



GE Nuclear Energy

GERIS 2000 Examination Summary Sheet

Project: TVA, Browns Ferry Nuclear Plant, Unit 3

System: Reactor Pressure Vessel

Weld ID: V-1-A

ASME Code Category: B-A

Calibration Sheets: C-003, C-159, C-160 and C-161

Supporting Data: Examination Data Sheets E-01-00 thru E-01-03, Exam Patch Location Map, Exam Coverage Plots, GERIS 2000 Setup Records and Manual Examination Data Sheet D-142, D-143, D-144 and D-145.

Examination Summary

The ultrasonic examination of weld V-1-A resulted in no recorded indications that exceed the allowable standards of IVB-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-A Nozzle at 30°, surveillance specimen brackets 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 82%.

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.

No indications were recorded with the GERIS 2000.

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: <i>CJ Ma</i>	GE Reviewer: <i>Debra Kimball</i>
LEVEL: <i>TII</i> DATE: <i>12/15/93</i>	LEVEL: <i>III</i> DATE: <i>12-15-93</i>
UTILITY Review: <i>2 reviews</i>	ANII Review:
TITLE: <i>#</i> DATE: <i>1/26/94</i>	TITLE: <i>Albert Todd</i> DATE: <i>7/12/94</i>

R1157



GE Nuclear Energy

GERIS 2000 Examination Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-1-A

Exam Data Sheet: E-01-00

Procedure No.: GE-UT-700

Revision No.: 2

FRR No.: N/A

Patch	Data Sh.	Date	Start	Stop	Min X	Max X	Min Y	Max Y	Disk No.	Examiner
BF-124	E-01-01	10/22/93	1948	2034	30.00	48.25	152.00	194.00	87B	JCG
BF-125	E-01-02	10/22/93	2059	2238	30.00	57.75	194.25	260.25	87A	JCG
BF-126	E-01-03	10/22/93	2321	2332	30.00	51.75	260.50	269.50	87B	JCG
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~	~	~

Comments: N/A

Limitations: Nozzle N2-A at 30°, surveillance specimen bracket at 30° and lower scan limit of the GERIS 2000 manipulator.

Analyst: Chris M...

Level: TU Date: 12/8/93

Reviewed By: J. C. D...

Level: II Date: 12/13/93

R1157



GE Nuclear Energy

GERIS 2000 Examination Data Sheet

Project: TVA, Browns Ferry, Unit 3
Weld ID: V-1-A
Cal. ID: C-003

Exam Data Sheet No.: E-01-01
Patch ID: BF-124
Ind. Data Sheet Series: 01-XXX

Channel	Angle	Direction	Ind.	Ind. Data Sh.	Ind. Data Sh.	Ind. Data Sh.	Ind. Data Sh.	Ind. Data Sheet
1	0 WM	N/A	NRI	~	~	~	~	~
2	0 WM	N/A	NRI	~	~	~	~	~
3	70 RL	0 UP	NRI	~	~	~	~	~
4	70 RL	90 CW	NRI	~	~	~	~	~
5	70 RL	180 DN	NRI	~	~	~	~	~
6	70 RL	270 CCW	NRI	~	~	~	~	~
7	45 RS	0 UP	NRI	~	~	~	~	~
8	45 RS	90 CW	NRI	~	~	~	~	~
9	45 RS	180 DN	NRI	~	~	~	~	~
10	45 RS	270 CCW	NRI	~	~	~	~	~
11	60 RS	0 UP	NRI	~	~	~	~	~
12	60 RS	90 CW	NRI	~	~	~	~	~
13	60 RS	180 DN	NRI	~	~	~	~	~
14	60 RS	270 CCW	NRI	~	~	~	~	~
15	0 BM	N/A	NRI	~	~	~	~	~
16	0 BM	N/A	NRI	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~

Comments: N/A

Data Sheet Codes: G-XXX; "G" = Geometry (may be typical), 6-XXX; "6" = Weld Sequence, XXX = Sheet Number
Indication Codes: 1 = Flaw, 2 = OD Surface, 3 = OD Attachment, 4 = Nozzle, 5 = Other

Analyst: Clayton
Level: III Date: 12/8/93

Reviewed By: J.P. Dool
Level: II Date: 12/13/93

R1157



GE Nuclear Energy

GERIS 2000 Examination Data Sheet

Project: TVA, Browns Ferry, Unit 3
Weld ID: V-1-A
Cal. ID: C-003

Exam Data Sheet No.: E-01-02
Patch ID: BF-125
Ind. Data Sheet Series: 01-XXX

Channel	Angle	Direction	Ind.	Ind. Data Sh.	Ind. Data Sh.	Ind. Data Sh.	Ind. Data Sh.	Ind. Data Sheet
1	0 WM	N/A	NRI	~	~	~	~	~
2	0 WM	N/A	NRI	~	~	~	~	~
3	70 RL	0 UP	NRI	~	~	~	~	~
4	70 RL	90 CW	NRI	~	~	~	~	~
5	70 RL	180 DN	NRI	~	~	~	~	~
6	70 RL	270 CCW	NRI	~	~	~	~	~
7	45 RS	0 UP	NRI	~	~	~	~	~
8	45 RS	90 CW	NRI	~	~	~	~	~
9	45 RS	180 DN	NRI	~	~	~	~	~
10	45 RS	270 CCW	NRI	~	~	~	~	~
11	60 RS	0 UP	NRI	~	~	~	~	~
12	60 RS	90 CW	NRI	~	~	~	~	~
13	60 RS	180 DN	NRI	~	~	~	~	~
14	60 RS	270 CCW	NRI	~	~	~	~	~
15	0 BM	N/A	NRI	~	~	~	~	~
16	0 BM	N/A	NRI	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~

Comments: N/A

Data Sheet Codes: G-XXX; "G" = Geometry (may be typical), 6-XXX; "6" = Weld Sequence, XXX = Sheet Number
Indication Codes: 1 = Flaw, 2 = OD Surface, 3 = OD Attachment, 4 = Nozzle, 5 = Other

Analyst: CA Ma

Reviewed By: J. C. Duff

Level: III Date: 12/8/93

Level: II Date: 12/13/93

R1157



GE Nuclear Energy

GERIS 2000 Examination Data Sheet

Project: TVA, Browns Ferry, Unit 3
Weld ID: V-1-A
Cal. ID: C-003

Exam Data Sheet No.: E-01-03
Patch ID: BF-126
Ind. Data Sheet Series: 01-XXX

Channel	Angle	Direction	Ind.	Ind. Data Sh.	Ind. Data Sh.	Ind. Data Sh.	Ind. Data Sh.	Ind. Data Sheet
1	0 WM	N/A	NRI	~	~	~	~	~
2	0 WM	N/A	NRI	~	~	~	~	~
3	70 RL	0 UP	NRI	~	~	~	~	~
4	70 RL	90 CW	NRI	~	~	~	~	~
5	70 RL	180 DN	NRI	~	~	~	~	~
6	70 RL	270 CCW	NRI	~	~	~	~	~
7	45 RS	0 UP	NRI	~	~	~	~	~
8	45 RS	90 CW	NRI	~	~	~	~	~
9	45 RS	180 DN	NRI	~	~	~	~	~
10	45 RS	270 CCW	NRI	~	~	~	~	~
11	60 RS	0 UP	NRI	~	~	~	~	~
12	60 RS	90 CW	NRI	~	~	~	~	~
13	60 RS	180 DN	NRI	~	~	~	~	~
14	60 RS	270 CCW	NRI	~	~	~	~	~
15	0 BM	N/A	NRI	~	~	~	~	~
16	0 BM	N/A	NRI	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~
~	~	~	~	~	~	~	~	~

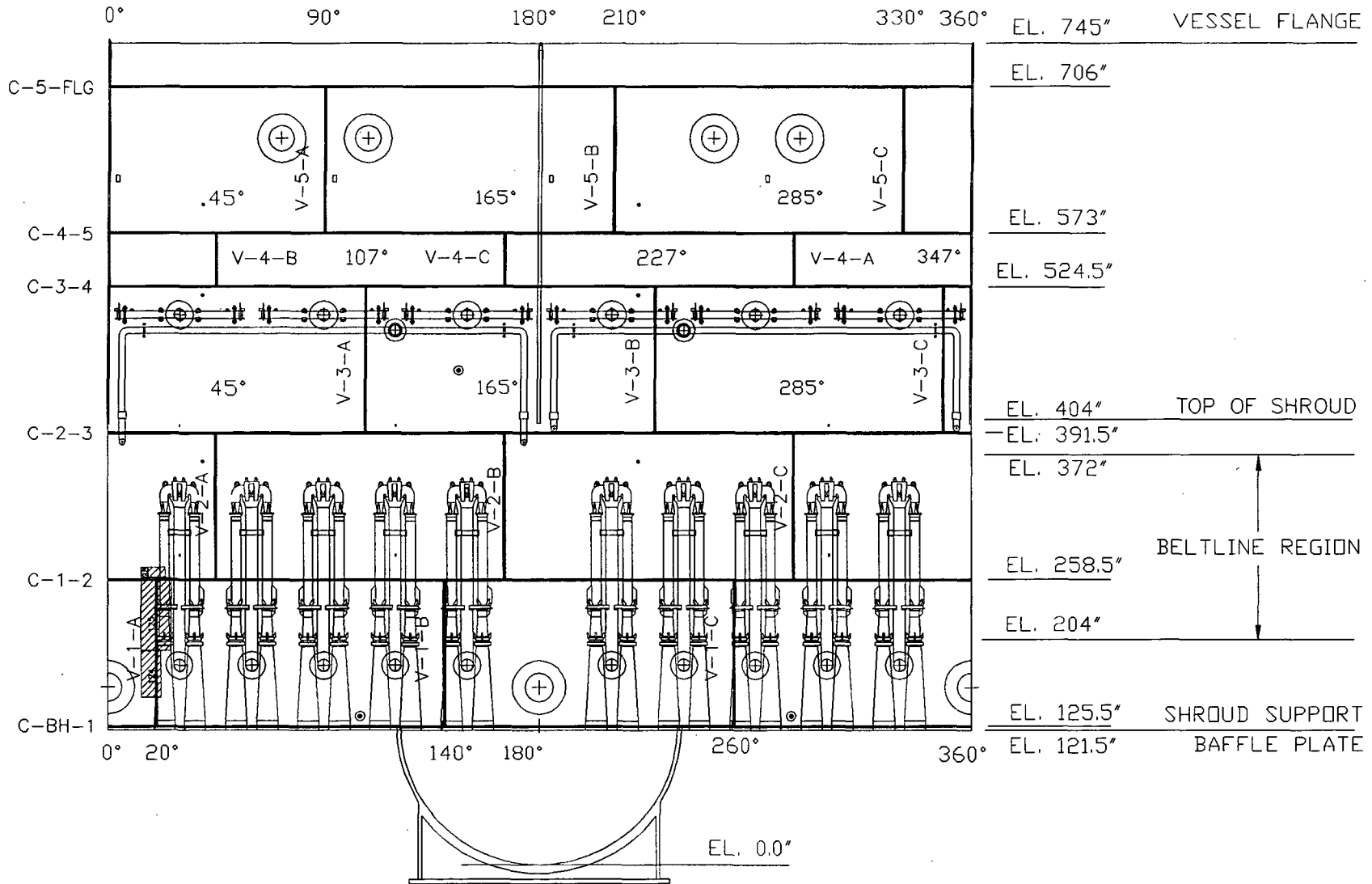
Comments: N/A

Data Sheet Codes: G-XXX; "G" = Geometry (may be typical), 6-XXX; "6" = Weld Sequence, XXX = Sheet Number
 Indication Codes: 1 = Flaw, 2 = OD Surface, 3 = OD Attachment, 4 = Nozzle, 5 = Other

Analyst: Ch M5
 Level: III Date: 12/8/93

Reviewed By: John C. D'...
 Level: II Date: 12/13/93

BROWNS FERRY UNIT-3 WELD LOCATIONS

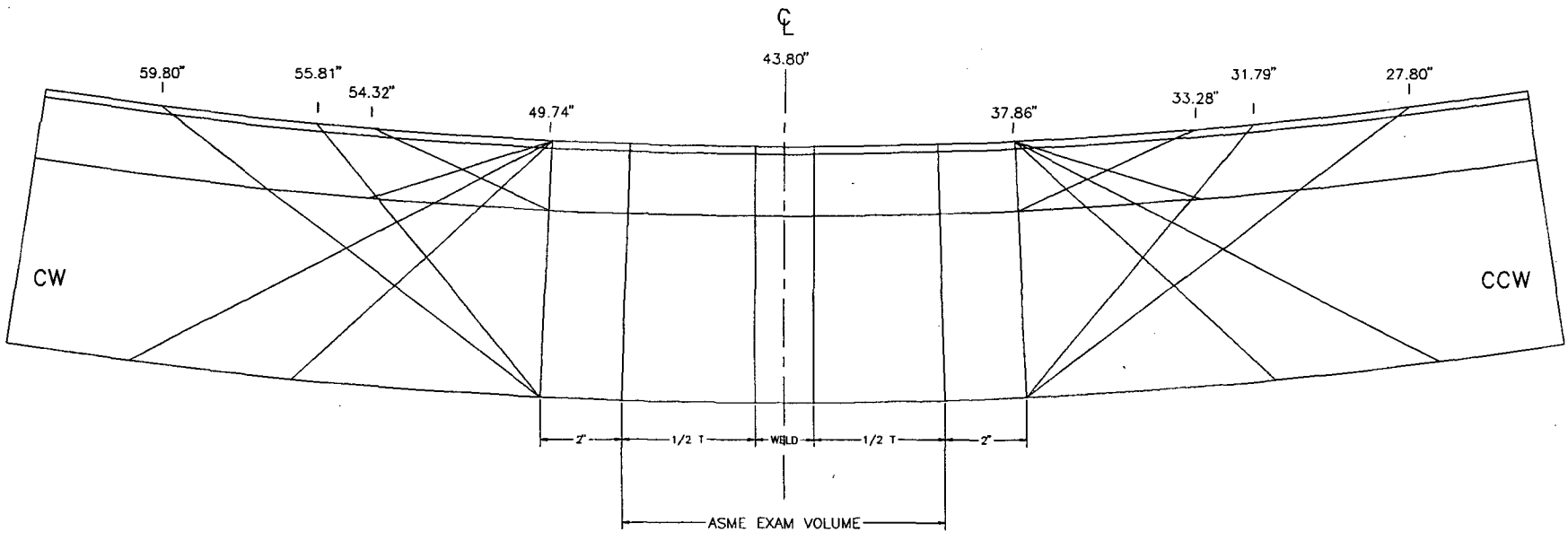


R1157 0000 0000

R1157

60 OF 15 * 004A3

R1157

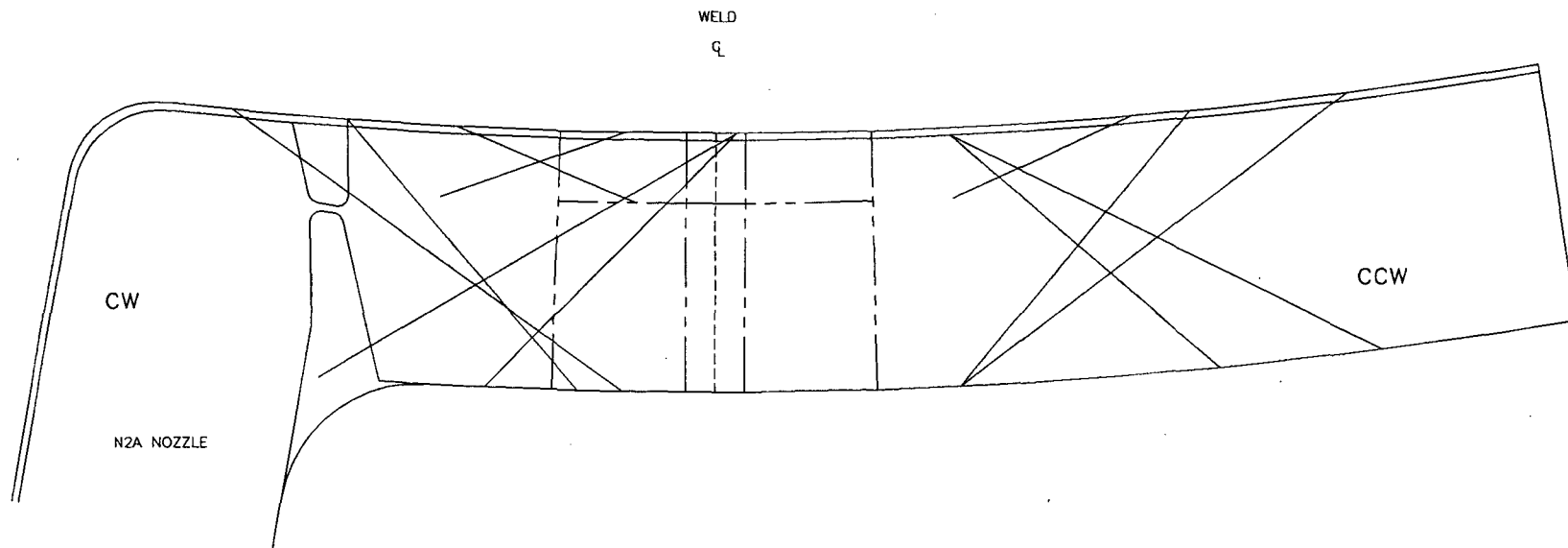


Nominal Clad T = 3/16"
 Nominal Base Metal T = 6 3/8"
 1 Degree = 2.19"

CH.	ANGLE	DIR.	MIN X	MAX X
1	0 W	0	37.86	49.74
2	0 W	90	37.86	49.74
3	70 UP	0	37.86	49.74
4	70 CW	90	33.28	49.74
5	70 DN	180	37.86	49.74
6	70 CCW	270	37.86	54.32
7	45 UP	0	37.86	49.74
8	45 CW	90	31.79	49.74
9	45 DN	180	37.86	49.74
10	45 CCW	270	37.86	55.81
11	60 UP	0	37.86	49.74
12	60 CW	90	27.80	49.74
13	60 DN	180	37.86	49.74
14	60 CCW	270	37.86	59.80
15	0 BM	0	37.86	59.80
16	0 BM	90	27.80	49.74

70F15 # 0044A

R1157



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

8489 0000 0444

R1157

8 OF 15 # 00425

GE NUCLEAR ENERGY	BROWNS FERRY UNIT 3	N2A NOZ. AUTOMATED SCAN LIMIT	SCALE: NONE	DWG. V1ABC-NZ	REV. 0
-------------------	---------------------	-------------------------------	-------------	---------------	--------



GE Nuclear Energy

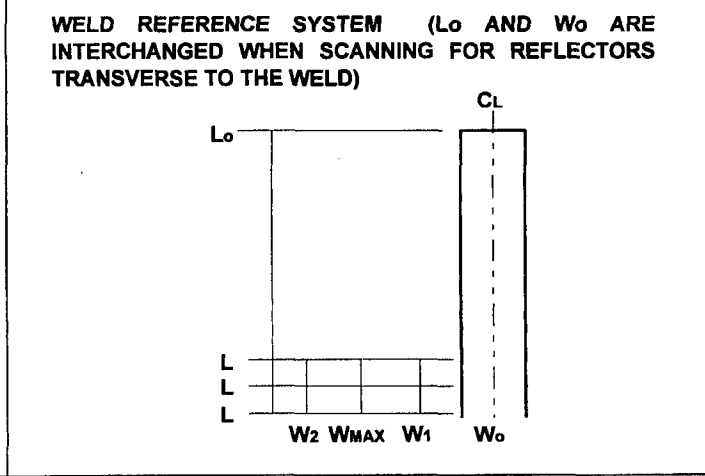
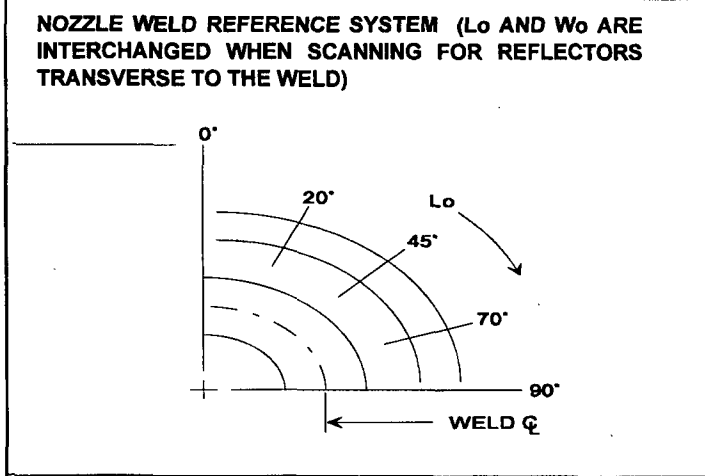
ULTRASONIC EXAMINATION DATA SHEET

SITE: <u>BFNP</u>	PROCEDURE NO.: <u>GE-UT-300</u>	REPORT NO.: <u>E-01</u>
UNIT: <u>3</u>	REVISION NO.: <u>6</u>	DATA SHEET NO.: <u>D-142</u>
PROJECT NO.: <u>00387</u>	FRR NO.: <u>004</u>	CALIBRATION SHEET NO.: <u>0° C-159</u> <u>45° N/A</u> <u>60° N/A</u>

SYSTEM: RPV EXAM SURFACE TEMP: 73 °F COUPLANT: Ultragel II EXAM START: 0052
 WELD ID: VIA THERMOMETER S/N: L0250CL BATCH NO.: 093011 EXAM END.: 0106

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 57.6 dB
 Wo REFERENCE Weld ⌀ 45° SCAN SENSITIVITY N/A 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, Weld Metal Exam</u>												

REMARKS: Examined from 149.5" to 213.5" elevation.

<u>Torrey Moran II</u> EXAMINED BY	<u>II</u> LEVEL	<u>11-17-93</u> DATE	<u>St. Ward</u> UTILITY REVIEW	<u>1/26/94</u> DATE
<u>Clay M. B.</u> GE REVIEWED BY		<u>12/2/93</u> DATE	<u>Albert Todd</u> ANII REVIEW	<u>8/25/94</u> DATE

PAGE: 1 OF: 1



GE Nuclear Energy

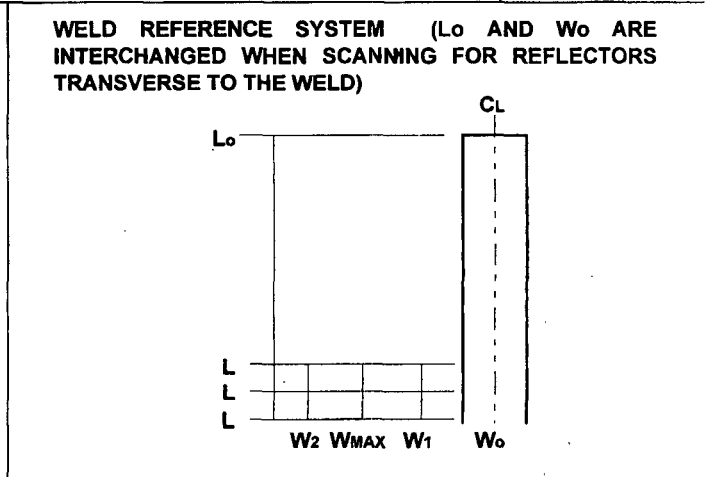
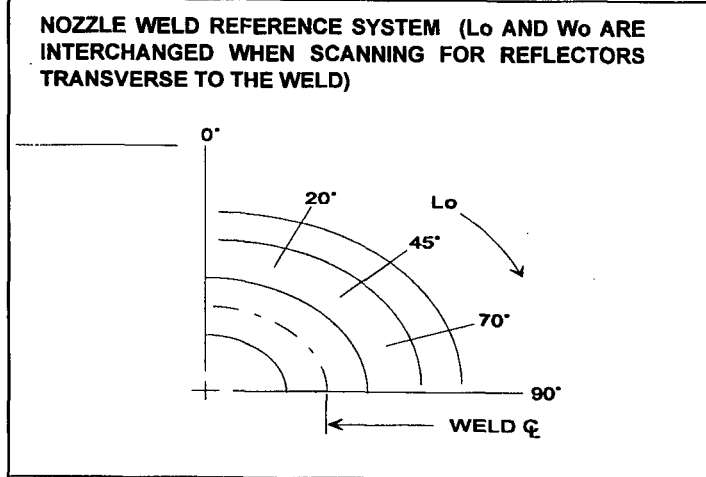
ULTRASONIC EXAMINATION DATA SHEET

SITE: <u>BFNP</u>	PROCEDURE NO.: <u>GE-UT-300</u>	REPORT NO.: <u>E-01</u>
UNIT: <u>3</u>	REVISION NO.: <u>6</u>	DATA SHEET NO.: <u>D-143</u>
PROJECT NO.: <u>00387</u>	FRR NO.: <u>004</u>	CALIBRATION SHEET NO.: <u>0° C-159</u> <u>45° N/A</u> <u>60° N/A</u>

SYSTEM: RPV EXAM SURFACE TEMP: 73 °F COUPLANT: Ultragel II EXAM START: 0255
 WELD ID: VIA THERMOMETER S/N: L0250CL BATCH NO.: 093011 EXAM END: 0325

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 57.6 dB
 Wo REFERENCE Weld ϕ 45° SCAN SENSITIVITY N/A 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, Base Metal Exam</u>													

REMARKS: Examined from 149.5" to 213.5" elevation. Exam limited to a "W" of 12.5" from an elevation of 172" to 199" on the CCW side of the weld due to the configuration of N2A. Exam also limited to a "W" of 13" from an elevation of 149.5" to 191" on the CW side of the weld due to the configuration of N1A.

<u>Timothy Novak II</u> EXAMINED BY	<u>II</u> LEVEL	<u>11-17-93</u> DATE	<u>Al Woody</u> UTILITY REVIEW	<u>1/26/94</u> DATE
<u>CF M</u> GE REVIEWED BY		<u>12/9/93</u> DATE	<u>Albert Ladd</u> ANII REVIEW	<u>8/25/94</u> DATE

PAGE: 1 OF: 1



GE Nuclear Energy

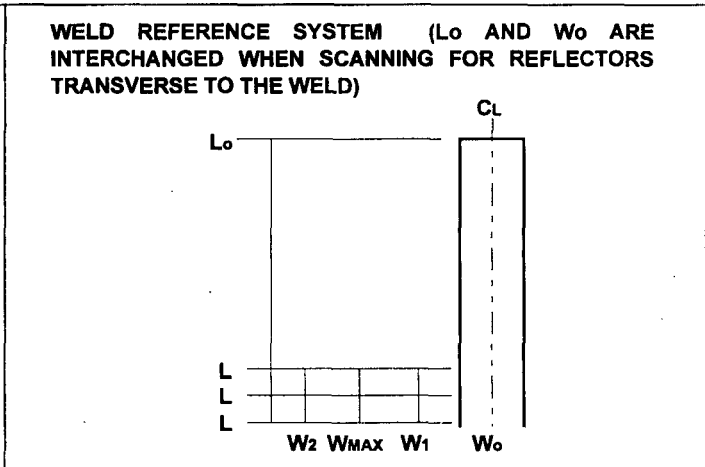
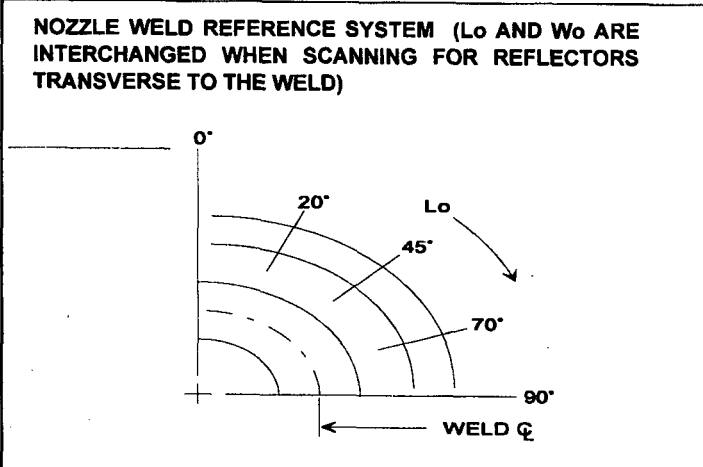
ULTRASONIC EXAMINATION DATA SHEET

SITE: <u>BFNP</u>	PROCEDURE NO.: <u>GE-UT-300</u>	REPORT NO.: <u>G-01</u>
UNIT: <u>3</u>	REVISION NO.: <u>6</u>	DATA SHEET NO.: <u>D-144</u>
PROJECT NO.: <u>00387</u>	FRR NO.: <u>004</u>	CALIBRATION SHEET NO.: <u>0° N/A</u> <u>45° C-160</u> <u>60° N/A</u>

SYSTEM: RPV EXAM SURFACE TEMP: 73 °F COUPLANT: Ultracel II EXAM START: 0107
 WELD ID: VIA THERMOMETER S/N: L0250CL BATCH NO.: 093011 EXAM END: 0128

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 ϕ 45° SCAN SENSITIVITY 65.2 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 149.5" to 213.5" elevation

<u>Tammy No. 11</u> EXAMINED BY	<u>11-17-93</u> LEVEL	<u>DATE</u>	<u>D. J. Woody</u> UTILITY REVIEW	<u>1/26/94</u> DATE
<u>C. J. M. S.</u> GE REVIEWED BY	<u>12/19/93</u> DATE	<u>Albert Todd</u> ANII REVIEW	<u>8/25/94</u> DATE	PAGE: <u>1</u> OF: <u>1</u>



GE Nuclear Energy

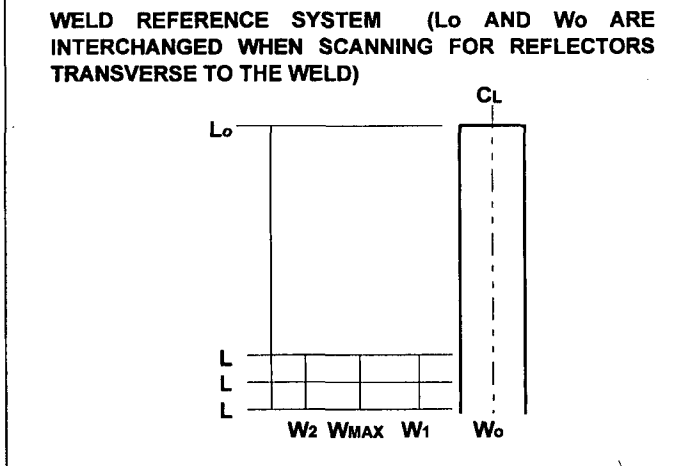
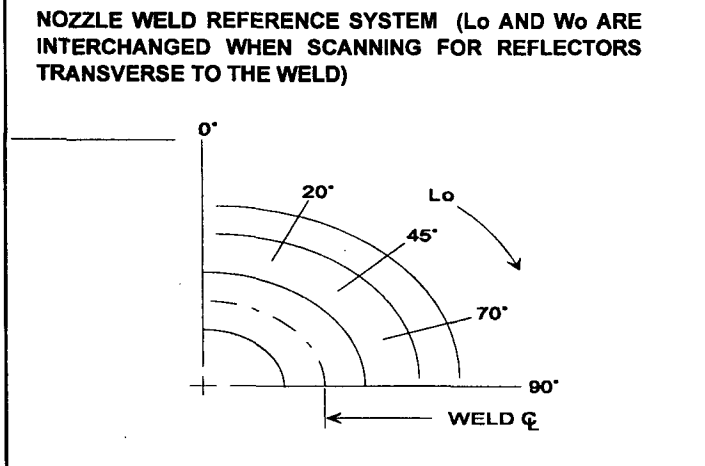
ULTRASONIC EXAMINATION DATA SHEET

SITE: <u>BFNP</u>	PROCEDURE NO.: <u>GE-UT-300</u>	REPORT NO.: <u>E-01</u>
UNIT: <u>3</u>	REVISION NO.: <u>6</u>	DATA SHEET NO.: <u>D-145</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-161</u>

SYSTEM: RPV EXAM SURFACE TEMP: 73 °F COUPLANT: Ultrage/II EXAM START: 0129
 WELD ID: VIA THERMOMETER S/N: L0250CL BATCH NO.: 093011 EXAM END: 0151

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 ⌀ 45° SCAN SENSITIVITY N/A dB
 60° SCAN SENSITIVITY 71.6 dB

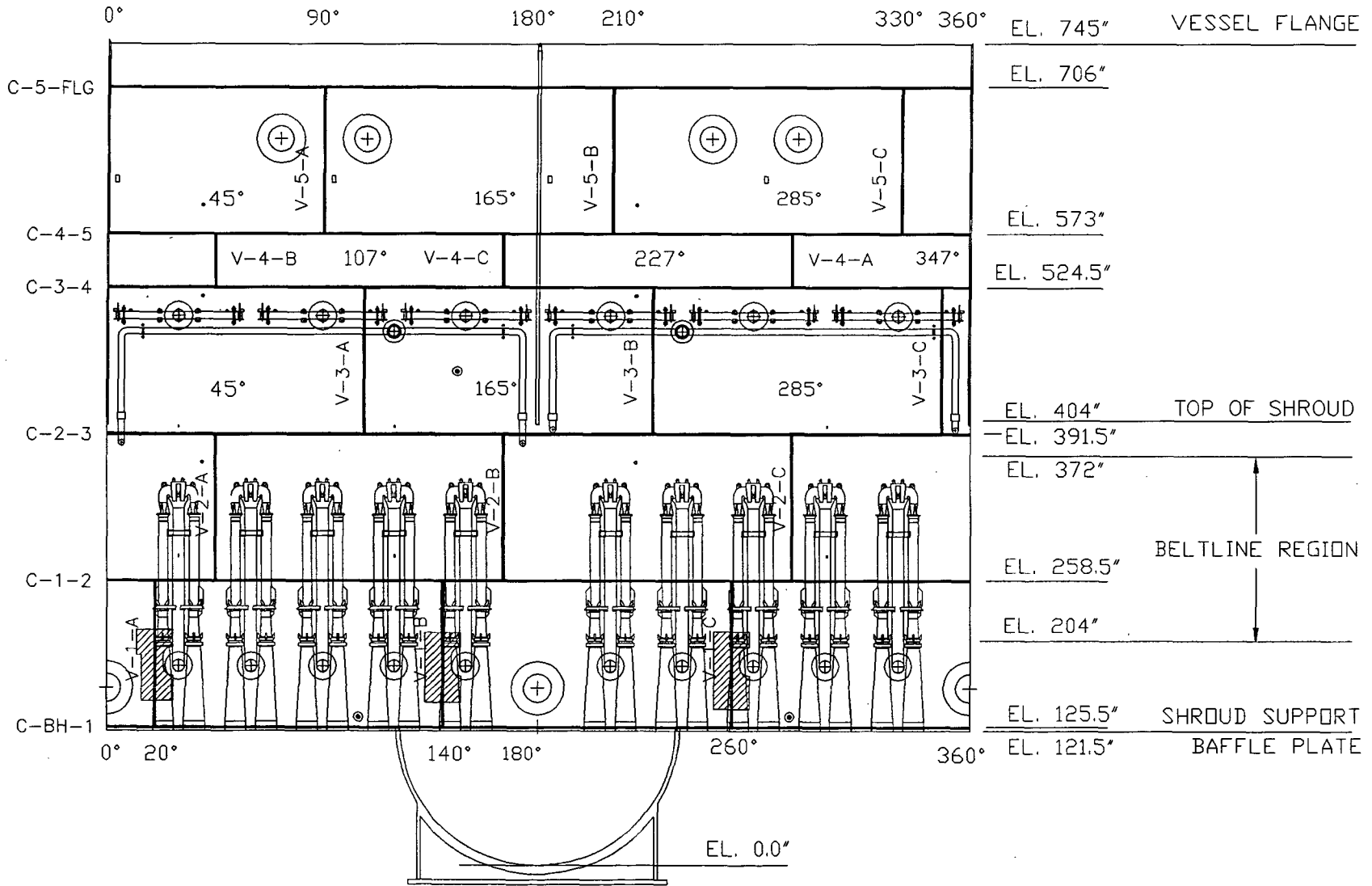


L/R	% DAC (MAX)	W1 20% DAC	WF1 50% DAC	WM MAX DAC	WF2 50% DAC	W2 20% DAC	MP1 20% DAC	MPF1 50% DAC	MP MAX DAC	MPF2 50% DAC	MP2 20% DAC	CONTINUOUS (C) OR SPOT (S) TRANSVERSE (T)	CW/CCW TOP OR BOTTOM
	No Recordable Indications												

REMARKS: Examined from 149.5" to 213.5" elevation. Exam limited to a "W" of 12.5" from an elevation of 172" to 198" on the CCW side of the weld due to the configuration of N2A. Exam also limited to a "W" of 13" from an elevation of 149.5 to 191" on the CW side of the weld due to the configuration of N1A.

Examined by: <u>Tammy N O'Neil II</u> 11-17-93	Utility Review: <u>Dr. Wood</u> 1-26-94
Examined by: <u>CL MS</u> 12/2/93	Utility Review: <u>Albert Ladd</u> 8/25/94
Level: _____	Date: _____
Level: _____	Date: _____

BROWNS FERRY UNIT-3 WELD LOCATIONS



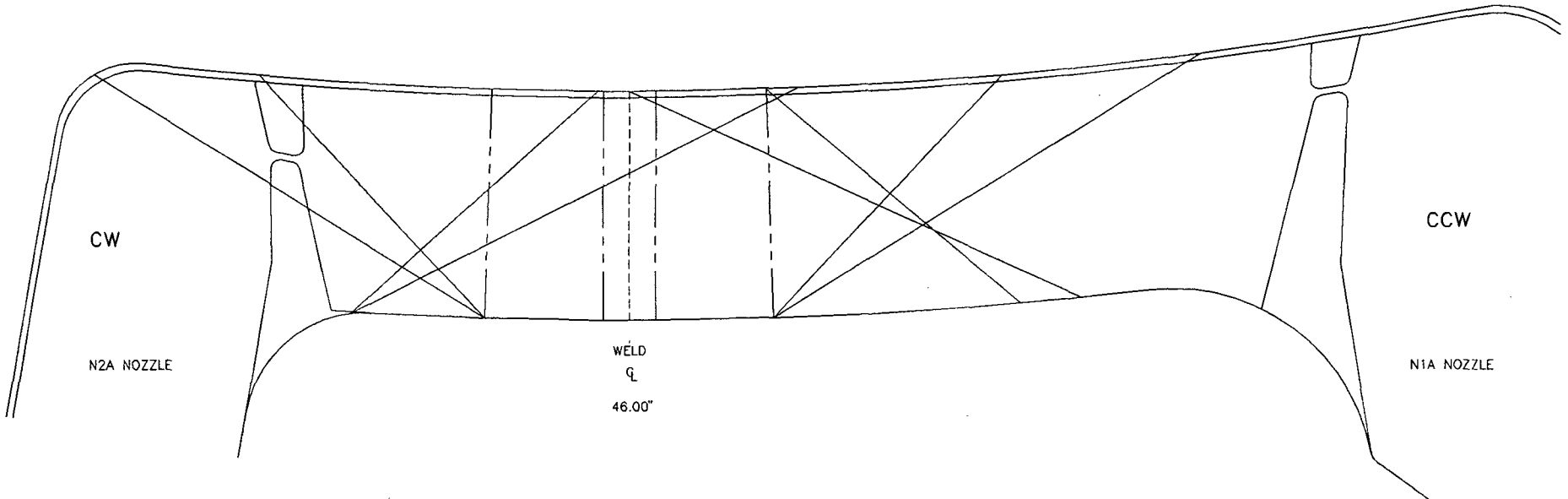
00450
13 OF 15

PAGE 0000 0001
R157

GE NUCLEAR ENERGY	BROWNS FERRY UNIT 3	VESSEL ROLLOUT & MANUAL PICKUP AREAS	BF-3-VMA	REV 0
-------------------	---------------------	--------------------------------------	----------	-------

4469 0000 0469

R1157



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

00451 140F15

GE NUCLEAR ENERGY

BROWNS FERRY UNIT 3

WELD V-1-A MANUAL PICKUP

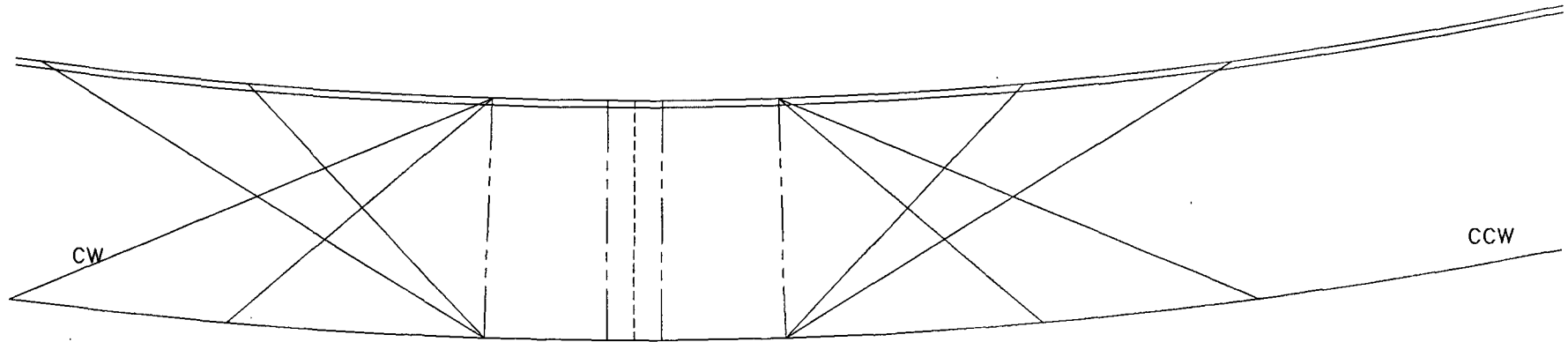
SCALE: NONE

DWG. MANV-1-A

REV. 0

0000 0000 0000

R1157



WELD
Q
46.00'

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

00452 15 OF 15

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