.: GE-UT-503

REVISION: 0

FRR: N/A

Instrument TECRAD / TOMOSCAN

TTS10090114

Search Unit SIGMA

Manufacturer / Model

System Serial No.

3511-94006 4" X .38" 2.25 MHz 45°S .60"

Manufacturer

Serial No.

Size

Freq.

Angle/Mode

Incident to wedge front

Cable RG-174 RG-174 RG-174

150' 20' 28"

4

Type

Length

No. of Connectors

Calibration Standard CAL-SHRD-20

STAINLESS

2.0"

80

°F

Serial No.

Material

Thickness

Temp.

Thermometer 131849

Serial No.

Couplant DEMIN WATER

N/A

Type

Batch No.

CALIBRATION

ORIENTATION: CIRC CIRC

TYPE: ID NOTCH TIP ID NOTCH BASE

DEPTH: .5" 2.0"

AMPLITUDE: 80% 80%

SWEEP: 2.134" 2.851"

GAIN: (dB) 36.5 dB 16.5 dB

☐ TIME

☐ DEPTH

☒ METAL PATH

BASIC SETTINGS

1. DELAY: 6440"

2. TIMEBASE: 6.402"

3. FREQUENCY: (MHz) 5

4. RATE: /S 20

5. UNITS:

☐ DISTANCE

☒ HALF PATH

☐ TIME

6. VELOCITY: 125039

7. SAMPLES: 512

FIELD SIMULATOR: ROMPUS S/N: CAL-RHOM-002

PULSER / RECEIVER

REFLECTOR: FAR SDH NEAR SDH

MAX AMPLITUDE: 80% FSH 80% FSH

SWEEP: 1.023" .410"

GAIN: 26 dB 24.5 dB

1. MODE: ☒ PULSE ECHO ☐ THRU-TRANSMISSION

2. PULSER: P4 TO P4

3. VOLTAGE: (v) 400

4. WIDTH: (Ns) 236

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.	REPORT NO
INITIAL	04:15	05/25/94	<i>JS</i>	SHROUD WELD H-5	R-S01
VERIFIED					
VERIFIED					
VERIFIED					
VERIFIED					
FINAL	18:35	05/28/94	<i>JS</i>	SHROUD WELD H-5	R-S01

EXAMINER

LEVEL

DATE

REVIEWED BY

LEVEL

DATE

REVIEWED BY

TITLE

DATE

PAGE: 14 OF: 14

FORM UT-08 REV. 0

CLCO AC, Paul J. Field 6/4/94