R1161

GE Nuclear Energy

GERIS 2000 Examination Summary Sheet

Project: TVA, Browns Ferry Nuclear Plant, Unit 3
System: Reactor Pressure Vessel
Weld ID: V-2-B **ASME Code Category:** B-A

Calibration Sheets: C-003

Supporting Data: Examination Data Sheets E-06-00 thru E-06-02, Indication Data Sheets 06-001 and 06-002, Indication Evaluation Sheets, Screen Prints, Exam Patch Location Map, Exam Coverage Plots and GERIS 2000 Setup Records.

Examination Summary

The ultrasonic examination of weld V-2-B 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 Jet Pump brackets at 160°. The total examination coverage was calculated to be 90%.

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

No manual supplemental examination was performed from the RPV outside surface due to access restrictions.

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

GERIS Analyst: [signature]	GE Reviewer: [signature]
LEVEL: III DATE: 12/14/93	LEVEL: III DATE: 12-15-93
UTILITY Review: [signature]	ANII Review:
TITLE: [illegible] DATE: 1/26/94	TITLE: [signature] DATE: 7/13/94

00044

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GE Nuclear Energy

GERIS 2000 Examination Data Sheet

Project: TVA, Browns Ferry, Unit 3
Weld ID: V-2-B
Exam Data Sheet: E-06-00

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-091	E-06-01	10/19/93	2351	0108	352.50	375.25	251.50	311.00	72B	JCG
BF-092	E-06-02	10/23/93	0636	0836	347.50	375.25	311.25	390.00	88B/89B	JCG
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Comments: N/A

Limitations: BF-091 limited due to Jet Pump Bracket @150°.

Analyst: [signature]
Level: III Date: 12/9/93

Reviewed By: [signature]
Level: II Date: 12/14/93

GE Nuclear Energy

GERIS 2000 Examination Data Sheet

Project: TVA, Browns Ferry, Unit 3
Weld ID: V-2-B
Cal. ID: C-003

Exam Data Sheet No.: E-06-01
Patch ID: BF-091
Ind. Data Sheet Series: 06-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	5	~	~	~	~	~
2	0 WM	N/A	5	~	~	~	~	~
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	1	06-001	~	~	~	~
8	45 RS	90 CW	NRI	~	~	~	~	~
9	45 RS	180 DN	2	06-002	~	~	~	~
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	5	~	~	~	~	~
16	0 BM	N/A	NRI	~	~	~	~	~
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Comments: (5) Non relevant plate segregates CW shell side.

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: [signature]
Level: III Date: 12/9/93

Reviewed By: [signature]
Level: II Date: 12/14/93

EXAM-DS2 V.1 9/28/93

00046 .XLS 12/9/93

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GE Nuclear Energy

GERIS 2000 Examination Data Sheet

Project: TVA, Browns Ferry, Unit 3
Weld ID: V-2-B
Cal. ID: C-003

Exam Data Sheet No.: E-06-02
Patch ID: BF-092
Ind. Data Sheet Series: 06-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	5	~	~	~	~	~
2	0 WM	N/A	5	~	~	~	~	~
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	5	~	~	~	~	~
8	45 RS	90 CW	5	~	~	~	~	~
9	45 RS	180 DN	5	~	~	~	~	~
10	45 RS	270 CCW	5	~	~	~	~	~
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	~	~	~	~	~
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Comments: (5) Non relevant plate segregates CW shell side.

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: [signature]
Level: III Date: 12/9/93

Reviewed By: [signature]
Level: II Date: 12/14/93

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GE Nuclear Energy

GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3
Weld ID: V-2-B
Cal. ID: C-003

Exam Data Sheet No.: E-06-01
Patch ID: BF-091
Ind. Data Sheet No.: 06-001

Indication: 06-001 **Channel:** 7 **Angle:** 45 **Direction:** 0

Amp.	X	20% Min Y	MP	50% Min Y	MP	@ Max Y	MP	50% Max Y	MP	20% Max Y	MP	Remarks
5.3%	362.21	~	~	~	~	302.05	5.01	~	~	~	~	SPOT
11.9%	362.46	~	~	~	~	302.05	4.99	~	~	~	~	~
9.9%	362.71	~	~	~	~	302.05	5.04	~	~	~	~	~
10.5%	362.96	~	~	~	~	301.80	5.21	~	~	~	~	~
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Comments: Thruwall size was determined by the SPOT technique.

TW= 0.268 L= 0.75 S= 2.9

Analyst: [signature]
Level: III Date: 12/9/93

Reviewed By: [signature]
Level: II Date: 12/14/93

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GE Nuclear Energy

GERIS 2000 Indication Evaluation Sheet

Project: TVA, Browns Ferry Unit 3
Weld ID: V-2-B
Patch: BF-091

Exam Data Sheet No.: E-06-01
Ind. Data Sheet No.: 06-001
Indication: 06-001

Flaw Thruwall Dimension =	0.27
Flaw Length "l" =	0.75
Seperation with clad "S" =	N/A
Surface Separation "S" =	2.90

T nominal =	6.38
Clad T nominal =	0.19

Flaw is acceptable by Table IWB-3510-1

ASME Section XI, 1986 Edition
TABLE IWB-3510-1 for 4" to 12"

a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.90	2	~	~
0.05	2.00	2.2	~	~
0.10	2.20	2.5	~	~
0.15	2.50	2.9	2.68	3.13 Y
0.20	2.80	3.3	~	~
0.25	3.30	3.8	~	~
0.30	3.80	4.4	~	~
0.35	4.40	5.1	~	~
0.40	5.00	5.8	~	~
0.45	5.10	6.7	~	~
0.50	5.20	7.6	~	~
			Allowed	Allowed
			2.68	3.13

a =	0.135
a/l value =	0.179
Y =	1.000

Flaw is Subsurface

Allowed a/t =	3.13%
a/t =	2.11%

Comments:

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GE Nuclear Energy

GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3
Weld ID: V-2-B
Cal. ID: C-003

Exam Data Sheet No.: E-06-01
Patch ID: BF-091
Ind. Data Sheet No.: 06-002

Indication: 06-002 **Channel:** 9 **Angle:** 45 **Direction:** 180

Amp.	X	20% Min Y	MP	50% Min Y	MP	@ Max Y	MP	50% Max Y	MP	20% Max Y	MP	Remarks
53.5%	366.40	~	~	~	~	277.75	8.54	~	~	~	~	~
60.6%	366.65	~	~	~	~	278.00	8.69	~	~	~	~	~
50.2%	366.90	~	~	~	~	278.00	8.73	~	~	~	~	~
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Comments: OD Surface geometry.
10.87 dB below notch response.

TW= 0.127 L= 0.5 S= 0

Analyst: [signature]
Level: III Date: 12/9/93

Reviewed By: [signature]
Level: II Date: 12/14/93

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GE Nuclear Energy

GERIS 2000 Indication Evaluation Sheet

Project: TVA, Browns Ferry Unit 3
Weld ID: V-2-B
Patch: BF-091

Exam Data Sheet No.: E-06-01
Ind. Data Sheet No.: 06-002
Indication: 06-002

Flaw Thruwall Dimension =	0.13
Flaw Length "l" =	0.50
Seperation with clad "S" =	0.00
Surface Separation "S" =	0.00

T nominal =	6.38
Clad T nominal =	0.19

Flaw is acceptable by Table IWB-3510-1

ASME Section XI, 1986 Edition
TABLE IWB-3510-1 for 4" to 12"

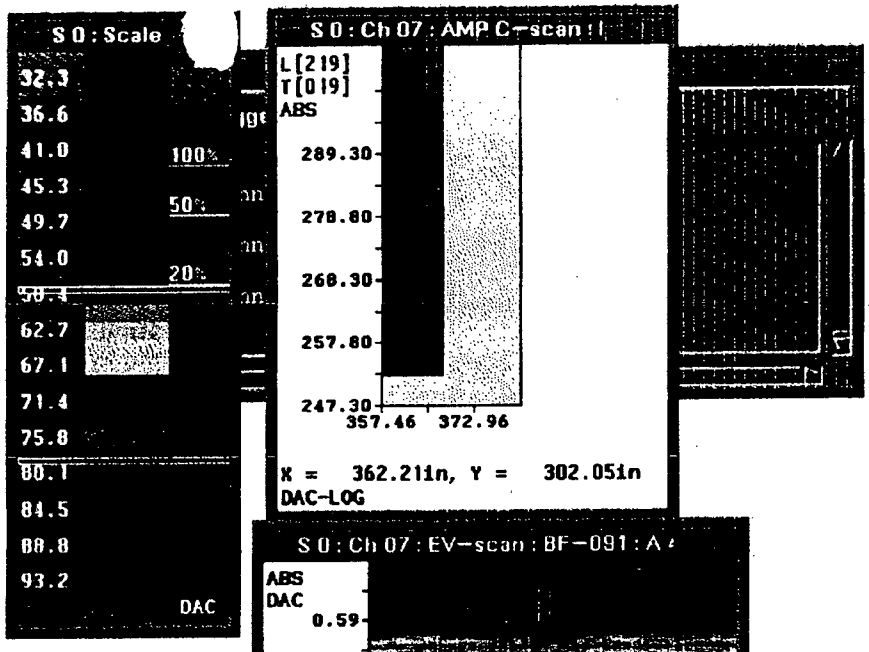
a/l	Surface %	Subsurface %	Surface %	Subsurface %
0.00	1.90	2	~	~
0.05	2.00	2.2	~	~
0.10	2.20	2.5	~	~
0.15	2.50	2.9	~	~
0.20	2.80	3.3	~	~
0.25	3.30	3.8	3.34	3.85 Y
0.30	3.80	4.4	~	~
0.35	4.40	5.1	~	~
0.40	5.00	5.8	~	~
0.45	5.10	6.7	~	~
0.50	5.20	7.6	~	~
			Allowed	Allowed
			3.34	0.00

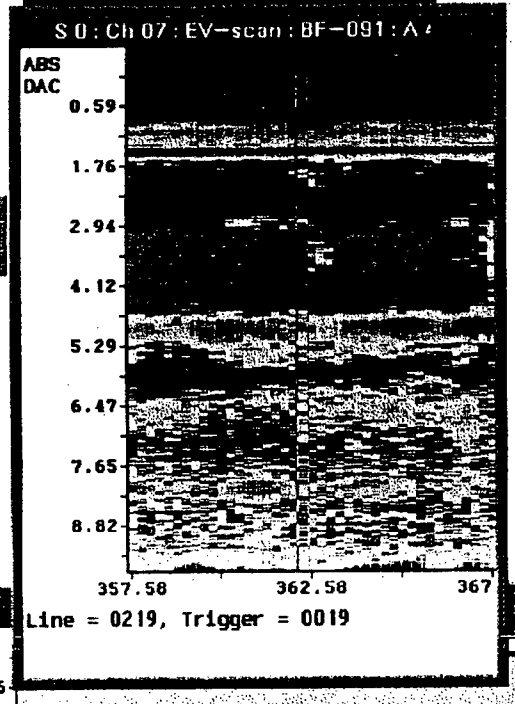
a =	0.127
a/l value =	0.254
Y =	0.000

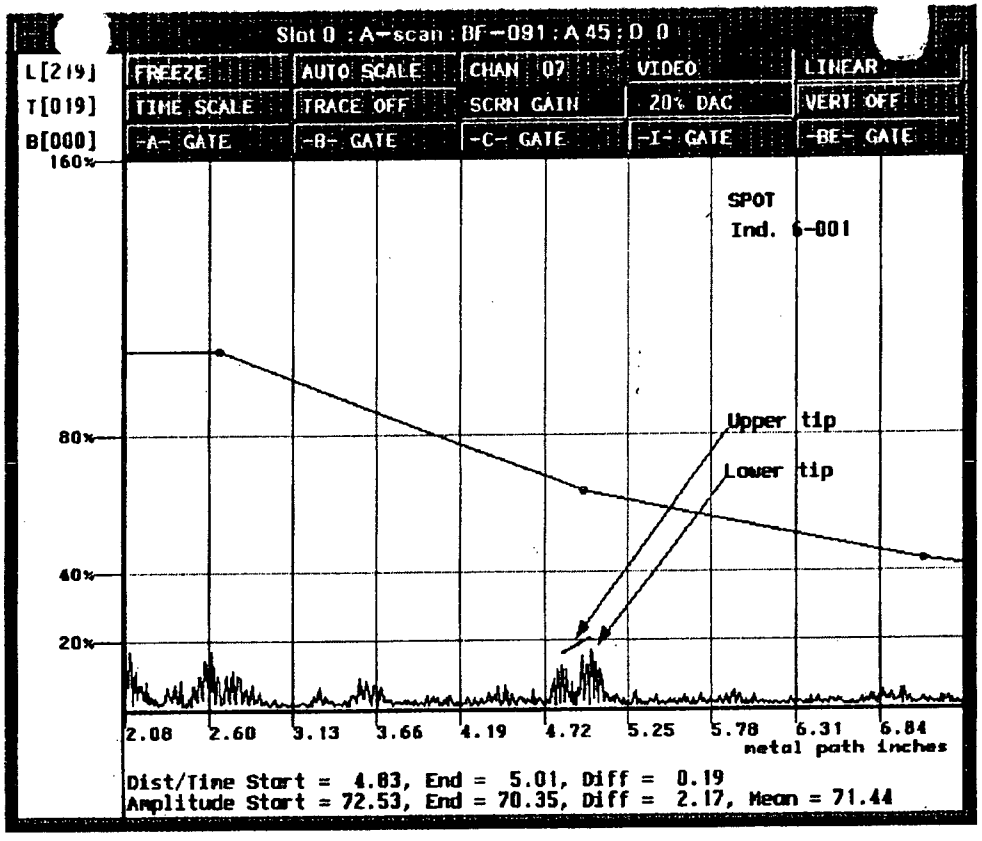
Flaw is Surface

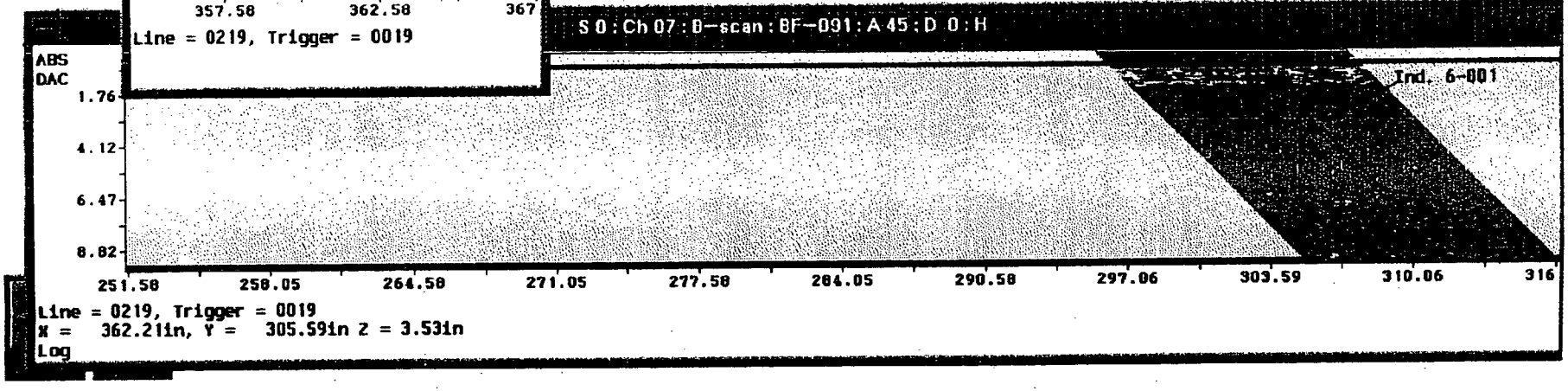
Allowed a/t =	3.34%
a/t =	1.99%

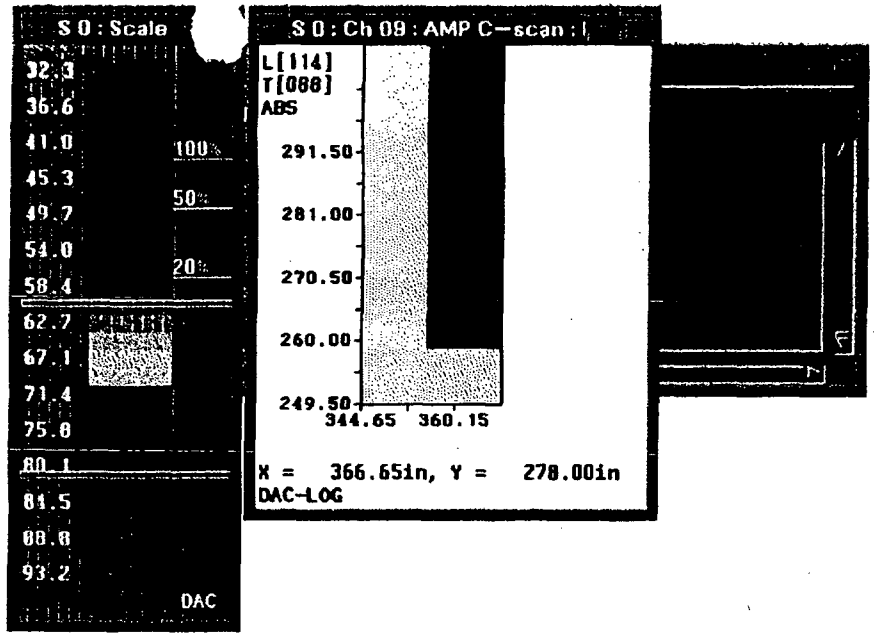
Comments: Evaluated to notch response assigned thruwall dimension = .127.

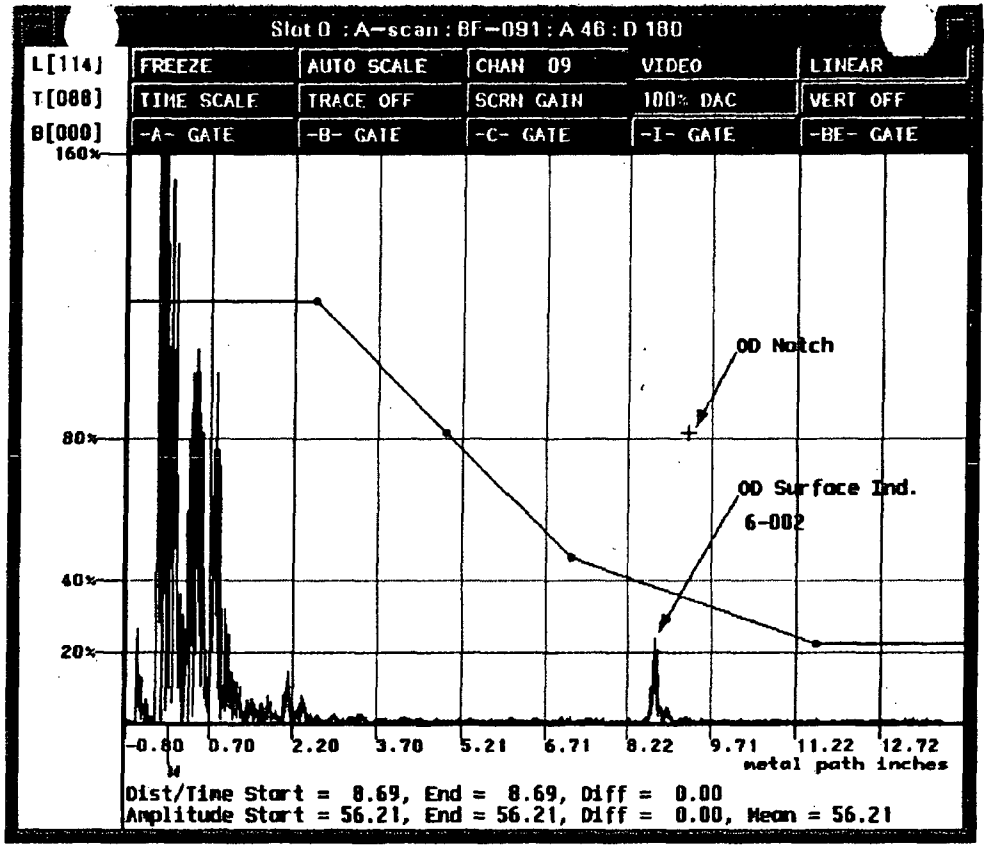


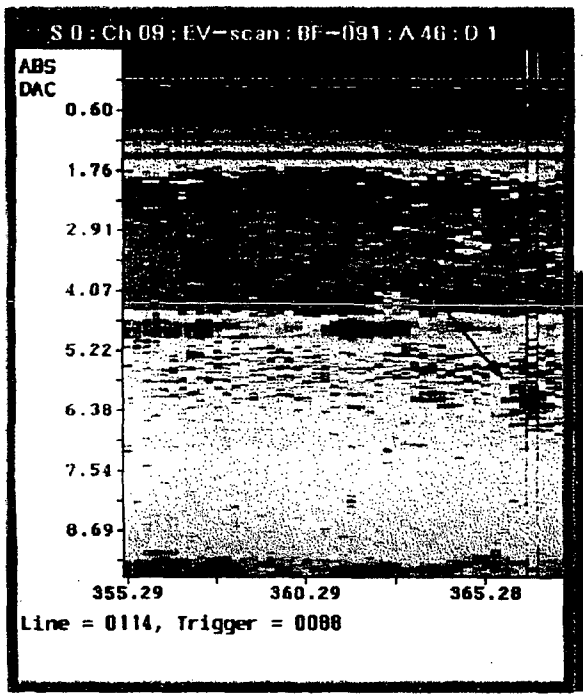


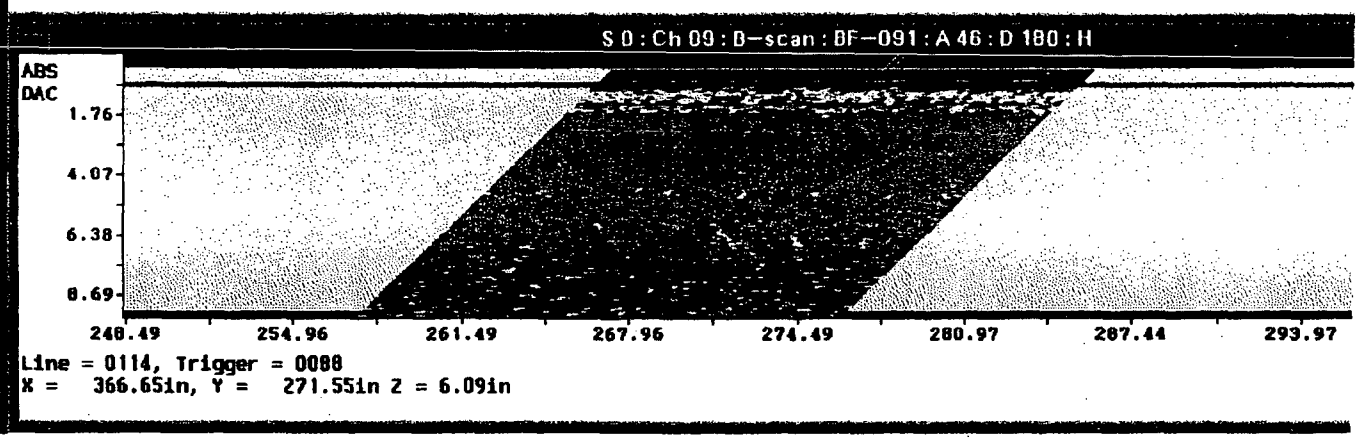


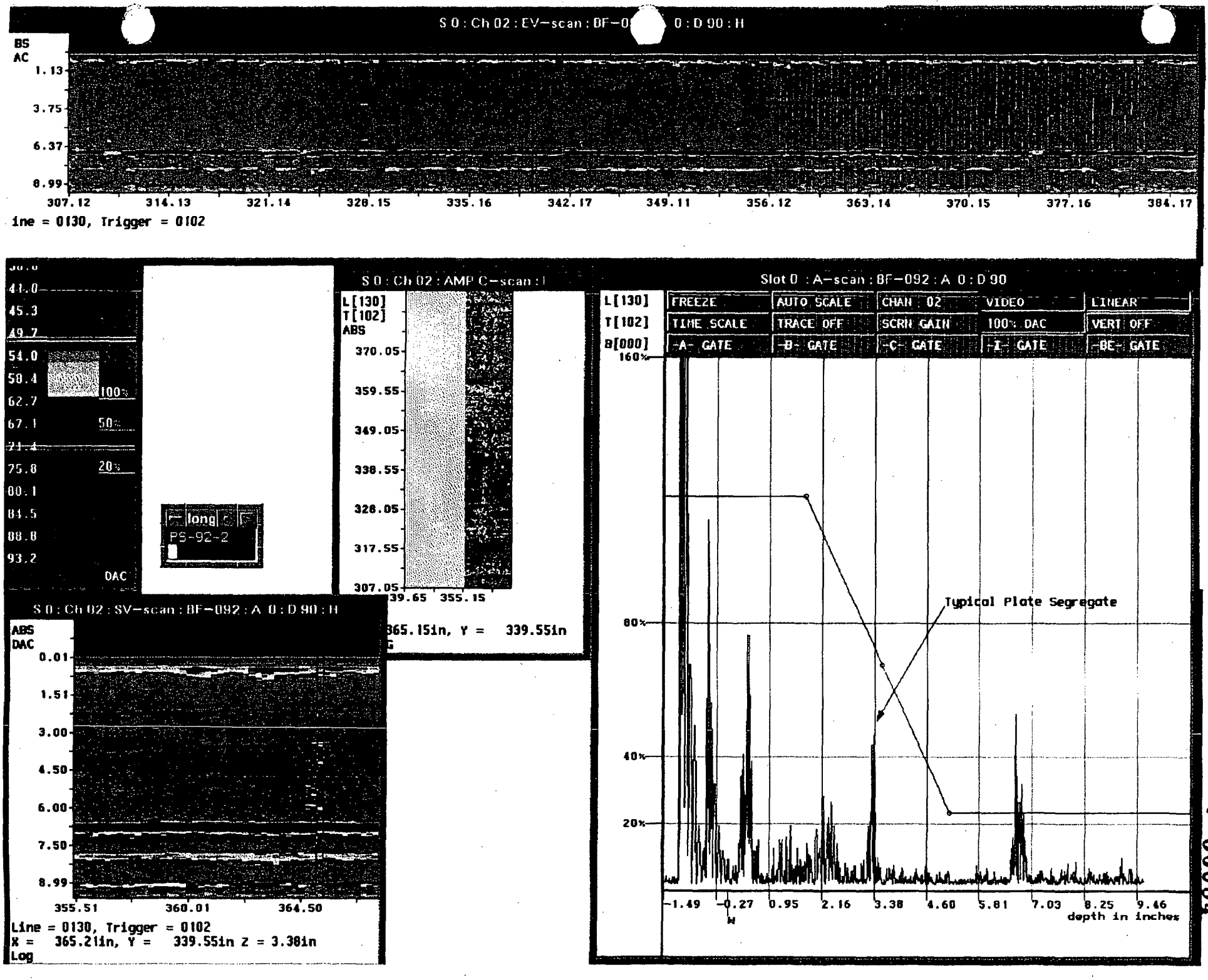












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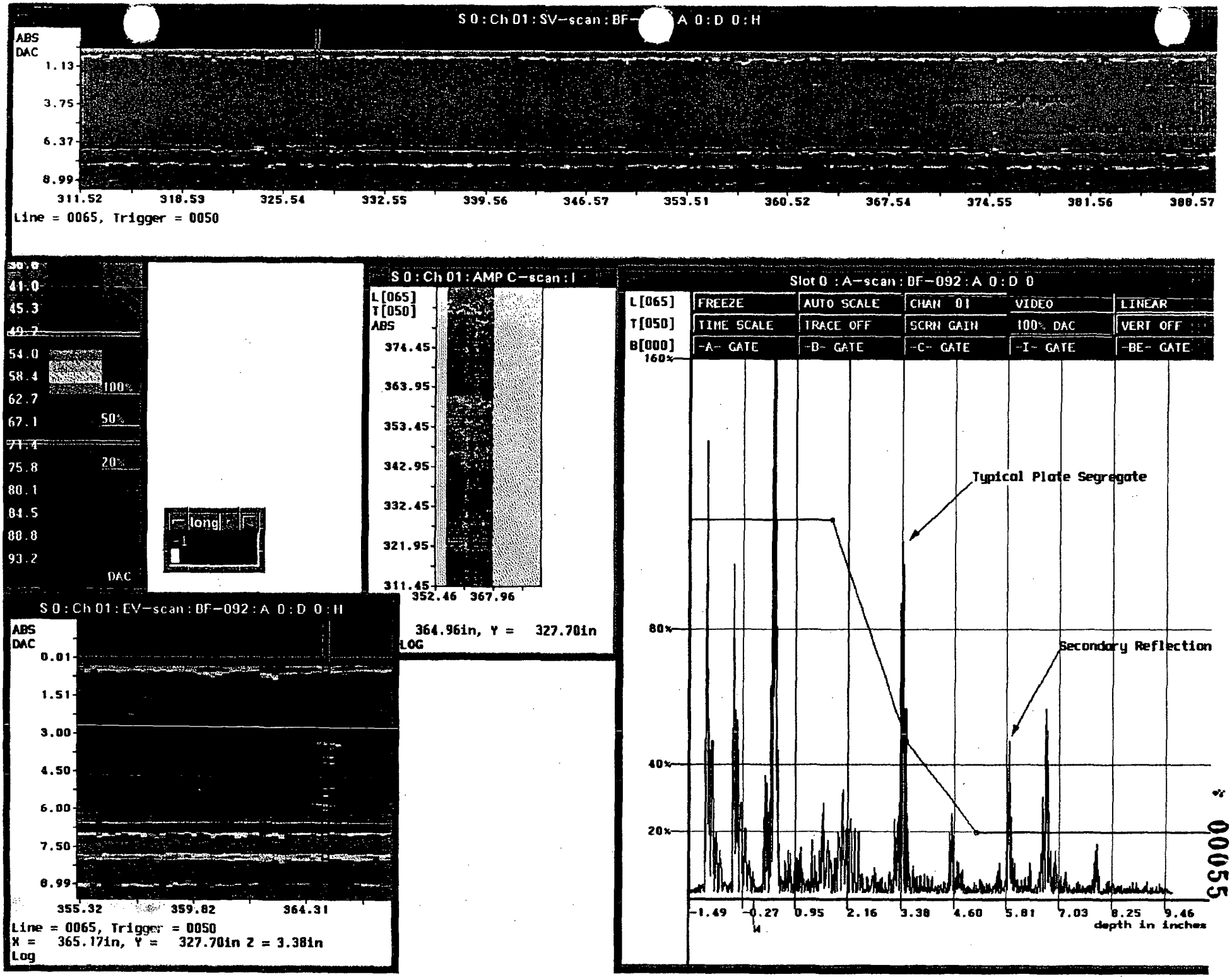

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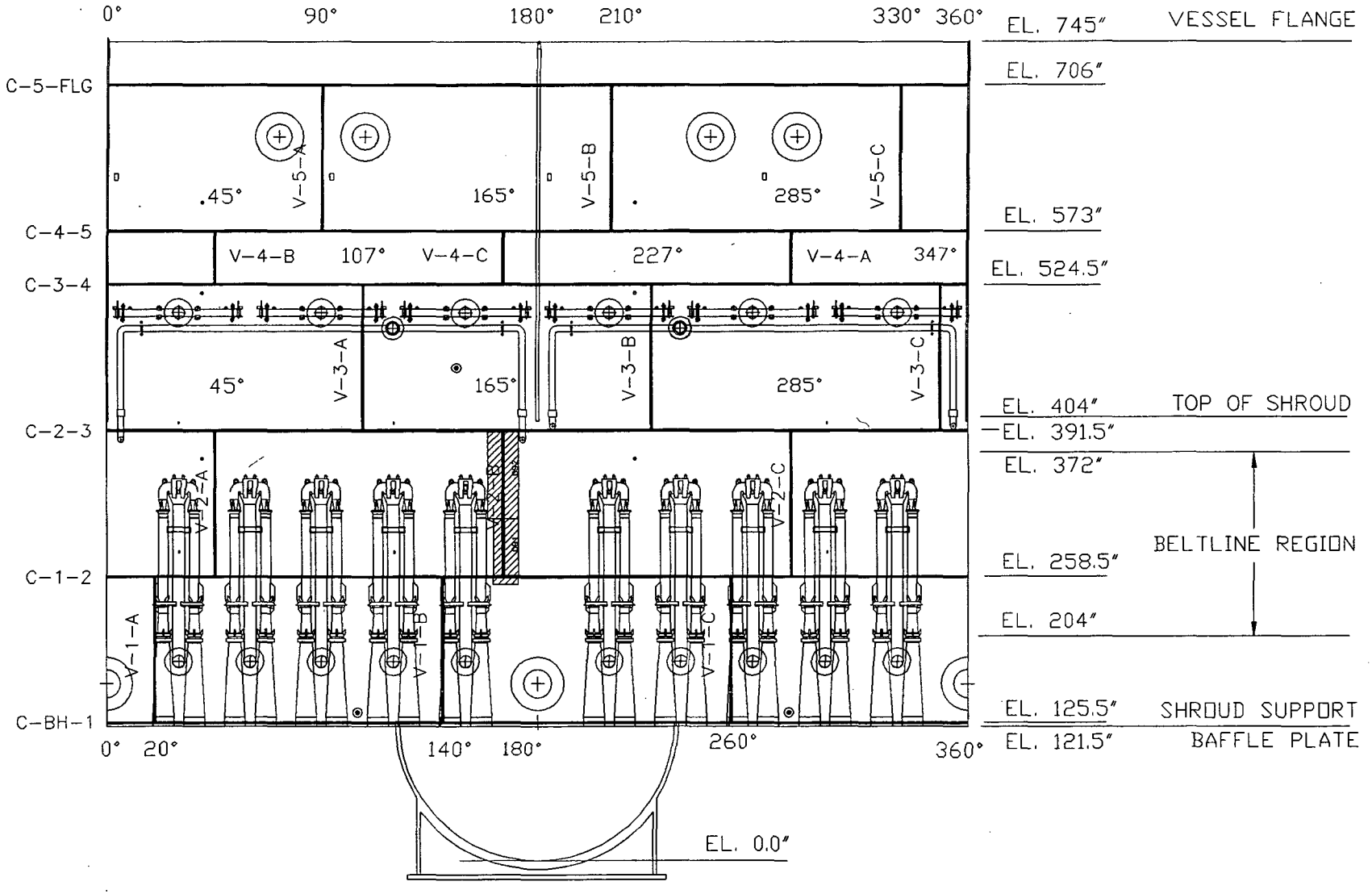
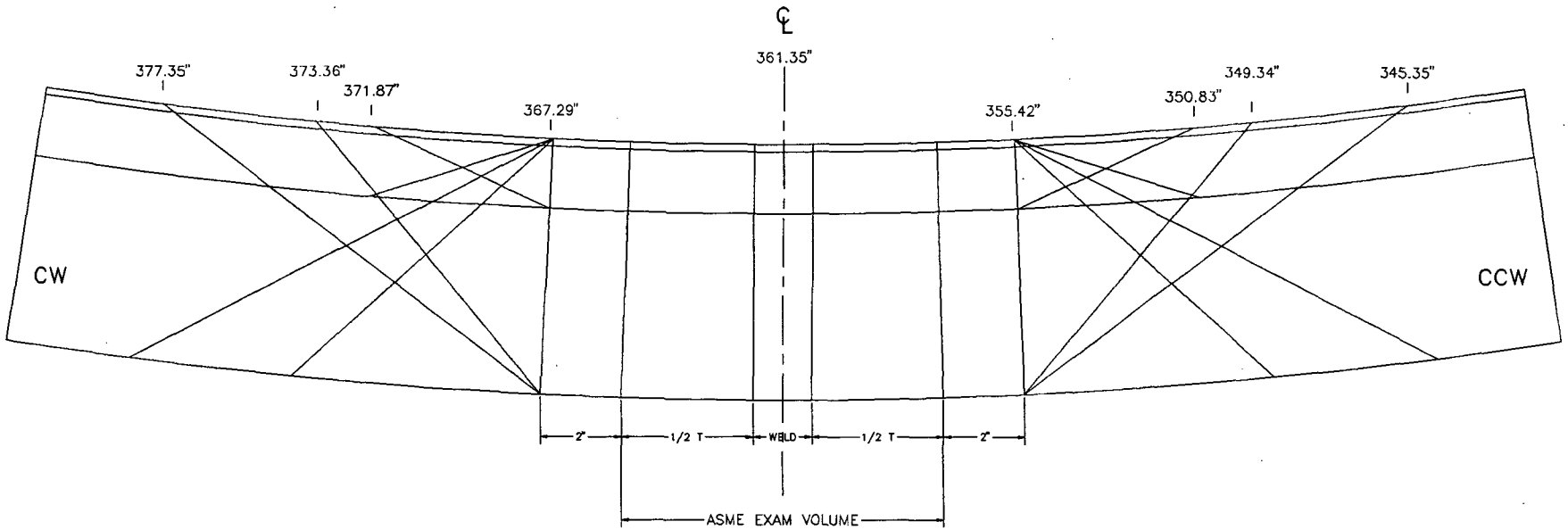
BROWNS FERRY UNIT-3 WELD LOCATIONS



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	355.42	367.29
2	0 W	90	355.42	367.29
3	70 UP	0	355.42	367.29
4	70 CW	90	350.83	367.29
5	70 DN	180	355.42	367.29
6	70 CCW	270	355.42	371.87
7	45 UP	0	355.42	367.29
8	45 CW	90	349.34	367.29
9	45 DN	180	355.42	367.29
10	45 CCW	270	355.42	373.36
11	60 UP	0	355.42	367.29
12	60 CW	90	345.35	367.29
13	60 DN	180	355.42	367.29
14	60 CCW	270	355.42	377.35
15	0 BM	0	355.42	377.35
16	0 BM	90	345.35	367.29

GE NUCLEAR ENERGY	BROWNS FERRY UNIT 3	WELD V-2-B EXAM VOLUME	SCALE: NONE	DWG. BF3-VERT	REV. 0

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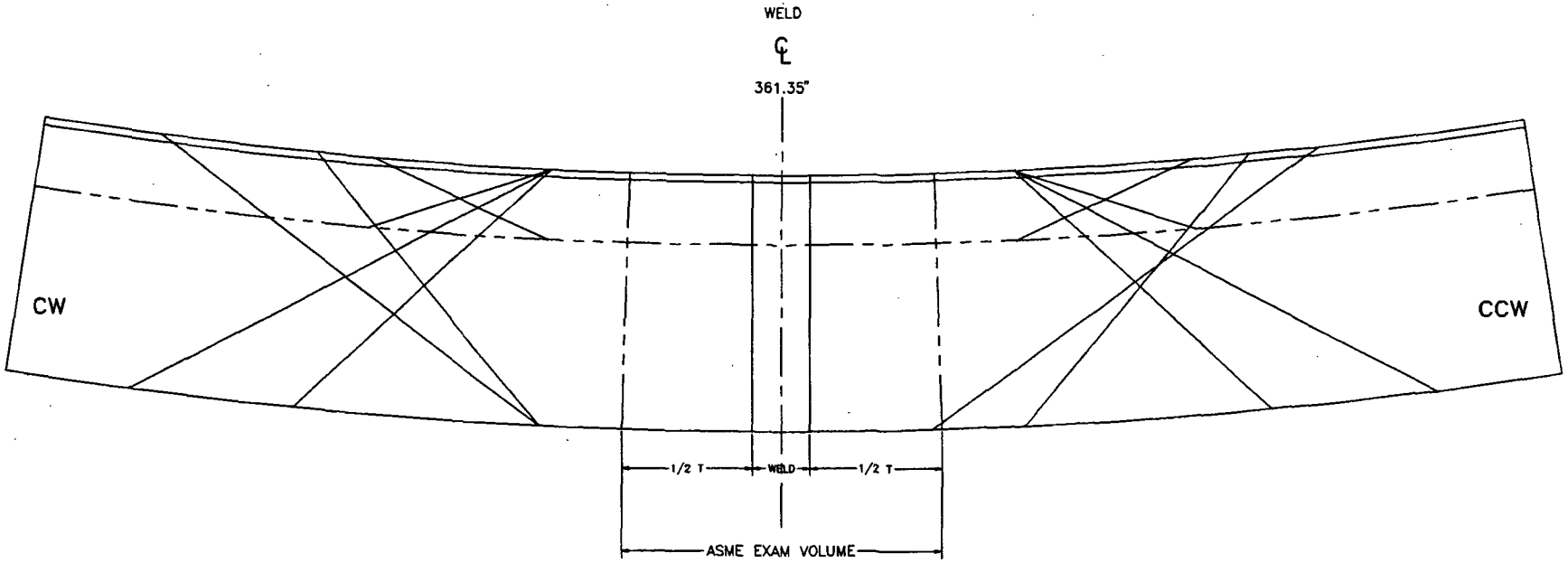

Nominal Clad T = 3/16"
Nominal Base Metal T = 6 3/8"
1 Degree = 2.19"

P-scans limited due to Jet Pump Brackets.
Reference Scanner Data Setup BF-091

GE NUCLEAR ENERGY	BROWNS FERRY UNIT 3	JET PP AUTOMATED SCAN LIMIT	SCALE: NONE	DWG. V2ABCJET	REV. 0

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