



GE Nuclear Energy

GERIS 2000 Examination Summary Sheet

Project: TVA, Browns Ferry Nuclear Plant, Unit 3

System: Reactor Pressure Vessel

Weld ID: V-1-C

ASME Code Category: B-A

Calibration Sheets: C-003, C-139, C-140 and C-141

Supporting Data: Examination Data Sheets E-03-00 thru E-03-02, Indication Data Sheets 03-001 thru 03-004, Screen Prints, Exam Patch Location Map, Exam Coverage Plots, GERIS 2000 Setup Records and Manual Examination Data Sheet D-093, D-094, D-098 and D-102.

Examination Summary

The ultrasonic examination of weld V-1-C resulted in no recorded indications that exceed the allowable standards of IWB-3500, ASME Section XI, 1986 Edition, No Addenda.

The ASME Section XI required examination volume was examined with the GERIS 2000 System from the RPV inside surface utilizing Procedure No. GE-UT-700, Rev. 2. This examination was limited due to the N2-H Nozzle at 270°, and the lower limit of the GERIS 2000 manipulator. Areas that could not be examined using the GERIS 2000 and accessible from the outside surface were examined by the manual technique utilizing Procedure No. GE-UT-300, Rev. 6, FRR-004. The total examination coverage was calculated to be 88%.

The GERIS 2000 utilizes an array of search units arranged to effectively examine the weld and adjacent base material parallel and perpendicular to the weld axis in two directions. The transducer package consisted of 0° longitudinal, 45° and 60° shear wave, and 70° refracted longitudinal (RL) wave search units.

The GERIS 2000 system recorded indications with the 0° base metal scans and the 45° shear wave scans that were evaluated and found to be acceptable per the referencing Code section.

The manual technique utilized 0° longitudinal, 45° and 60° shear wave search units both parallel and perpendicular to the weld axis in two directions to effectively examine the weld and adjacent base material.

No indications were recorded with the manual technique.

Fabrication records and previous examination results were reviewed prior to the completion of this examination summary.

GERIS Analyst: *CD MA*

GE Reviewer: *Deesa Kimball*

LEVEL: *III* DATE: *12/15/93*

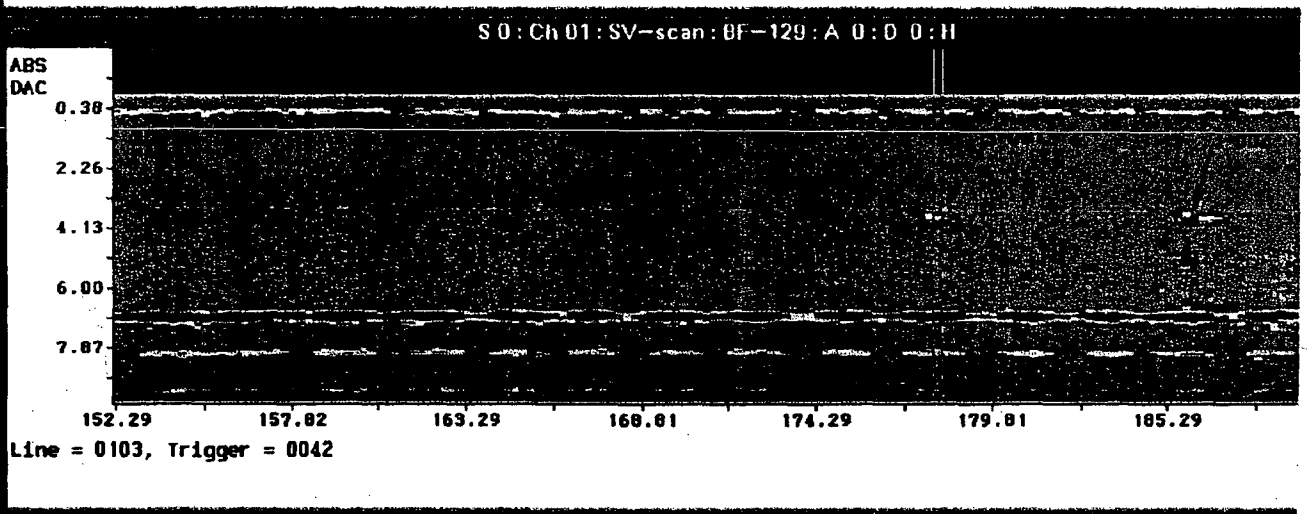
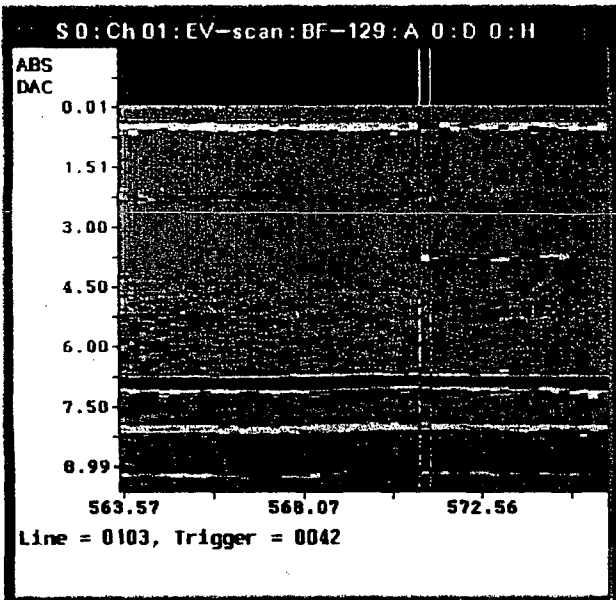
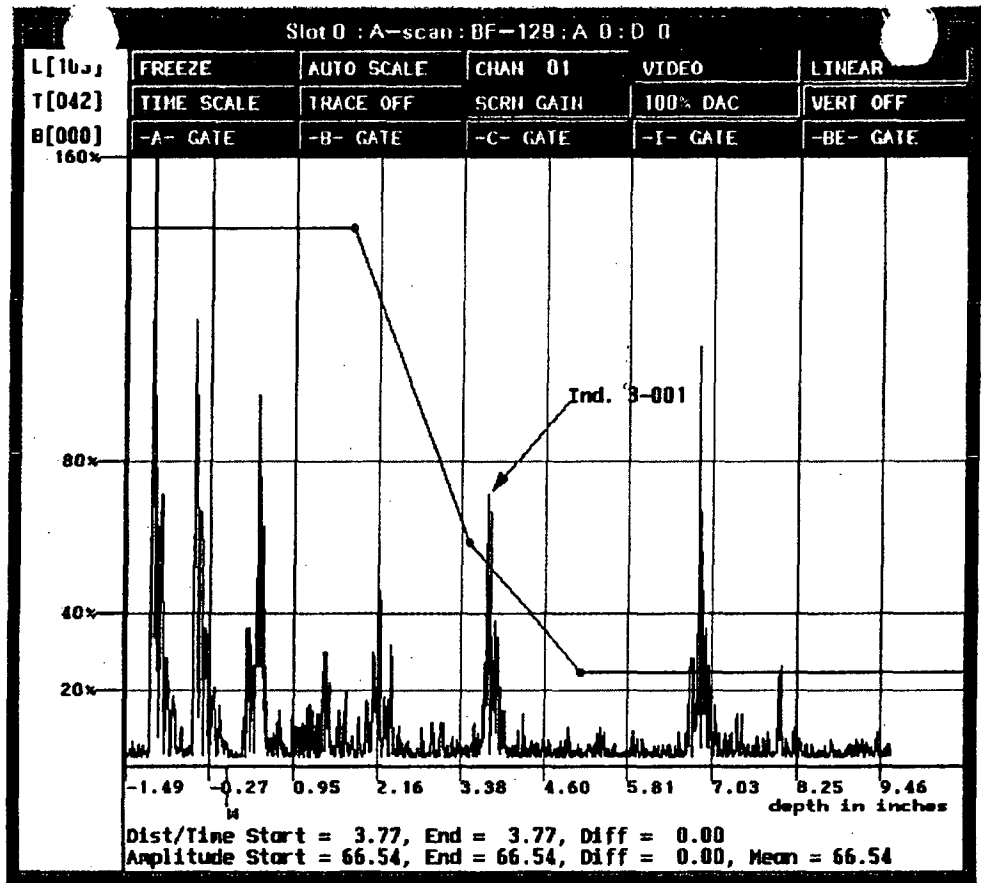
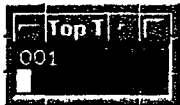
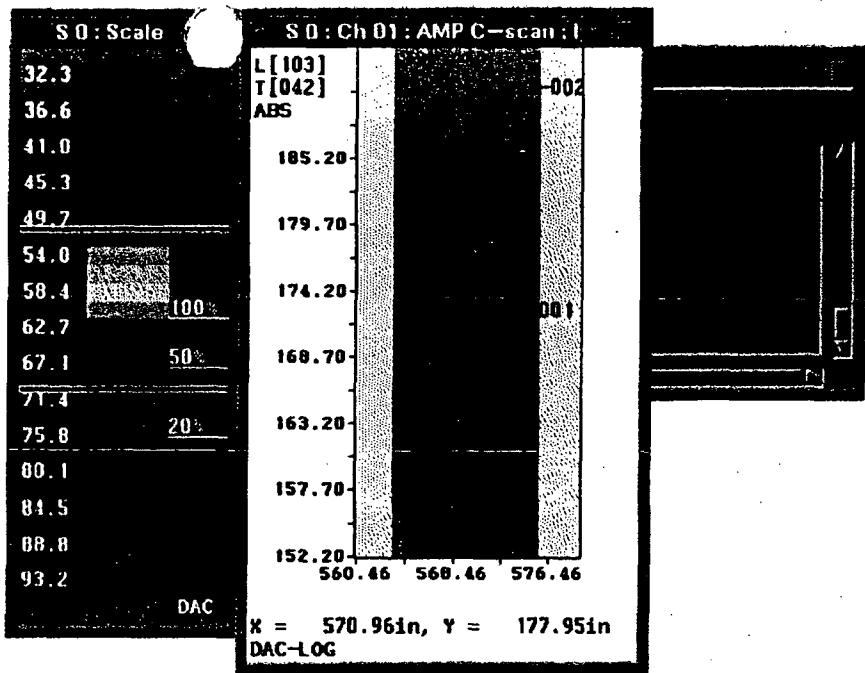
LEVEL: *III* DATE: *12-15-93*

UTILITY Review: *J. Woody*

ANII Review:

TITLE: *II* DATE: *1/26/94*

TITLE: *Albert Ladd* DATE: *7/12/94*



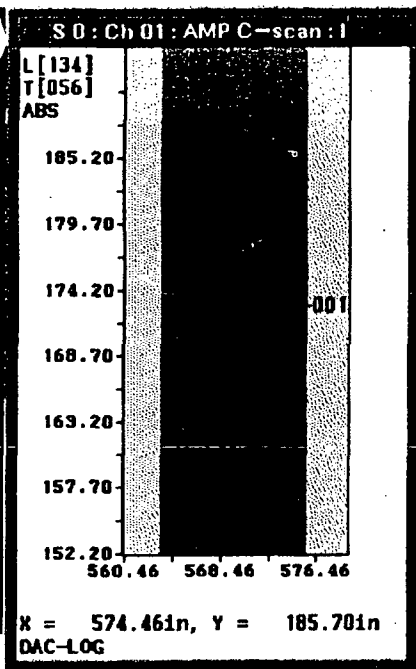
R1159
9 OF 25
00477

S 0 : Scale

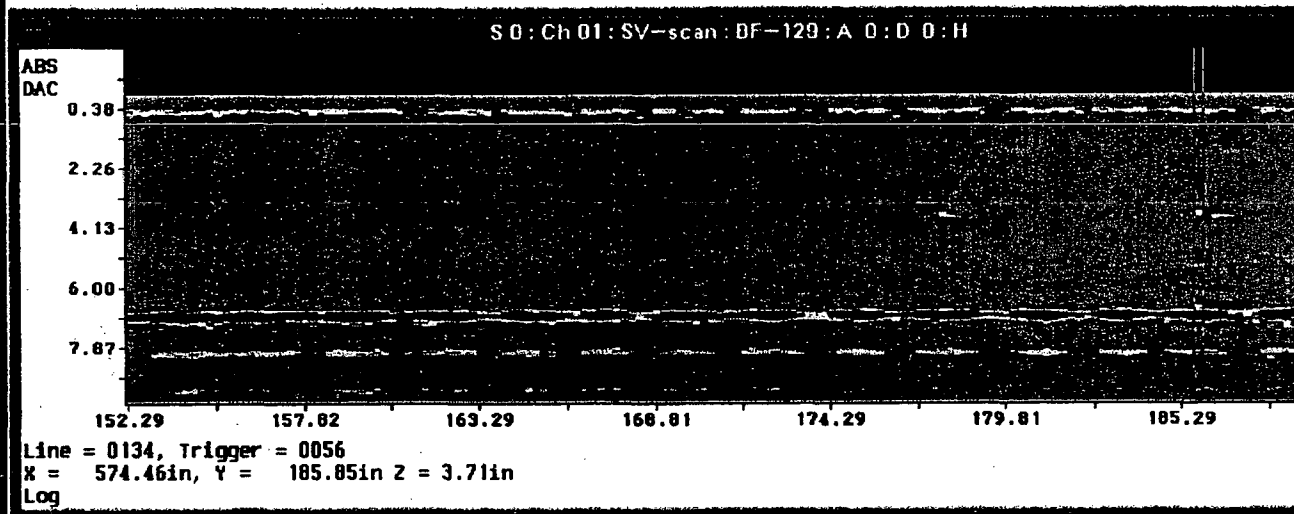
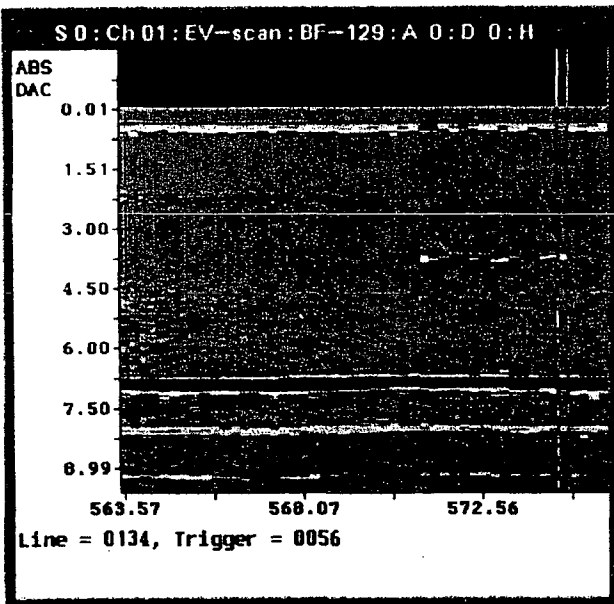
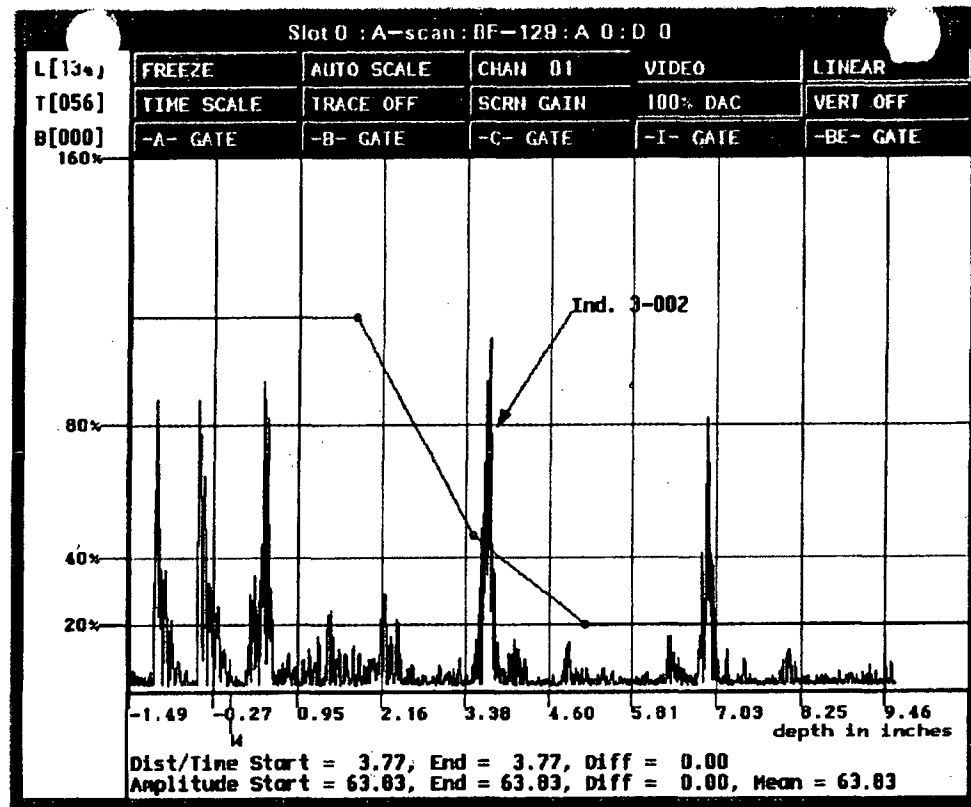
32.3
36.6
41.0
45.3
49.7
54.0
58.4
62.7
67.1
71.3
75.8
80.1
84.5
88.8
93.2

100%
50%
20%

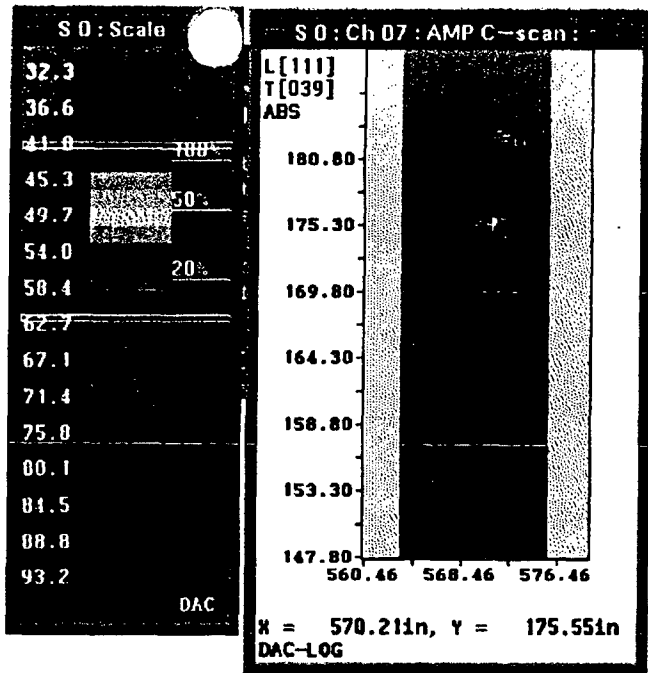
DAC



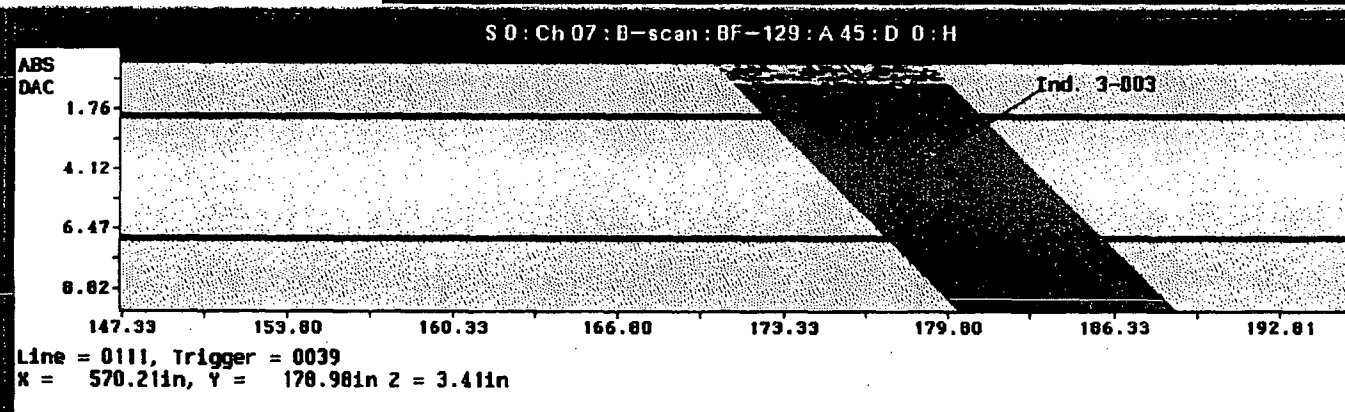
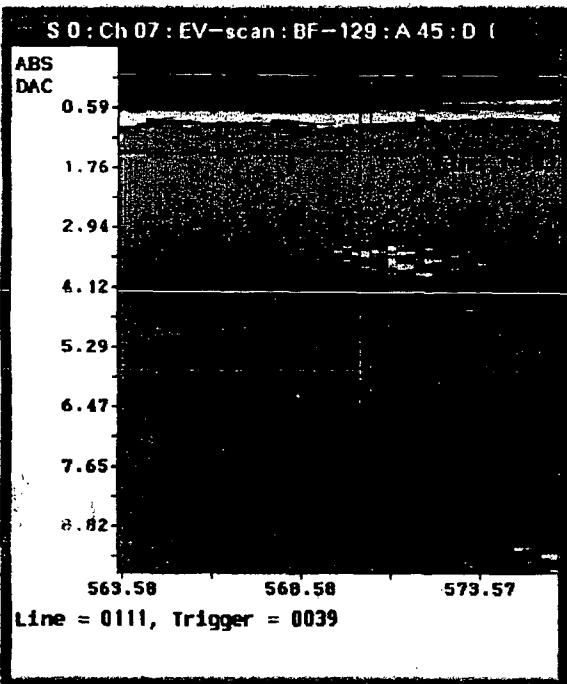
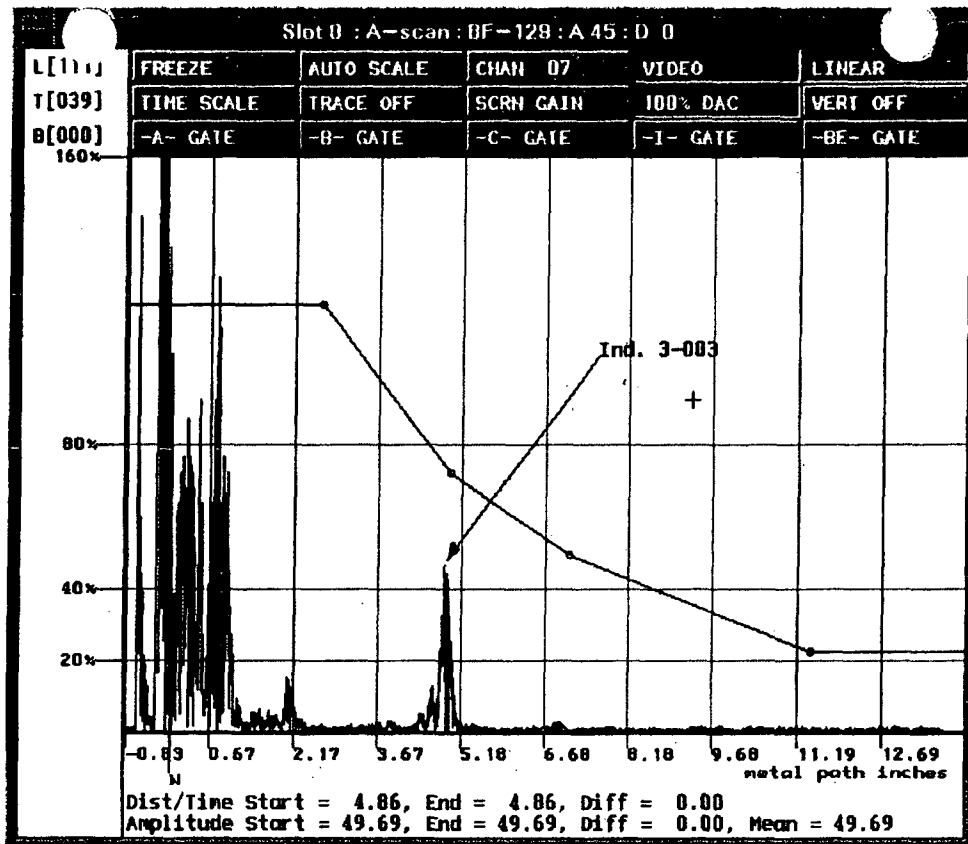
Top T
3/3-002



100525
R1159
* 00478



Top Terminal



00479

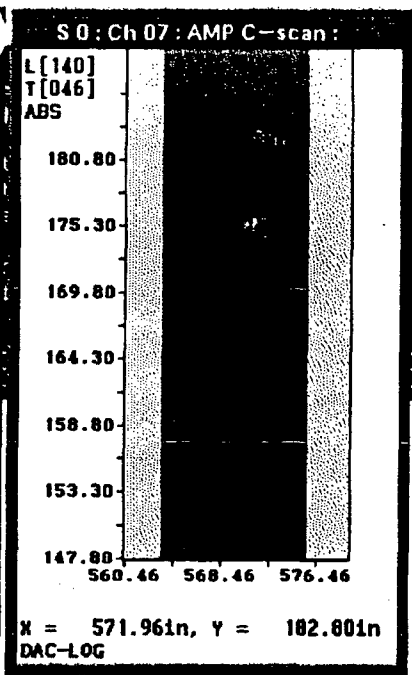
110525
K1107

S O : Scale

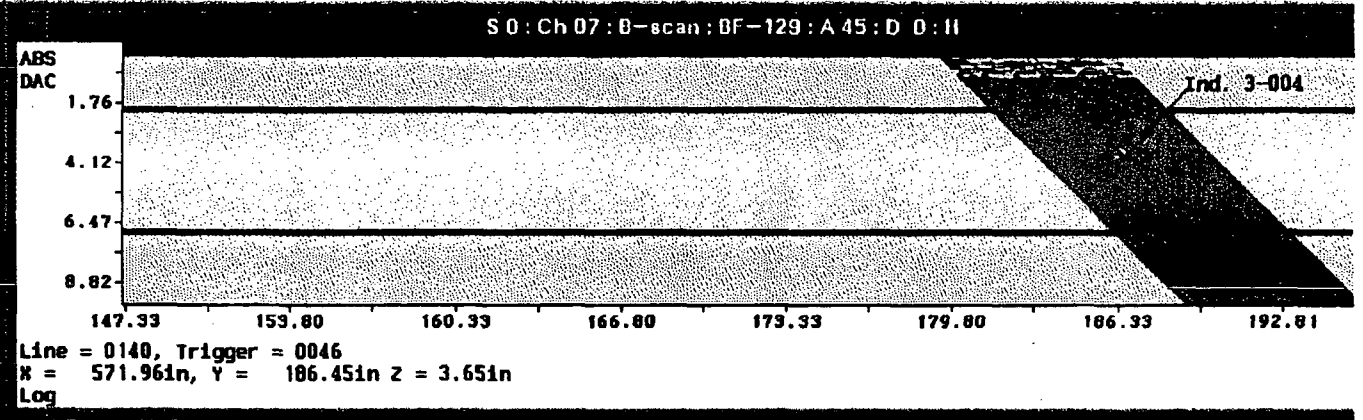
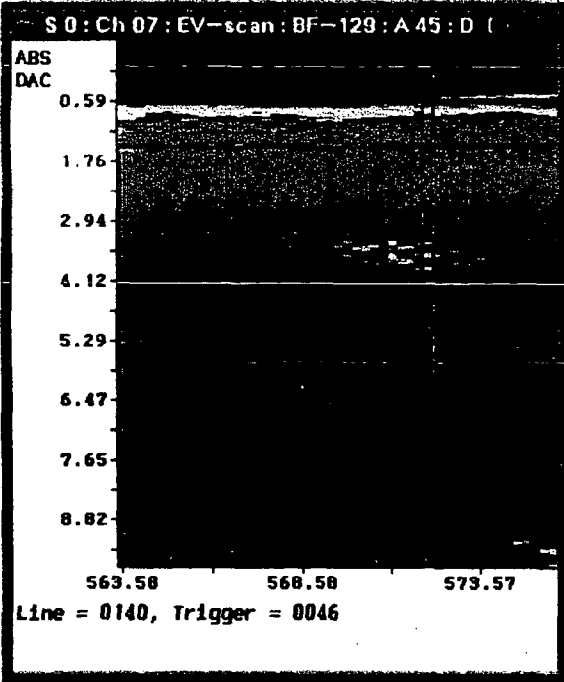
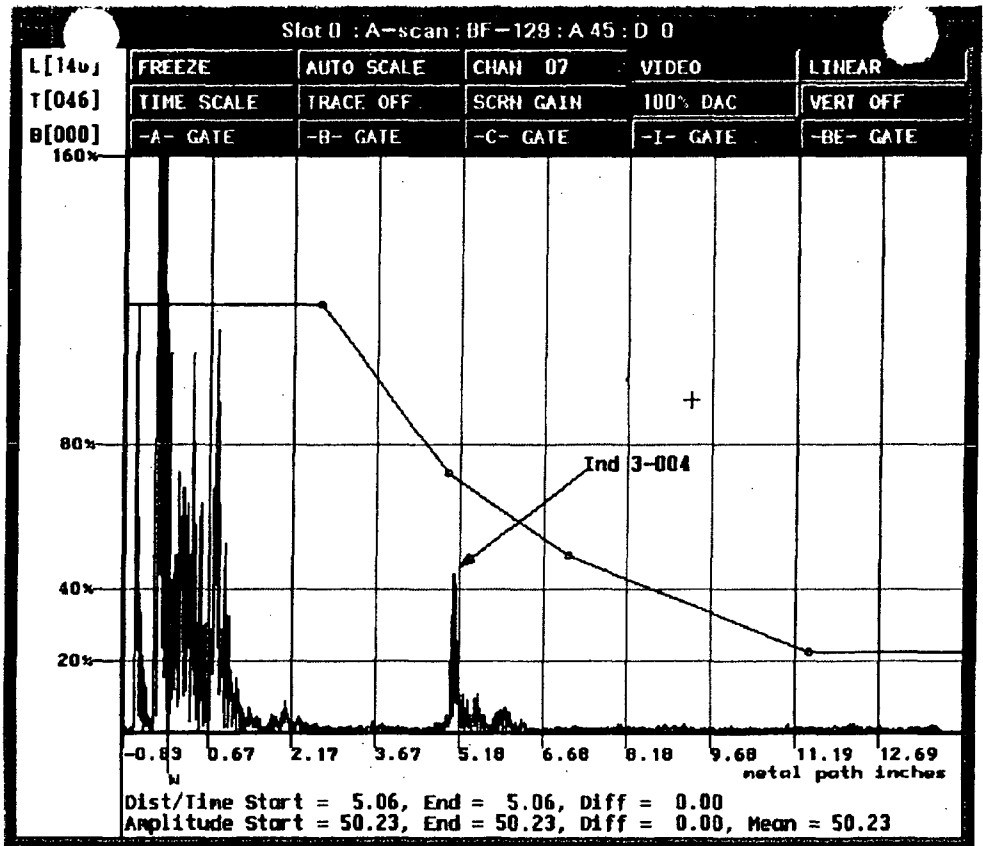
32.3
36.6
41.0
45.3
49.7
54.0
58.4
62.7
67.1
71.4
75.0
80.1
84.5
88.8
93.2

100%
50%
20%

DAC



Top Terminal



00480

12 OF 25

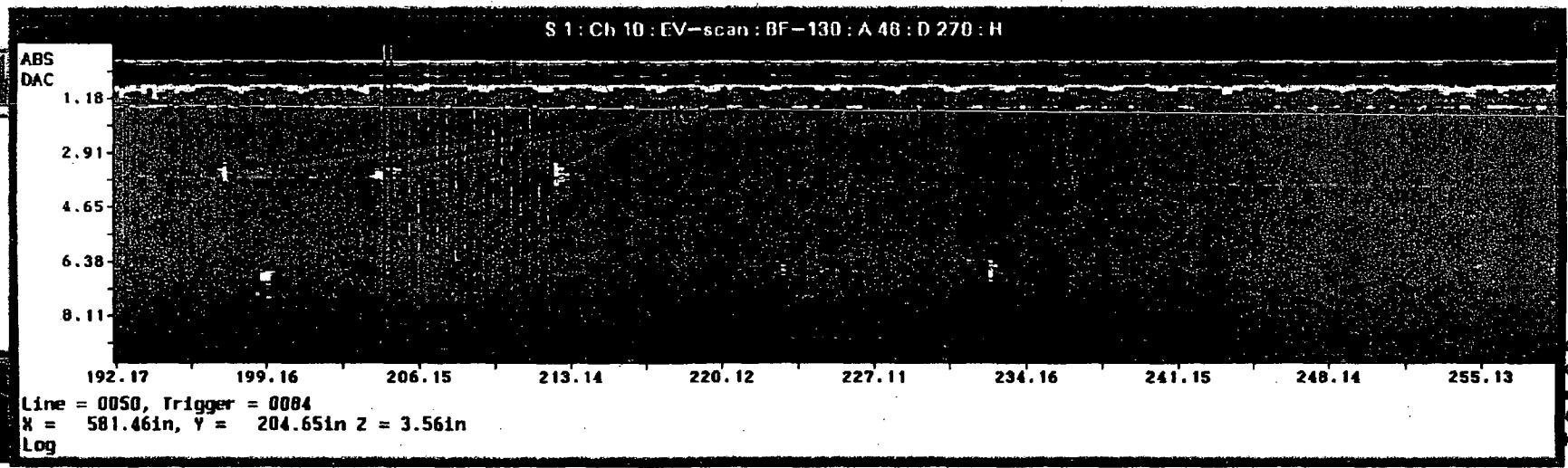
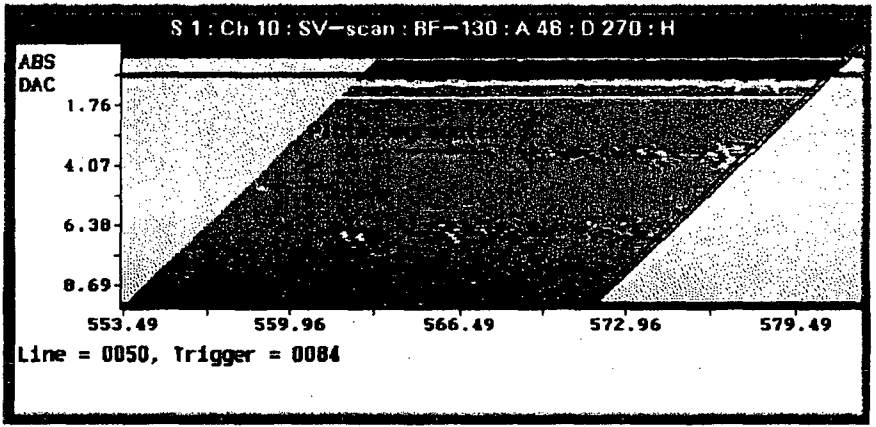
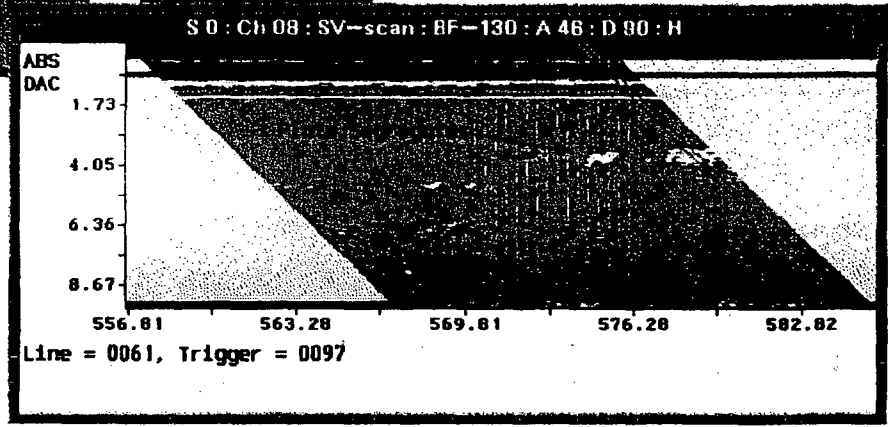
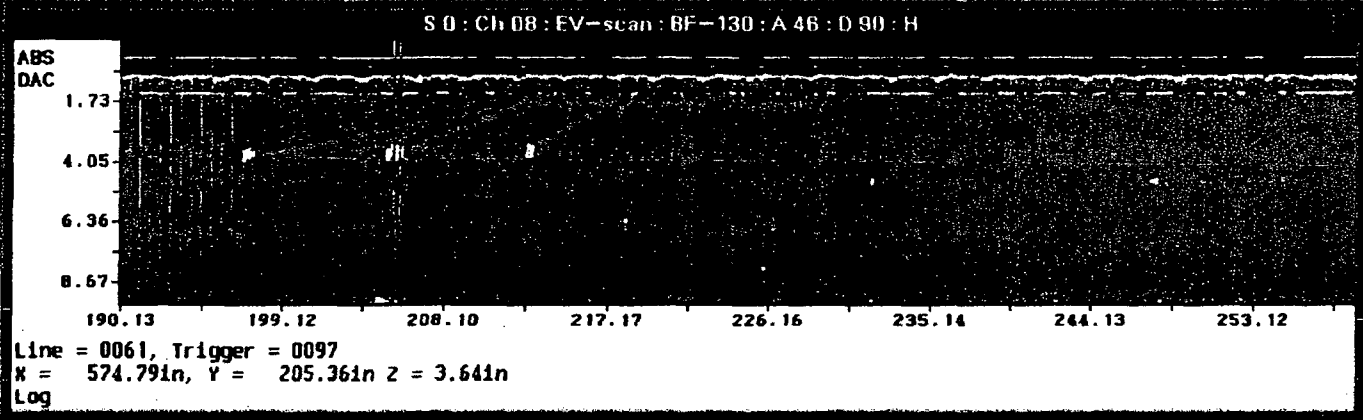
K1154

Mon Nov 8 15:28:12 1993

S 0 : Scale

S 1 : Scale

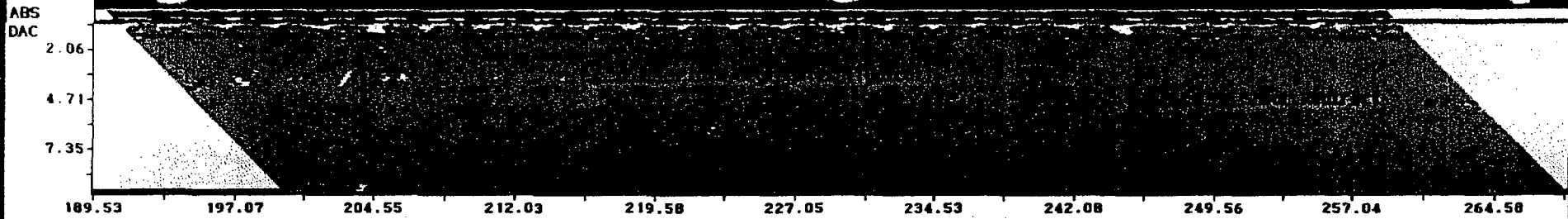
32.3	32.3
36.6	36.6
41.0	41.0
45.3	45.3
49.7	49.7
54.0	54.0
58.4	58.4
62.7	62.7
67.1	67.1
71.4	71.4
75.8	75.8
80.1	80.1
84.5	84.5
88.8	88.8
93.2	



Top Terminal

130F25
21159
00481

S 0 : Ch 07 : SV-scan : BF-130 : A 45 : D 0 : H

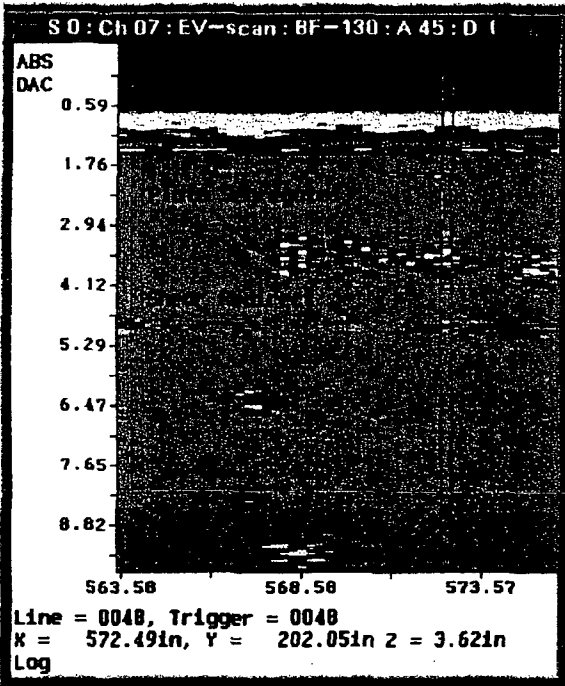


Line = 0048, Trigger = 0048

S 0 : Scale

32.3
36.6
41.0
45.3
49.7
54.0
58.4
62.7
67.1
71.4
75.8
80.1
84.5
88.8
93.2

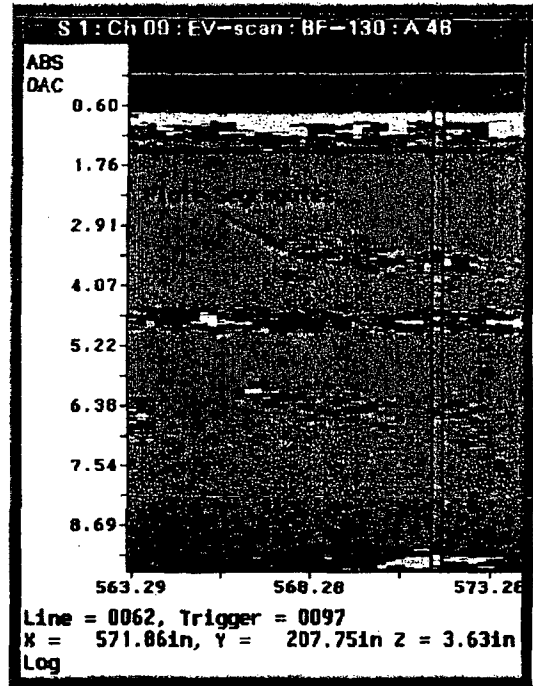
DAC



S 1 : Scale

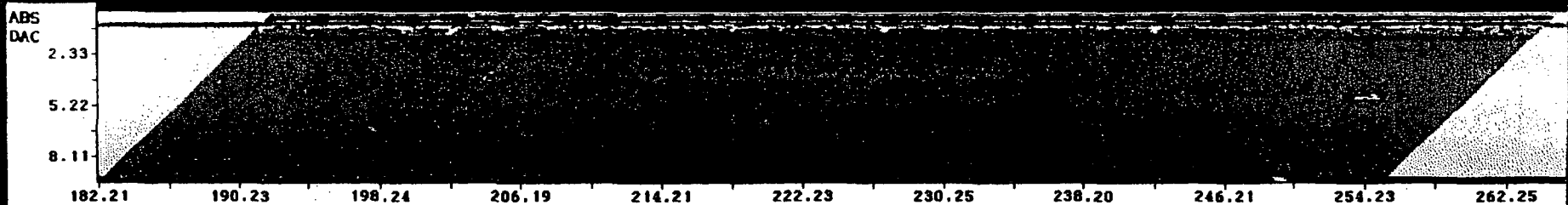
32.3
36.6
41.0
45.3
49.7
54.0
58.4
62.7
67.1
71.4
75.8
80.1
84.5
88.8
93.2

DAC



Top Terminal

S 1 : Ch 09 : SV-scan : BF-130 : A 46 : D 180 : H

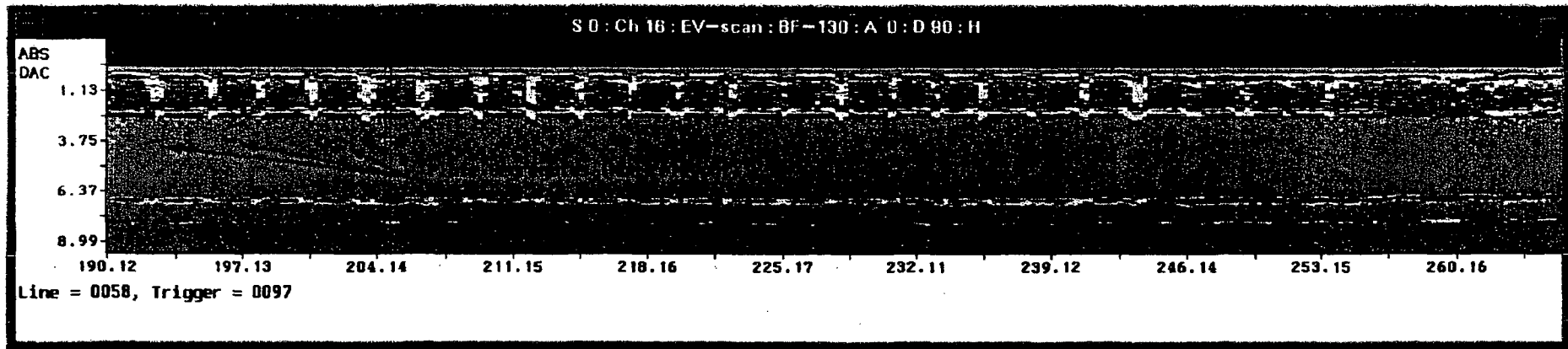
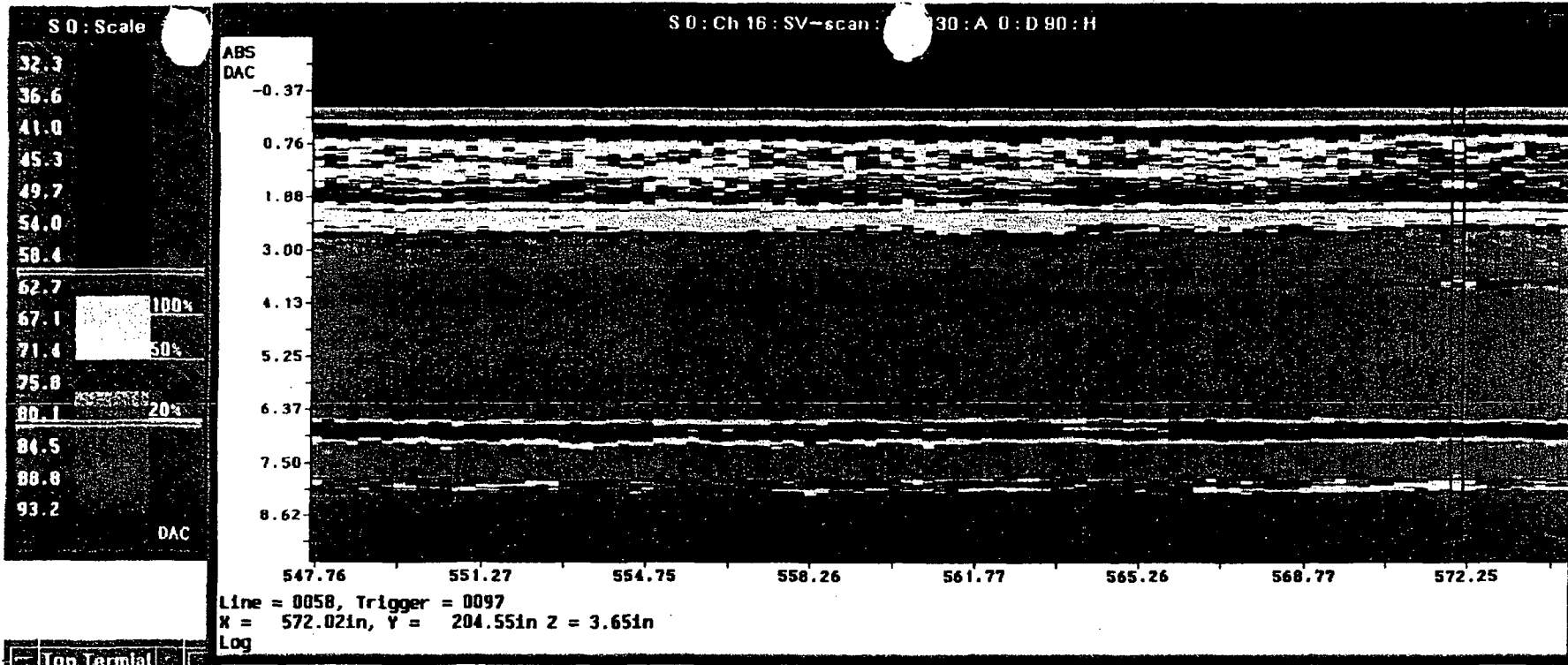


Line = 0062, Trigger = 0097

00482

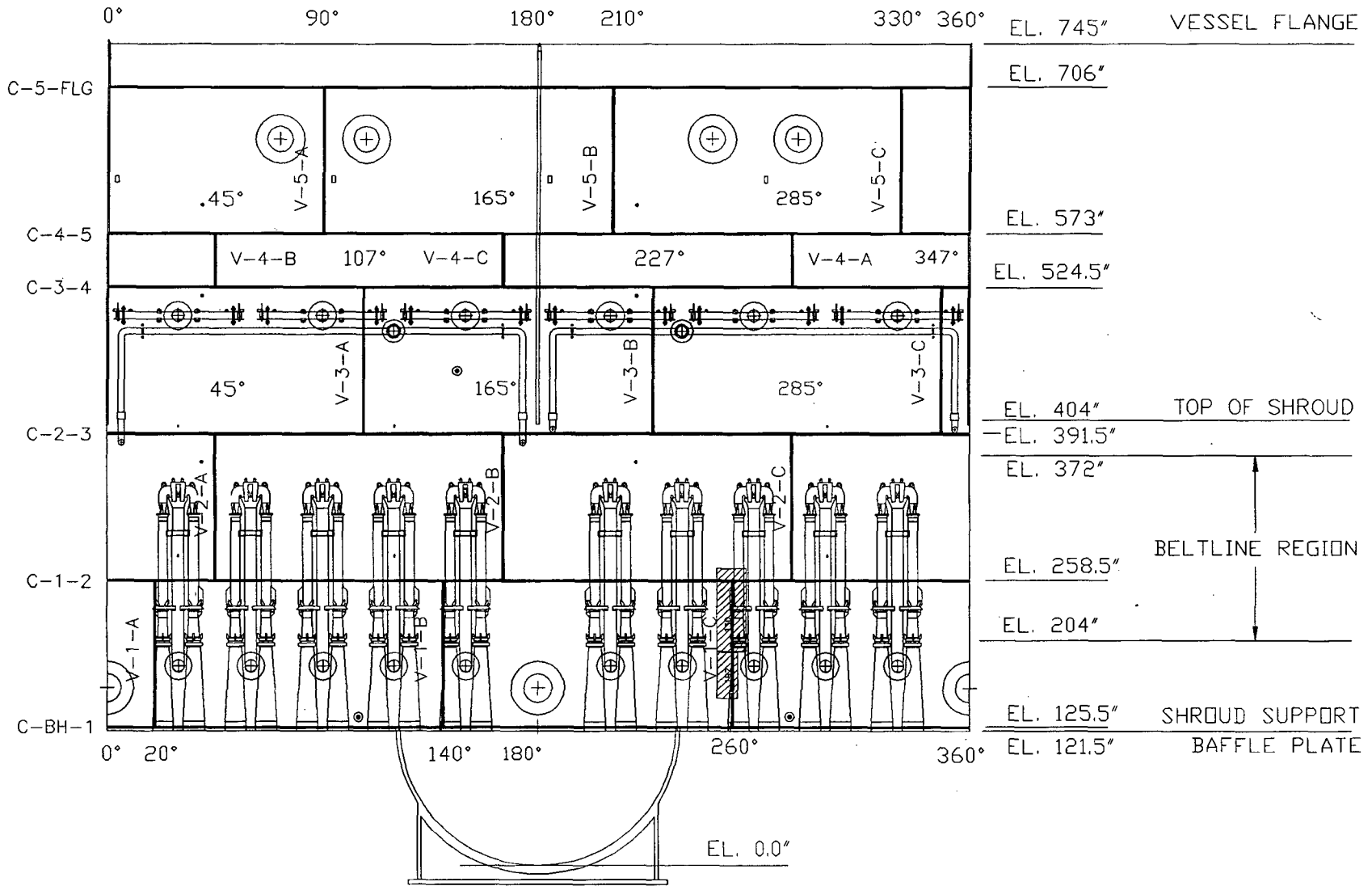
14 OF 25

R1159



K1129
15 of 25
00483

BROWNS FERRY UNIT-3 WELD LOCATIONS

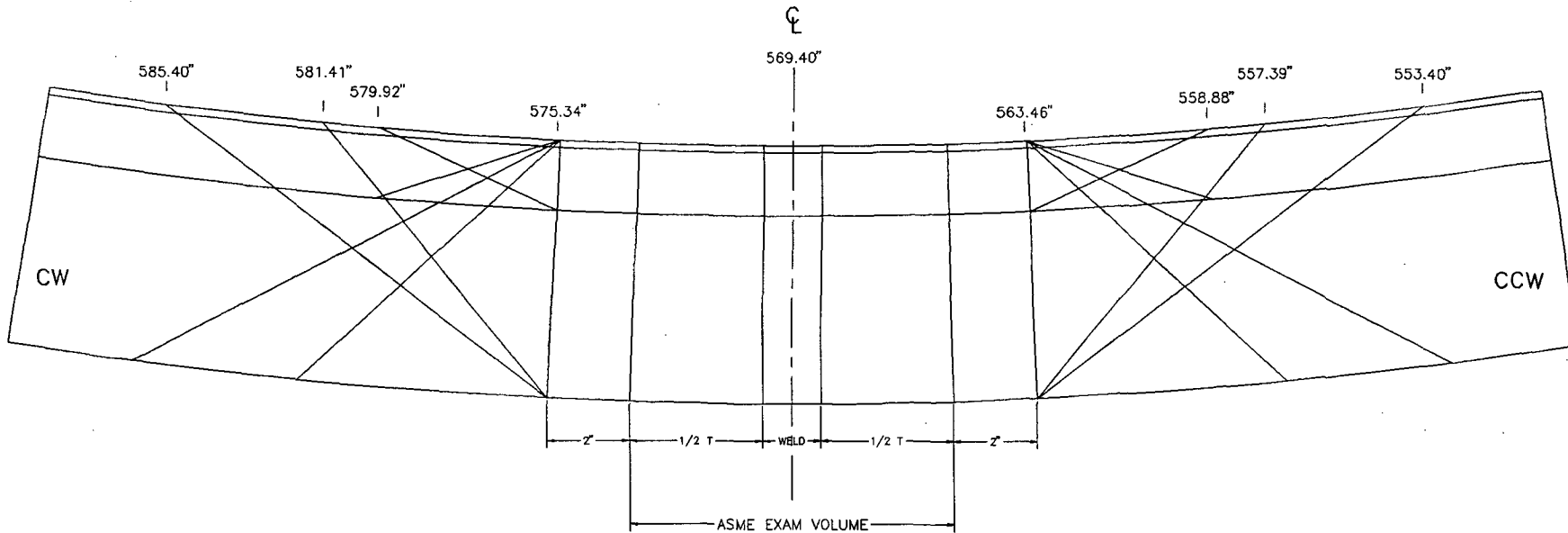


00484

0000 0484

21159
16 OF 25

GE NUCLEAR ENERGY	BROWNS FERRY UNIT 3	VESSEL ROLLOUT & AS SCANNED PATCH LOCATIONS	BF-3-VMA	REV 0
-------------------	---------------------	---	----------	-------



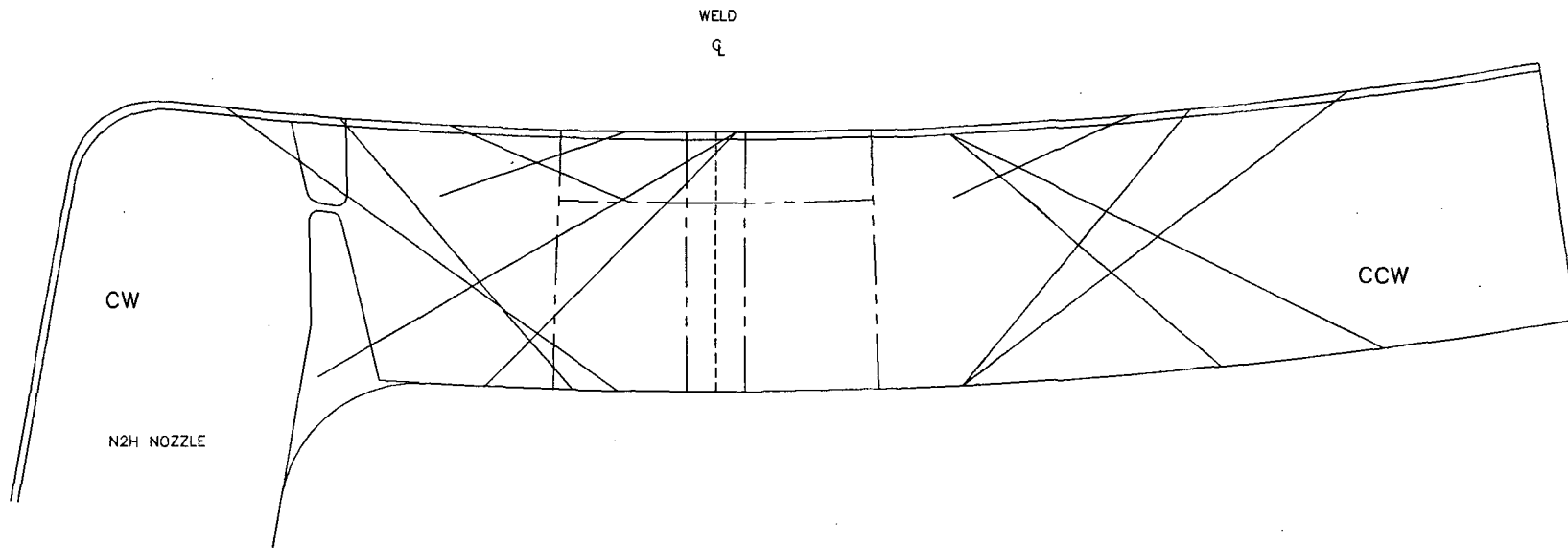
Nominal Clad T = 3/16"
 Nominal Base Metal T = 6 3/8"
 1 Degree = 2.19"

CH.	ANGLE	DIR.	MIN X	MAX X
1	0 W	0	563.46	575.34
2	0 W	90	563.46	575.34
3	70 UP	0	563.46	575.34
4	70 CW	90	558.88	575.34
5	70 DN	180	563.46	575.34
6	70 CCW	270	563.46	579.92
7	45 UP	0	563.46	575.34
8	45 CW	90	557.39	575.34
9	45 DN	180	563.46	575.34
10	45 CCW	270	563.46	581.41
11	60 UP	0	563.46	575.34
12	60 CW	90	553.40	575.34
13	60 DN	180	563.46	575.34
14	60 CCW	270	563.46	585.40
15	0 BM	0	563.46	585.40
16	0 BM	90	553.40	575.34

00485

R1134
 17 OF 25

00000 00000



Nominal Clad T = 3/16"
 Nominal Base Metal T = 6 3/8"
 1 Degree = 2.19"

00486

18 OF 25
 K1101

GE NUCLEAR ENERGY	BROWNS FERRY UNIT 3	N2H NOZ. AUTOMATED SCAN LIMIT	SCALE: NONE	DWG. V1ABC-NZ	REV. 0
-------------------	---------------------	-------------------------------	-------------	---------------	--------



GE Nuclear Energy

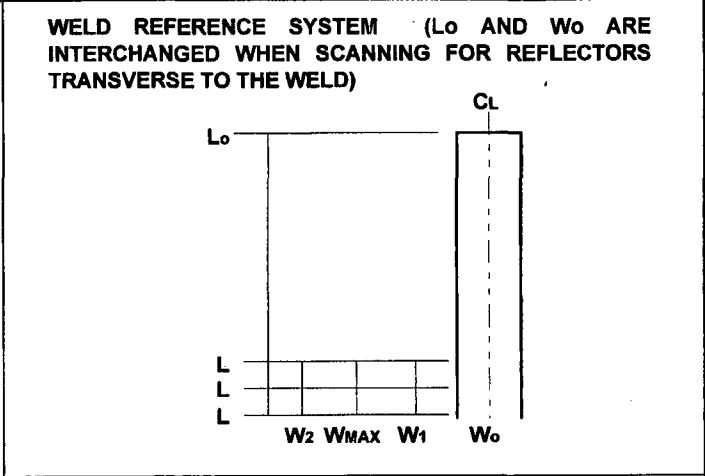
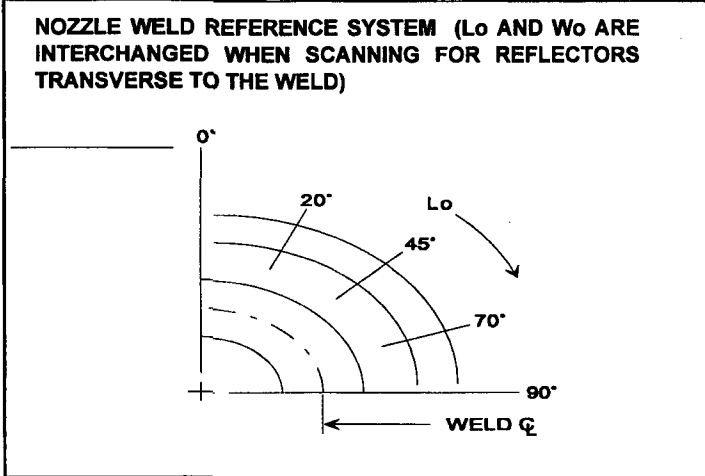
ULTRASONIC EXAMINATION DATA SHEET

SITE: <u>BROWNS FERRY</u>	PROCEDURE NO.: <u>GE-UT-300</u>	REPORT NO.: <u>E-03</u>
UNIT: <u>3</u>	REVISION NO.: <u>6</u>	DATA SHEET NO.: <u>D-093</u>
PROJECT NO.: <u>00387</u>	FRR NO.: <u>004</u>	CALIBRATION SHEET NO.: <u>0° C-139</u>
		45° <u>N/A</u> 60° <u>N/A</u>

SYSTEM: RPV EXAM SURFACE 72 °F COUPLANT: Ultrasel II EXAM START: 1424
 WELD ID: VIC THERMOMETER S/N: L0250CL BATCH NO.: 093011 EXAM END.: 1429

BEAM ANGLE: 0° 45° 60° OTHER N/A SURFACE CONDITION: SMOOTH GROUND OTHER N/A
 MATERIAL TYPE: CS SS OTHER N/A EXAM SURFACE: ID OD

L₀ REFERENCE TOE OF WELD C-1-2 0° SCAN SENSITIVITY 55.8 dB
 W₀ REFERENCE WELD E 45° SCAN SENSITIVITY N/A dB
 60° SCAN SENSITIVITY N/A dB



L/R	% DAC (MAX)	W ₁ 20% DAC	WF ₁ 50% DAC	W _M MAX DAC	WF ₂ 50% DAC	W ₂ 20% DAC	MP ₁ 20% DAC	MPF ₁ 50% DAC	MP MAX DAC	MPF ₂ 50% DAC	MP ₂ 20% DAC	CONTINUOUS (C) OR SPOT (S) TRANSVERSE (T)	CW/CCW TOP OR BOTTOM
<u>NO RECORDABLE INDICATIONS, WELD METAL EXAM</u>													

REMARKS: EXAMINED FROM 142" TO 212" ELEVATION.

<u>Carroll Carter II</u> EXAMINED BY	<u>11-13-93</u> LEVEL DATE	<u>JP Woody</u> UTILITY REVIEW	<u>1/26/94</u> DATE
<u>Alan C. Foster III</u> GE REVIEWED BY	<u>17 Nov 93</u> DATE	<u>Albert Todd</u> ANII REVIEW	<u>8/25/94</u> DATE

PAGE: 1 OF: 1

0000 0000



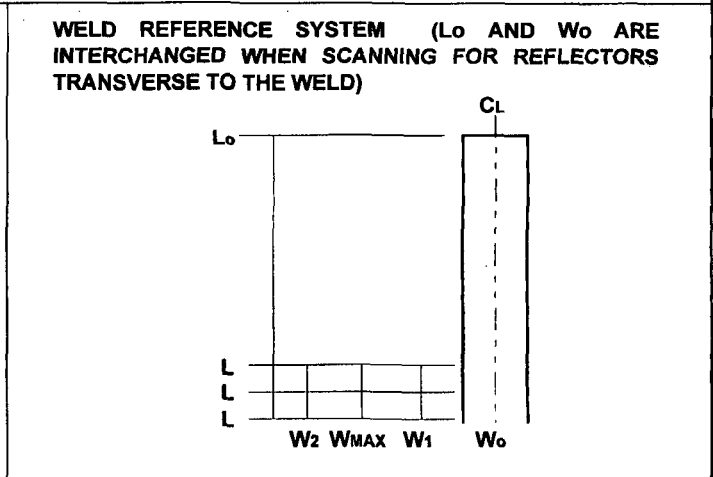
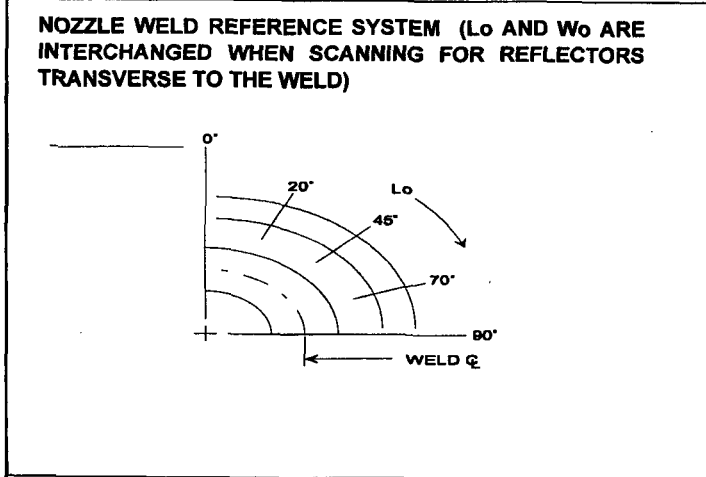
GE Nuclear Energy

ULTRASONIC EXAMINATION DATA SHEET

SITE: <u>BROWNS FERRY</u>	PROCEDURE NO.: <u>GE-UT-300</u>	REPORT NO.: <u>E-03</u>
UNIT: <u>3</u>	REVISION NO.: <u>6</u>	DATA SHEET NO.: <u>D-094</u>
PROJECT NO.: <u>00387</u>	FRR NO.: <u>004</u>	CALIBRATION SHEET NO.: <u>0° C-139</u> <u>45° N/A</u> <u>60° N/A</u>

SYSTEM: <u>RPV</u>	EXAM SURFACE: <u>72 ° F</u>	COUPLANT: <u>Ultrasel II</u>	EXAM START: <u>1417</u>
WELD ID: <u>VIC</u>	THERMOMETER S/N: <u>L0250CL</u>	BATCH NO.: <u>093011</u>	EXAM END: <u>1424</u>
BEAM ANGLE: <input checked="" type="checkbox"/> 0° <input type="checkbox"/> 45° <input type="checkbox"/> 60° <input type="checkbox"/> OTHER <u>N/A</u>	SURFACE CONDITION: <input checked="" type="checkbox"/> SMOOTH <input type="checkbox"/> GROUND <input type="checkbox"/> OTHER <u>N/A</u>		
MATERIAL TYPE: <input checked="" type="checkbox"/> CS <input type="checkbox"/> SS <input type="checkbox"/> OTHER <u>N/A</u>	EXAM SURFACE: <input type="checkbox"/> ID <input checked="" type="checkbox"/> OD		

Lo REFERENCE: <u>TOE OF WELD C-1-2</u>	0° SCAN SENSITIVITY: <u>66.2</u> dB
W0 REFERENCE: <u>WELD E</u>	45° SCAN SENSITIVITY: <u>N/A</u> dB
	60° SCAN SENSITIVITY: <u>N/A</u> dB



L/R	% DAC (MAX)	W1 20% DAC	WF1 50% DAC	WM MAX DAC	WF2 50% DAC	W2 20% DAC	MP1 20% DAC	MPF1 50% DAC	MP MAX DAC	MPF2 50% DAC	MP2 20% DAC	CONTINUOUS (C) OR SPOT (S) TRANSVERSE (T)	CW/CCW TOP OR BOTTOM
<u>N/O RECORDABLE INDICATIONS, BASE METAL EXAM</u>													

REMARKS: EXAMINED FROM 142" TO 212" ELEVATION. EXAM LIMITED TO A "W" OF 8" FROM AN ELEVATION OF 172" TO 198" ON THE CCW SIDE OF THE WELD DUE TO NRH CONFIGURATION.

<u>Earnest Carter II</u> EXAMINED BY	<u>11-13-93</u> LEVEL	<u>DATE</u>	<u>D. J. Woody</u> UTILITY REVIEW	<u>1/26/94</u> DATE
<u>C. J. MA</u> GE REVIEWED BY	<u>12/9/93</u> DATE		<u>Albert Todd</u> ANII REVIEW	<u>8/25/94</u> DATE



GE Nuclear Energy

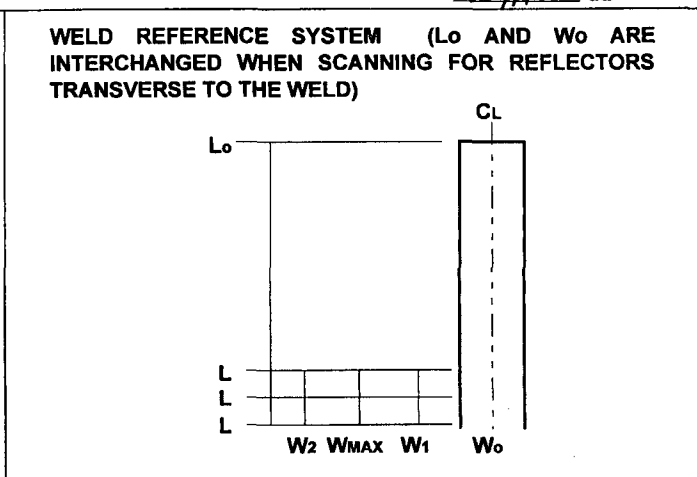
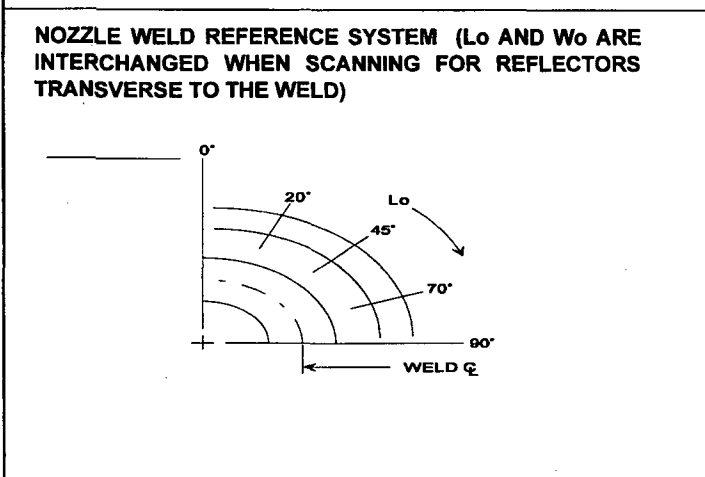
ULTRASONIC EXAMINATION DATA SHEET

SITE: <u>BROWNS FERRY</u>	PROCEDURE NO.: <u>GE-UT-300</u>	REPORT NO.: <u>E-03</u>
UNIT: <u>3</u>	REVISION NO.: <u>6</u>	DATA SHEET NO.: <u>D-098</u>
PROJECT NO.: <u>00387</u>	FRR NO.: <u>004</u>	CALIBRATION SHEET NO.: <u>0° N/A</u> <u>45° C-140</u> <u>60° N/A</u>

SYSTEM: RPV EXAM SURFACE 72 °F COUPLANT: ULTRASELIF EXAM START: 1430
 WELD ID: VIC THERMOMETER S/N: L02504 BATCH NO.: 093011 EXAM END: 1438

BEAM ANGLE: 0° 45° 60° OTHER N/A SURFACE CONDITION: SMOOTH GROUND OTHER N/A
 MATERIAL TYPE: CS SS OTHER N/A EXAM SURFACE: ID OD

Lo REFERENCE TOE OF WELD C-1-2 0° SCAN SENSITIVITY N/A dB
 Wo REFERENCE WELD E 45° SCAN SENSITIVITY 66.8 dB
 60° SCAN SENSITIVITY N/A dB



L/R	% DAC (MAX)	W1 20% DAC	WF1 50% DAC	WM MAX DAC	WF2 50% DAC	W2 20% DAC	MP1 20% DAC	MPF1 50% DAC	MP MAX DAC	MPF2 50% DAC	MP2 20% DAC	CONTINUOUS (C) OR SPOT (S) TRANSVERSE (T)	CW/CCW TOP OR BOTTOM
<u>NO RECORDABLE INDICATIONS.</u>													

REMARKS: EXAMINED FROM 142" TO 212" ELEVATION. EXAM LIMITED TO A "W" OF 8" FROM AN ELEVATION OF 172" TO 198" ON THE CCW SIDE OF THE WELD DUE TO THE CONFIGURATION OF N/A.

<u>Earnest Cator</u> EXAMINED BY	<u>II</u> LEVEL	<u>11-13-93</u> DATE	<u>2822 Woody</u> UTILITY REVIEW	<u>1-26-94</u> DATE
<u>CS MS</u> GE REVIEWED BY		<u>12/9/93</u> DATE	<u>Albert Hall</u> ANII REVIEW	<u>8/25/94</u> DATE



GE Nuclear Energy

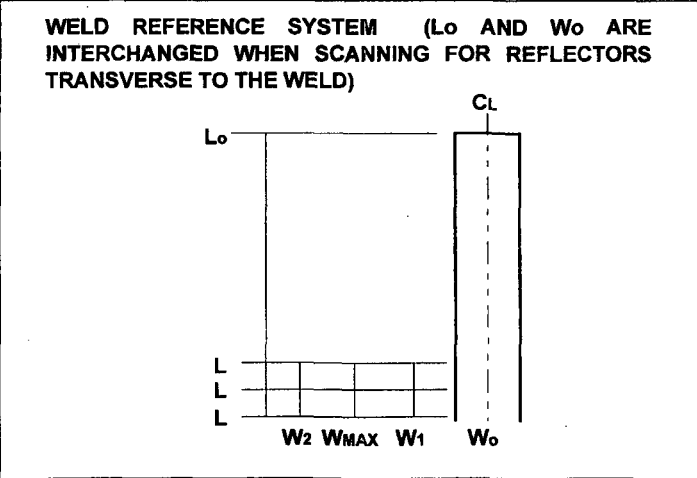
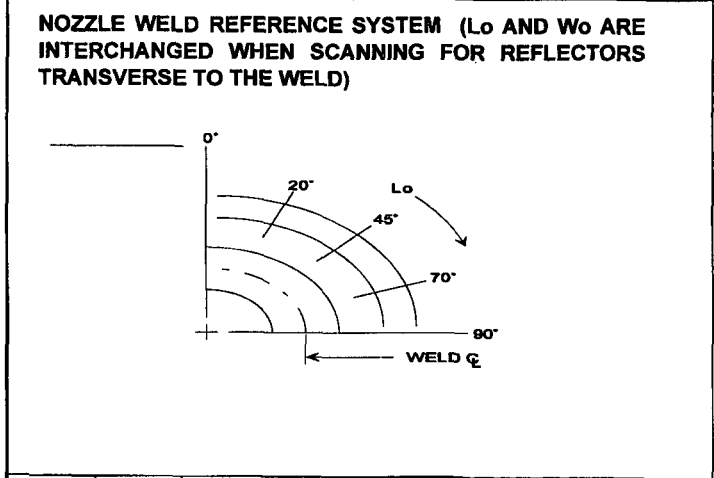
ULTRASONIC EXAMINATION DATA SHEET

SITE: <u>BROWNS FERRY</u>	PROCEDURE NO.: <u>GE-UT-300</u>	REPORT NO.: <u>E-03</u>
UNIT: <u>3</u>	REVISION NO.: <u>6</u>	DATA SHEET NO.: <u>D-102</u>
PROJECT NO.: <u>00387</u>	FRR NO.: <u>004</u>	CALIBRATION SHEET NO.: <u>0° N/A</u> <u>45° N/A</u> <u>60° C-141</u>

SYSTEM: RPV EXAM SURFACE: 72 °F COUPLANT: Ultrasel II EXAM START: 1439
 WELD ID: VIC THERMOMETER S/N: L0250 CL BATCH NO.: 093011 EXAM END: 1446

BEAM ANGLE: 0° 45° 60° OTHER N/A SURFACE CONDITION: SMOOTH GROUND OTHER N/A
 MATERIAL TYPE: CS SS OTHER N/A EXAM SURFACE: ID OD

Lo REFERENCE: TOE OF WELD C-1-2 0° SCAN SENSITIVITY: N/A dB
 Wo REFERENCE: WELD C 45° SCAN SENSITIVITY: N/A dB
 60° SCAN SENSITIVITY: 73.0 dB

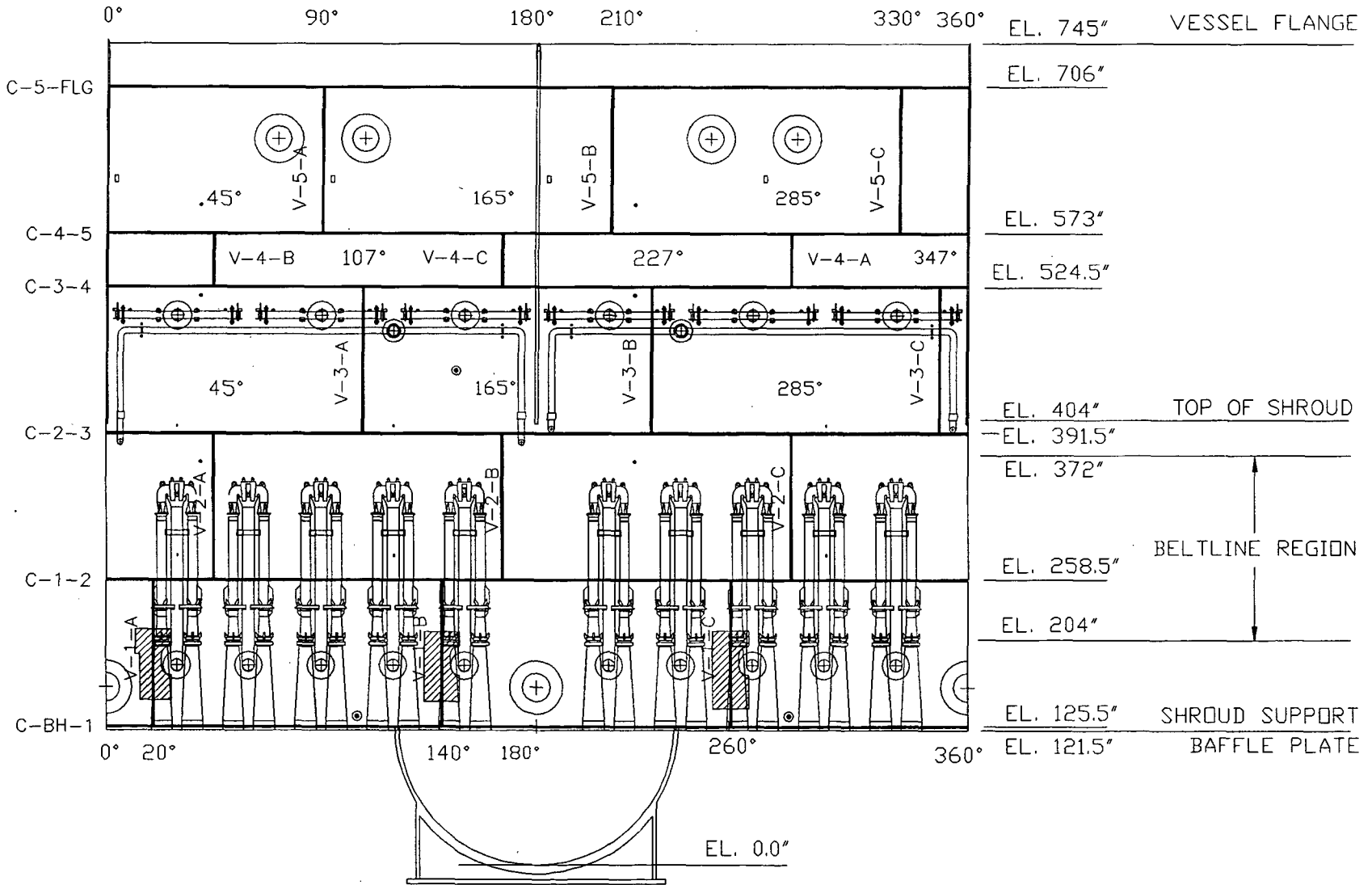


L/R	% DAC (MAX)	W1 20% DAC	WF1 50% DAC	Wm MAX DAC	WF2 50% DAC	W2 20% DAC	MP1 20% DAC	MPF1 50% DAC	MP MAX DAC	MPF2 50% DAC	MP2 20% DAC	CONTINUOUS (C) OR SPOT (S) TRANSVERSE (T)	CW/CCW TOP OR BOTTOM
		<u>N/D RECORDABLE INDICATIONS.</u>											

REMARKS: EXAMINED FROM 142" TO 212" ELEVATION. EXAM LIMITED TO A "W" OF 8" FROM AN ELEVATION OF 178" TO 198" ON THE C.W. SIDE OF THE WELD DUE TO THE CONFIGURATION OF N.24.

<u>Edward Cotton II</u> 11-13-93 EXAMINED BY LEVEL DATE	<u>Jim Woody</u> 1-26-94 UTILITY REVIEW DATE	PAGE: <u>1</u> OF: <u>1</u>
<u>Clay Mays</u> 12/4/93 GE REVIEWED BY DATE	<u>Albert Todd</u> 8/25/94 ANII REVIEW DATE	

BROWNS FERRY UNIT-3 WELD LOCATIONS



00491

GE NUCLEAR ENERGY

BROWNS FERRY UNIT 3

VESSEL ROLLOUT & MANUAL PICKUP AREAS

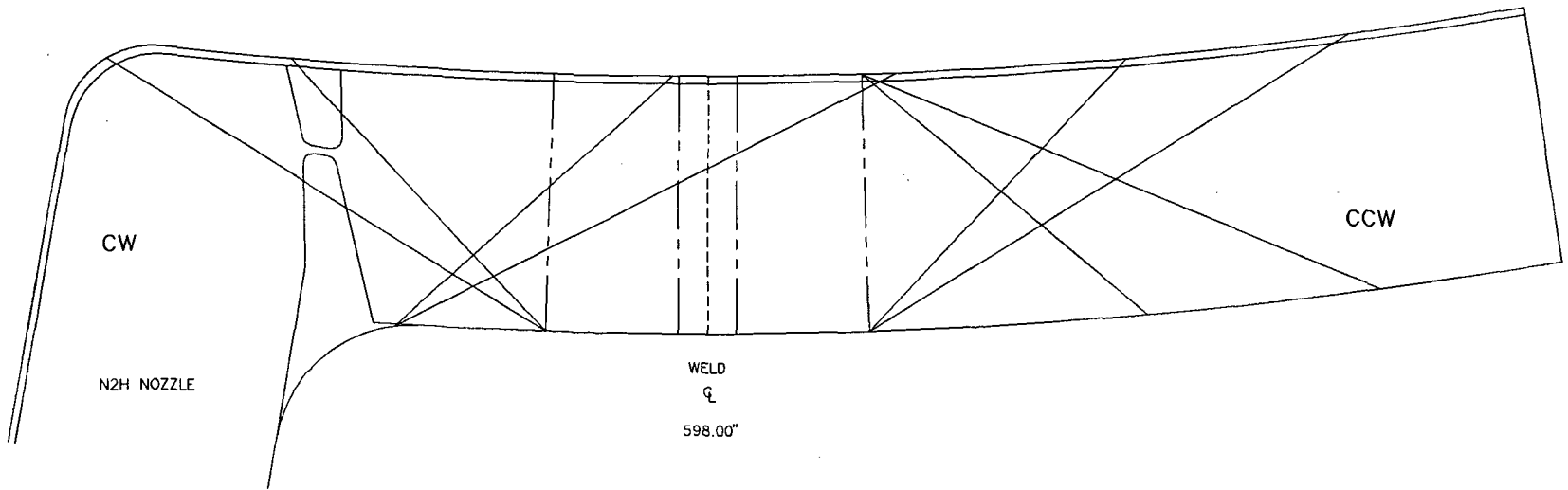
BF-3-VMA

REV 0

23 OF 25

R1159

0000 0491



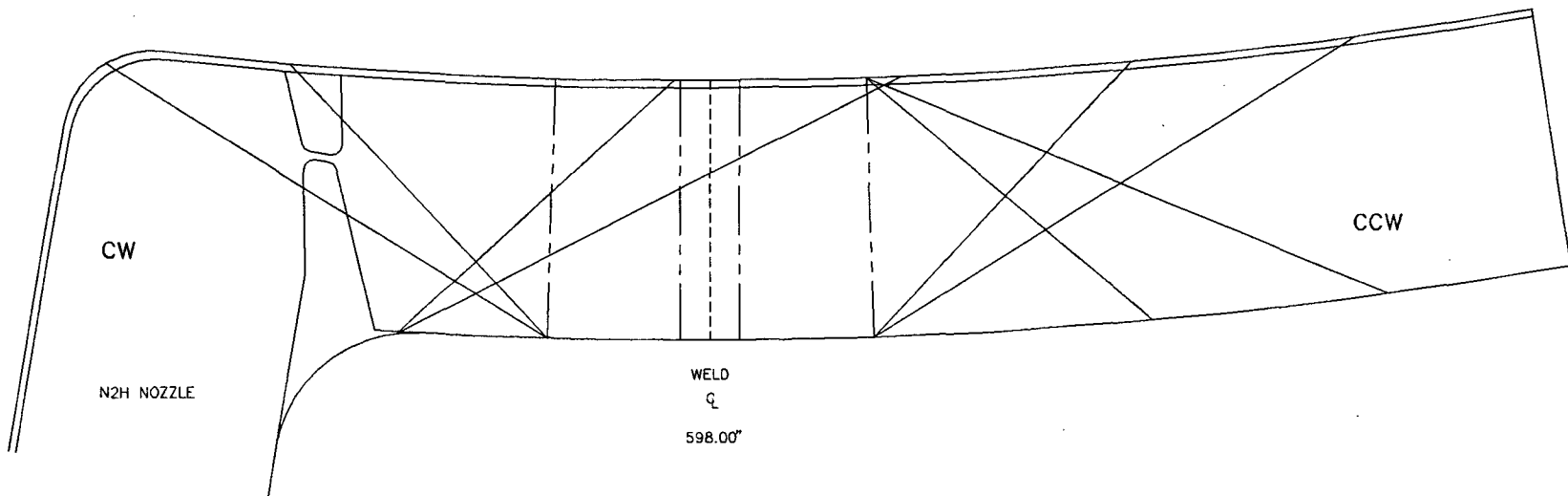
Nominal Clad T = 3/16"
 Nominal Base Metal T = 6 3/8"
 1 Degree = 2.19"

00000 00000

R1101
 24 OF 25

00492

GE NUCLEAR ENERGY	BROWNS FERRY UNIT 3	WELD V-1-C MANUAL PICKUP	SCALE: NONE	DWG. MANV-1-C	REV. 0
-------------------	---------------------	--------------------------	-------------	---------------	--------



Nominal Clad T = 3/16"
 Nominal Base Metal T = 6 3/8"

1469 0000 0494

R1159
 25 OF 25

00493

GE NUCLEAR ENERGY	BROWNS FERRY UNIT 3	WELD V-1-C MANUAL PICKUP	SCALE: NONE	DWG. MANV-1-C	REV. 0
-------------------	---------------------	--------------------------	-------------	---------------	--------