



GE Nuclear Energy

GERIS 2000 Examination
Summary Sheet

335

Project: TVA, Browns Ferry Nuclear Plant, Unit 3

System: Reactor Pressure Vessel

Weld ID: V-2-A

ASME Code Category: B-A

Calibration Sheets: C-003

Supporting Data: Examination Data Sheets E-05-00 thru E-05-05, Indication Data Sheets 05-001 thru 05-008 and G-001 thru G-008, Screen Prints, Exam Patch Location Map, Exam Coverage Plots and GERIS 2000 Setup Records.

Examination Summary

The ultrasonic examination of weld V-2-A 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 N16-A Nozzle at 40° and the Jet Pump brackets at 30° and 60°. The total examination coverage was calculated to be 85%.

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 scan, 70°RL, 45° and 60° shear wave scans that were evaluated and found to be acceptable per the referencing Code section. Geometric indications from the N16-A Nozzle and OD surface were recorded with the 45° and 60° shear wave scans.

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: *CO Ma*

GE Reviewer: *Alesia 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: *About Laid* DATE: *9/8/94*



GERIS 2000 Examination Data Sheet

Weld ID: V-2-A

Exam Data Sheet: E-05-00**Procedure No.: GE-UT-700**

Revision No.: 2

FRR No.: N/A

[illegible]

Comments: N/A

Limitations: BF-087R limited due to Jet Pump Brackets @ 30 and 60 deg.

BF-089R limited due to nozzle N16-A @ 40 deg.

Analyst:

Level:

Date: 12/9/93

Reviewed By:

Level: II

Date: 12/13/93



GERIS 2000 Examination Data Sheet

Cal. ID: C-003

Ind. Data Sheet Series: 05-XXX

[illegible]

Comments: Geometric indications recorded as typical reflectors.

Indication Codes: 1 = Flaw, 2 = OD Surface, 3 = OD Attachment, 4 = Nozzle, 5 = Other

Level: III Date: 12/9/93

Level: II Date: 12/13/93



GERIS 2000 Examination Data Sheet

Cal. ID: C-003

Ind. Data Sheet Series: 05-XXX

[illegible]

Comments: N/A

Indication Codes: 1 = Flaw, 2 = OD Surface, 3 = OD Attachment, 4 = Nozzle, 5 = Other

Analyst: CE Ma

Level: III Date: 12/9/23

Reviewed By: De C. D.

Level: II Date: 12/13/93



GERIS 2000 Examination Data Sheet

Exam Data Sheet No.: E-05-04
Patch ID: BF-090
Ind. Data Sheet Series: 05-XXX

[illegible]

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: CE MS

Level: III Date: 12/9/93

Reviewed By: [Signature]

Level: II Date: 12/13/93



GERIS 2000 Examination Data Sheet

Exam Data Sheet No.: E-05-05
Patch ID: BF-135
Ind. Data Sheet Series: 05-XXX

[illegible]

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: CJMS

Level: III Date: 12/9/93

Reviewed By: John L. Smith

Level: II Date: 12/13/93

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GE Nuclear Energy

GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-01

Patch ID: BF-087R

Ind. Data Sheet No.: 05-001

Indication: 05-001

Channel: 7

Angle: 45

Direction: 0

[illegible]

Comments: Recorded at less than ASME required recording level for reference only.

Associated with circumferential weld C-1-2.

Analyst: CE M

Level: III Date: 12/9/93

Reviewed By: Ken C. Lutz

Level: II Date: 12/13/93



GERIS 2000 Indication Data Sheet

Cal. ID: C-003

Ind. Data Sheet No.: 05-002

Direction: 180

Comments: Recorded at less than ASME required recording level for reference only.
Associated with circumferential weld C-1-2.

Level: II Date: 12/13/93



GERIS 2000 Indication Data Sheet

Cal. ID: C-003

Ind. Data Sheet No.: 05-003

Direction: 180

[illegible]

Associated with circumferential weld C-1-2.

Analyst:

Analyst: CG M5

Level:

III

Date: 12/9/53

Reviewed By:

Gen C. Dill

Level:

II.

Date: 12/13/93



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GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-01

Patch ID: BF-087R

Ind. Data Sheet No.: 05-004

Indication: 05-004

Channel: 9

Angle: 45

Direction: 180

[illegible]

Comments: Recorded at less than ASME required recording level for reference only.

Associated with circumferential weld C-1-2.

Analyst: Q. M.

Level: TUE Date: 12/9/92

Reviewed By:

Level: II

Date: 12/13/93



GE Nuclear Energy

GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-01**Patch ID:** BF-087R**Ind. Data Sheet No.: 05-005**

Indication: 5-005

Channel: 11

Angle: 60

Direction: 0

[illegible]

Comments: Recorded at less than ASME required recording level for reference only.

Associated with circumferential weld C-1-2.

Analyst:

CL M5

Level:

III

Date:

12/9/93

Reviewed By:

John C. Reed

Level:

II

Date:

12/13/93



GE Nuclear Energy

GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-05

Patch ID: BF-135

Ind. Data Sheet No.: 05-006

Indication: 05-006

Channel: 2

Angle: 0

Direction: 90

[illegible]

Comments: This indication evaluated as a laminar reflector and is acceptable

in accordance with IWB-3510-2, ASME Section XI, 1986 Edition, No Addenda.

Analyst:

Analyst: CA M5

Level:

Level: III Date: 12/9/93

Reviewed By:

Reviewed By: Jen C. D...

Level:

Level: II Date: 12/13/93



GE Nuclear Energy

GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-05**Patch ID:** BF-135

Ind. Data Sheet No.: 05-007

Indication: 05-007

Channel: 10

Angle: 45

Direction: 270

[illegible]

Comments: Geometric indication from nozzle N16-A @ 40°

Analyst: C. M.

Level: III Date: 12/9/93

Reviewed By: John C. Dicks

Level: II Date: 12/13/93



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GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-05

Patch ID: BF-135

Ind. Data Sheet No.: 05-008

Indication: 05-008

Channel: 14

Angle: 60

Direction: 270

[illegible]

Comments: Geometric indication from nozzle N16-A @ 40°.

Analyst:

Analyst: CE MS

Level:

Level: III Date: 12/2/93

Reviewed By:

Reviewed By: John C. Dill

Level:

Level: II Date: 12/13/93



GE Nuclear Energy

GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-01

Patch ID: BF-087R

Ind. Data Sheet No.: G-001

Indication: G-001

Channel: 7

Angle: 45

Direction: 0

[illegible]

Comments: Geometric indication from OD surface. 17.4 dB below notch response.

Analyst: CF/MS

Level: III Date: 12/7/93

Reviewed By:

Level: II Date: 12/13/93



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GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-01

Patch ID: BF-087R**Ind. Data Sheet No.: G-002**

Indication: G-002

Channel: 8

Angle: 45

Direction: 90

[illegible]

Comments: Geometric indication from OD surface. 13 dB below notch response.

Analyst:

Q. M.

Level:

III

Date:

12/9/93

Reviewed By:

y: Gen C. Birch

Level: II

Date: 12/13/93



GERIS 2000 Indication Data Sheet

Exam Data Sheet No.: E-05-01

Patch ID: BF-087R

Ind. Data Sheet No.: G-003

Direction: 180

Comments: Geometric indication from the weld fusion line of C-1-2. 19.4 dB below notch response.

Level: II Date: 12/13/93



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GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-01

Patch ID: BF-087R

Ind. Data Sheet No.: G-004

Indication: G-004

Channel: 10

Angle: 45

Direction: 270

[illegible]

Comments: Geometric indication from OD surface. 17 dB below notch response.

Analyst: C. M. S.

Level: IV Date: 12/9/93

Reviewed By: He C. Li

Level: II Date: 12/13/93



GE Nuclear Energy

GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-02

Patch ID: BF-088

Ind. Data Sheet No.: G-005

Indication: G-005

Channel: 8

Angle: 45

Direction: 90

[illegible]

Comments: Geometric indication from OD surface. 17 dB below notch response.

Analyst: CE/M

Level: TV Date: 12/9/93

Reviewed By: W. C. L. L.

Level: II Date: 12/13/93



GE Nuclear Energy

GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-02

Patch ID: BF-088**Ind. Data Sheet No.: G-006**

Indication: G-006

Channel: 3

Angle: 70

Direction: 0

[illegible]

Comments: Non relevant indication at the clad / base material interface. No apparent tip signals.

Recorded for reference only.

Analyst: CQ MS

Level: III Date: 12/9/93

Reviewed By: He C. Li

Level: II Date: 12/13/93



GE Nuclear Energy

GERIS 2000 Indication Data Sheet

Project: TVA, Browns Ferry, Unit 3

Weld ID: V-2-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-02

Patch ID: BF-088**Ind. Data Sheet No.: G-007**

Indication: G-007

Channel: 9

Angle: 45

Direction: 180

[illegible]

Comments: Geometric indication from the OD surface. 9.8 dB below notch response.

Analyst:

Ch M5

Level:

III

Date:

12/14/93

Reviewed By:

John C. Smith

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-A

Cal. ID: C-003

Exam Data Sheet No.: E-05-02

Patch ID: BF-088**Ind. Data Sheet No.: G-008**

Indication: G-008

Channel: 10

Angle: 45

Direction: 270

[illegible]

Comments: Geometric indication from the OD surface. 16.3 dB below notch response.

Analyst:

Analyst: CF MS

Level:

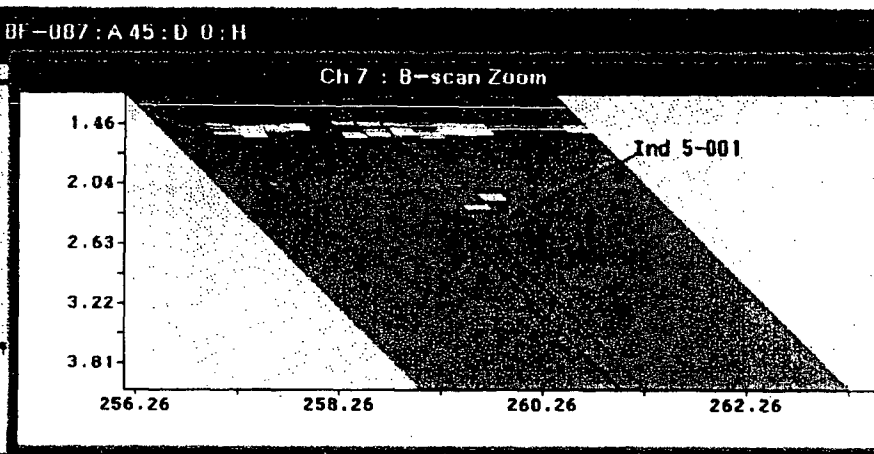
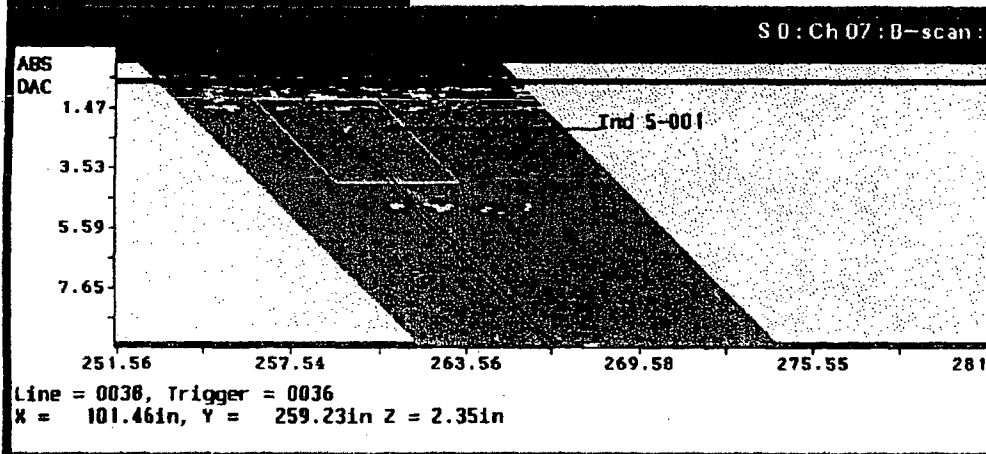
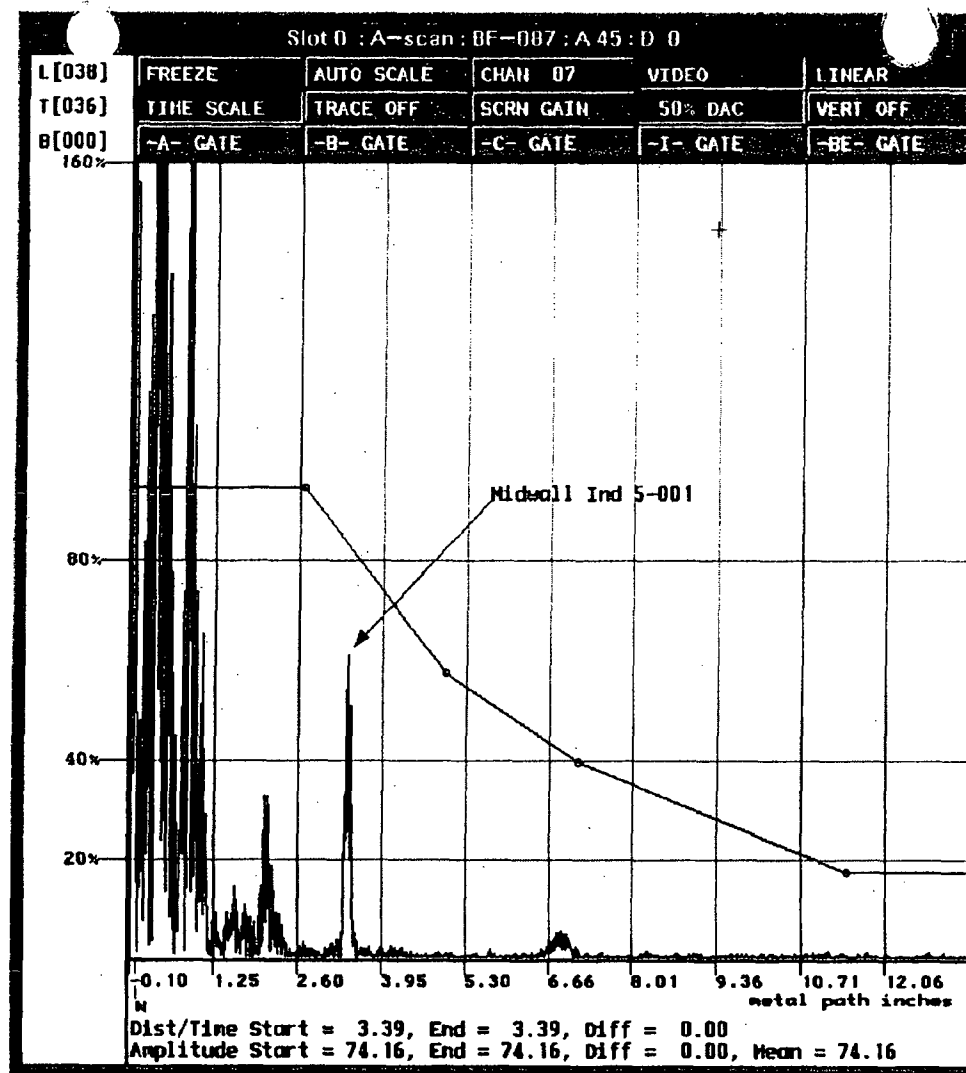
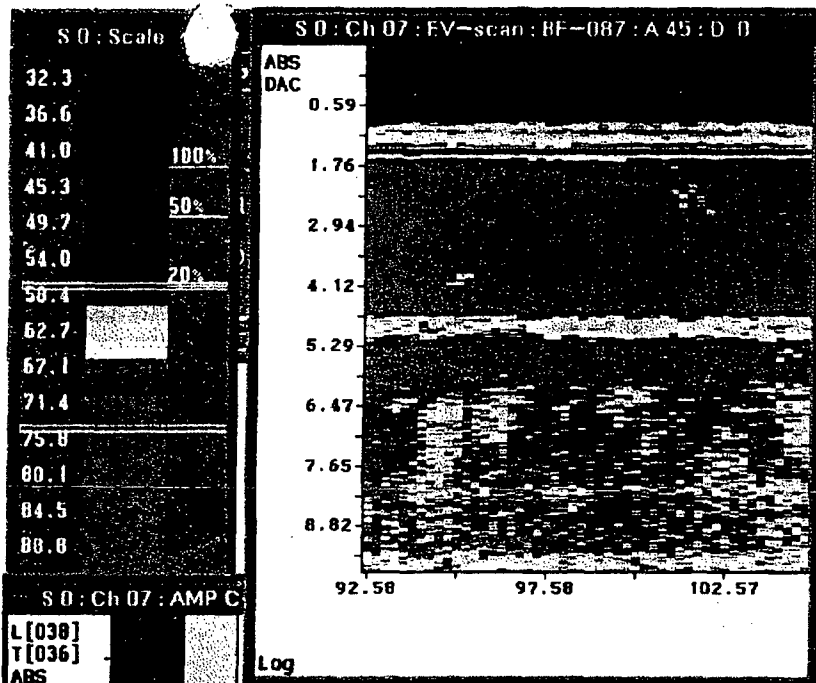
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Reviewed By:

Reviewed By: John C. Dool

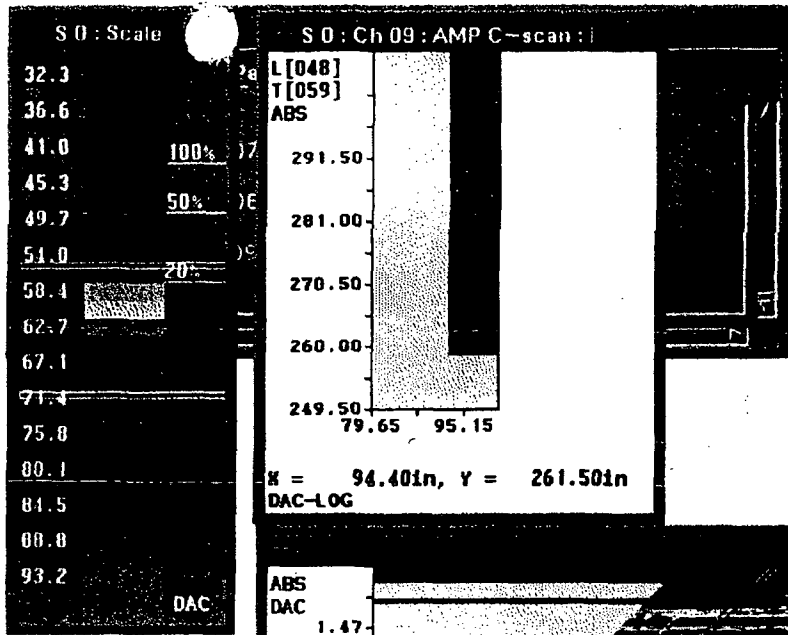
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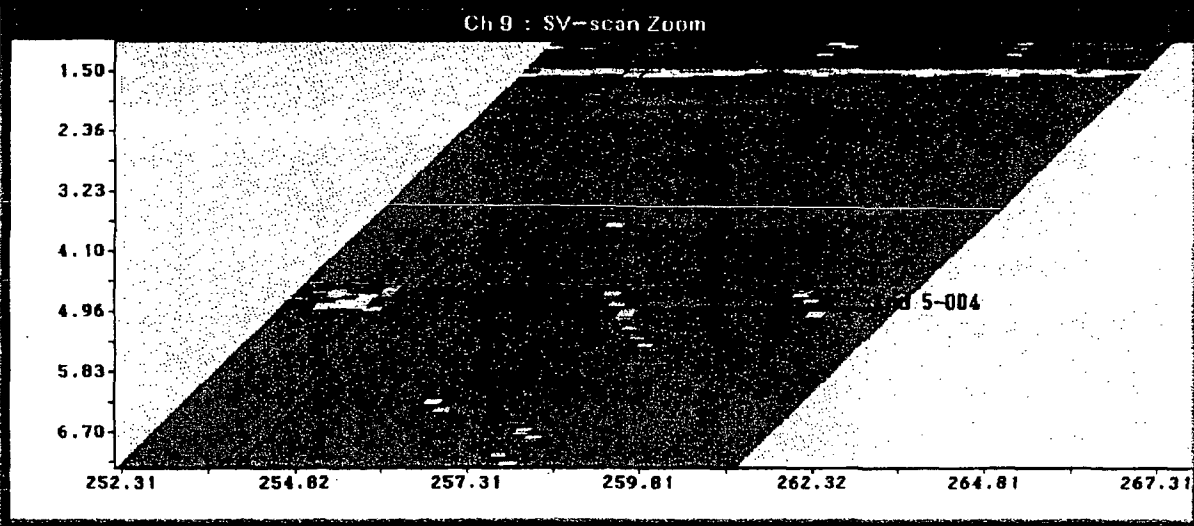
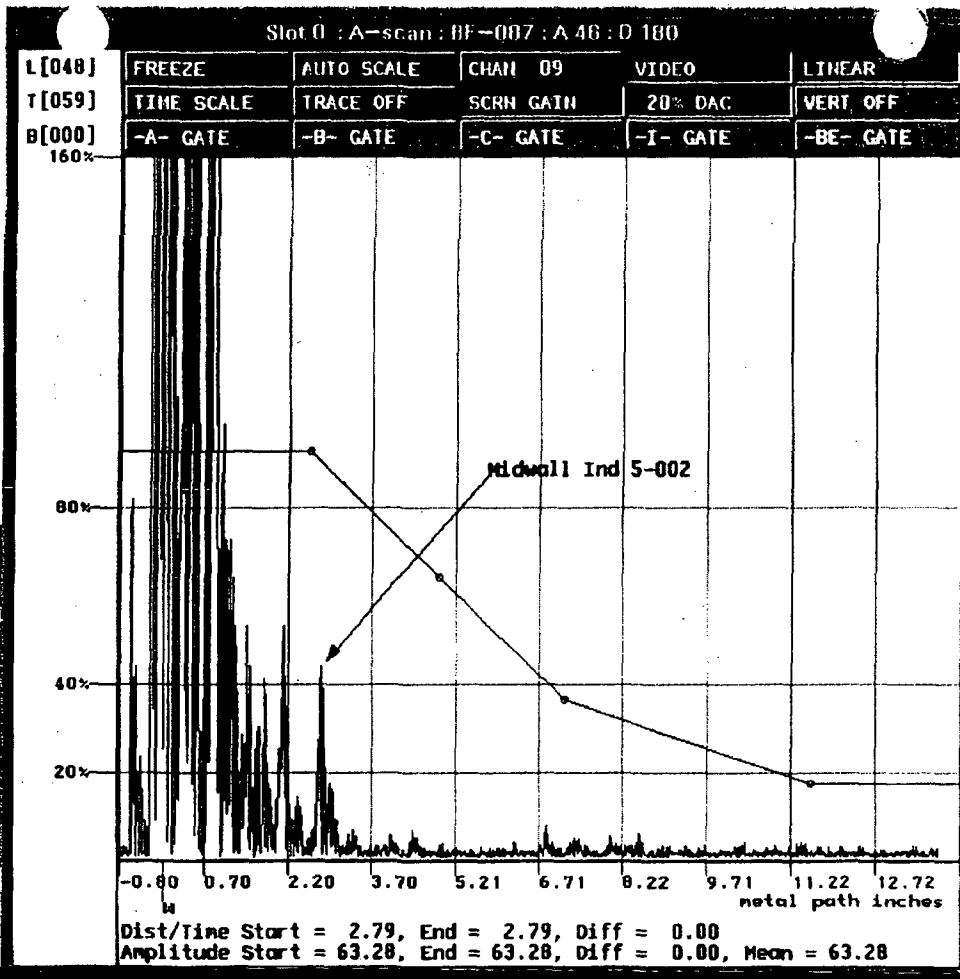
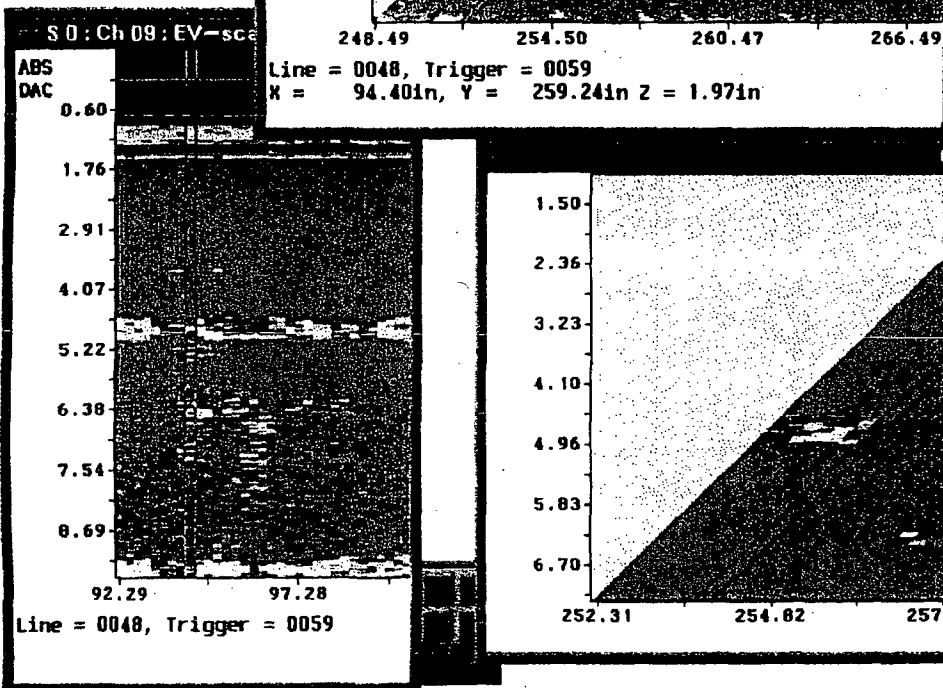


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R11100



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extor3/5-002



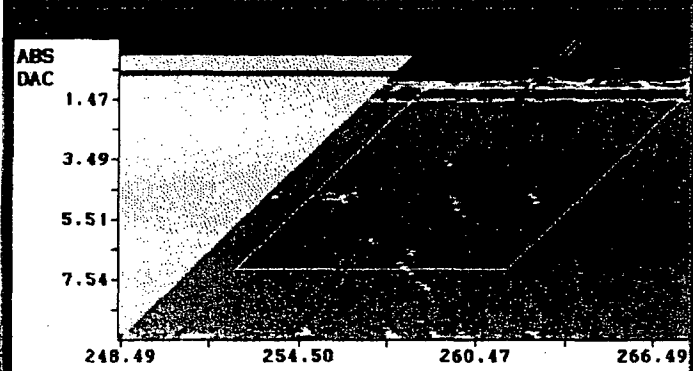
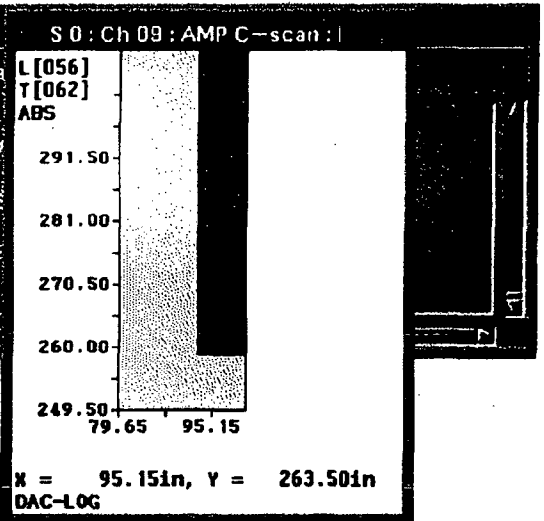
25 of 43
00025

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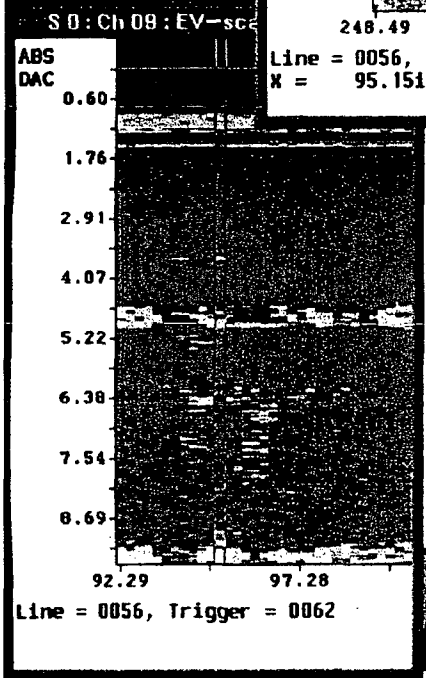
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36.6
41.0
45.3
49.7
51.0
58.4
62.7
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75.8
80.1
81.5
88.8
93.2

100%
50%
20%

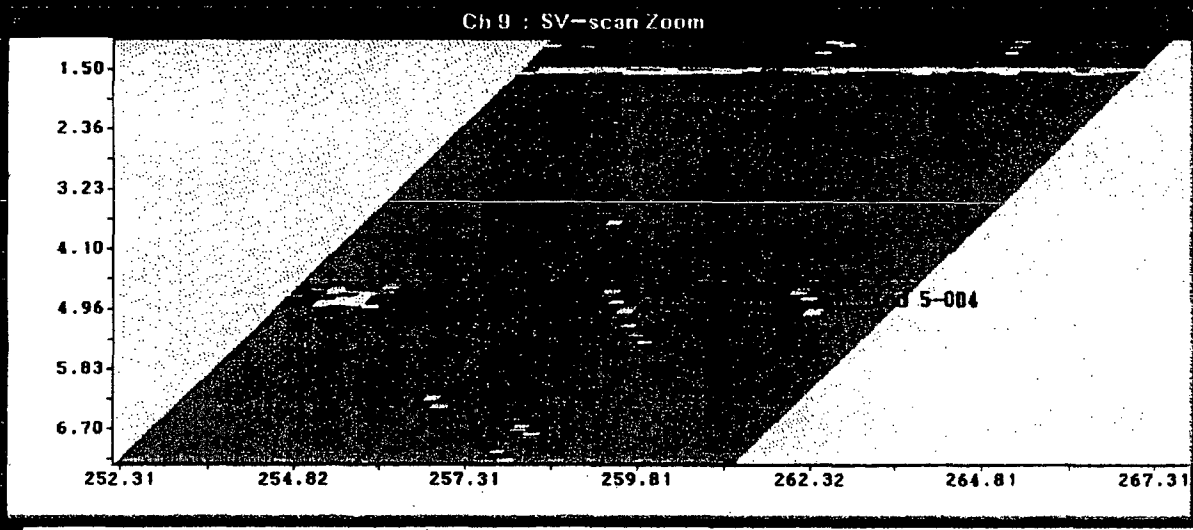
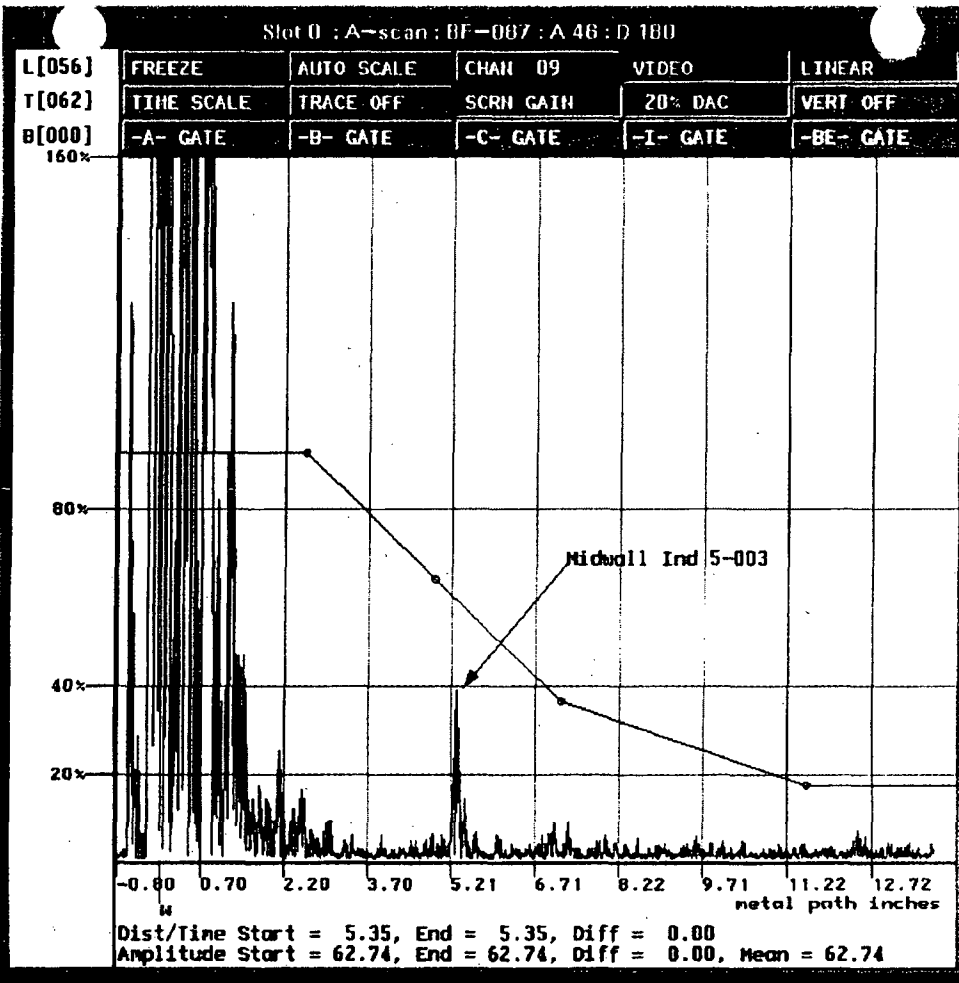
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hpterm
axtor3/5-003



00026

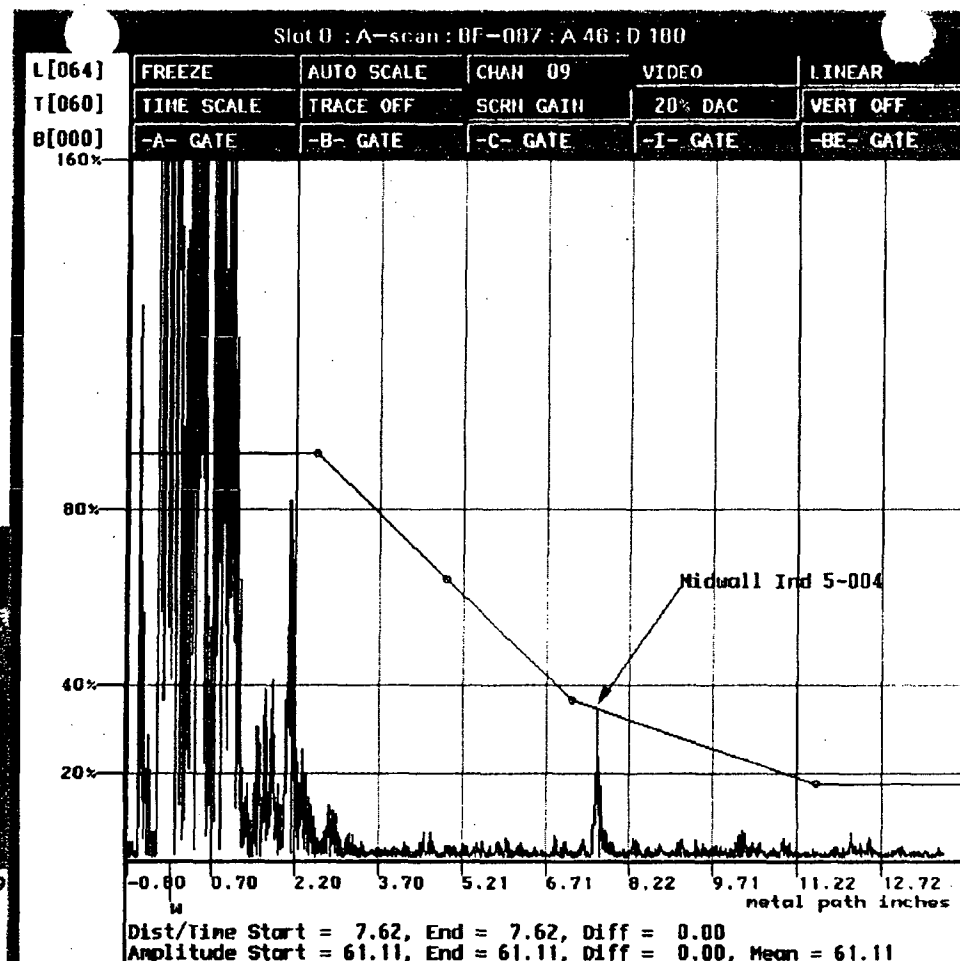
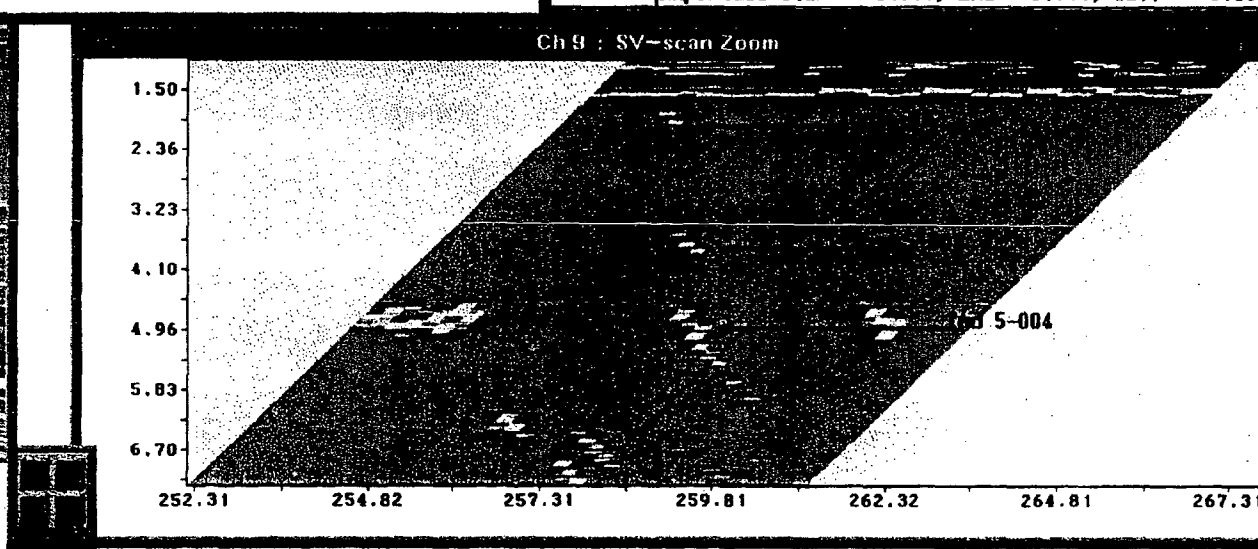
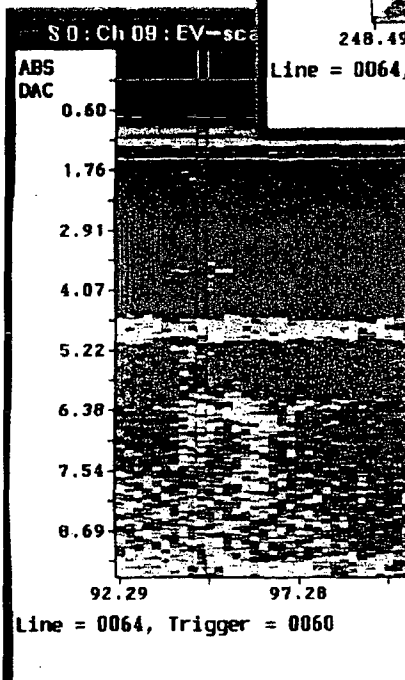
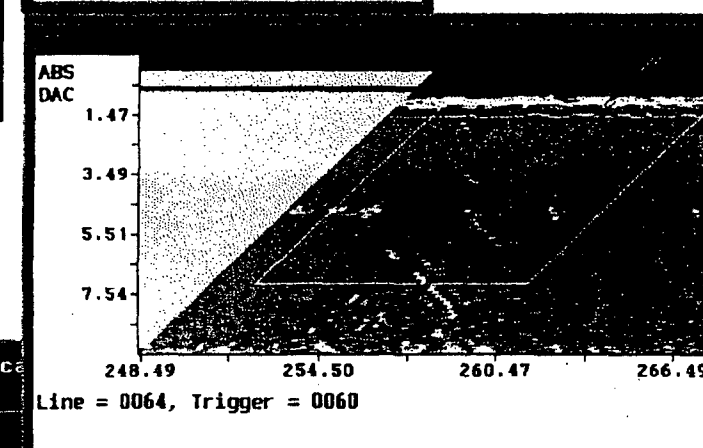
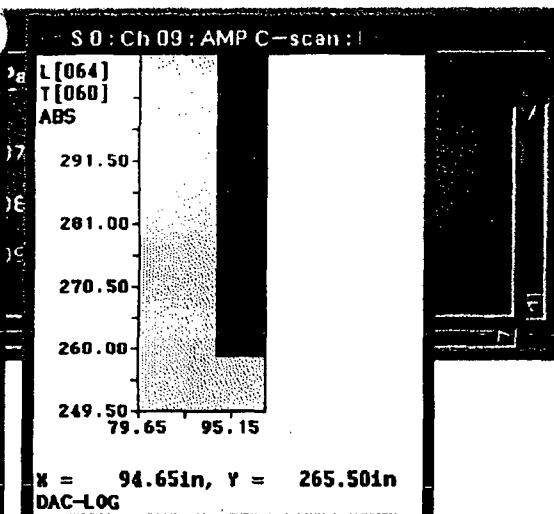
26 06 13

00026

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45.3 50%
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54.0 20%
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67.1
71.4
75.0
80.1
84.5
88.8
93.2

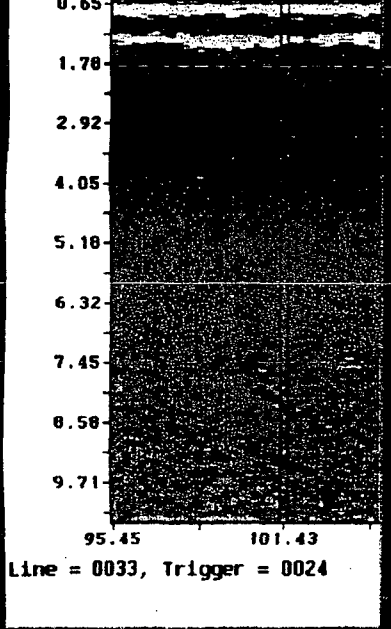
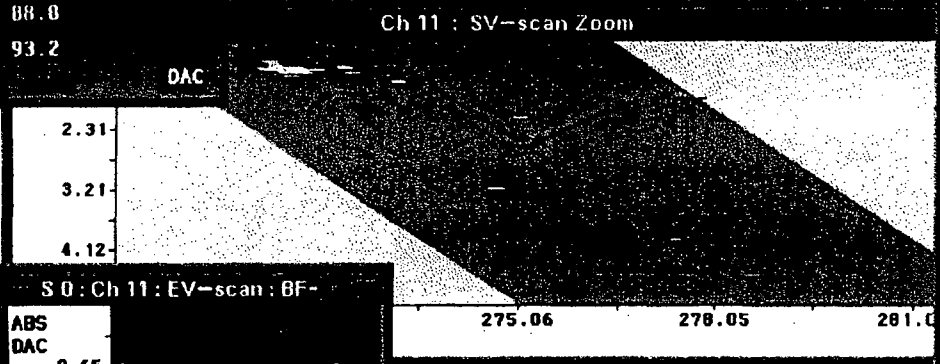
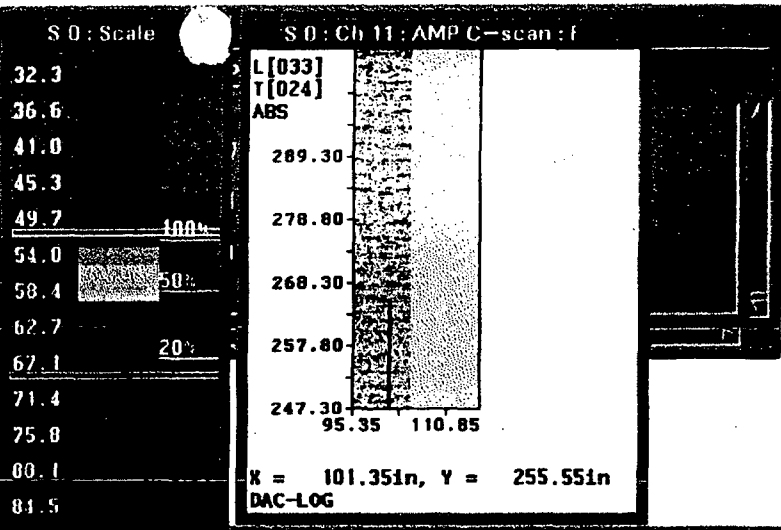
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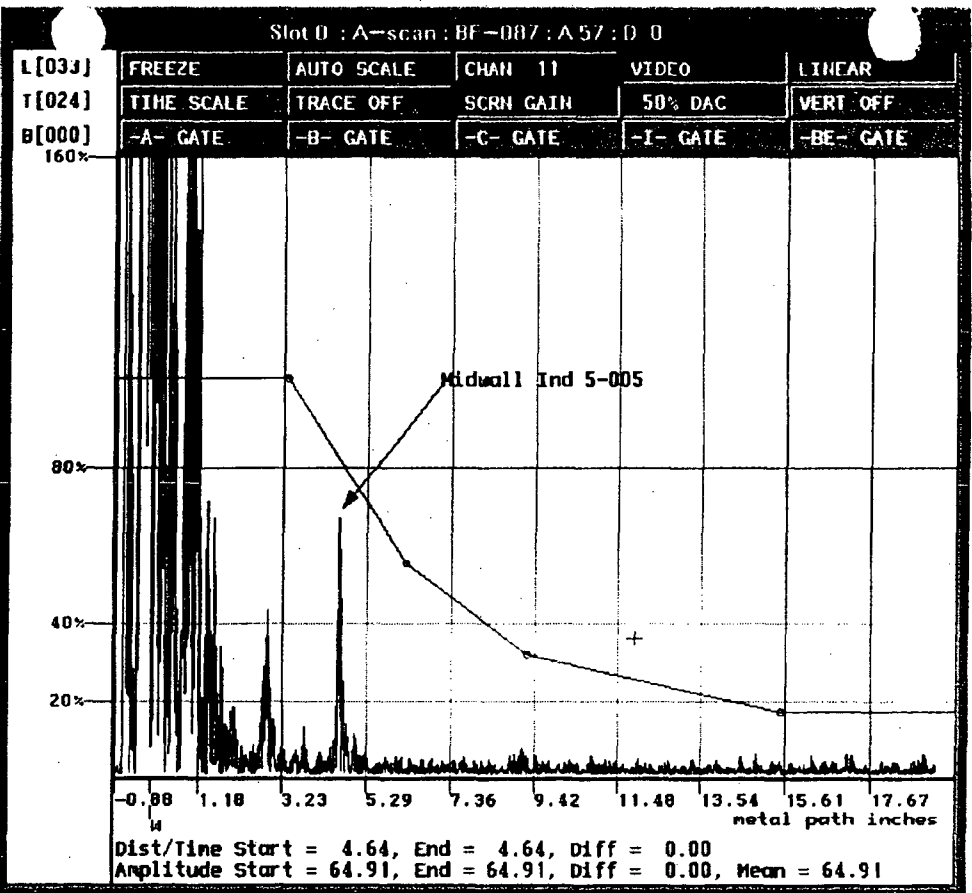
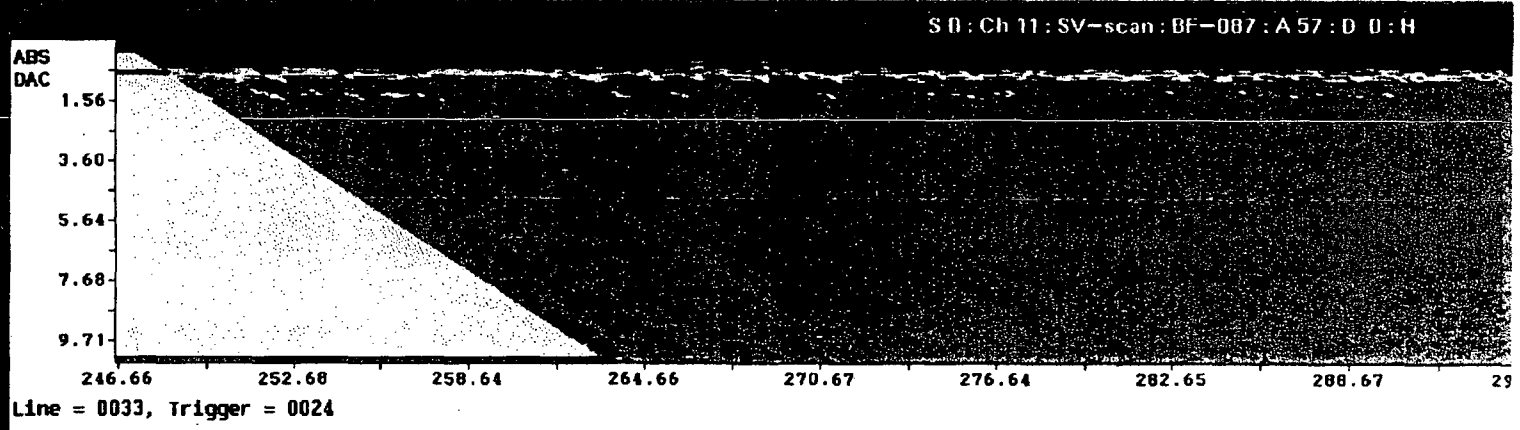
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07105-113

00027



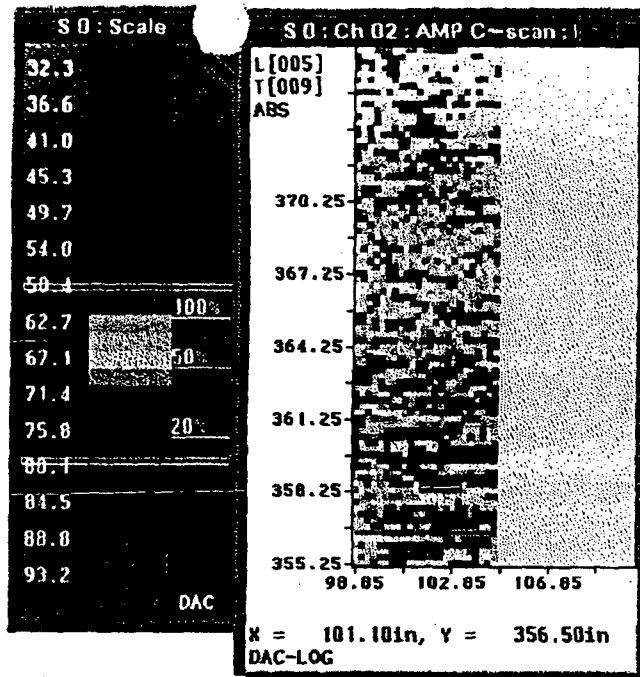
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ASTOR 3/5-005



00028

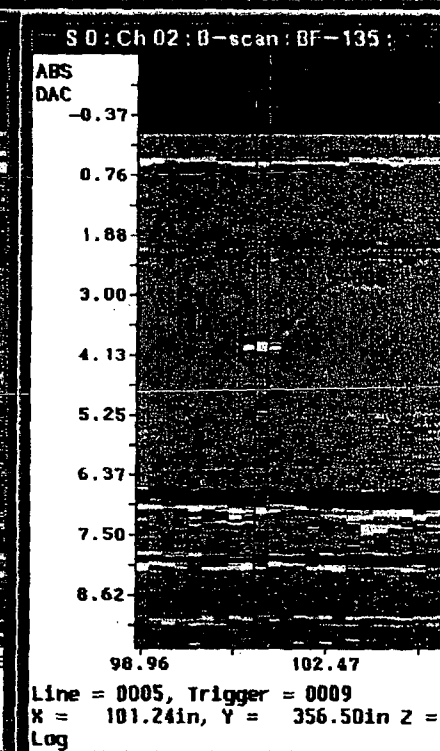
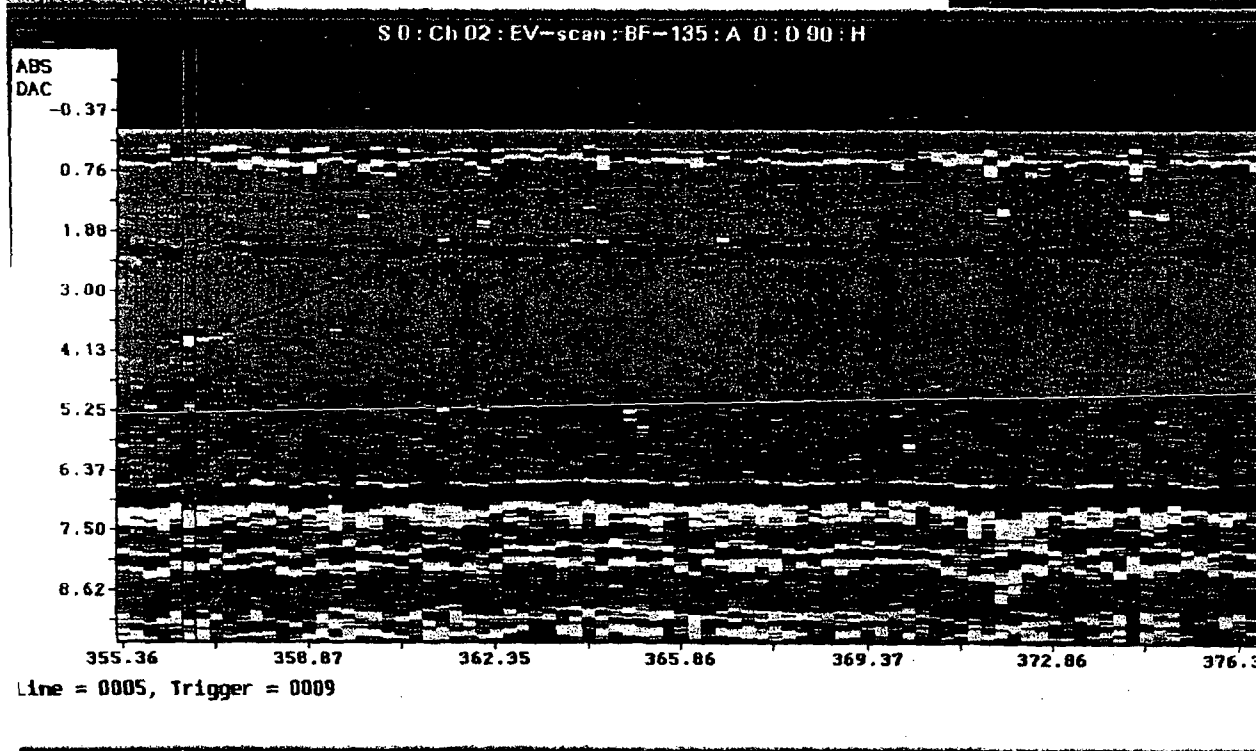
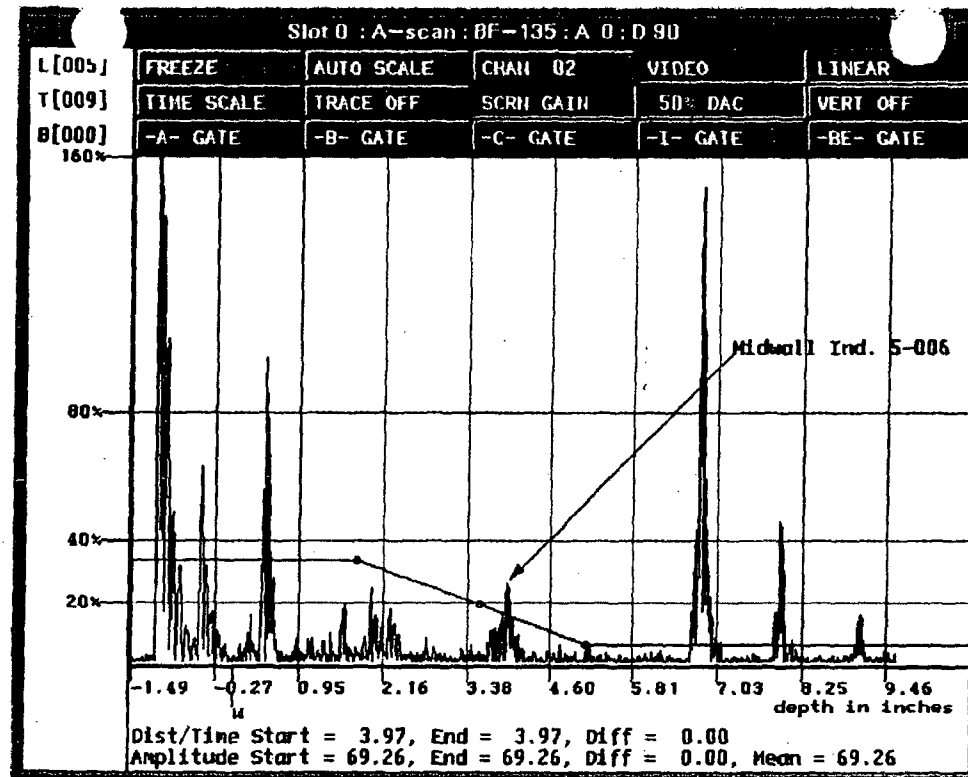
28 of 43

2-1-00

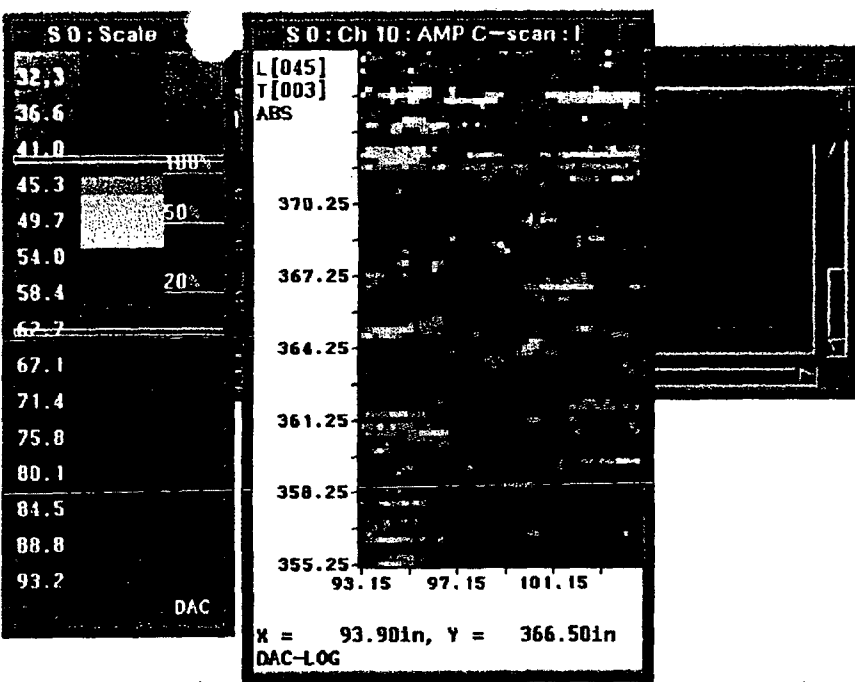


Top Terminal

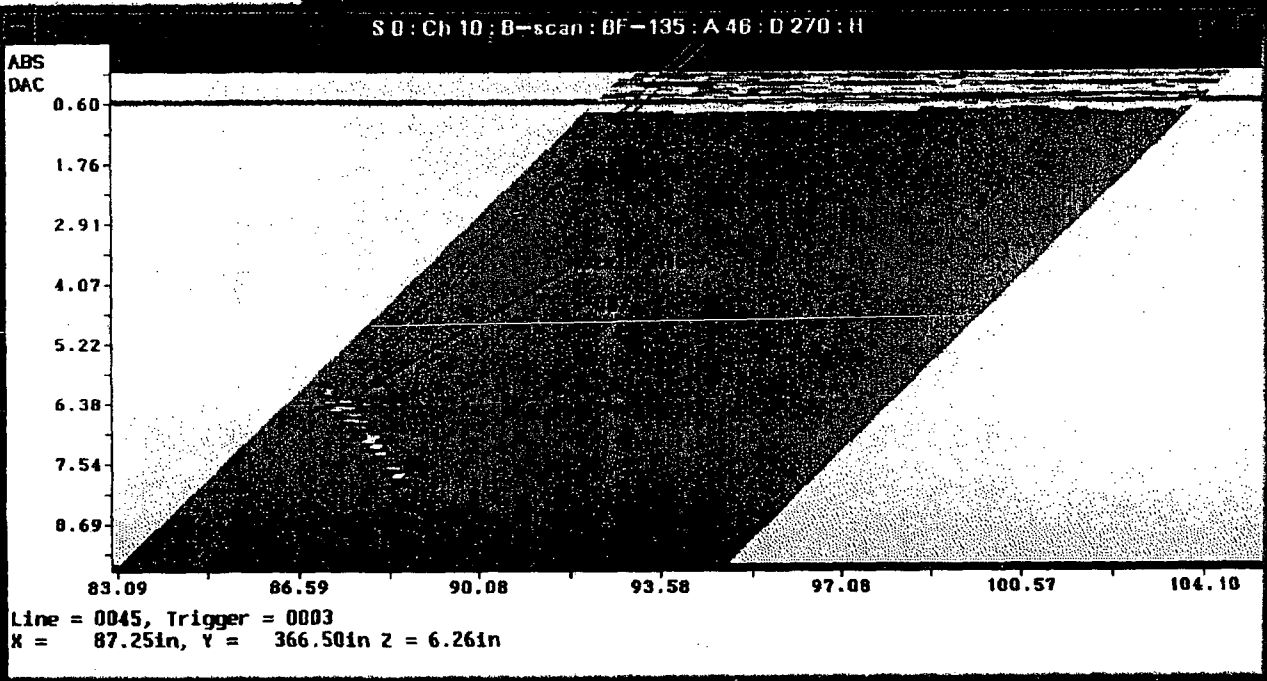
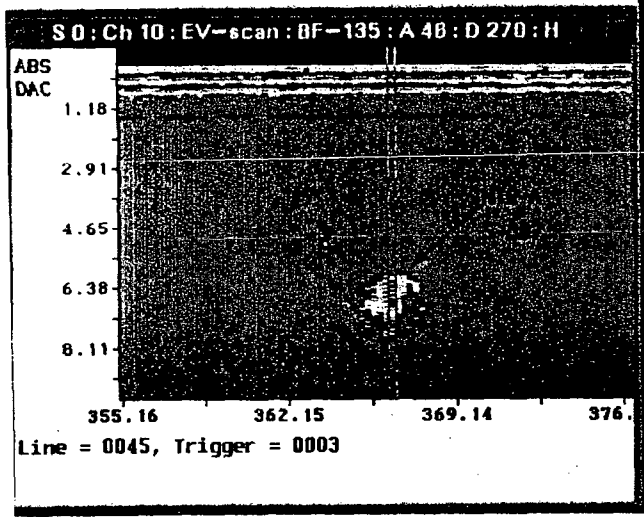
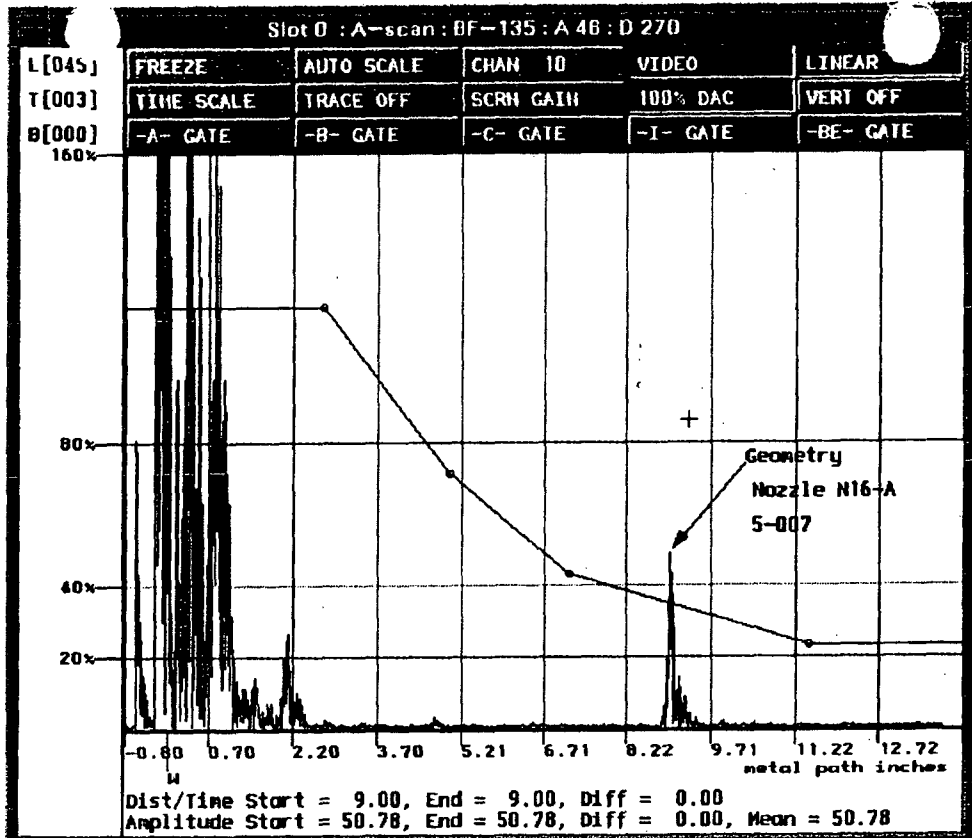
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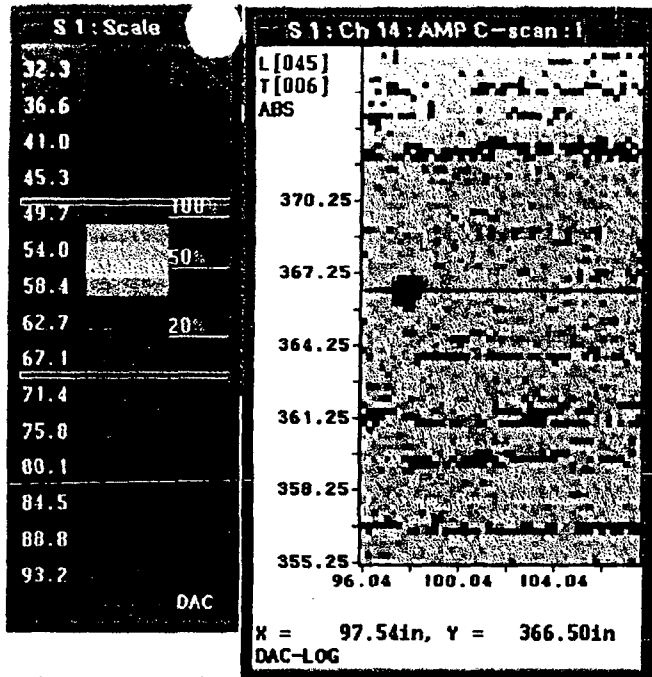
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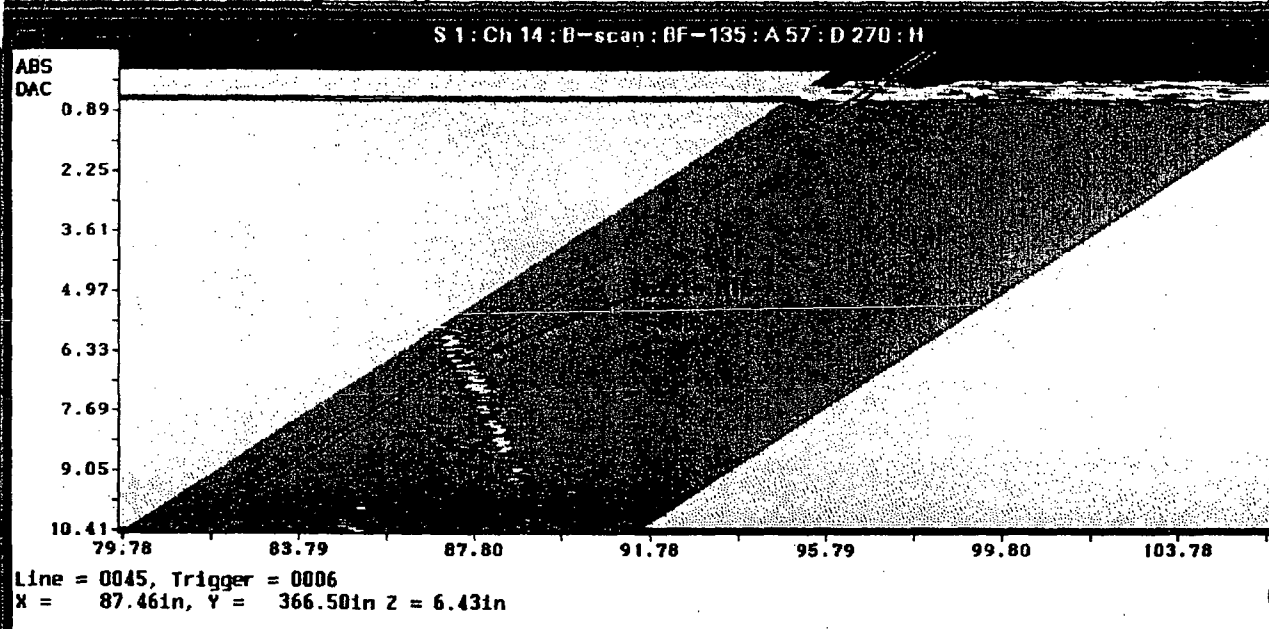
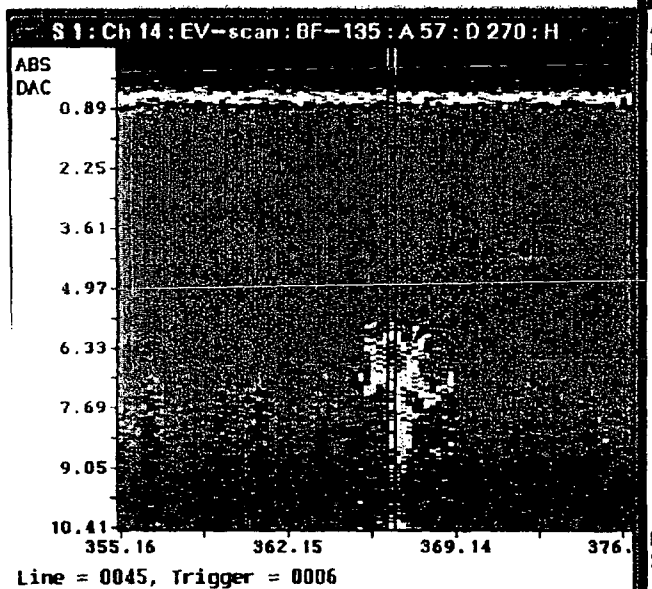
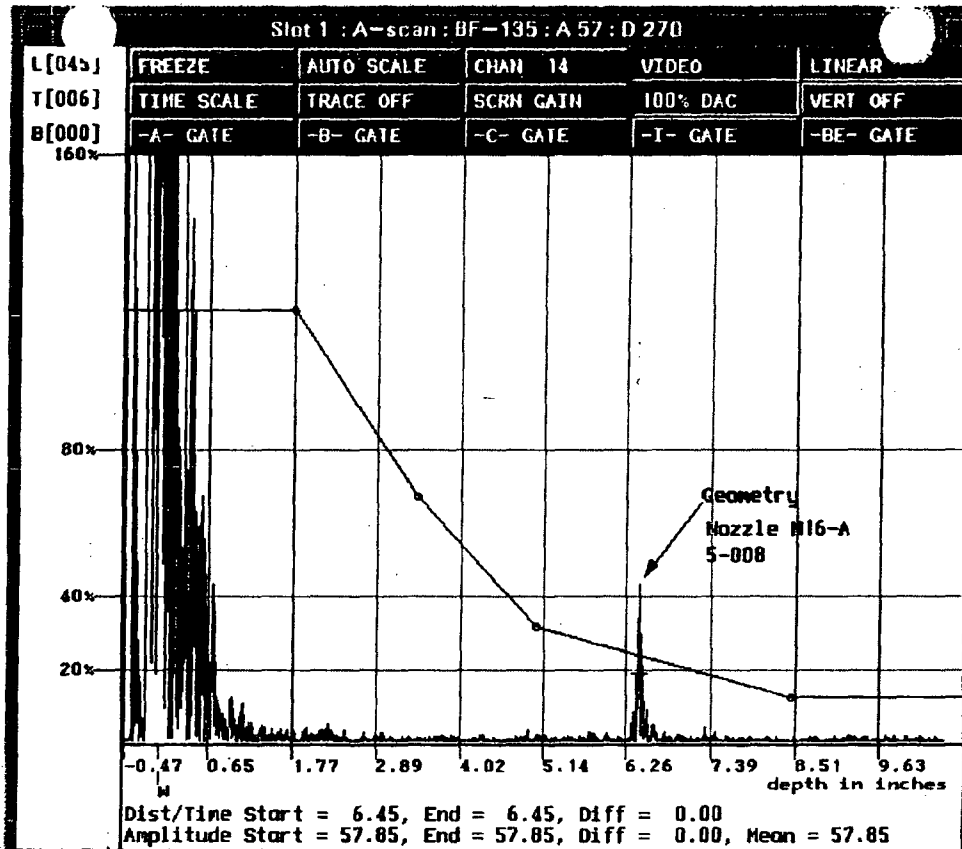
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or 3/5-007



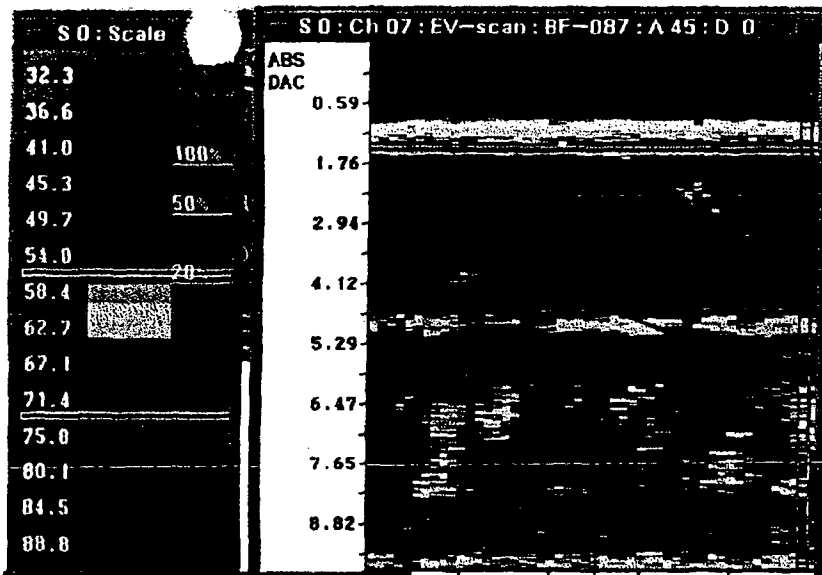
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30 OF 43
00030



Top Terminal
or 3/5-008

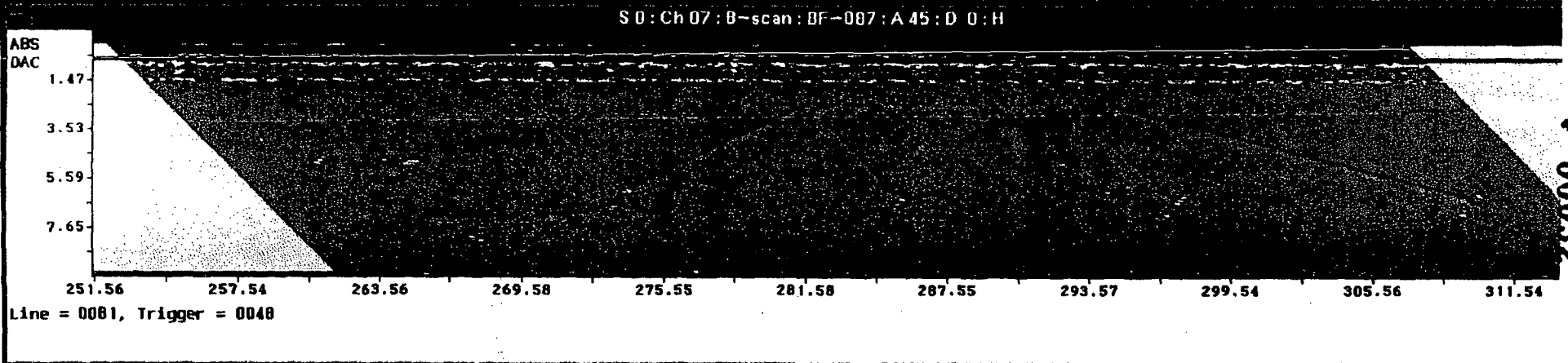
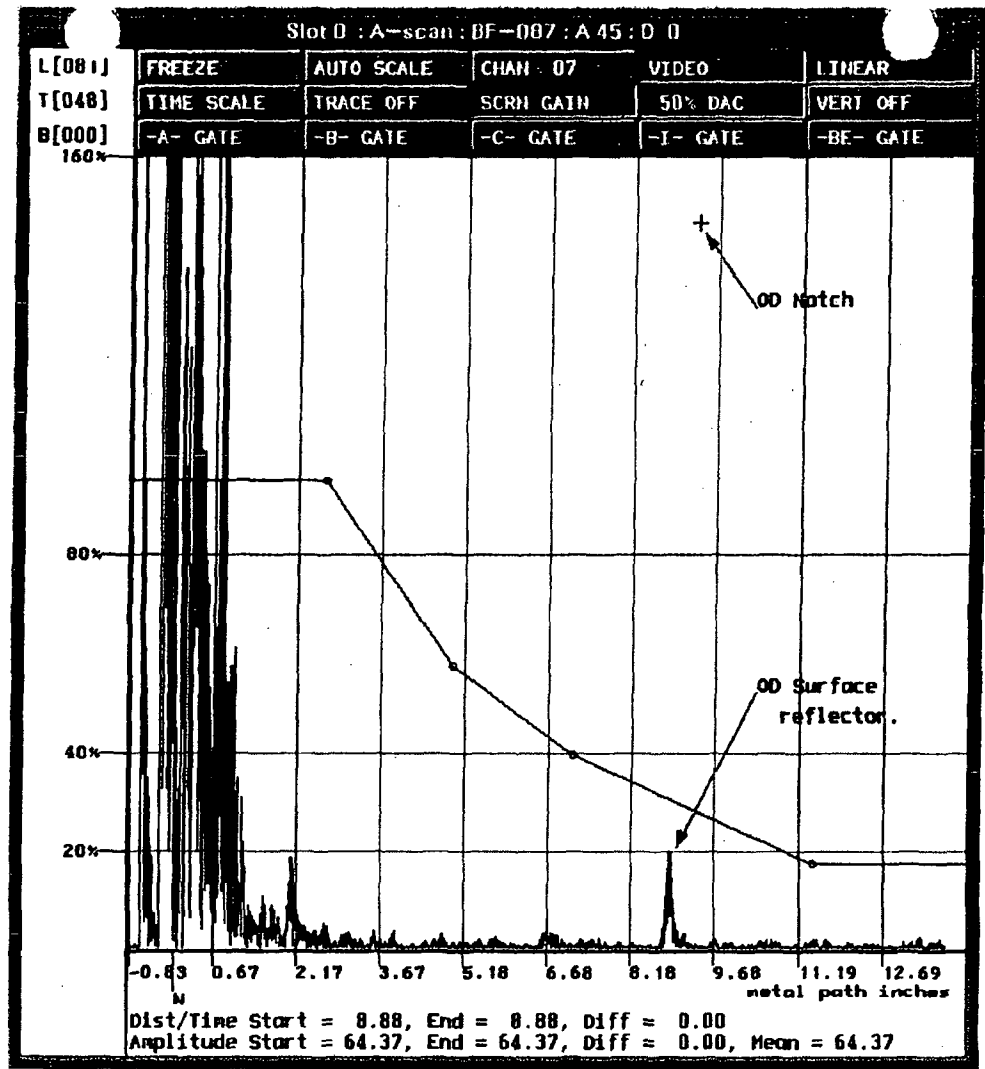


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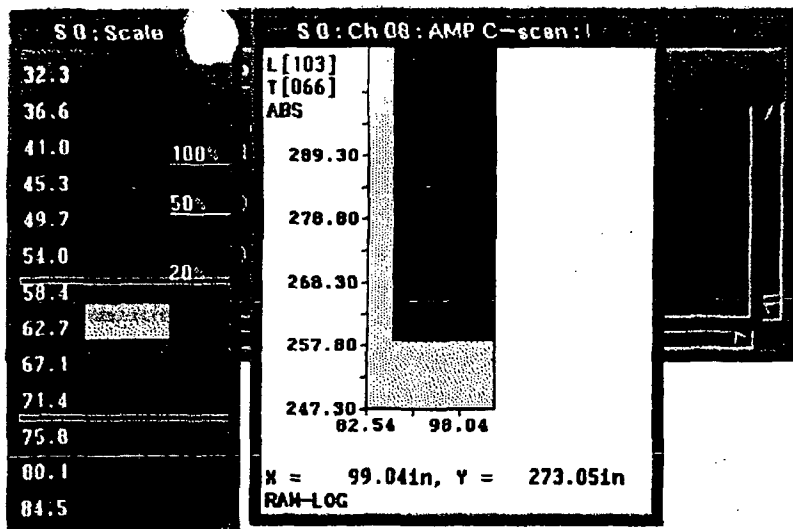


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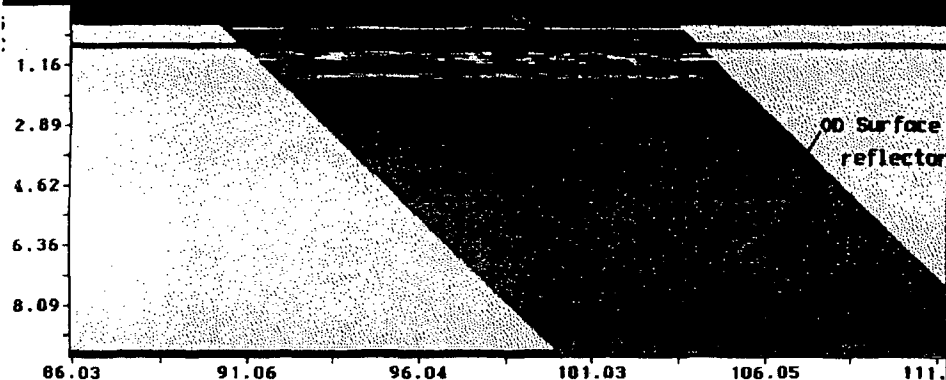
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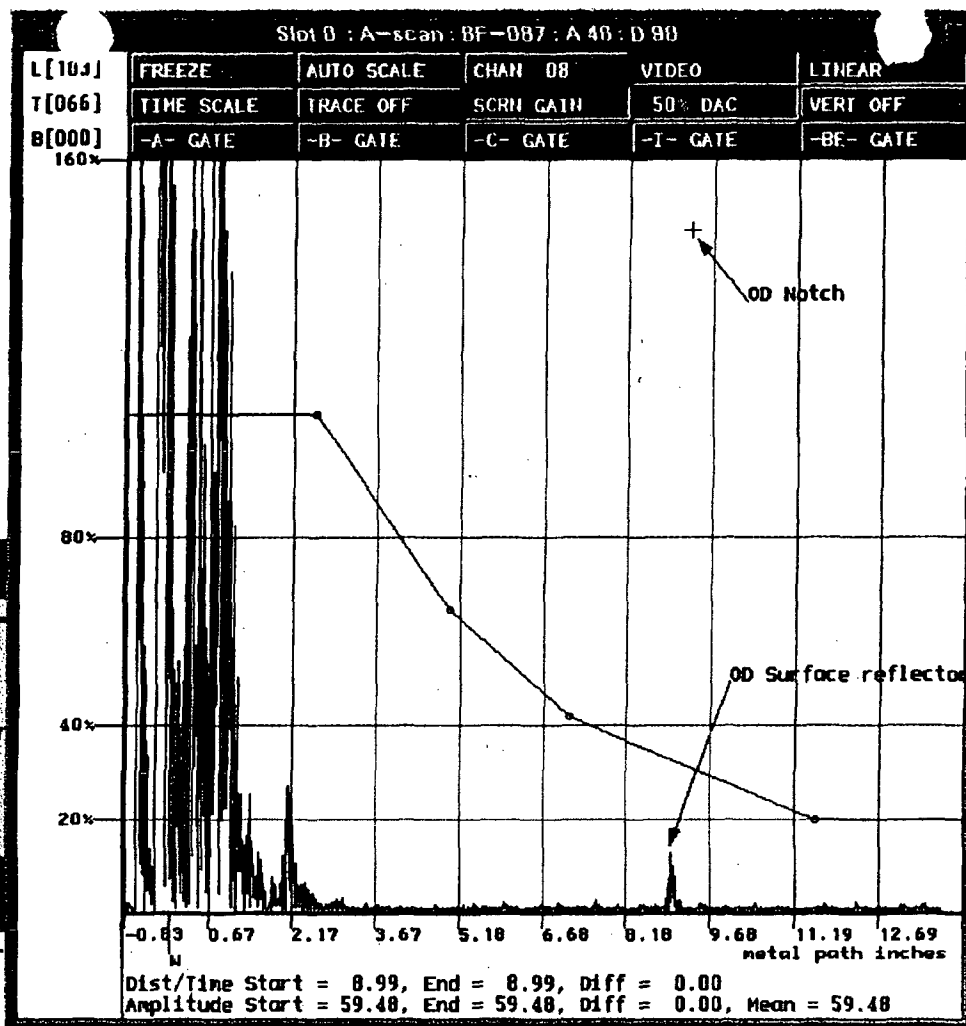
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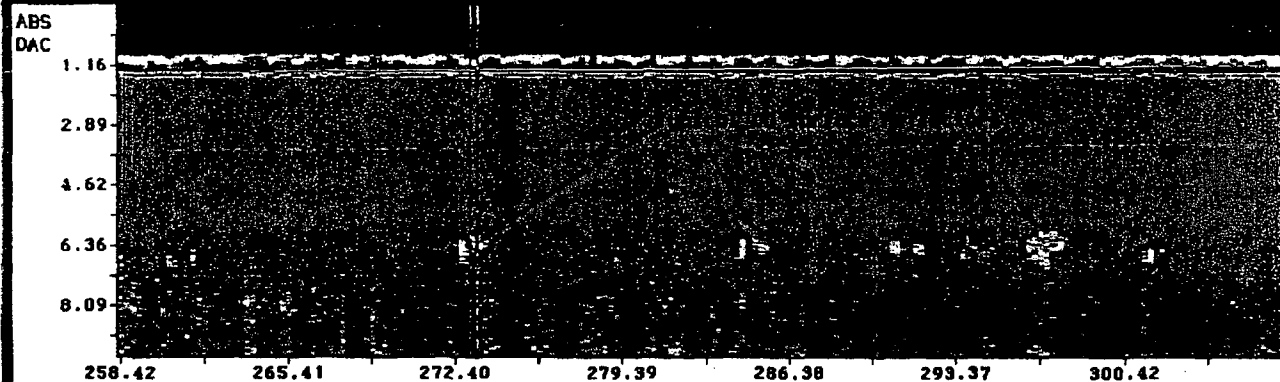
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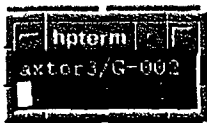
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S 0 : Ch 08 : EV-scan : BF-087 : A 46 : D 90 : H



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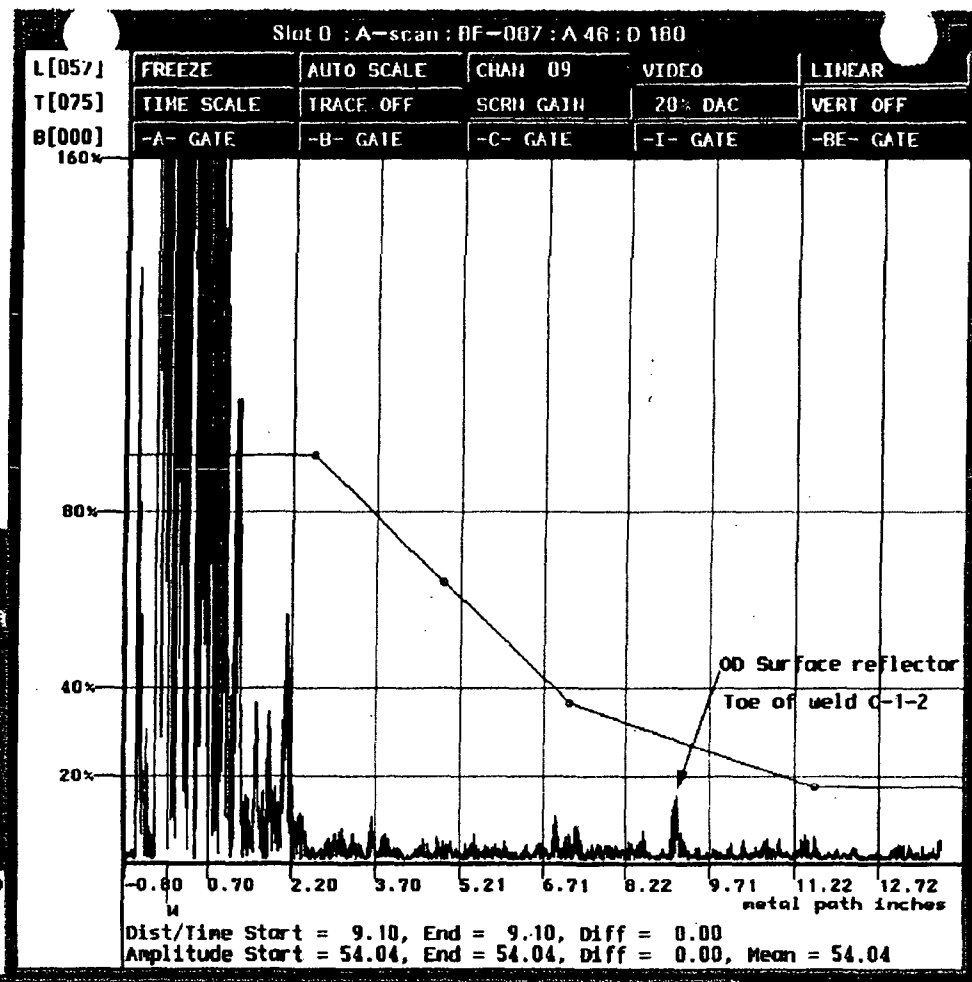
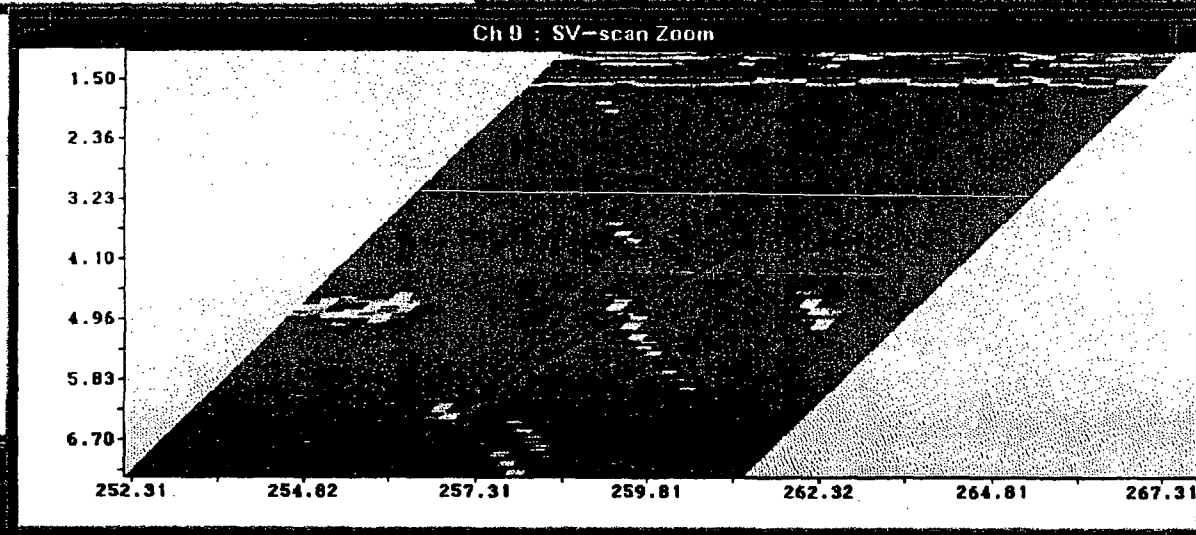
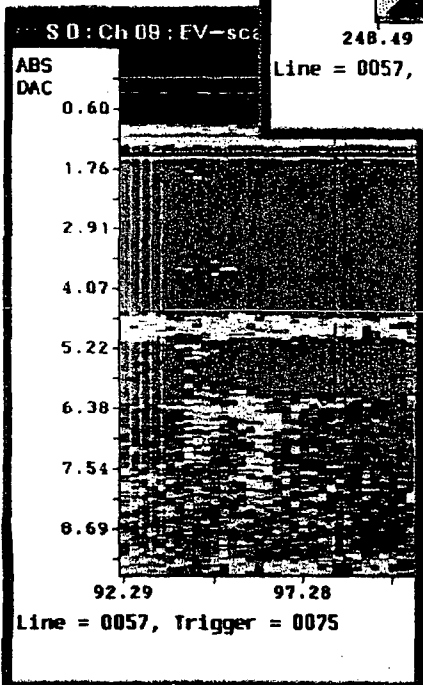
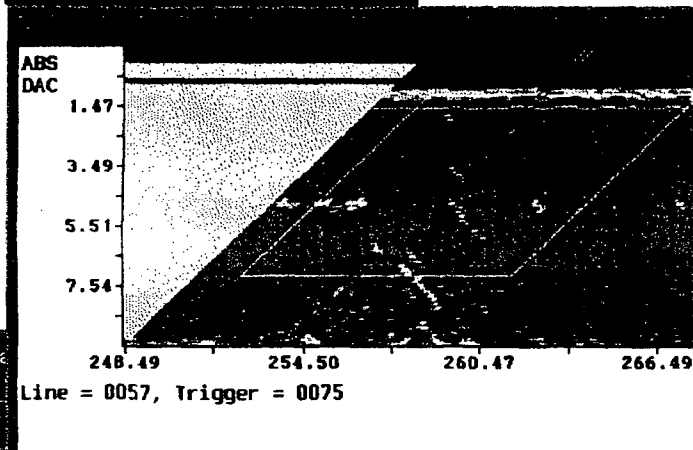
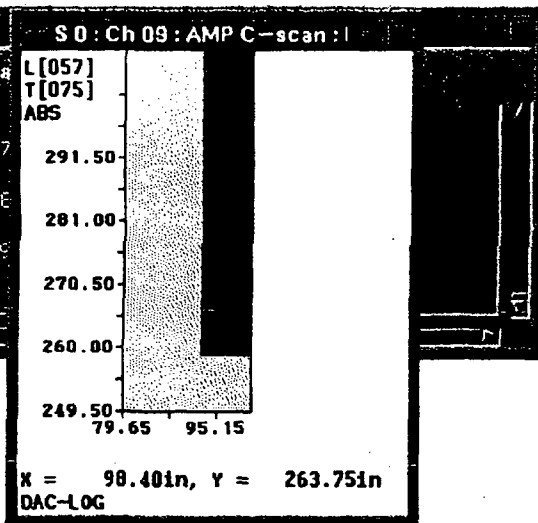
R1160
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000033

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

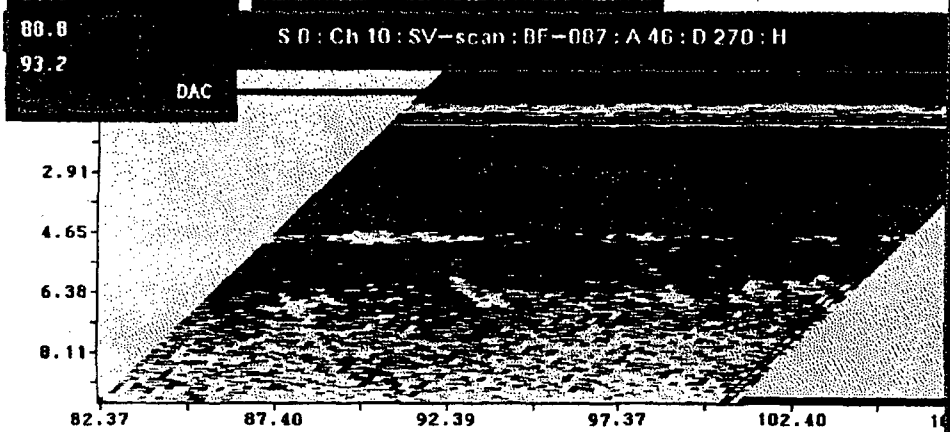
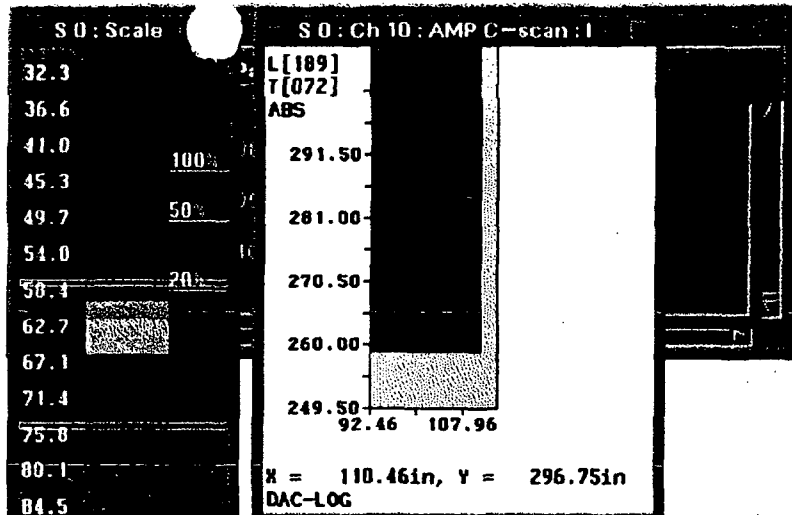
100%
50%
20%

DAC

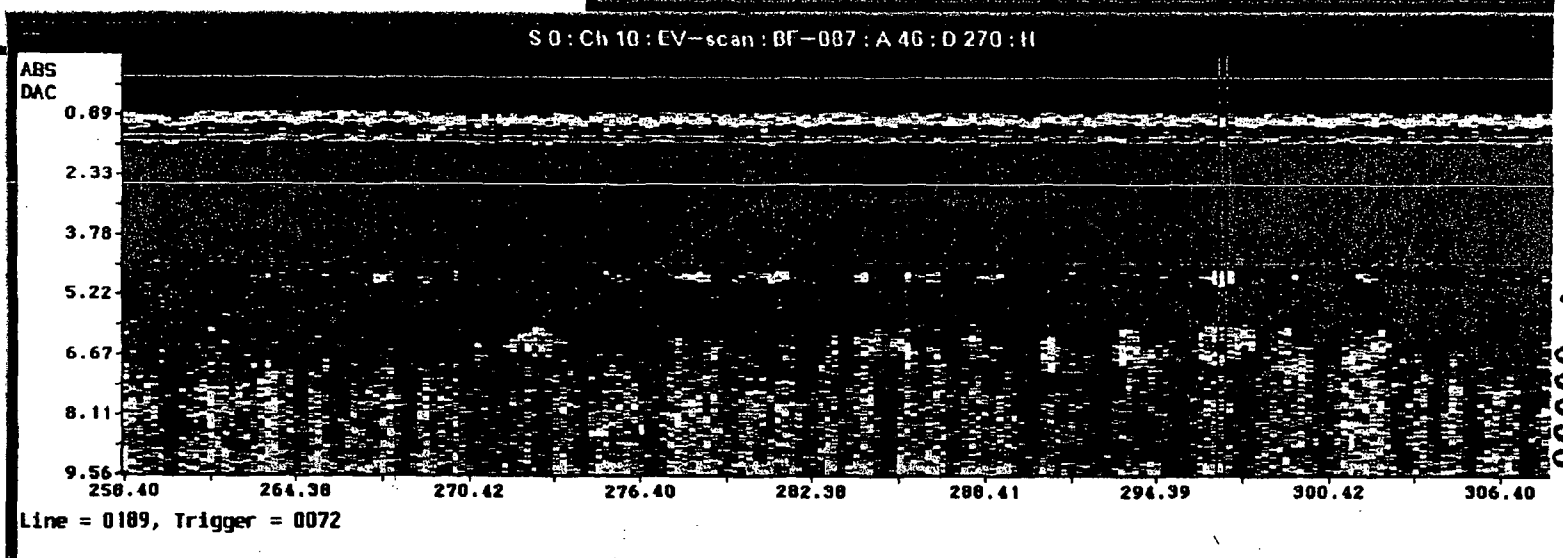
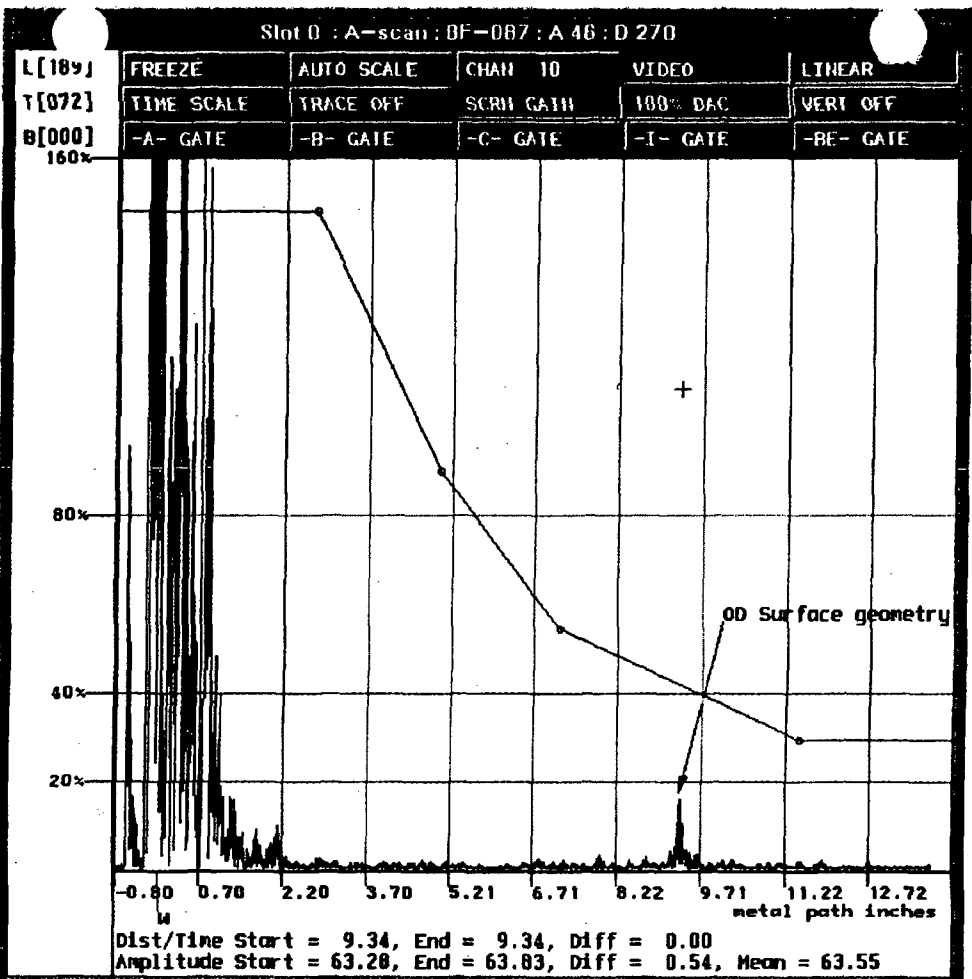
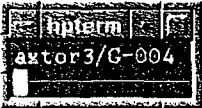


211.00
34 of 43
000034

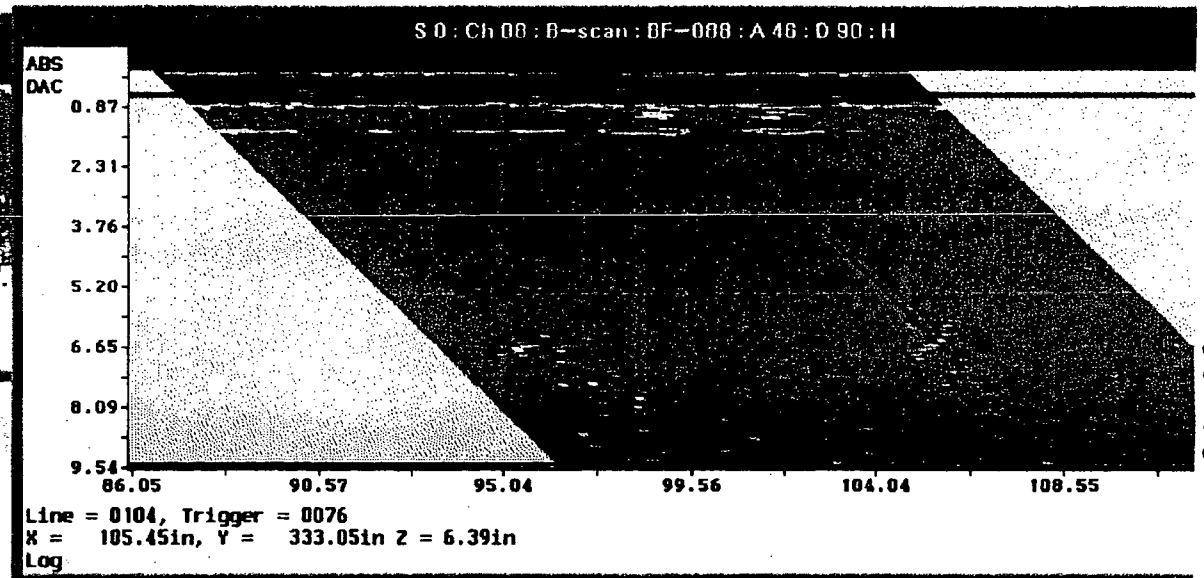
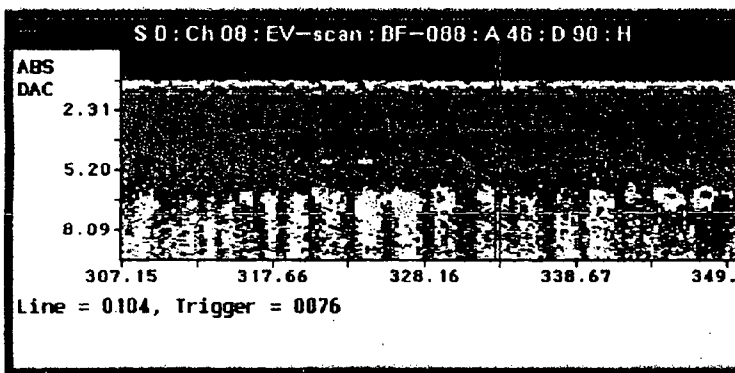
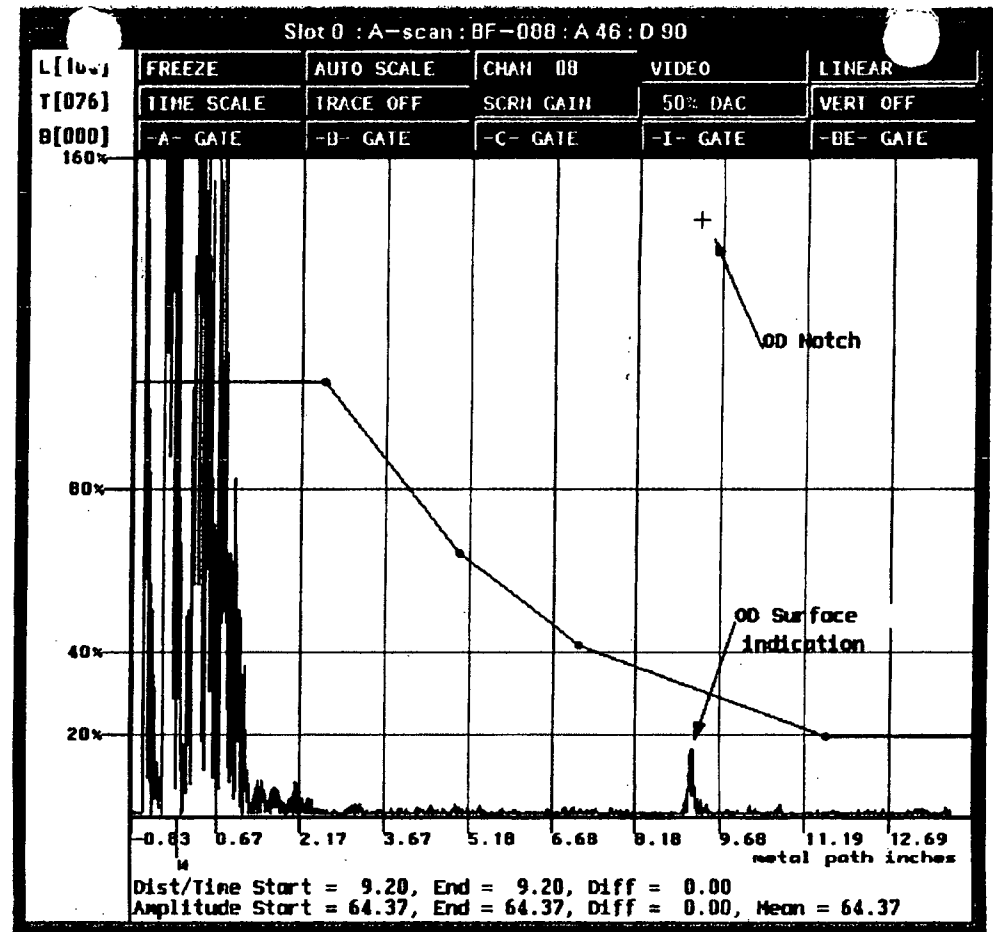
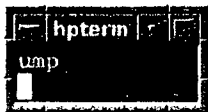
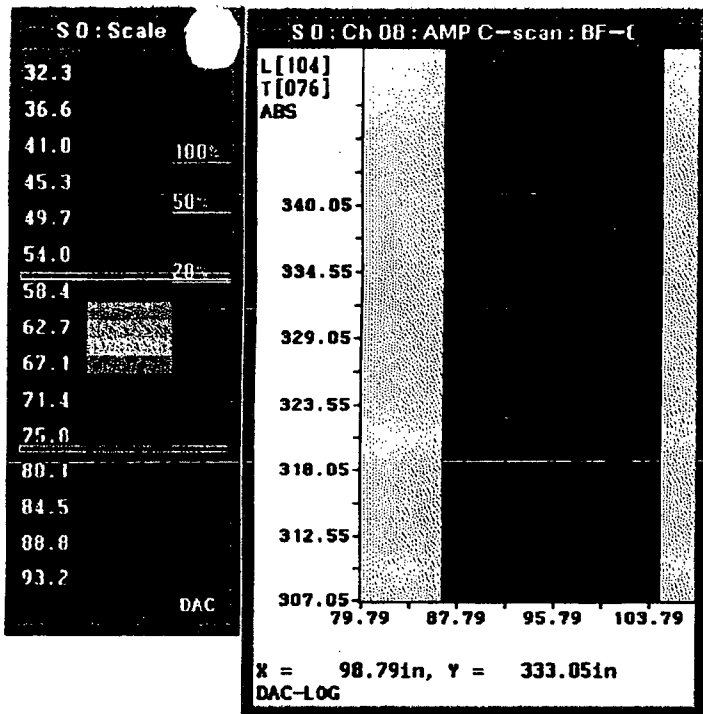
6.00



ine = 0189, Trigger = 0072



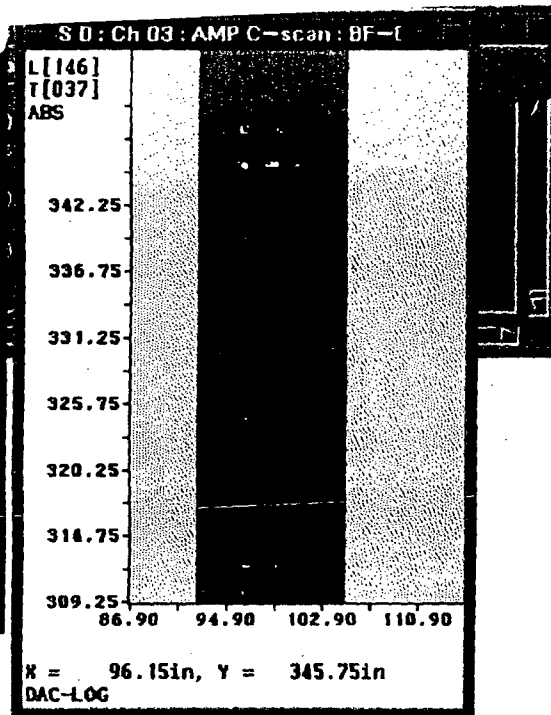
K1190
SS of 43
00035



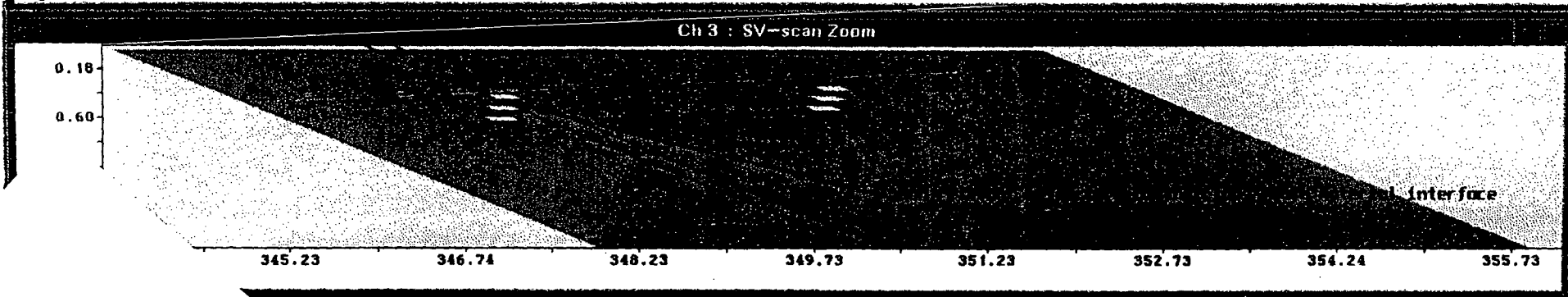
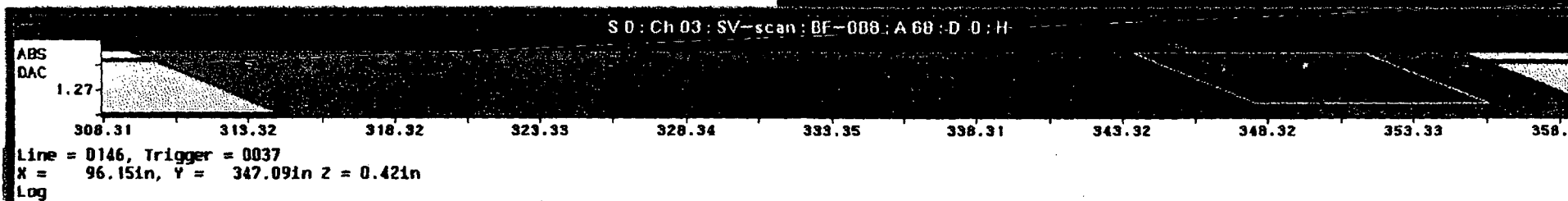
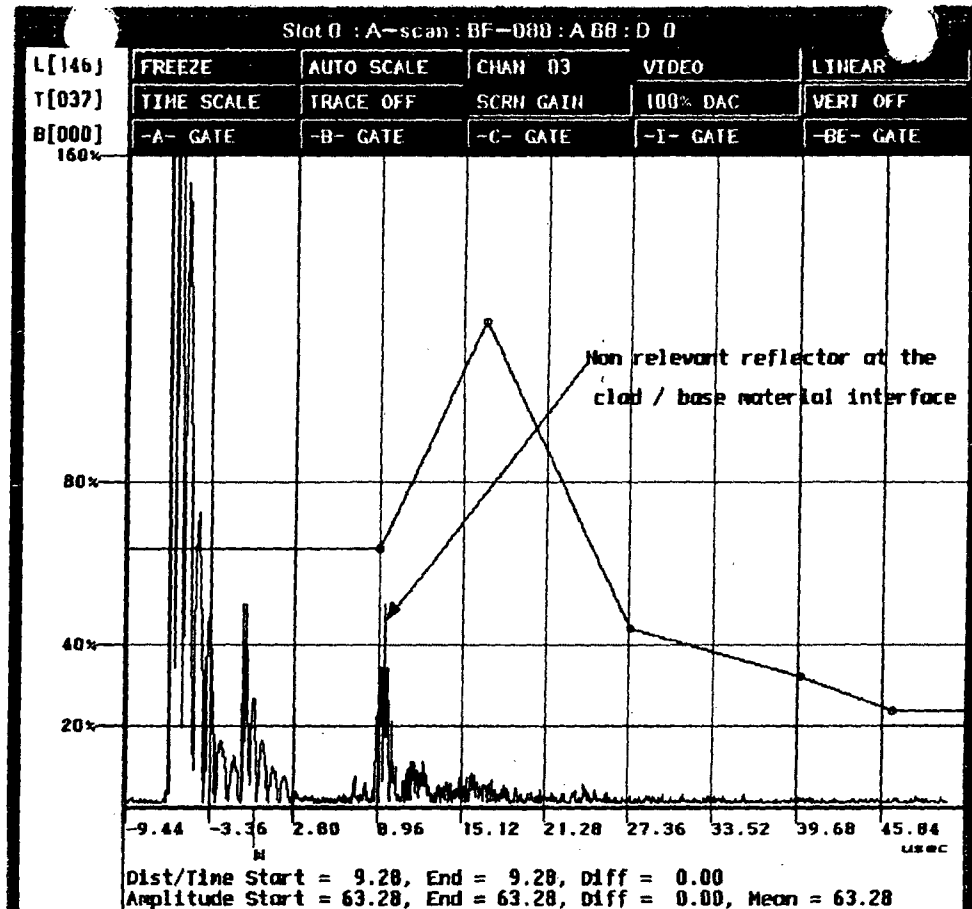
32.3
36.6
41.0
45.3
49.7
54.0
58.4
62.7
67.1
71.4
75.8
80.1
84.5
88.8
93.2

100%
50%
20%

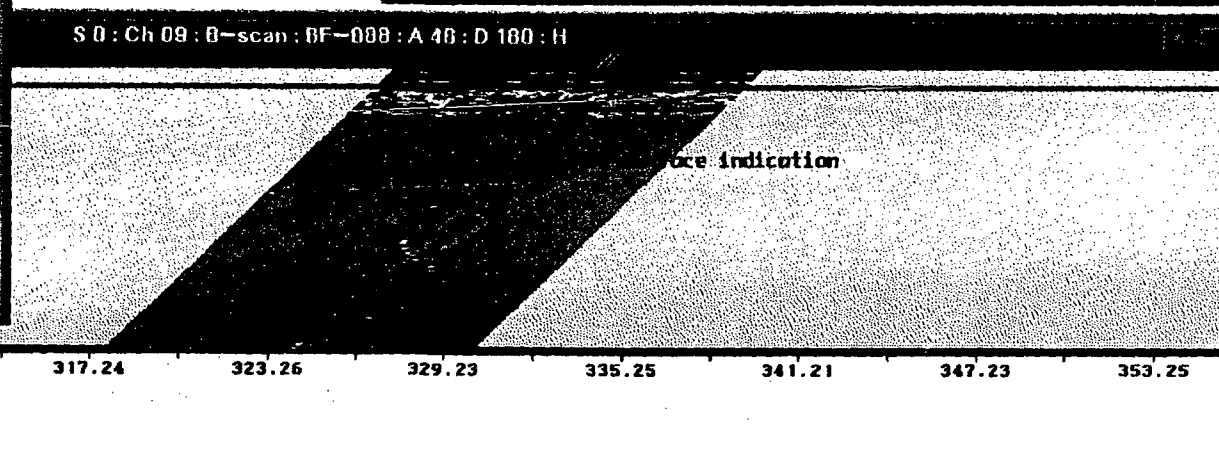
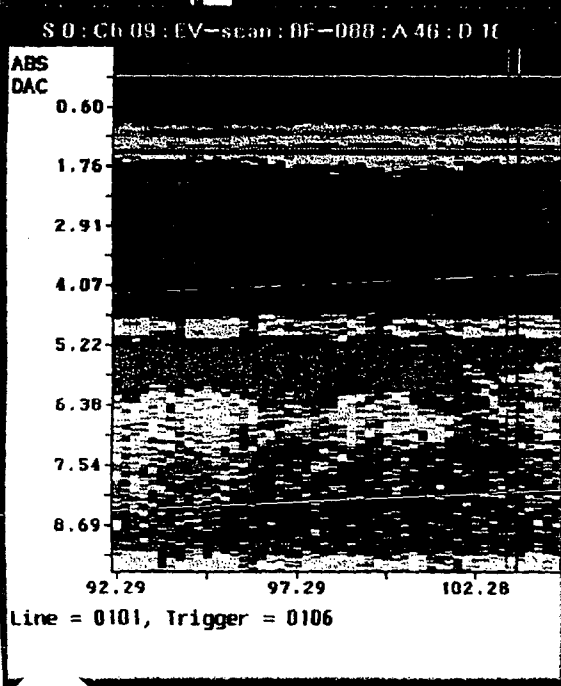
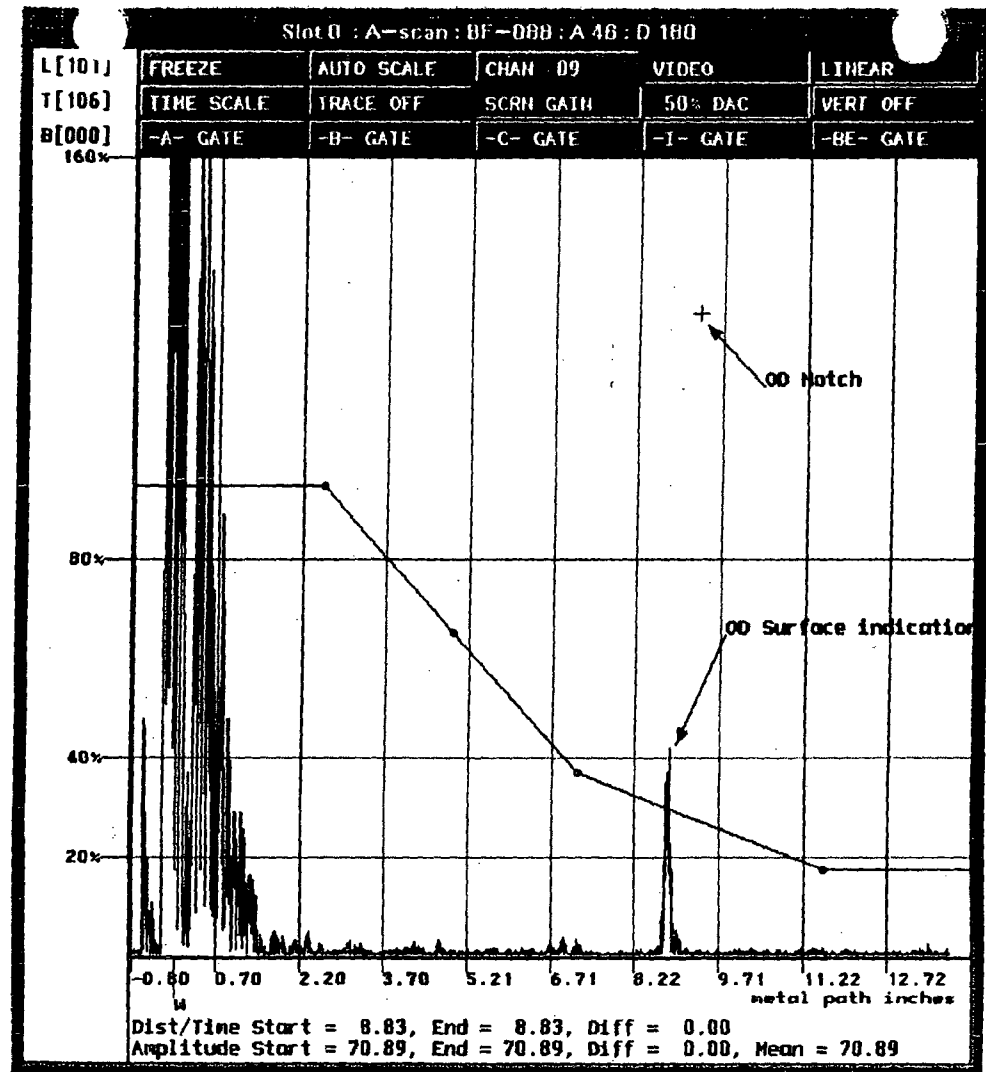
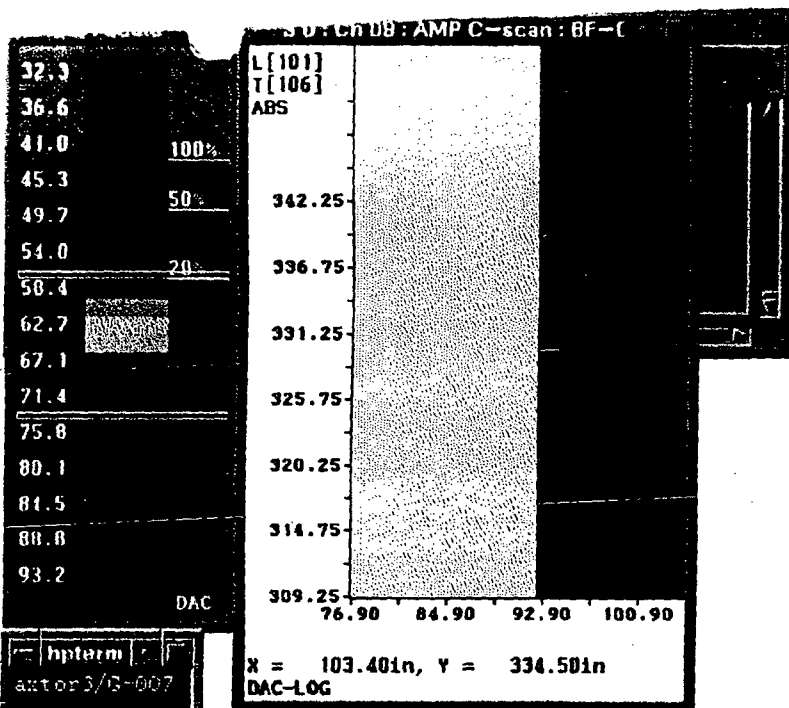
DAC



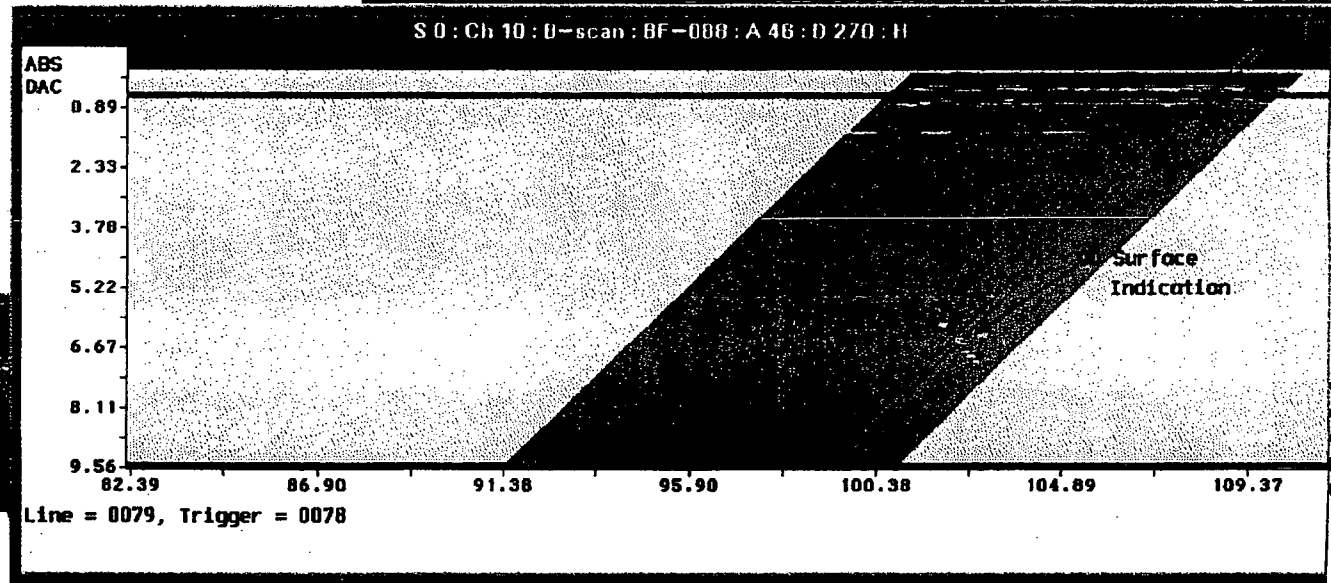
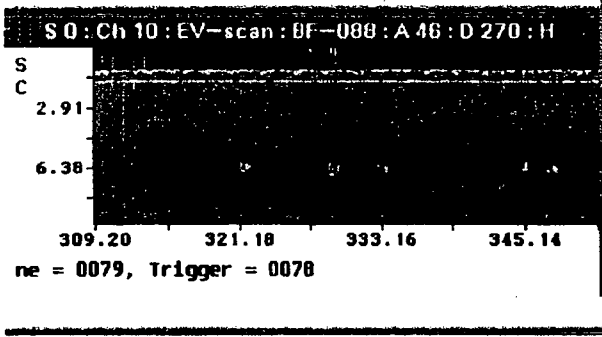
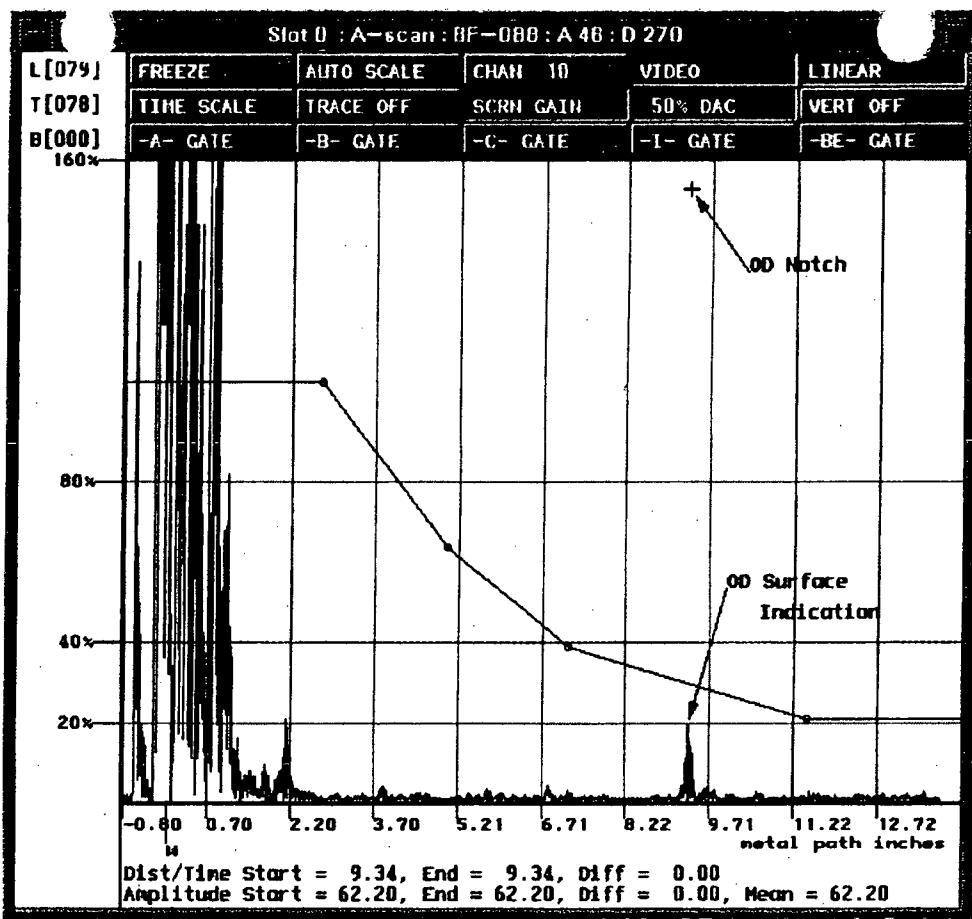
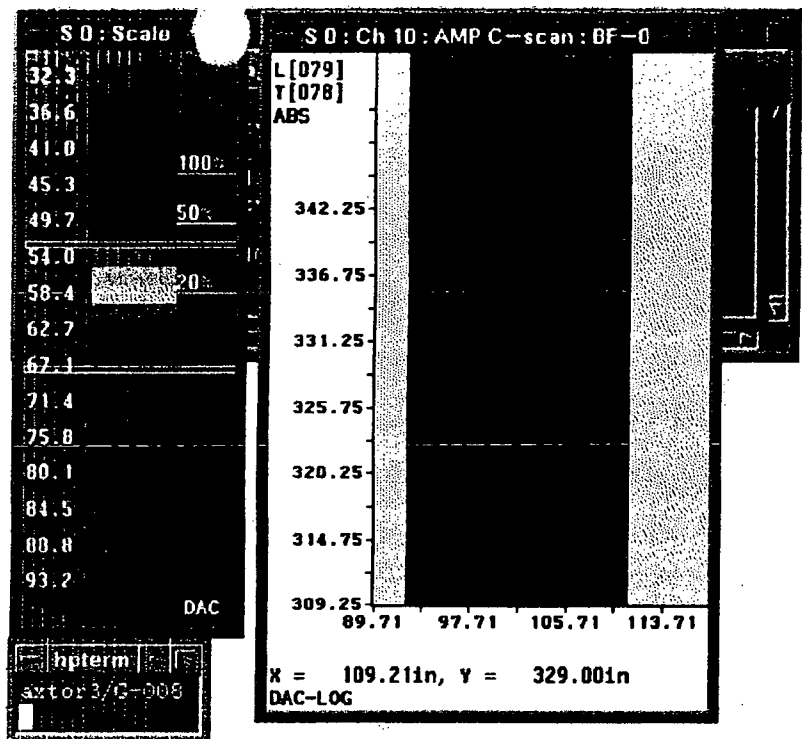
hpterm
axter3/G-006



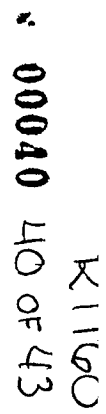
R1160
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00037

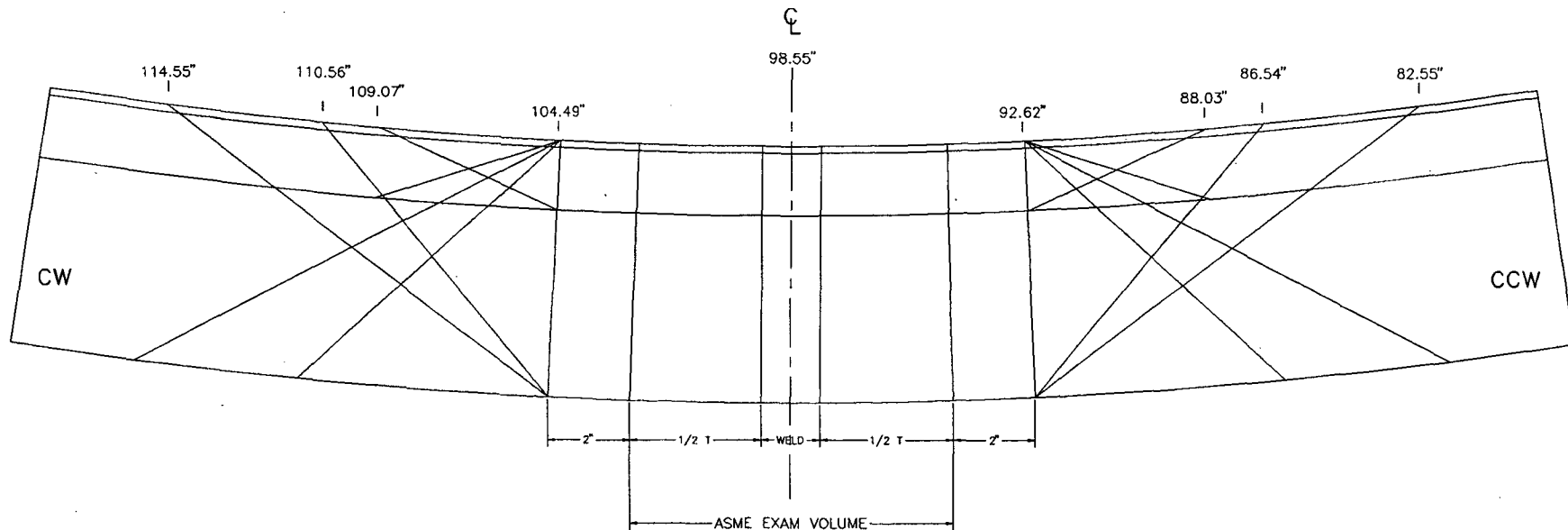


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00038



390543
: 00039
K1160

[illegible]



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	92.62	104.49
2	0 W	90	92.62	104.49
3	70 UP	0	92.62	104.49
4	70 CW	90	88.03	104.49
5	70 DN	180	92.62	104.49
6	70 CCW	270	92.62	109.07
7	45 UP	0	92.62	104.49
8	45 CW	90	86.54	104.49
9	45 DN	180	92.62	104.49
10	45 CCW	270	92.62	110.56
11	60 UP	0	92.62	104.49
12	60 CW	90	82.55	104.49
13	60 DN	180	92.62	104.49
14	60 CCW	270	92.62	114.55
15	0 BM	0	92.62	114.55
16	0 BM	90	82.55	104.49

GE NUCLEAR ENERGY

BROWNS FERRY UNIT 3

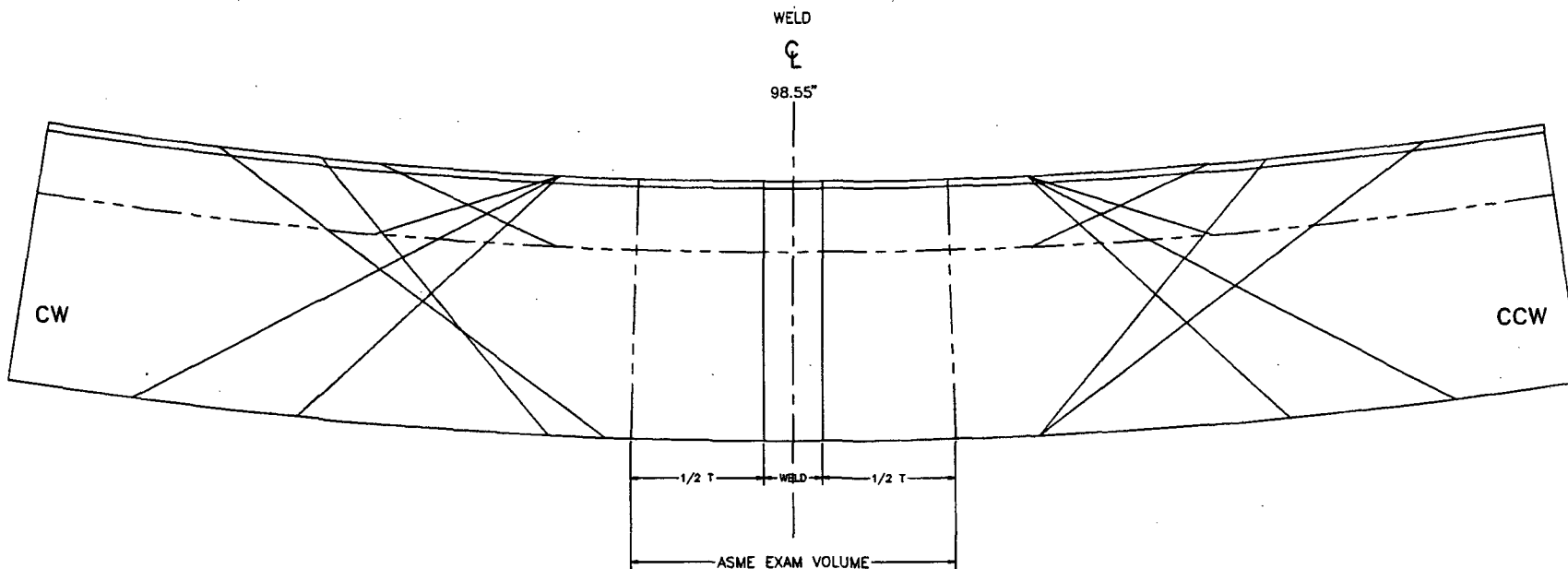
WELD V-2-A EXAM VOLUME

SCALE: NONE

DWG. BF3-VERT

REV. 0

00041 41 OF 43 R1160



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-087 and BF-089

GE NUCLEAR ENERGY

BROWNS FERRY UNIT 3

JET PP AUTOMATED SCAN LIMIT

SCALE: NONE

DWG. V2ABCJET

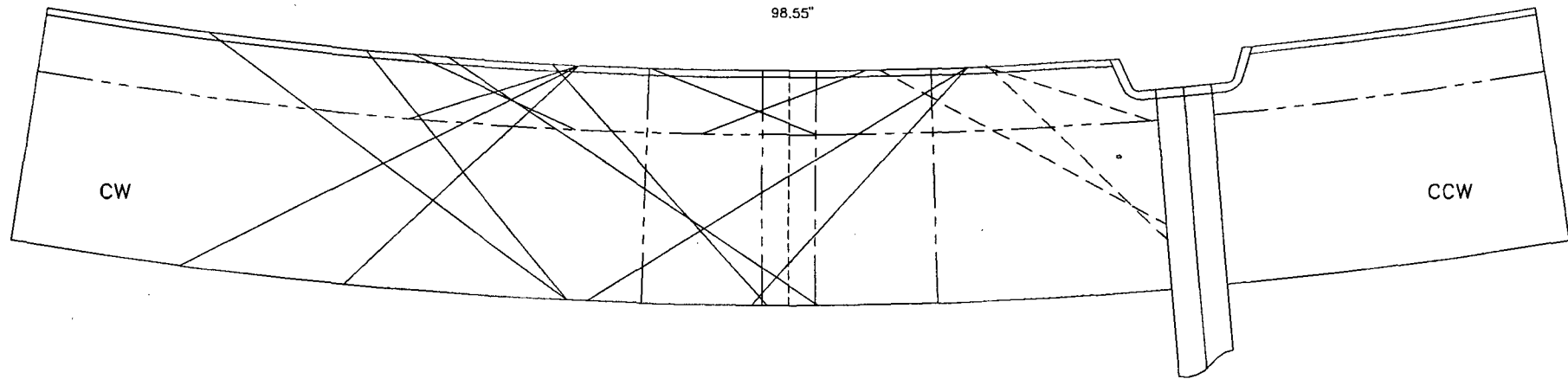
REV. 0

00042 121160
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00000 00000 00000

K1160
00043 43 OF 43

WELD
⌀
98.55"



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

----- EXTENDED SCAN AREA

GE NUCLEAR ENERGY	BROWNS FERRY UNIT 3	N16A NOZ. AUTOMATED SCAN LIMIT	SCALE: NONE	DWG. V-2AN16A	REV. 0
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