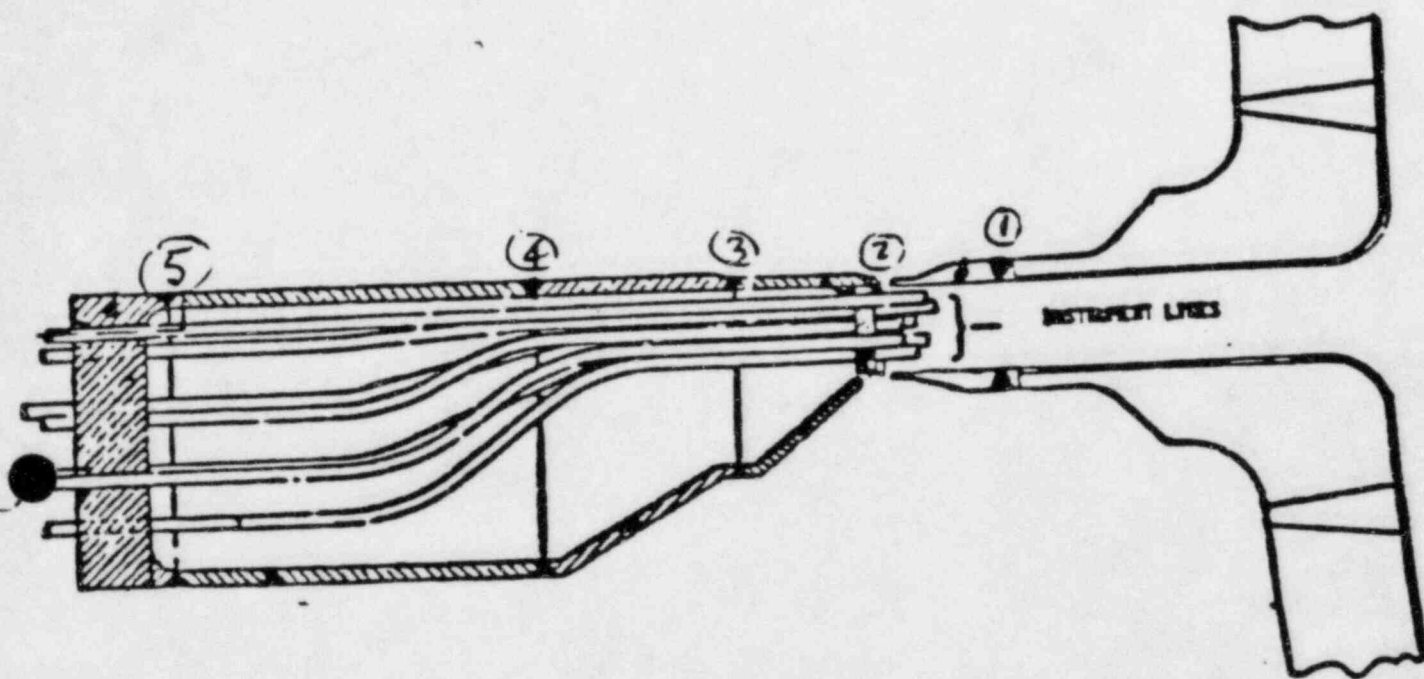


ATTACHMENT A
PHILADELPHIA ELECTRIC COMPANY
PEACH BOTTOM ATOMIC POWER STATION
UNIT 3
DOCKET NO. 50-278

ULTRASONIC INDICATIONS IN THE
JET PUMP INSTRUMENTATION PENETRATIONS
OF PEACH BOTTOM ATOMIC POWER STATION
UNIT 3

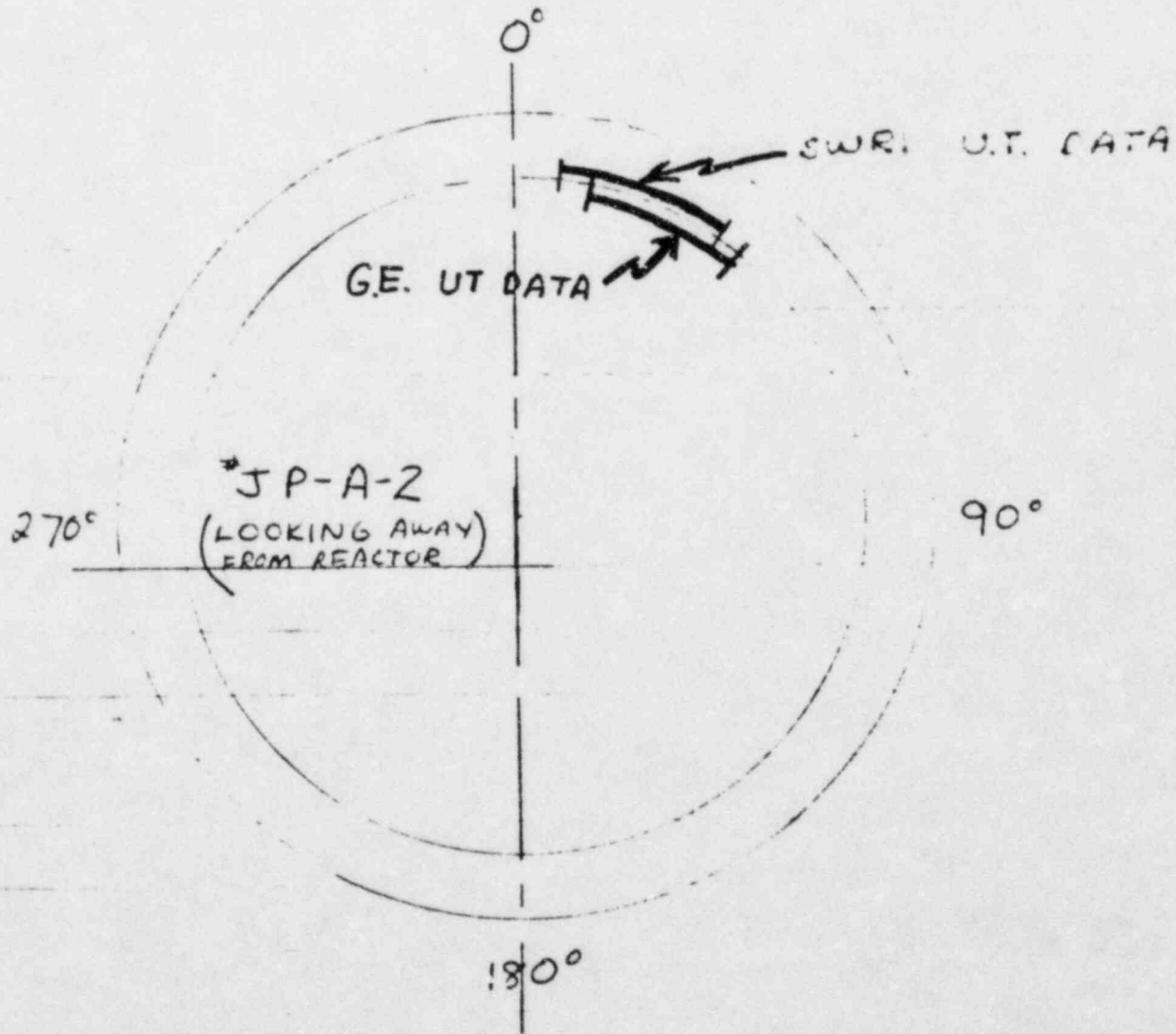


JET PUMP INSTRUMENTATION
SEAL AND SAFE END

Peach Bottom No. 3
Jet Pump Instrumentation Nozzle

Weld # JP-A-2
 Ultrasonic Indication

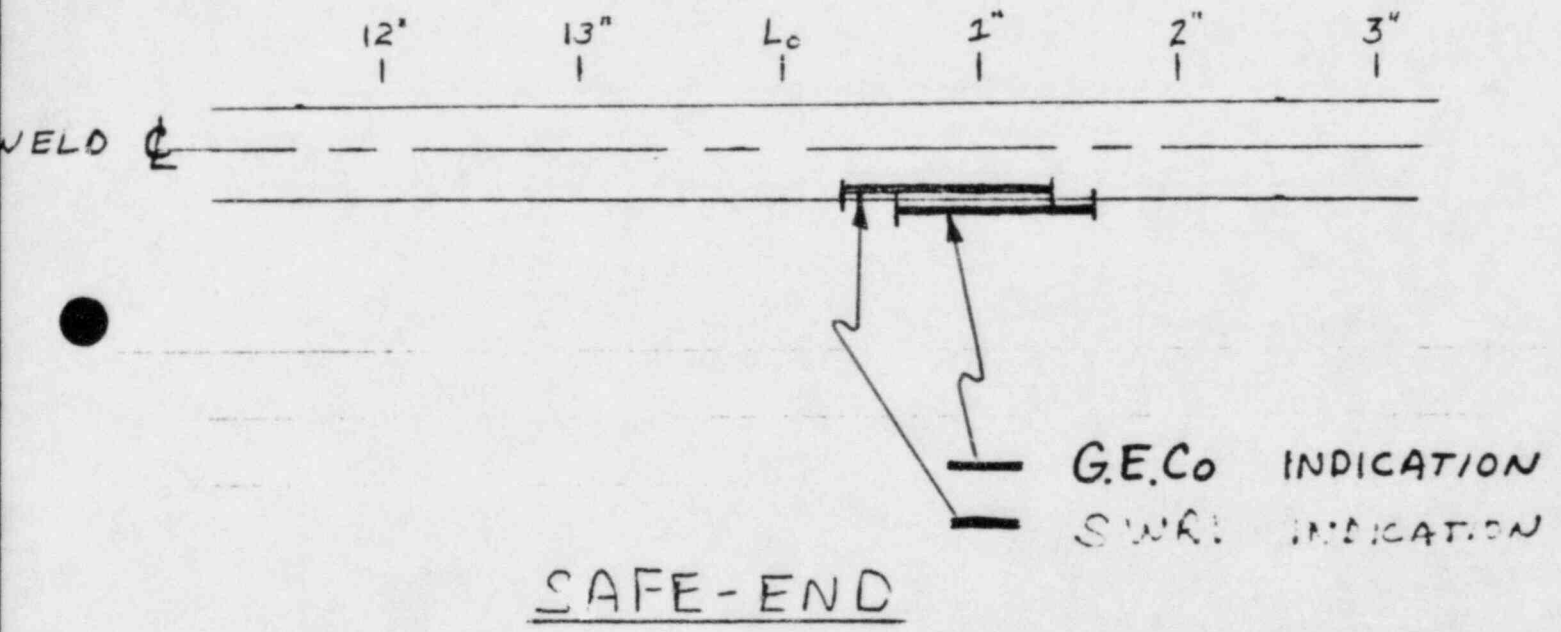
<u>GECO</u>			<u>SWRI</u>	
0.5"-1.5"	—	CIRC. LOCATION	—	0.25" - 1.3125"
1.0"	—	TOTAL LENGTH	—	1.06"
SAFE-END	—	SIDE OF WELD	—	SAFE-END



TLA 6/12/84

Weld # JP-A-2 (CON'T.)

REDUCER



TLA 6/12/84

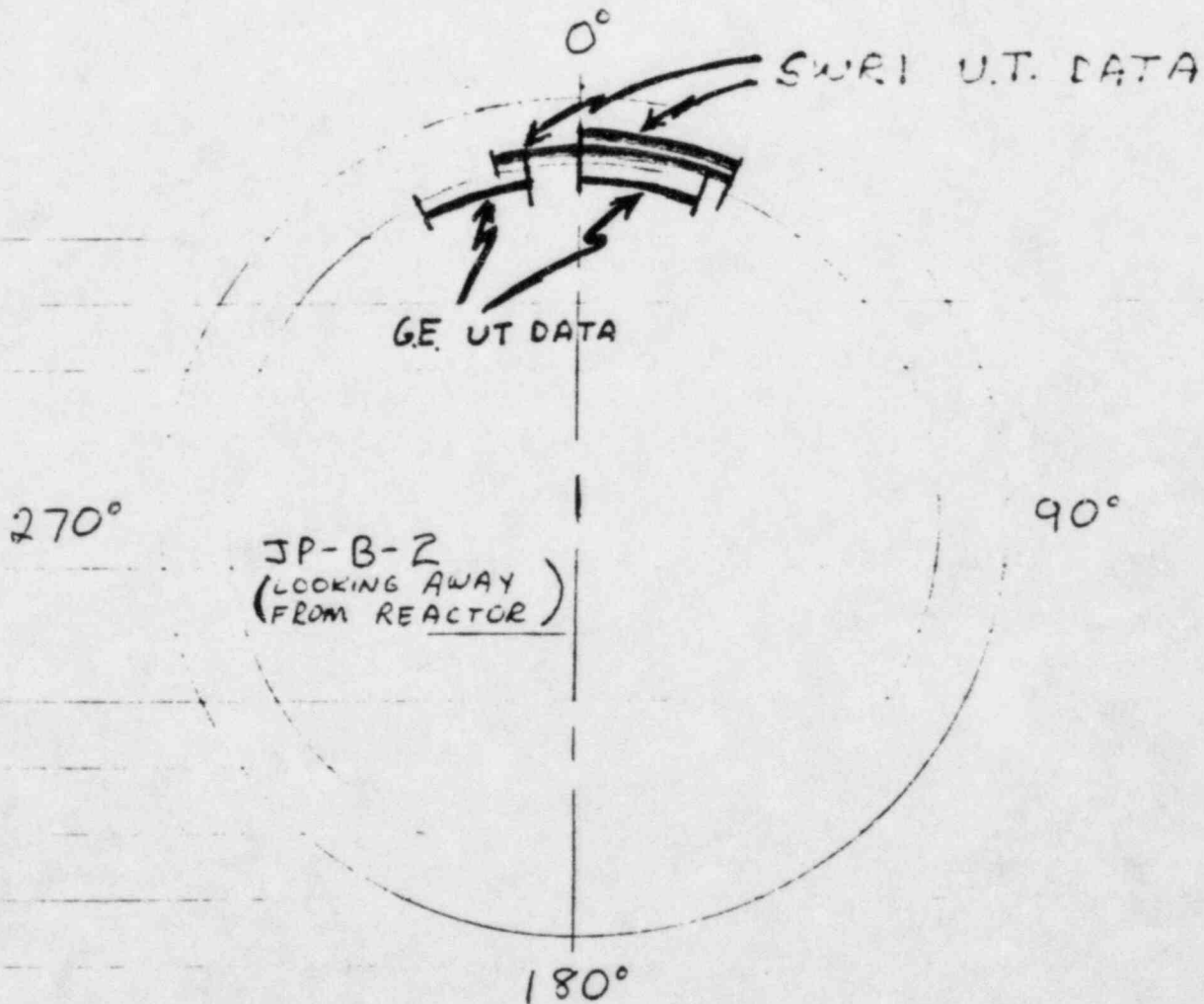
Peach Bottom No 3
Jet Pump Instrumentation Nozzle

Weld # JP-B-2
 Ultrasonic Indication

G.E.Co

SWRI

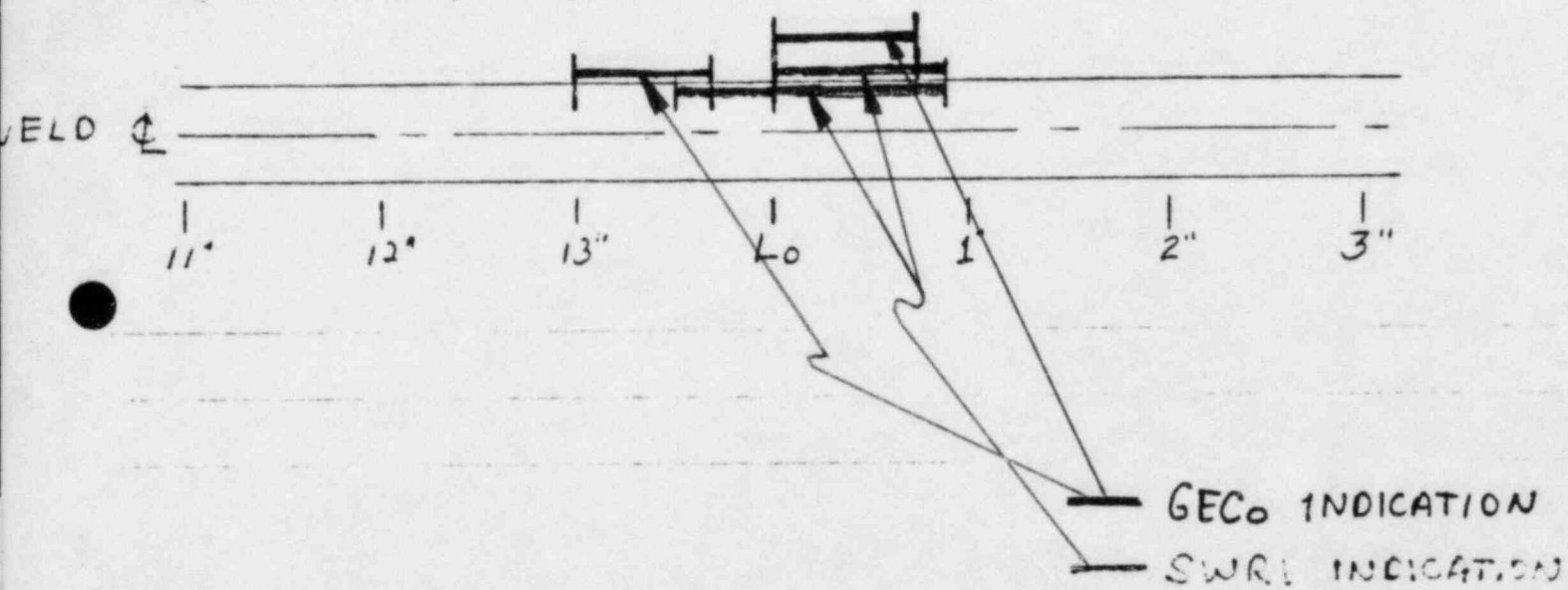
3'-13.7" + 0"-.75"	—	CIRC. LOCATION	—	13 1/2" - 7/8" + 0" - 7/8"
.7 + .3 + .75 = 1.75'	—	TOTAL LENGTH	—	1.375'
REDUCER	—	SIDE OF WELD	—	REDUCER



TLA 6/12/84

Weld # JP-B-2 (CON'T.)

REDUCER



SAFE-END

TLA 6/12/84



PIPE UT CALIBRATION DATA SHEET

SITE PEACH BOTTOM UNIT #3 Preoperational I.S.I.
 SYSTEM JET PUMP INST. NOZZLE CALIBRATION BLOCK NO. 6A-PED
 PROCEDURE NO. 83-1 REV. 4 CALIBRATION SHEET NO. 001
 DATE 6-10-84 COUPLANT SONOTRACE IIW-2 BLOCK NO. 790339
 EXAMINER JOHN DECKER ASNT LEVEL III
 DATA TAKER BILLY ANDERSON ASNT LEVEL II
 INSTRUMENT MODEL NO. SONIC MK-1 INSTRUMENT SERIAL NO. 08053E
 CABLE NO. C-1 CABLE TYPE BUL-MCD CABLE LENGTH 6'

TRANSDUCER DATA

	STRAIGHT BEAM	ANGLE BEAM
SERIAL NO.	_____	<u>E02408</u>
IDENTITY	_____	<u>GAMMA</u>
FREQUENCY	_____	<u>1.5 MHZ</u>
SIZE	_____	<u>1375</u>

SHOE TYPE LUCITE
 SHOE NO. SSI-4
 SHOE ANGLE 45°
 MODE SHEAR

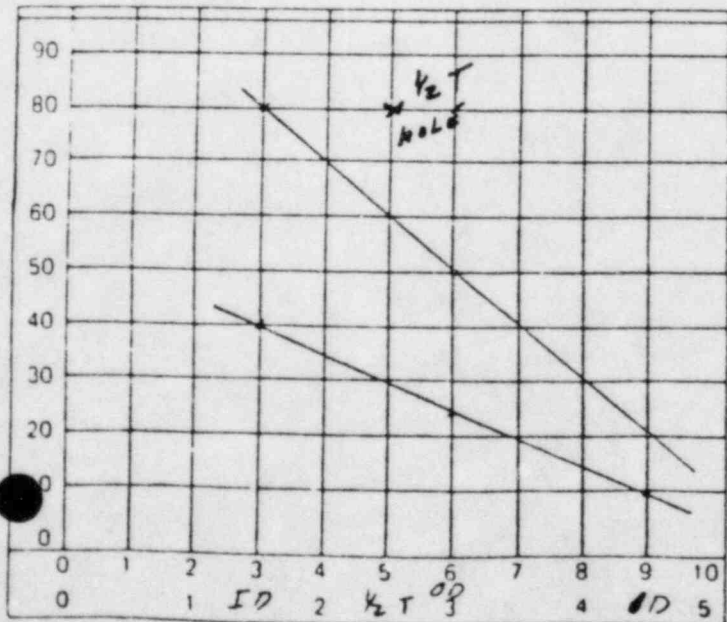
REFLECTORS ORIENTED PARALLEL OR TRANSVERSE TO WELD SEAM (Cross Out One)
 COUPLANT SONOTRACE

CAL STD TEMP _____

INSTRUMENT SETTINGS:

START	FINISH
Uncalibrated Gain	<u>N/A</u> <u>N/A</u>
Coarse Sweep	<u>N/A</u> <u>N/A</u>
Fine Sweep	<u>1-32</u> <u>1-32</u>
Coarse Range	<u>5</u> <u>5</u>
Fine Range	<u>1.22</u> <u>1.22</u>
Scanning Gain	<u>78</u> <u>78</u>
Attenuation (in)	<u>N/A</u> <u>N/A</u>
Evaluating Gain	<u>72</u> <u>72</u>
Attenuation (in)	<u>N/A</u> <u>N/A</u>
Filter Position	<u>H1</u> <u>H1</u>
Rep Rate	<u>3K</u> <u>3K</u>
Damping	<u>MIN</u> <u>MIN</u>
Reject	<u>OFF</u> <u>OFF</u>

DAC Curve





PIPE UT CALIBRATION DATA SHEET

SITE PEACH BOTTOM UNIT #3 Preoperational I.S.I.
 SYSTEM JET PUMP INST. NOZZLE CALIBRATION BLOCK NO. 6A-PED
 PROCEDURE NO. 83-1 REV. 4 CALIBRATION SHEET NO. 001
 DATE 6-10-84 COUPLANT SONOTRACE IIW-2 BLOCK NO. 790339
 EXAMINER JOHN DECKER ASNT LEVEL III
 DATA TAKER BILLY ANDERSON ASNT LEVEL II
 INSTRUMENT MODEL NO. SONIC MK-1 INSTRUMENT SERIAL NO. 08053E
 CABLE NO. C-1 CABLE TYPE BUL-MCD CABLE LENGTH 6'

TRANSDUCER DATA

STRAIGHT BEAM ANGLE BEAM
 SERIAL NO. _____ E02408
 IDENTITY _____ GAMMA
 FREQUENCY _____ 1.5 MHZ
 SIZE _____ 1375

SHOE TYPE LUCITE
 SHOE NO. SSI-4
 SHOE ANGLE 45°
 MODE SHEAR

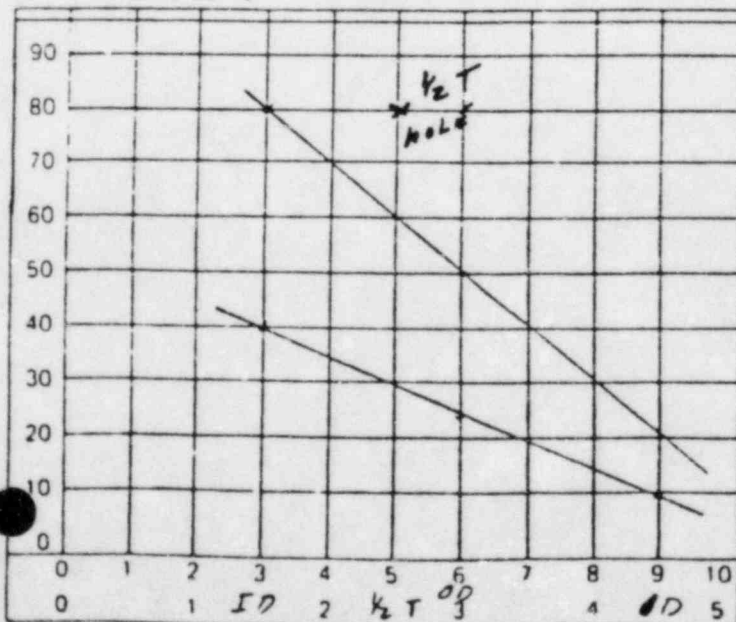
REFLECTORS ORIENTED PARALLEL OR COUPLANT SONOTRACE
 TO WELD SEAM (Cross Out One)
 TRANSVERSE

CAL STD TEMP _____

INSTRUMENT SETTINGS:

	START	FINISH
Uncalibrated Gain	N/A	N/A
Coarse Sweep	N/A	N/A
Fine Sweep	1-32	1-32
Coarse Range	5	5
Fine Range	1.22	1.22
Scanning Gain	78	78
Attenuation (in)	N/A	N/A
Evaluating Gain	72	72
Attenuation (in)	N/A	N/A
Filter Position	H1	H1
Rep Rate	3K	3K
Damping	MIN	MIN
Reject	OFF	OFF

DAC Curve



	Hole Depth		Gain @ 1X	Max. Amp.	"W" Inch	D or MP Inch	SDH or FBH
	"T"	Inches					
	1/4		1X				
	1/2	.659	1X	80%	.6	50	
ID	3/4	718	1X	80%	.7	30	
OD	2% D. Notch	1.436	1X	50%	1.4	60	N/A
ID	2% D. Notch	2.154	1X	20%	1.95	90	N/A

Initial Calibration Time 14:00

Periodic Checks:

Time	Value	Last Data Sheet
_____	_____	_____
_____	_____	_____
_____	_____	_____

Final Check:

1500 100%, 003

Calibration in Depth (D) or Metal Path (MP)

100% FSH	<u>50</u>	% FSH	50% FSH	<u>25</u>	% FSH
90% "	<u>45</u>	"	40% "	<u>20</u>	"
80% "	<u>40</u>	"	30% "	<u>15</u>	"
70% "	<u>35</u>	"	20% "	<u>10</u>	"
60% "	<u>30</u>	"			

80% FSH	-6db	<u>40</u>	(32-48)
80% "	-12db	<u>20</u>	(16-24)
40% "	+6db	<u>80</u>	(64-96)
20% "	+12db	<u>80</u>	(64-96)

Equip. Data - Straight Beam For Linearity Checks	
11W-2	<u>790339</u>
Transducer Data:	
Serial No.	<u>E02408</u>
Beam Angle	<u>45°</u>
Size	<u>.375</u> Freq. <u>1.5 MHz</u>
Shoe No.	<u>SS1-4</u> Cable No. <u>C-1</u>
Check Made By:	
<u>John Decker</u>	

Checks on 11W-2

Block on 1/8" SDH for Field Calib

Checks @ Max Amp. for Both Near & Far

Positions in % Screen Height

1/8" SDH	Near	Far
Max. Amp.	%	%
Metal Path	"	"

Reviewed by Wade H Miller III
SNT-TC Level



ULTRASONIC EXAMINATION DATA FORM

Exam Form 002
Cal. Form No. 001

Site PEACH BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-84
 System JET PUMP INST. NOZZLE Weld No. JP-A-1 Weld Type BUTT
 Examiner JOHN DECKER ASNT Level III
 Data Taker BILLY ANDERSON ASNT Level II
 Search Angle 45° U.T. Procedure 83-1 Rev. 4
 Scan Sens X2 78dB Other STAINLESS SIDE Evaluation Sens: X1 72dB
 Couplant SONOTRACE

EXAMINATIONS:

Performed		Indication	
Yes	No	Yes	No
X			X
X			X

- 1 Angle beam for reflectors parallel to weld
- 2 Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Benchmark or Referenced "O" Location TDC

L₀ = TDC W₀ = ECF WELD

L=	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
NO RECORDABLE INDICATIONS										

Reviewed by: Wade H. Miller ASNT-TC-1A Level II III



ULTRASONIC EXAMINATION DATA FORM

Exam Form 003
Cal. Form No. 001

Site PEACH BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-54
 System JET PUMP INSTEAD Weld No. JP-B-1 Weld Type RWT
 Examiner JOHN DECKER ASNT Level III
 Data Taker BILLY ANDERSON ASNT Level II
 Search Angle 45° U.T. Procedure 83-1 Rev. 4
 Scan Sens X2 78dB Other STAINLESS SIDE Evaluation Sens: X1 72dB
 Couplant SCOTRACE

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
X			+
X			X

Benchmark or Referenced "O" Location: TDC

L₀ = TDC W₀ = 2

L =	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
NO RECORDABLE INDICATIONS										

Reviewed by Wade H. Miller ASNT-TC-1A Level II III



PIPE UT CALIBRATION DATA SHEET

SITE PEACH BOTTOM UNIT 3 Preoperational I.S.I.
 SYSTEM JET PUMP INST NOZZLE CALIBRATION BLOCK NO. 21-PEB
 PROCEDURE NO. 83-1 REV. 4 CALIBRATION SHEET NO. 004
 DATE 6-10-84 COUPLANT SONDTRACE IIW-2 BLOCK NO. 790339
 EXAMINER BILLY ANDERSON ASNT LEVEL II
 DATA TAKER JOHN DECKER ASNT LEVEL III
 INSTRUMENT MODEL NO. SONIC MK-1 INSTRUMENT SERIAL NO. 08053E
 CABLE NO. C-1 CABLE TYPE BNC TO MCD CABLE LENGTH 6'

TRANSDUCER DATA

	STRAIGHT BEAM	ANGLE BEAM
SERIAL NO.	_____	<u>E02408</u>
IDENTITY	_____	<u>GAMMA</u>
FREQUENCY	_____	<u>1.5 MHZ</u>
SIZE	_____	<u>.375"</u>

SHOE TYPE LUCITE
 SHOE NO. 551-4
 SHOE ANGLE 45°
 MODE SHEAR

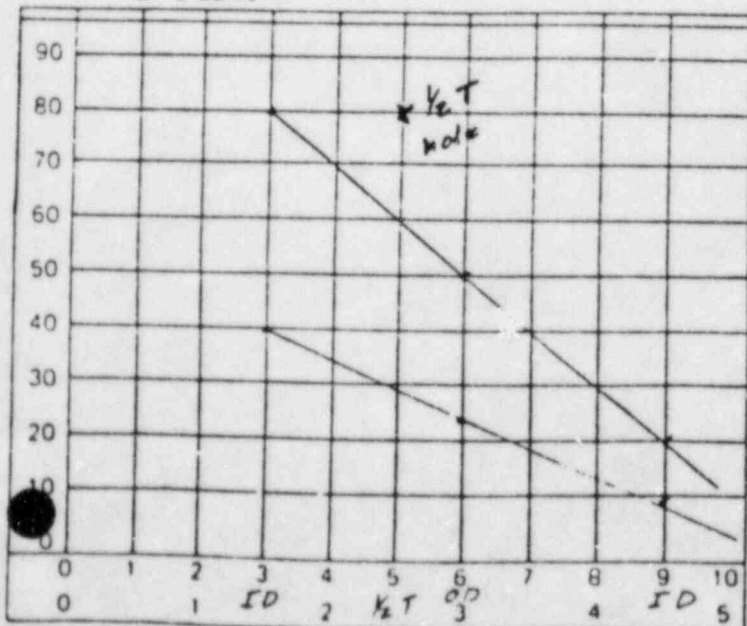
REFLECTORS ORIENTED PARALLEL OR TRANSVERSE TO WELD SEAM (Cross Out One)

CAL STD TEMP _____

INSTRUMENT SETTINGS:

START	FINISH
Uncalibrated Gain	<u>N/A</u> <u>N/A</u>
Coarse Sweep	<u>N/A</u> <u>N/A</u>
Fine Sweep	<u>1.32</u> <u>1.32</u>
Coarse Range	<u>5</u> <u>5</u>
Fine Range	<u>1.22</u> <u>1.22</u>
Scanning Gain	<u>72</u> <u>72</u>
Attenuation (in)	<u>N/A</u> <u>N/A</u>
Evaluating Gain	<u>66</u> <u>66</u>
Attenuation (in)	<u>N/A</u> <u>N/A</u>
Filter Position	<u>H1</u> <u>H1</u>
Rep Rate	<u>3K</u> <u>3K</u>
Damping	<u>MIN</u> <u>MIN</u>
Reject	<u>off</u> <u>off</u>

DAC Curve



004

Hole Depth "T" Inches	Gain @ 1X	Max. Amp.	"W" Inch	D or MP Inch	SDH or FBH
1/4	1X				
1/2	1X	80%	.4	50	SDH
ID 3/4	1X	80	.7	30	
2% I.D. Notch	1X	50	1.4	60	N/A
2% O.D. Notch	1X	20	1.95	90	N/A

OD
ID

Initial Calibration Time 1100

Periodic Checks:

Time	Value	Last Data Sheet
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Final Check:

1200 100% 006

Calibration in Depth (D) or Metal Path (MP)

Amplitude Linearity Check (Made Daily)					
100%FSH	<u>50</u>	% FSH	50% FSH	<u>25</u>	% FSH
90% "	<u>45</u>	"	40% "	<u>20</u>	"
80% "	<u>40</u>	"	30% "	<u>15</u>	"
70% "	<u>35</u>	"	20% "	<u>10</u>	"
60% "	<u>30</u>	"			

Control Linearity (Made Daily)		
80%FSH	-6db	<u>40</u> (32-48)
80% "	-12db	<u>20</u> (16-24)
40% "	+ 6db	<u>80</u> (64-96)
20% "	+12db	<u>80</u> (64-96)

Equip. Data - Straight Beam For Linearity Checks	
11W-2	<u>790339</u>
Transducer Data:	
Serial No.	<u>E02408</u>
Beam Angle	<u>45°</u>
Size	<u>.375</u> Freq. <u>1.5 MHz</u>
Shoe No.	<u>SSI-4</u> Cable No. <u>C-1</u>
Check Made By:	
<u>JOHN DECKER</u>	

Checks on 11W-2

Block on 1/8" SDH for Field Calib
Checks @ Max Amp. for Both Near & Far
Positions in % Screen Height

1/8" SDH	Near	Far
Max. Amp.	%	%
Metal Path	"	"

Reviewed by Wade F. Miller III
SNT-TC Level



INSTALLATION & SERVICE
ENGINEERING DIVISION

ULTRASONIC EXAMINATION DATA FORM

Exam Form 005
Cal. Form No. 004

Site PEACH BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-84
System JET PUMP INST NOZZLE Weld No. JP-A-1 Weld Type R111
Examiner JOHN DECKER ASNT Level III
Data Taker BILLY ANDERSON ASNT Level II
Search Angle 45° U.T. Procedure 83-1 Rev. 4
Scan Sens: x2 72 dB Other CARBON SIDE Evaluation Sens: X1 66 dB
Couplant SONOTRACE

EXAMINATIONS:

Performed		Indication	
Yes	No	Yes	No
X			X
X			X

- 1 Angle beam for reflectors parallel to weld
- 2 Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Benchmark or Referenced "O" Location: TDC

L₀ = TDC W₀ = E OF WELD

L =	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										NO RECORDABLE INDICATIONS

Reviewed by Hedra Miller ASNT-TC-1A Level II III



PIPE UT CALIBRATION DATA SHEET

SITE PEACH BOTTOM UNIT 3 Preoperational I.S.I.
 SYSTEM JET PUMP INST. NOZZLE CALIBRATION BLOCK NO. HT-6274
 PROCEDURE NO. 83-1 REV. 4 CALIBRATION SHEET NO. 007
 DATE 6-10-84 COUPLANT SONOTRACE IIW-2 BLOCK NO. 790339
 EXAMINER JOHN DECKER ASNT LEVEL III
 DATA TAKER BILLY ANDERSON ASNT LEVEL II
 INSTRUMENT MODEL NO. SONIC MK-1 INSTRUMENT SERIAL NO. 04057E
 CABLE NO. C-2 CABLE TYPE BNC TO MCD CABLE LENGTH 6'

TRANSDUCER DATA

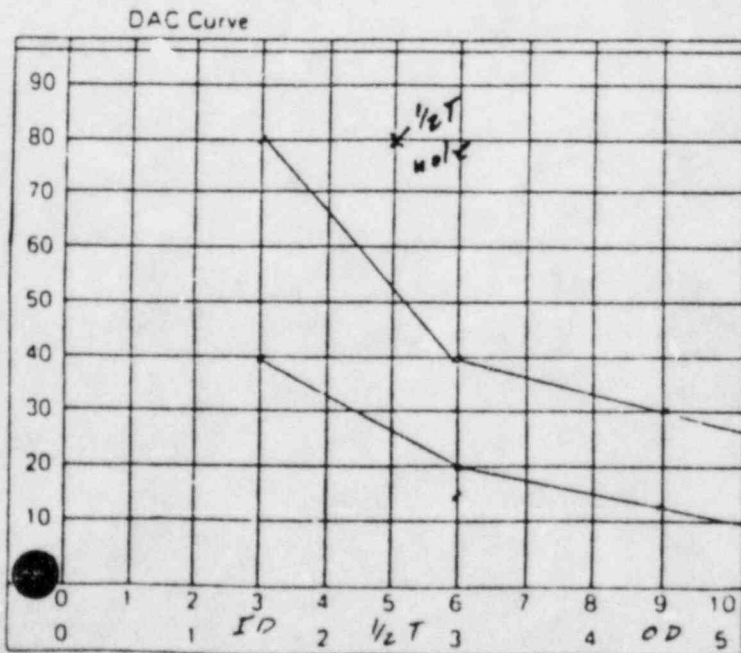
	STRAIGHT BEAM	ANGLE BEAM
SERIAL NO.	_____	<u>K17925</u>
IDENTITY	_____	<u>CANMA</u>
FREQUENCY	_____	<u>2.25 MHZ</u>
SIZE	_____	<u>1/2"</u>

SHOE TYPE LUCITE
 SHOE NO. SS1-5
 SHOE ANGLE 45°
 MODE SHEAR

REFLECTORS ORIENTED PARALLEL OR COUPLANT SONOTRACE
 TRANSVERSE TO WELD SEAM (Cross Out One)

CAL STD TEMP _____

INSTRUMENT SETTINGS:



	START	FINISH
Uncalibrated Gain	N/A	N/A
Coarse Sweep	N/A	N/A
Fine Sweep	5.68	5.68
Coarse Range	1	1
Fine Range	1.66	1.66
Scanning Gain	62	62
Attenuation (in)	N/A	N/A
Evaluating Gain	56	56
Attenuation (in)	N/A	N/A
Filter Position	H1	H1
Rep Rate	3K	3K
Damping	MIN	MIN
Reject	OFF	OFF

Hole Depth "T" Inches	Gain @ 1X	Max. Amp.	"W" Inch	D or MP Inch	SDH or FBH
1/4	1X				
1/2	1X	80%	.4	50	SDH
1/4 ID	1X	80%	.4	30	
1/4 Notch	1X	40%	0.85	60	N/A
1/4 Notch	1X	30%	1.15	90	N/A

Initial Calibration Time 1500

Periodic Checks:

Time	Value	Last Data Sheet
_____	_____	_____
_____	_____	_____
_____	_____	_____

Final Check:

1600 100% 009

Calibration in Depth (D) or Metal Path (MP)

Amplitude Linearity Check (Made Daily)					
100% FSH	<u>48</u>	% FSH	50% FSH	<u>25</u>	% FSH
90% "	<u>45</u>	"	40% "	<u>20</u>	"
80% "	<u>40</u>	"	30% "	<u>15</u>	"
70% "	<u>35</u>	"	20% "	<u>10</u>	"
60% "	<u>28</u>	"			

Control Linearity (Made Daily)		
80% FSH	-6db	<u>40</u> (32-48)
80% "	-12db	<u>20</u> (16-24)
40% "	+ 6db	<u>80</u> (64-96)
20% "	+12db	<u>80</u> (64-96)

Equip. Data - Straight Beam For Linearity Checks	
11W-2	<u>790339</u>
Transducer Data:	
Serial No.	<u>E02406</u>
Beam Angle	<u>45°</u>
Size	<u>.25</u> Freq. <u>2.25 MHz</u>
Shoe No.	<u>SSI-3</u> Cable No. <u>C-2</u>
Check Made By:	
<u>John Decker</u>	

Checks on 11W-2

Block on 1/8" SDH for Field Calib.
Checks @ Max Amp. for Both Near & Far
Positions in % Screen Height

1/8" SDH	Near	Far
Max. Amp.	%	%
Metal Path	"	"

Reviewed by Wade H. Miller III
SNT TC Level



ULTRASONIC EXAMINATION DATA FORM

Exam Form 108

Cal. Form No. 007

Site PEACH BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-84
 System JET PUMP INST. NOZZLE Weld No. JP-A-2 Weld Type BVT
 Examiner JOHN DECKER ASNT Level III
 Data Taker BILLY ANDERSON ASNT Level II
 Search Angle 45° U.T. Procedure 83-1 Rev. 4
 Scan Sens X2 62dB Other _____ Evaluation Sens: X1 56dB
 Couplant SCOTTRACE

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
X		X	
X			X

Benchmark or Referenced "O" Location: TDC

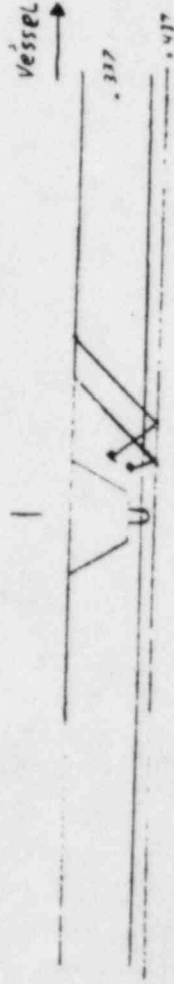
L_0 = TDC W_0 = 2 OF WELD

L =	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
L ₁	0.5"								US sm	SCAN FROM SE
L _M	1"	TCE	.7	.9	62%	TCE	4.2	5.0	D.S.	SIDE
L ₂	1.5"								US sm D.S.	INDICATION #1 USM
L _M	1"		.7		30%		3.2			

Reviewed by Wade F. Miller ASNT TC-1A Level II III

JET PUMP INSTANT...

WELD # JPA-
DATA SHEET 008
CAL SHEET 007



SHORT MP = W.7 MP 4.2 t = .360

SHORT MP = W.9 MP 5.0 t = .360

CAN NOT PEAR INDICATION DUE TO WELD GROWTH
STOPPING FORWARD MOVEMENT AT SEACH UNIT.

$$l = .75''$$

$$d = .175'' \text{ etc}$$

$$t = .360'' \text{ (UT MEASUREMENT)}$$

$$d/l = .23$$

$$d/t \% = 48.6$$

Photo. J. H. ...

RE DATA SHEET

...



ULTRASONIC EXAMINATION DATA FORM

Exam Form 009
Cal. Form No. 007

Site PEACH BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-84
 System JET PUMP INST NOZZLE Weld No. JP-B-2 Weld Type PLTT
 Examiner JOHN DECKER ASNT Level III
 Data Taker BILLY ANDERSON ASNT Level II
 Search Angle 45° U.T. Procedure 83-1 Rev. 4
 Scan Sens. X2 62dB Other _____ Evaluation Sens: X1 56dB
 Couplant SONOTRACE

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

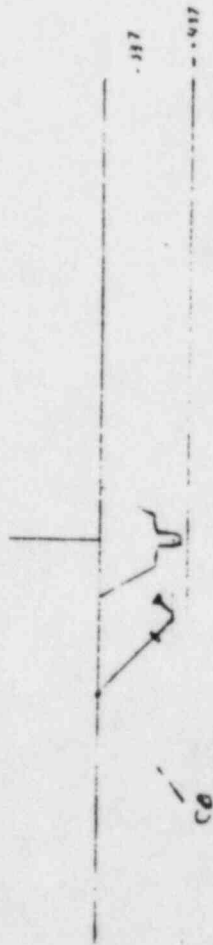
Performed		Indication	
Yes	No	Yes	No
X		X	
X			X

Benchmark or Referenced "O" Location: TDC
 L₀ = TDC W₀ = 2 CF WELD

L =	Inches From Ref	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	SCAN FROM REVERSE SIDE. Scanning Mode & Remarks
						W ₁	W _m	W ₂		
L ₁	0"								DS sm	} INDICATION # 1 sm
L _M	.5"		.8"		100% ⁷¹⁴		2.8		H.S.	
L ₂	.75"									
L ₁	13"								DS sm	} INDICATION # 2 sm
L _M	13.5"		.8"		50%		3.6		H.S.	
L ₂	13.7"									

Reviewed by Wade H Miller ASNT TC-1A Level II III

JET PUMP INSTRUMENT
WELD # JPB-2



SHORT MP : w .8 MP 2.8 T : .337

SHORT MP : w .8 MP 3.6 T : .117

Both reflections originate at the same W distance
at different times. This is indicative
of a crack.

Kelvinoid Plot
Made by Miller
GE DARESO ESC
LEVEL III



PIPE UT CALIBRATION DATA SHEET

SITE PEACH BOTTOM UNIT #3 Preoperational I.S.I.
 SYSTEM Jet Pump INST. NOZZLE CALIBRATION BLOCK NO. 5-A-PEB
 PROCEDURE NO. 83-1 REV. 4 CALIBRATION SHEET NO. 010
 DATE 6-10-84 COUPLANT SONOTRAC IIW-2 BLOCK NO. 790339
 EXAMINER BILLY ANDERSON ASNT LEVEL II
 DATA TAKER JOHN DECKER ASNT LEVEL III
 INSTRUMENT MODEL NO. SONIC MK-1 INSTRUMENT SERIAL NO. 08053E
 CABLE NO. C-1 CABLE TYPE BNC - MCD CABLE LENGTH 6'

TRANSDUCER DATA

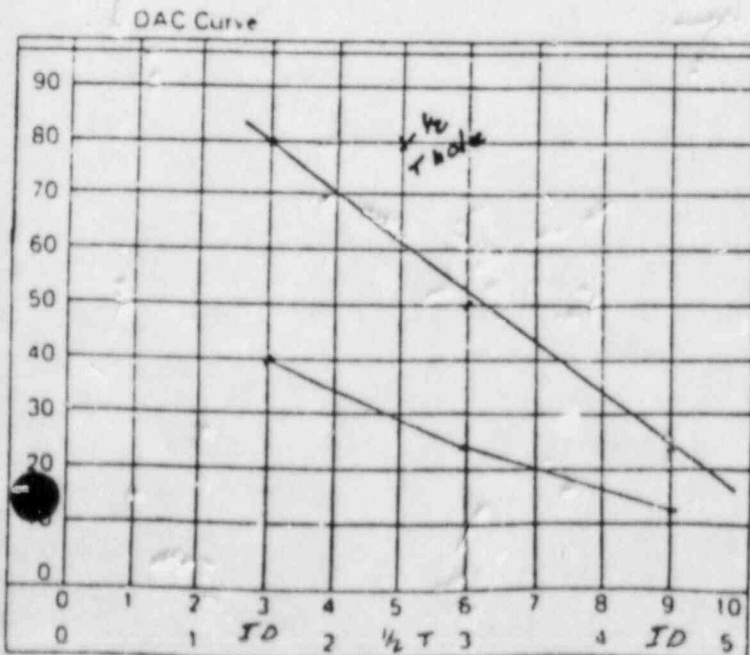
	STRAIGHT BEAM	ANGLE BEAM
SERIAL NO.	_____	<u>1E02408</u>
IDENTITY	_____	<u>GAMMA</u>
FREQUENCY	_____	<u>1.5 MHz</u>
SIZE	_____	<u>1375</u>

SHOE TYPE LUCITE
 SHOE NO. SSI-4
 SHOE ANGLE 45°
 MODE SHEAR

REFLECTORS ORIENTED PARALLEL OR COUPLANT SONOTRAC
TRANSVERSE TO WELD SEAM (Cross Out One)

CAL STD TEMP _____

INSTRUMENT SETTINGS:



	START	FINISH
Uncalibrated Gain	N/A	N/A
Coarse Sweep	N/A	N/A
Fine Sweep	5.68	5.68
Coarse Range	1	1
Fine Range	7.02	7.02
Scanning Gain		
Attenuation (in)	59	59
Evaluating Gain	N/A	N/A
Attenuation (in)	53	53
Filter Position	N/A	N/A
Rep Rate	MIN	MIN
Damping	MIN	MIN
Reject	OFF	OFF

	Hole Depth		Gain @ 1X	Max. Amp.	"W" Inch	D or MP Inch	SDH or FBH
	"T"	Inches					
	1/4		1X				
	1/2	.216	1X	80%	.5	50	SDH
ID	3/4	.432	1X	80%	.4	30	
OD	2" Ø Notch	.864	1X	50%	.9	60	N/A
ID	2" Ø Notch	1.264	1X	35%	1.350	90	N/A

Initial Calibration Time 1800

Periodic Checks:

Time	Value	Last Data Sheet
_____	_____	_____
_____	_____	_____
_____	_____	_____

Final Check:
1950 100% 012

Calibration in Depth (D) or Metal Path (MP)

Amplitude Linearity Check (Made Daily)			
100%FSH	<u>50</u>	% FSH	50% FSH <u>25</u> % FSH
90% "	<u>45</u>	"	40% " <u>20</u> "
80% "	<u>40</u>	"	30% " <u>15</u> "
70% "	<u>35</u>	"	20% " <u>10</u> "
60% "	<u>30</u>	"	_____

Control Linearity (Made Daily)	
80%FSH	-6db <u>40</u> (32-48)
80% "	-12db <u>20</u> (16-24)
40% "	+ 6db <u>80</u> (64-96)
20% "	+12db <u>80</u> (64-96)

Equip. Data - Straight Beam For Linearity Checks	
11W-2	<u>790359</u>
Transducer Data	
Serial No.	<u>E02408</u>
Beam Angle	<u>45°</u>
Size	<u>.375</u> Freq. <u>1.5 MHz</u>
Shoe No.	<u>SSI-4</u> Cable No. <u>C-1</u>
Check Made By:	
<u>John Decker</u>	

Checks on 11W-2

Block on 1/8" SDH for Field Calib.
Checks @ Max Amp. for Both Near & Far
Positions in % Screen Height

1/8" SDH	Near	Far
Max. Amp.	%	%
Metal Path	"	"

Reviewed by Wade H. Miller III
SNT-TC Level



ULTRASONIC EXAMINATION DATA FORM

Exam Form 011

Cal. Form No 010

Site PEAK BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-87

System JET PUMP INST. USE Weld No. JP-A-3 Weld Type BUTT

Examiner BILLY ANDERSON ASNT Level II

Data Taker JOHN DECKER ASNT Level III

Search Angle 45° U.T. Procedure 83-1 Rev. 4

Scan Sens X2 59db Other _____ Evaluation Sens: X1 53db

Couplant SONOTRAC

EXAMINATIONS:

- 1. Angle beam for reflectors parallel to weld
- 2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
X			X
X			X

Benchmark or Referenced "O" Location: TDC

L₀ = TDC W₀ = 1/2 OF WELD

L =	Inches From Ref	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										NO RECORDABLE INDICATIONS

Reviewed by Wade F. Miller ASNT TC 1A Level II III



ULTRASONIC EXAMINATION DATA FORM

Exam Form 012
 Cal. Form No. 010

Site PEACH BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-84
 System JET PUMP INST. NO. 2 Weld No. JP-B-3 Weld Type BUTT
 Examiner BILLY ANDERSON ASNT Level II
 Data Taker JOHN DECKER ASNT Level III
 Search Angle 45° U.T. Procedure 83-1 Rev. 4
 Scan Sens X2 59db Other _____ Evaluation Sens: X1 53db
 Couplant SONOTRAK

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
X			X
X			X

Benchmark or Referenced "O" Location: TDC

$L_0 =$ TDC $W_0 =$ 1/2 OF WELD

L =	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
NO RECORDABLE INDICATIONS										

Reviewed by Wade H. Miller ASNT TC : A Level II III



PIPE UT CALIBRATION DATA SHEET

SITE PEACH BOTTOM UNIT 3 Preoperational I.S.I.
 SYSTEM JET PUMP INST NOZZLE CALIBRATION BLOCK NO. HA-PEB
 PROCEDURE NO. 83-1 REV. 4 CALIBRATION SHEET NO. 013
 DATE 6-9-84 COUPLANT SONOTRAC IIW-2 BLOCK NO. 790339
 EXAMINER BILLY ANDERSON ASNT LEVEL II
 DATA TAKER JOHN DECKER ASNT LEVEL III
 INSTRUMENT MODEL NO. SONIC MK-1 INSTRUMENT SERIAL NO. 04057E
 CABLE NO. C-2 CABLE TYPE BNC-MCD CABLE LENGTH 6'

TRANSDUCER DATA

	STRAIGHT BEAM	ANGLE BEAM
SERIAL NO.	<u>LE0240B</u>	
IDENTITY	<u>GAMMA</u>	
FREQUENCY	<u>1.5 MHZ</u>	
SIZE	<u>.375</u>	

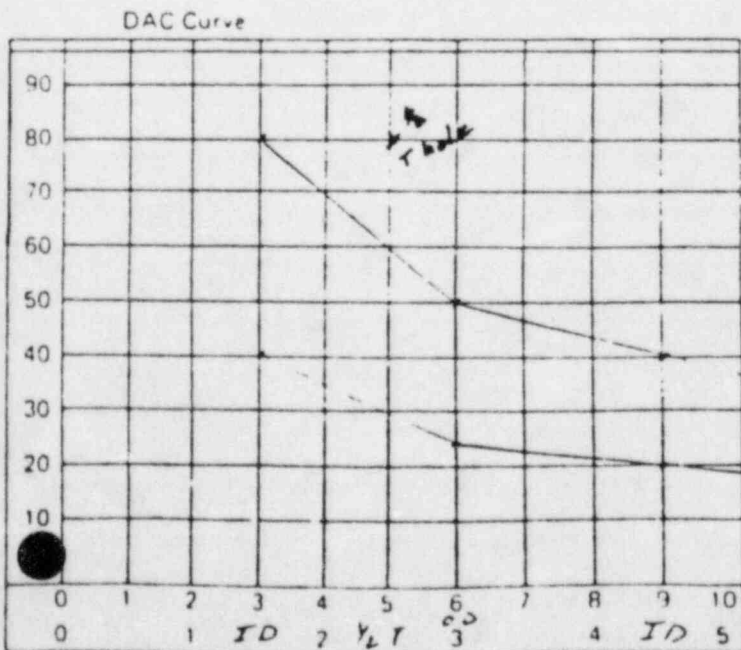
SHOE TYPE LUCITE
 SHOE NO. SSI-3
 SHOE ANGLE 45°
 MODE SHEAR

REFLECTORS ORIENTED PARALLEL OR COUPLANT TO WELD SEAM (Cross Out One)
TRANSVERSE

CAL STD TEMP _____

INSTRUMENT SETTINGS:

START	FINISH
<u>N/A</u>	<u>N/A</u>
<u>N/A</u>	<u>N/A</u>
<u>0</u>	<u>0</u>
<u>5</u>	<u>5</u>
<u>1</u>	<u>1</u>
<u>51</u>	<u>51</u>
<u>N/A</u>	<u>N/A</u>
<u>45</u>	<u>45</u>
<u>N/A</u>	<u>N/A</u>
<u>H1</u>	<u>H1</u>
<u>3K</u>	<u>3K</u>
<u>MIN</u>	<u>MIN</u>
<u>OFF</u>	<u>OFF</u>



Uncalibrated Gain
 Coarse Sweep
 Fine Sweep
 Coarse Range
 Fine Range
 Scanning Gain
 Attenuation (in)
 Evaluating Gain
 Attenuation (in)
 Filter Position
 Rep Rate
 Damping
 Reject

	Hole Depth		Gain @ 1X	Max. Amp.	"W" Inch	D or MP Inch	SDH or FBH
	"T"	Inches					
	1/4		1X				
	1/2	.345	1X	80%	.4	50	SDH
ID	3/4	.689	1X	80%	.55	30	
OD	2" D. Notch	1.354	1X	50%	1.1	60	N/A
ID	2" O.D. Notch	2.081	1X	40%	1.7	90	N/A

Initial Calibration Time 1900

Periodic Checks:

Time	Value	Last Data Sheet
_____	_____	_____
_____	_____	_____
_____	_____	_____

Final Check:

2000 100% 017

Calibration in Depth (D) or Metal Path (MP)

Amplitude Linearity Check (Made Daily)			
100% FSH	<u>48</u>	% FSH	50% FSH <u>25</u> % FSH
90% "	<u>45</u>	"	40% " <u>20</u> "
80% "	<u>40</u>	"	30% " <u>15</u> "
70% "	<u>35</u>	"	20% " <u>10</u> "
60% "	<u>28</u>	"	_____ "

Control Linearity (Made Daily)		
80% FSH	-6db <u>40</u>	(32-48)
80% "	-12db <u>20</u>	(16-24)
40% "	+ 6db <u>80</u>	(64-96)
20% "	+12db <u>80</u>	(64-96)

Equip. Data - Straight Beam For Linearity Checks	
11W-2	<u>790339</u>
Transducer Data:	
Serial No.	<u>E02406</u>
Beam Angle	<u>45°</u>
Size	<u>.375</u> Freq. <u>1.5 MHz</u>
Shoe No.	<u>SSI-3</u> Cable No. <u>C-2</u>
Check Made By:	
<u>John Decker</u>	

Checks on 11W-2

Block on 1/8" SDH for Field Cal' b
 Checks @ Max Amp. for Both Near & Far
 Positions in % Screen Height

1/8" SDH	Near	Far
Max. Amp.	%	%
Metal Path	"	"



ULTRASONIC EXAMINATION DATA FORM

Exam Form 014
Cal. Form No. 013

Site PEACH BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-84
 System JET PUMP INST. NOZZLE Weld No. JP-A-4 Weld Type BUTT
 Examiner BILLY ANDERSON ASNT Level II
 Data Taker JOHN DECKER ASNT Level III
 Search Angle 45° U.T. Procedure 83-1 Rev. 4
 Scan Sens: X2 51 dB Other _____ Evaluation Sens: X1 45 dB
 Couplant SONOTRACE

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
X			X
X			X

Benchmark or Referenced "O" Location: TDC

L₀ = TDC W₀ = 1/2 OF WELD

L =	Inches From Ref	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		

NO RECORDABLE INDICATIONS

Reviewed by Steve H. Miller ASNT TC 1A Level II III





ULTRASONIC EXAMINATION DATA FORM

Exam Form 015
Cal. Form No. 013

Site PEAK/BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-84
 System JET PUMP INST. NOZZLE Weld No. JP-B-4 Weld Type BUTT
 Examiner BILLY ANDERSON ASNT Level II
 Data Taker JOHN DECKER ASNT Level III
 Search Angle 45° U.T. Procedure 83-1 Rev. 1
 Scan Sens: X2 51dB Other: _____ Evaluation Sens: X1 45dB
 Couplant SONOTRACE

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
X			X
X			X

Benchmark or Referenced "O" Location: TDC

L₀ = TDC W₀ = 2 CF WELD

L=	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
NO RECORDABLE INDICATIONS										

Reviewed by Wade Miller ASNT-TC-1A Level II III



ULTRASONIC EXAMINATION DATA FORM

Exam Form 016
 Cal Form No 013

Site PEACH BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-84
 System JET PUMP INS. NOZZLE Weld No. JP-A-5 Weld Type BUTT
 Examiner BILLY ANDERSON ASNT Level II
 Data Taker JOHN DECKER ASNT Level III
 Search Angle 45° U.T. Procedure 83-1 Rev. 4
 Scan Sens X2 51dB Other _____ Evaluation Sens: X1 45dB
 Couplant SONO TRACE

EXAMINATIONS.

Performed		Indication	
Yes	No	Yes	No
X			X
X			X

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Benchmark or Referenced "O" Location: TDC
 $L_0 =$ TDC $W_0 =$ 2 OF WELD

L =	Inches From Ref	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										NO RECORDABLE INDICATIONS

Reviewed by Wade H Miller ASNT TC IA Level II III



ULTRASONIC EXAMINATION DATA FORM

Exam Form 017
Cal. Form No. 013

Site PEACH BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-84
 System JET AMP INST. NOZZLE Weld No. JP-B-5 Weld Type BUTT
 Examiner BILLY ANDERSON ASNT Level II
 Data Taker JOHN DECKER ASNT Level III
 Search Angle 450 U.T. Procedure 83-1 Rev. 4
 Scan Sens X2 51 dB Other _____ Evaluation Sens: X1 45 dB
 Couplant SCAOTRACE

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
X			X
X			X

Benchmark or Referenced "O" Location: TDC

L₀ = TDC W₀ = 2 CF WELD

L =	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
NO RECORDABLE INDICATIONS										

Inspected by: Hale H. Miller ASNT TC-1A Level II III

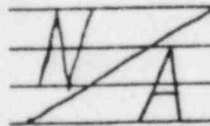


PIPE UT CALIBRATION DATA SHEET

SITE PEACH BOTTOM UNIT 3 Preoperational I.S.I.
 SYSTEM JET PUMP INST. NOZZLE CALIBRATION BLOCK NO. 6A-PEB
 PROCEDURE NO. 83-1 REV. 4 CALIBRATION SHEET NO. 018
 DATE 6-10-84 COUPLANT SONOTRACE IIW-2 BLOCK NO. 790339
 EXAMINER J. DECKER ASNT LEVEL III
 DATA TAKER B. ANDERSON ASNT LEVEL II
 INSTRUMENT MODEL NO. SONIC MK-1 INSTRUMENT SERIAL NO. 04057E
 CABLE NO. C-2 CABLE TYPE BNC TO MCD CABLE LENGTH 6'

TRANSDUCER DATA

STRAIGHT BEAM ANGLE BEAM
 SERIAL NO. 023752
 IDENTITY GAMMA
 FREQUENCY 5 MHz
 SIZE .25

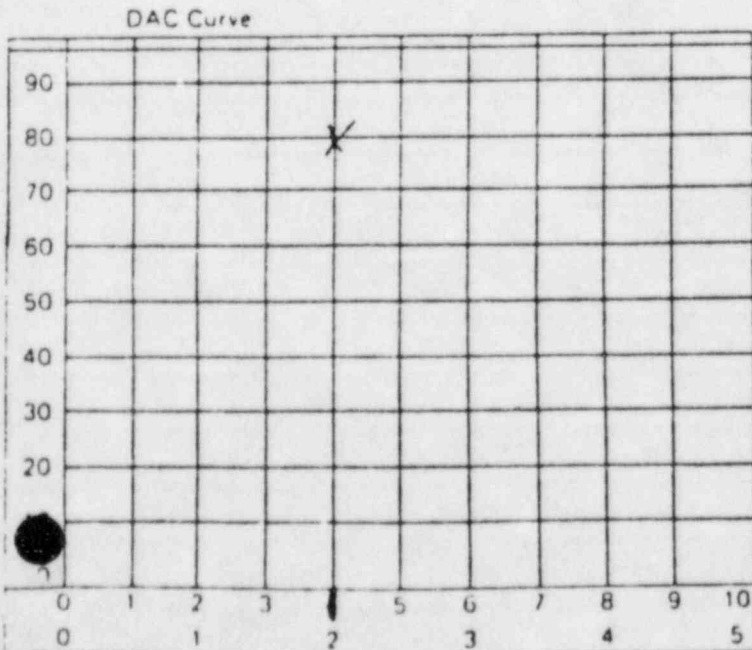


SHOE TYPE N/A
 SHOE NO. N/A
 SHOE ANGLE 0°
 MODE LONGITUDINAL

REFLECTORS ORIENTED PARALLEL OR TRANSVERSE TO WELD SEAM (Cross Out One)

CAL STD TEMP _____

INSTRUMENT SETTINGS:



	START	FINISH
Uncalibrated Gain	N/A	N/A
Coarse Sweep	N/A	N/A
Fine Sweep	.89	.89
Coarse Range	1	1
Fine Range	.57	.57
Scanning Gain	54dB	54dB
Attenuation (in)	N/A	N/A
Evaluating Gain	48dB	48dB
Attenuation (in)	N/A	N/A
Filter Position	H1	H1
Rep Rate	3K	3K
Damping	MIN	MIN
Reject	OFF	OFF

IT

Hole Depth "T" Inches	Gain @ 1X	Max. Amp.	"W" Inch	D or MP Inch	SDH or FBH
1/4	1X	80%	N/A	4.0	N/A
1/2	1X	N/A	N/A	N/A	N/A
3/4	1X	N/A	N/A	N/A	N/A
2% D. Notch	1X	N/A	N/A	N/A	N/A
2% D. Notch	1X	N/A	N/A	N/A	N/A

Initial Calibration Time 1600

Periodic Checks:

Time	Value	Last Data Sheet
_____	_____	_____
_____	_____	_____
_____	_____	_____

Final Check:
1615 100% 020

Calibration in Depth (D) or Metal Path (MP)

Amplitude Linearity Check (Made Daily)			
100% FSH	<u>48</u>	% FSH	50% FSH <u>25</u> % FSH
90% "	<u>45</u>	"	40% " <u>20</u> "
80% "	<u>40</u>	"	30% " <u>15</u> "
70% "	<u>35</u>	"	20% " <u>10</u> "
60% "	<u>28</u>	"	_____

Control Linearity (Made Daily)	
80% FSH	-6db <u>40</u> (32-48)
80% "	-12db <u>20</u> (16-24)
40% "	+ 6db <u>80</u> (64-96)
20% "	+12db <u>80</u> (64-96)

Equip Data - Straight Beam For Linearity Checks	
11W-2	<u>790339</u>
Transducer Data:	
Serial No.	<u>E02406</u>
Beam Angle	<u>450</u>
Size	<u>.375</u> * Freq. <u>1.5 MHz</u>
Shoe No.	<u>SSI-3</u> Cable No. <u>C-2</u>
Check Made By: <u>J DECKER</u>	

Checks on 11W-2

Block on 1/8" SDH for Field Calib.
Checks @ Max Amp. for Both Near & Far
Positions in % Screen Height

1/8" SDH	Near	Far
Max. Amp.	<u>N/A</u> %	<u>N/A</u> %
Metal Path	<u>N/A</u> "	<u>N/A</u> "

Reviewed by Kidas F. Miller III
SNT-TC Level



PIPE UT CALIBRATION DATA SHEET

SITE PEACHBOTTOM UNIT 3 Preoperational I.S.I.
 SYSTEM JET PUMP INST. NOZZLE CALIBRATION BLOCK NO. 21-PEB
 PROCEDURE NO. 83-1 REV. 4 CALIBRATION SHEET NO. 021
 DATE 6-10-84 COUPLANT SONO TRACE IIW-2 BLOCK NO. 790339
 EXAMINER J. DECKER ASNT LEVEL III
 DATA TAKER B. ANDERSON ASNT LEVEL II
 INSTRUMENT MODEL NO. SONIC MK-1 INSTRUMENT SERIAL NO. 04057E
 CABLE NO. C-2 CABLE TYPE PWC TO MCD CABLE LENGTH 6'

TRANSDUCER DATA

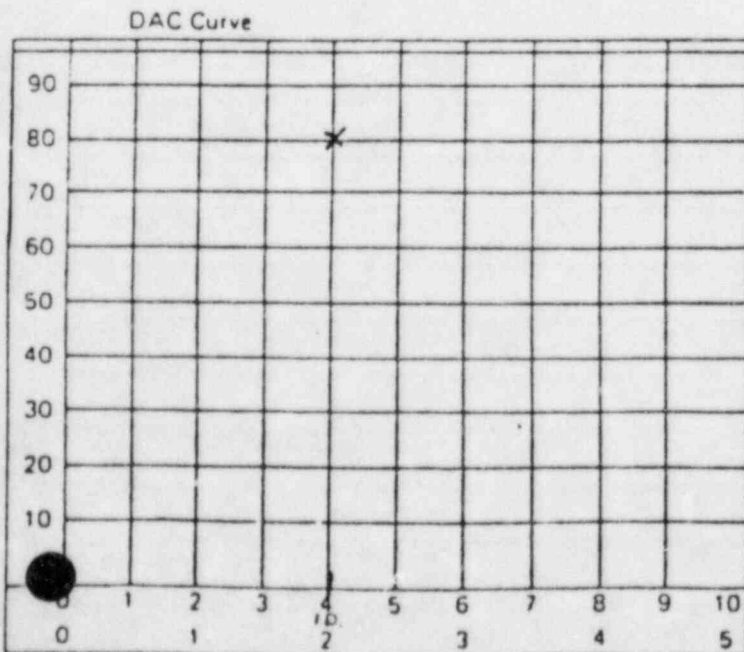
	STRAIGHT BEAM	ANGLE BEAM
SERIAL NO.	<u>D23752</u>	_____
IDENTITY	<u>GAMMA</u>	_____
FREQUENCY	<u>5 MHZ</u>	_____
SIZE	<u>.25"</u>	_____

SHOE TYPE N/A
 SHOE NO. N/A
 SHOE ANGLE 0°
 MODE LONGITUDINAL

REFLECTORS ORIENTED PARALLEL OR TRANSVERSE TO WELD SEAM (Cross Out One)
 COUPLANT SONO TRACE

CAL STD TEMP _____

INSTRUMENT SETTINGS:



Uncalibrated Gain
 Coarse Sweep
 Fine Sweep
 Coarse Range
 Fine Range
 Scanning Gain
 Attenuation (in)
 Evaluating Gain
 Attenuation (in)
 Filter Position
 Rep Rate
 Damping
 Reject

	START	FINISH
Uncalibrated Gain	N/A	N/A
Coarse Sweep	N/A	N/A
Fine Sweep	.94	.94
Coarse Range	1	1
Fine Range	.62	.62
Scanning Gain	54dB	54dB
Attenuation (in)	N/A	N/A
Evaluating Gain	48dB	48dB
Attenuation (in)	N/A	N/A
Filter Position	H1	H1
Rep Rate	3K	3K
Damping	MIN	MIN
Reject	OFF	OFF

1 T

Hole Depth "T" Inches	Gain @ 1X	Max. Amp.	"W" Inch	D or MP Inch	SDH or FBH
1/4 .75	1X	80%	N/A	4.0	N/A
1/2	1X	N/A	N/A	N/A	N/A
3/4	1X	N/A	N/A	N/A	N/A
2% I.D. Notch	1X	N/A	N/A	N/A	N/A
2% O.D. Notch	1X	N/A	N/A	N/A	N/A

Initial Calibration Time 1620

Periodic Checks:

Time	Value	Last Data Sheet
_____	_____	_____
_____	_____	_____
_____	_____	_____

Final Check:

1630 100% 023

Calibration in Depth (D) or Metal Path (MP)

Amplitude Linearity Check (Made Daily)					
100% FSH	<u>48</u>	% FSH	50% FSH	<u>25</u>	% FSH
90% "	<u>45</u>	"	40% "	<u>20</u>	"
80% "	<u>40</u>	"	30% "	<u>15</u>	"
70% "	<u>35</u>	"	20% "	<u>10</u>	"
60% "	<u>28</u>	"			

Control Linearity (Made Daily)		
80% FSH	-6db	<u>40</u> (32-48)
80% "	-12db	<u>20</u> (16-24)
40% "	+ 6db	<u>80</u> (64-96)
20% "	+12db	<u>80</u> (64-96)

Equip. Data - Straight Beam For Linearity Checks	
11W-2	<u>790339</u>
Transducer Data:	
Serial No.	<u>E02406</u>
Beam Angle	<u>45°</u>
Size	<u>.375"</u> Freq. <u>1.5 MHz</u>
Shoe No.	<u>SSI-3</u> Cable No. <u>C-2</u>
Check Made By:	
<u>J. DECKER</u>	

Checks on 11W-2

Block on 1/8" SDH for Field Calib.

Checks @ Max Amp. for Both Near & Far
Positions in % Screen Height

1/8" SDH	Near	Far
Max. Amp.	<u>N/A</u> %	<u>N/A</u> %
Metal Path	<u>N/A</u> "	<u>N/A</u> "

Reviewed by Wade H. Miller III
SNT-TC Level



ULTRASONIC EXAMINATION DATA FORM

Exam Form 022
Cal. Form No. 021

Site PEACH BOTTOM UNIT 3 Preoperational I.S.I. Date 6-10-84
 System JET PUMP INSINOZ Weld No. JP-A-1 Weld Type BUTT
 Examiner BILLY ANDERSON ASNT Level: II
 Data Taker N/A ASNT Level _____
 Search Angle 0° U.T. Procedure 83-1 Rev. 4
 Scan Sens: X2 54 Other _____ Evaluation Sens: X1 48
 Couplant SONOTRAC

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
	X		X
	X		X

Benchmark or Referenced "O" Location: T.D.C.

L₀ = T.D.C. W₀ = ϕ OF WELD

L =	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										NO RECORDABLE INDICATIONS
										O/S TRS = .840
										WELD TRS = .850
										S/S TRS = .840

Reviewed by Steve F. Miller ASNT-TC-1A Level II III



ULTRASONIC EXAMINATION DATA FORM

Exam Form 023

Cal. Form No. 021

Site PEACH BOTTOM UNITS Preoperational I.S.I. Date 6-10-84

System JET PUMP INST NOZ. Weld No. JP-B-1 Weld Type BUTT

Examiner BILLY ANDERSON ASNT Level II

Data Taker N/A ASNT Level N/A

Search Angle 0° U.T. Procedure 83-1 Rev _____

Scan Sens X2 54 Other _____ Evaluation Sens X1 48

Couplant SONOTRACE

EXAMINATIONS

Performed		Indication	
Yes	No	Yes	No
	X		X
	X		X

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Benchmark or Referenced "O" Location T.D.C

L₀ : T.D.C. W₀ : ¢ OF WELD

Inches from Ref	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp W _m	Metal Path			Examination	Scanning Mode & Remarks
					W ₁	W _m	W ₂		
									NO RECORDABLE INDICATIONS
									S/S TKS. .840
									WELD .850
									C/S TKS .840

Reviewed by Wade H. Miller ASNT TC 1A Level II III

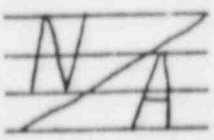


PIPE UT CALIBRATION DATA SHEET

SITE PEACH BOTTOM UNIT 3 Preoperational I.S.I.
 SYSTEM JET PUMP INST. NOZZLE CALIBRATION BLOCK NO. HT-6274
 PROCEDURE NO. 83-1 REV. 4 CALIBRATION SHEET NO. 024
 DATE 6-10-84 COUPLANT SONOTRACE IIW-2 BLOCK NO. 790339
 EXAMINER J. DECKER ASNT LEVEL III
 DATA TAKER B. ANDERSON ASNT LEVEL II
 INSTRUMENT MODEL NO. SONIC MK-1 INSTRUMENT SERIAL NO. 04057E
 CABLE NO. C-2 CABLE TYPE BNC to MCD CABLE LENGTH 6'

TRANSDUCER DATA

STRAIGHT BEAM ANGLE BEAM
 SERIAL NO. 023752
 IDENTITY GAMMA
 FREQUENCY 5 MHz
 SIZE .25"

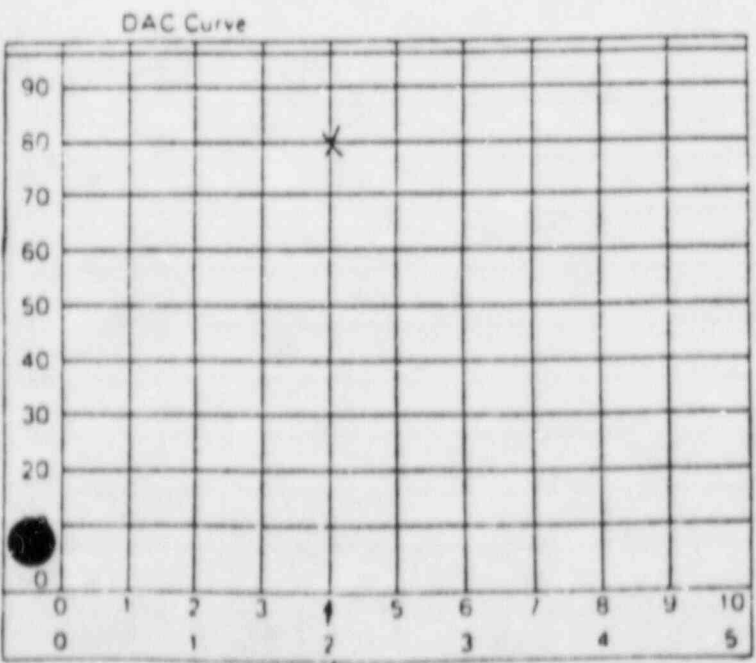


SHOE TYPE N/A
 SHOE NO. N/A
 SHOE ANGLE 0°
 MODE LONGITUDINAL

REFLECTORS ORIENTED PARALLEL OF TO WELD SEAM (Cross Out One)
 OR TRANSVERSE

CAL STD TEMP _____

INSTRUMENT SETTINGS:



	START	FINISH
Uncalibrated Gain	N/A	N/A
Coarse Sweep	N/A	N/A
Fine Sweep	.94	.94
Coarse Range	1	1
Fine Range	.62	.62
Scanning Gain	54dB	54dB
Attenuation (in)	N/A	N/A
Evaluating Gain	48dB	48dB
Attenuation (in)	N/A	N/A
Filter Position	HI	HI
Rep Rate	3K	3K
Damping	MIN	MIN
Reject	OFF	OFF

Hole Depth "T" Inches	Gain @ 1X	Max. Amp.	"W" Inch	D or MP Inch	SDH or FBH	
1/4	337	1X	80%	N/A	4.0	N/A
1/2	N/A	1X	N/A	N/A	N/A	N/A
3/4	N/A	1X	N/A	N/A	N/A	N/A
2" @ Notch	N/A	1X	N/A	N/A	N/A	N/A
2" @ Notch	N/A	1X	N/A	N/A	N/A	N/A

Initial Calibration Time 1645

Periodic Checks:

Time	Value	Last Data Sheet
_____	_____	_____
_____	_____	_____
_____	_____	_____

Final Check:

1700 100% 026

Calibration in Depth (D) or Metal Path (MP)

Amplitude Linearity Check (Made Daily)			
100% FSH	<u>48</u>	% FSH	50% FSH <u>25</u> % FSH
90% "	<u>45</u>	"	40% " <u>20</u> "
80% "	<u>40</u>	"	30% " <u>15</u> "
70% "	<u>35</u>	"	20% " <u>10</u> "
60% "	<u>30</u>	"	_____

Control Linearity (Made Daily)	
80% FSH	-6db <u>40</u> (32-48)
80% "	-12db <u>20</u> (16-24)
40% "	+ 6db <u>80</u> (64-96)
20% "	+12db <u>80</u> (64-96)

Equip. Data - Straight Beam For Linearity Checks	
11W 2	<u>790339</u>
Transducer Data:	
Serial No	<u>E02406</u>
Beam Angle	<u>45°</u>
Size	<u>.375"</u> Freq. <u>1.5 MHz</u>
Shoe No	<u>SS1-3</u> Cable No. <u>C-2</u>
Check Made By:	
<u>J. DECKER</u>	

Checks on 11W-2

Block on 1/8" SDH for Field Calib.

Checks @ Max Amp. for Both Near & Far

Positions in % Screen Height

1/8" SDH	Near	Far
Max. Amp.	<u>N/A</u> %	<u>N/A</u> %
Metal Path	<u>N/A</u> "	<u>N/A</u> "

Reviewed by Madu F Miller III SNT TC Level



ULTRASONIC EXAMINATION DATA FORM

Exam Form 025
Cal. Form No. 024

Site LEACH BOTTOM # 3 Preoperational I.S.I. Date 6-10-84
 System JET RAMP INST. NOZ. Weld No. JPA-2 Weld Type BUTT
 Examiner BILLY ANDERSON ASNT Level II
 Data Taker N/A ASNT Level N/A
 Search Angle 00 U.T. Procedure 83-1 Rev. 4
 Scan Sens: X2 54 Other _____ Evaluation Sens: X1 48
 Couplant SONOTRACE

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
	X		X
	X		X

Benchmark or Referenced "O" Location T.D.C.

L₀ = T.D.C. W₀ = 1/2 of weld

L ₀	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	DAC 1X Amp W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										NO RECORDABLE INDICATIONS
										U.S. TKS = .360
										WELD = .365
										D.S. TKS = .360

Reviewed by Wade H. Miller ASNT TC 1A Level II III



ULTRASONIC EXAMINATION DATA FORM

Exam Form 026
 Cal. Form No. 024

Site Peach Bottom Unit 3 Preoperational I.S.I. Date 6-10-84
 System Jet Repair NOZ Weld No. JP-B-2 Weld Type Butt
 Examiner Billy Anderson ASNT Level II
 Data Taker N/A ASNT Level N/A
 Search Angle 0° U.T. Procedure 83-1 Rev. 4
 Scan Sens. X2 54 Other _____ Evaluation Sens: X1 48
 Couplant SONOTRACE

EXAMINATIONS

Performed		Indication	
Yes	No	Yes	No
	X		X
	X		X

- 1 Angle beam for reflectors parallel to weld
- 2 Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Benchmark or Referenced "O" Location T.D.C.
 L₀ T.D.C. W₀ 1/2 of weld

L [*]	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										NO RECORDABLE INDICATIONS
										US. TKS. = .340
										weld = .360
										D.S. TKS = .340

Reviewed by Stade H. Miller ASNT TC 1A Level II III



PIPE UT CALIBRATION DATA SHEET

SITE PEACH BOTTOM UNIT 3
 SYSTEM JET PUMP INST, NOZZLE
 PROCEDURE NO. 83-1 REV. 4
 DATE 6-10-84 COUPLANT SONOTRACE
 EXAMINER J. DECKER
 DATA TAKER B. ANDERSON
 INSTRUMENT MODEL NO. SONIC MK-1
 CABLE NO. C-2 CABLE TYPE BNC to MCD CABLE LENGTH 6'

Preoperational I.S.I.
 CALIBRATION BLOCK NO. 5A-PEB
 CALIBRATION SHEET NO. 027
 IIW-2 BLOCK NO. 790339
 ASNT LEVEL III
 ASNT LEVEL II
 INSTRUMENT SERIAL NO. 04057E

TRANSDUCER DATA

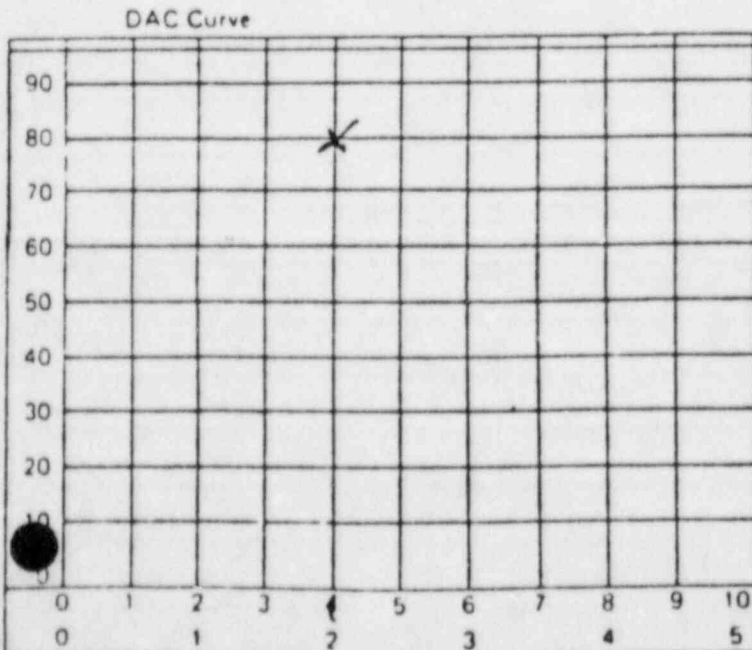
	STRAIGHT BEAM	ANGLE BEAM
SERIAL NO.	<u>D23752</u>	
IDENTITY	<u>GAMMA</u>	<u>N/A</u>
FREQUENCY	<u>5 MHz</u>	<u>A</u>
SIZE	<u>.25"</u>	

SHOE TYPE N/A
 SHOE NO. N/A
 SHOE ANGLE 0°
 MODE LONGITUDINAL

REFLECTORS ORIENTED PARALLEL OR TRANSVERSE TO WELD SEAM (Cross Out One)
 COUPLANT SONOTRACE

CAL STD TEMP _____

INSTRUMENT SETTINGS:



Uncalibrated Gain
 Coarse Sweep
 Fine Sweep
 Coarse Range
 Fine Range
 Scanning Gain
 Attenuation (in)
 Evaluating Gain
 Attenuation (in)
 Filter Position
 Rep Rate
 Damping
 Reject

START	FINISH
N/A	N/A
N/A	N/A
.94	.94
1	1
.62	.62
54dB	54dB
N/A	N/A
48dB	48dB
N/A	N/A
HI	HI
3K	3K
MIN	MIN
OFF	OFF

Hole Depth "T" Inches	Gain @ 1X	Max. Amp.	"W" Inch	D or MP Inch	SDH or FBH	
1/4	.432	1X	80%	N/A	4.0	N/A
1/2	N/A	1X	N/A	N/A	N/A	N/A
3/4	N/A	1X	N/A	N/A	N/A	N/A
2% @ D Notch	N/A	1X	N/A	N/A	N/A	N/A
2% @ D Notch	N/A	1X	N/A	N/A	N/A	N/A

Initial Calibration Time 1705

Periodic Checks:

Time	Value	Last Data Sheet
_____	_____	_____
_____	_____	_____
_____	_____	_____

Final Check:
1720 100% 029

Calibration in Depth (D) or Metal Path (MP)

Amplitude Linearity Check (Made Daily)			
100% FSH	<u>48</u>	% FSH	50% FSH <u>25</u> % FSH
90% "	<u>45</u>	"	40% " <u>20</u> "
80% "	<u>40</u>	"	30% " <u>15</u> "
70% "	<u>35</u>	"	20% " <u>10</u> "
60% "	<u>28</u>	"	_____

Control Linearity (Made Daily)	
80% FSH	-6db <u>40</u> (32-48)
80% "	-12db <u>20</u> (16-24)
40% "	+6db <u>80</u> (64-96)
20% "	+12db <u>80</u> (64-96)

Equip. Data - Straight Beam For Linearity Checks	
11W 2	<u>790339</u>
Transducer Data:	
Serial No.	<u>502406</u>
Beam Angle	<u>45°</u>
Size	<u>.375"</u> Freq. <u>1.5 MHz</u>
Shoe No.	<u>SS1-3</u> Cable No. <u>C-2</u>
Check Made By <u>J. DECKER</u>	

Checks on 11W-2
Block on 1/8" SDH for Field Calib
Checks @ Max Amp. for Both Near & Far
Positions in % Screen Height

1/8" SDH	Near	Far
Max. Amp.	<u>N/A</u> %	<u>N/A</u> %
Metal Path	<u>N/A</u> "	<u>N/A</u> "



ULTRASONIC EXAMINATION DATA FORM

Exam Form 028
Cal. Form No. 027

Site Peak Preoperational I.S.I. Date 6-10-84
 System Jet Pump INST. NOZ Weld No. JP-A-3 Weld Type BUTT
 Examiner BILLY ANDERSON ASNT Level II
 Data Taker N/A ASNT Level N/A
 Search Angle 0° U.T. Procedure 83-1 Rev. 4
 Scan Sens X2 54 Other _____ Evaluation Sens: X1 48
 Couplant SONOTRACÉ

EXAMINATIONS

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
	X		X
	X		X

Benchmark or Referenced "O" Location: T.D.C.

$L_0 =$ T.D.C. $W_0 =$ 1/2 of weld

L=	Inches from Ref	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp W _m	Metal Path			Exami- nation	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										US TKS = .560 weld = .580 D.S. TKS = .560

Reviewed by Hadef Miller ASNT TC 1A Level II III





ULTRASONIC EXAMINATION DATA FORM

Exam Form 029
Cal. Form No. 027

Site Beach Bottom Unit 3 Preoperational I.S.I. Date 6-10-84
System Jet Pump INST. NO. 2 Weld No. JP-B-3 Weld Type Butt
Examiner BILLY ANDERSON ASNT Level II
Data Taker N/A ASNT Level N/A
Search Angle 0° U.T. Procedure 83.1 Rev. 4
Scan Sens X2 54 Other _____ Evaluation Sens: X1 48
Couplant SONOTRAK

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
	X		X
	X		X

Benchmark or Referenced "O" Location: T.D.C.
W₀ = 1/2 of weld

L =	Inches From Ref	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										<u>NO RECORDABLE INDICATIONS</u>
										<u>US = .560</u>
										<u>Weld = .560</u>
										<u>DS = .560</u>

Reviewed by Wade F. Miller ASNT TC 1A Level II III



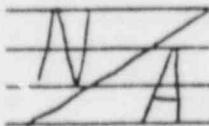
INSTALLATION & SERVICE
ENGINEERING DIVISION

PIPE UT CALIBRATION DATA SHEET

SITE PEAKH BOTTOM UNIT 3 Preoperational I.S.I.
 SYSTEM JET PUMP INST. NOZZLE CALIBRATION BLOCK NO. 11A-PEB
 PROCEDURE NO. 83-1 REV. 4 CALIBRATION SHEET NO. 030
 DATE 6-10-84 COUPLANT SONO TRACE IIW-2 BLOCK NO. 790337
 EXAMINER J. DECKER ASNT LEVEL III
 DATA TAKER B. ANDERSON ASNT LEVEL II
 INSTRUMENT MODEL NO. SONIC MK-1 INSTRUMENT SERIAL NO. 04057E
 CABLE NO. C-2 CABLE TYPE BNC TO MCD CABLE LENGTH 6'

TRANSDUCER DATA

STRAIGHT BEAM ANGLE BEAM
 SERIAL NO. D23752
 IDENTITY GAMMA
 FREQUENCY 5 MHz
 SIZE .25

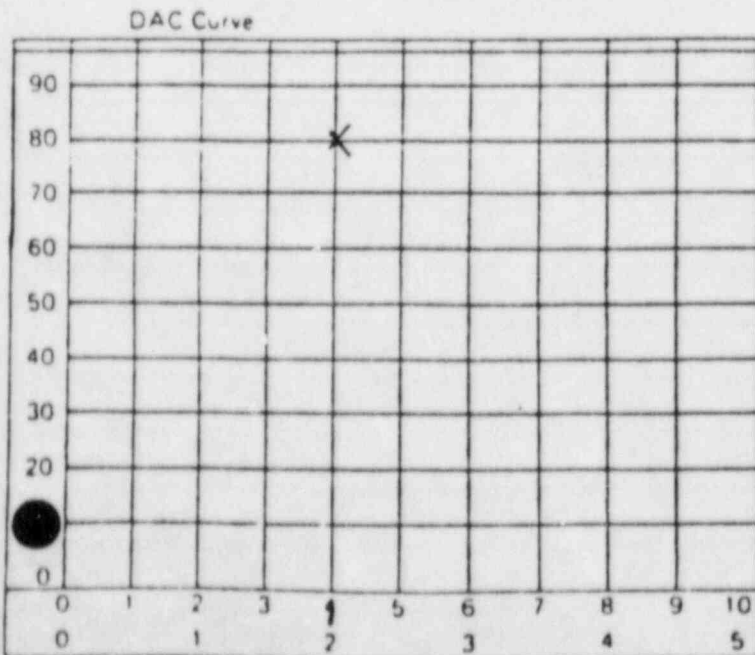


SHOE TYPE N/A
 SHOE NO. N/A
 SHOE ANGLE 0°
 MODE LONGITUDINAL

REFLECTORS ORIENTED PARALLEL OR TRANSVERSE TO WELD SEAM (Cross Out One)
 COUPLANT SONO TRACE

CAL STD TEMP _____

INSTRUMENT SETTINGS:



Uncalibrated Gain
 Coarse Sweep
 Fine Sweep
 Coarse Range
 Fine Range
 Scanning Gain
 Attenuation (in)
 Evaluating Gain
 Attenuation (in)
 Filter Position
 Rep Rate
 Damping
 Reject

START	FINISH
N/A	N/A
N/A	N/A
.89	.89
1	1
.57	.57
54dB	54dB
N/A	N/A
48dB	48dB
N/A	N/A
H1	H1
3K	3K
MIN	MIN
OFF	OFF

IT

Hole Depth "T" Inches	Gain @ 1X	Max. Amp.	"W" Inch	D or MP Inch	SDH or FBH
1/4	1X	80%	N/A	4.0	N/A
1/2	1X	N/A	N/A	N/A	N/A
3/4	1X	N/A	N/A	N/A	N/A
2% D. Notch	1X	N/A	N/A	N/A	N/A
2% O.D. Notch	1X	N/A	N/A	N/A	N/A

Initial Calibration Time 1730

Periodic Checks:

Time	Value	Last Data Sheet
_____	_____	_____
_____	_____	_____
_____	_____	_____

Final Check:

1750 100% 034

Calibration in Depth (D) or Metal Path (MP)

Amplitude Linearity Check (Made Daily)			
100% FSH	<u>48</u>	% FSH	50% FSH <u>25</u> % FSH
90% "	<u>45</u>	"	40% " <u>20</u> "
80% "	<u>40</u>	"	30% " <u>15</u> "
70% "	<u>35</u>	"	20% " <u>10</u> "
60% "	<u>28</u>	"	_____

Control Linearity (Made Daily)	
80% FSH	-6db <u>40</u> (32-48)
80% "	-12db <u>20</u> (16-24)
40% "	+ 6db <u>80</u> (64-96)
20% "	+12db <u>80</u> (64-96)

Equip. Data - Straight Beam For Linearity Checks	
11W-2	<u>490339</u>
Transducer Data:	
Serial No.	<u>E02406</u>
Beam Angle	<u>45°</u>
Size	<u>.375"</u> Freq. <u>1.5 MHz</u>
Shoe No.	<u>SS1-3</u> Cable No. <u>C-2</u>
Check Made By:	
<u>J. DECKER</u>	

Checks on 11W-2

Block on 1/8" SDH for Field Calib.

Checks @ Max Amp. for Both Near & Far

Positions in % Screen Height

1/8" SDH	Near	Far
Max. Amp.	<u>N/A</u>	<u>N/A</u>
Metal Path	<u>N/A</u>	<u>N/A</u>



ULTRASONIC EXAMINATION DATA FORM

Exam Form 031

Cal. Form No. 030

Site Leach Bottom #3 Preoperational I.S.I. Date 6-10-89
 System Jet Pump Inst No. 2 Weld No. JP-A-4 Weld Type Butt
 Examiner Billy Anderson ASNT Level II
 Data Taker N/A ASNT Level N/A
 Search Angle 0° U.T. Procedure 83-1 Rev. 4
 Scan Sens X2 54 Other _____ Evaluation Sens: X1 48
 Couplant SONOTRACE

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
	X		X
	X		Y

Benchmark or Referenced "O" Location T.D.C.

L₀ T.D.C W₀ 1/2 of weld

L ₀	Inches From Ref	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										US = .760 Weld = 780 D.S. = .760

Reviewed by Steve Miller ASNT TC-1A Level II III



ULTRASONIC EXAMINATION DATA FORM

Exam Form 032
Cal. Form No 030

Site Peak Bottom Unit 3 Preoperational I.S.I. Date 6-10-84
 System Jet Pump Inst. No. 2 Weld No JP-B-4 Weld Type Butt
 Examiner Billy Anderson ASNT Level II
 Data Taker N/A ASNT Level N/A
 Search Angle 0° U.T. Procedure 83-1 Rev. 4
 Scan Sens x2 54 Other _____ Evaluation Sens X1 48
 Couplant Sonotrace

EXAMINATIONS

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
	X		X
	X		X

Benchmark or Referenced 'O' Location T.D.C.

L₀ = T.D.C. W₀ = 1/2 of weld

L ₀	Inches From Ref	W ₁ inches	W _m inches	W ₂ inches	NDAC 1X Amp W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										US = 720 Weld = 720 DS = 720
										NO RECORDABLE INDICATIONS

Reviewed by Madison Miller ASNT TC 1A Level II III



ULTRASONIC EXAMINATION DATA FORM

Exam Form 033
 Cal. Form No. 030

Site Peach Bottom Unit 3 Preoperational I.S.I. Date 6-10-84
 System Jet Pump Inst. No. 2 Weld No. JP-A-5 Weld Type Butt
 Examiner Billy Anderson ASNT Level II
 Data Taker N/A ASNT Level N/A
 Search Angle 0° U.T. Procedure 83-1 Rev. 4
 Scan Sens: X2 54 Other _____ Evaluation Sens: X1 48
 Couplant SONOTRACE

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No
	X		X
	X		X

Benchmark or Referenced "O" Location: T.D.C.

L₀ = T.D.C. W₀ = 1/2 of weld

L =	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										US = .770 weld = .780 DS = .770

Revised by Wade H. Miller ASNT-TC-1A Level II III



ULTRASONIC EXAMINATION DATA FORM

Exam Form 034
Cal. Form No. 030

Site Peak Bottom Unit 3 Preoperational I.S.I. Date 6-10-84
 System Jet Pump Inst. No. 2 Weld No. JP-B-5 Weld Type BUTT
 Examiner BILLY ANDERSON ASNT Level II
 Data Taker N/A ASNT Level N/A
 Search Angle 0° U.T. Procedure 83.1 Rev. 4
 Scan Sens: X2 54 Other _____ Evaluation Sens: X1 48
 Couplant SONOTAC

EXAMINATIONS:

Performed		Indication	
Yes	No	Yes	No
	X		X
	X		X

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Benchmark or Referenced "O" Location: T. D. C.

L₀ = T. D. C. W₀ = 1/2 of weld

L =	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		
										NO RECORDABLE INDICATIONS
										US = 1,720
										WELD = 750
										DS = 1,720

Reviewed by Wade F. Miller ASNT-TC-1A Level II III

SW. R. I. WELD ULTRASONIC EXAMINATION RECORD

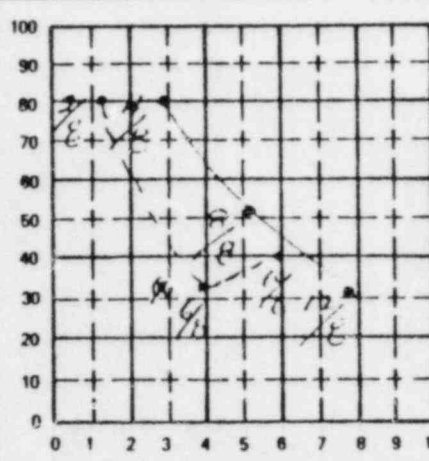
PROJECT NO. : 174336	SITE : Peach Bottom Atomic Power Station, Unit 2	DATE : (DAY-MON-YR) 11 JAN 84	TIME (24 HR - CLOCK) SHEET STARTED 2340 SHEET ENDED 2440	SHEET NO. 480073	
EXAMINATION AREA (SYST./COMPONENT) JET Pump Instrumentation	(LINE / SUBASSEMBLY) JP-A	(IDENTIFICATION) 2	L ₀ LOCATION : 1	W ₀ LOCATION : 4 of WLD	
EXAMINER : W Williams	SNT LEVEL : II	PROCEDURE : NO. 800 36 REV. 25 REV. 13	CALIBRATION SHEET(S) 90011	ANGLE USED 0° 45° 45° 60° OTHER SCANNING DB N/A 69 69 N/A N/A	WELD TYPE : SAFE END → Reducer
EXAMINER : Tom JOHANSON	SNT LEVEL : II				

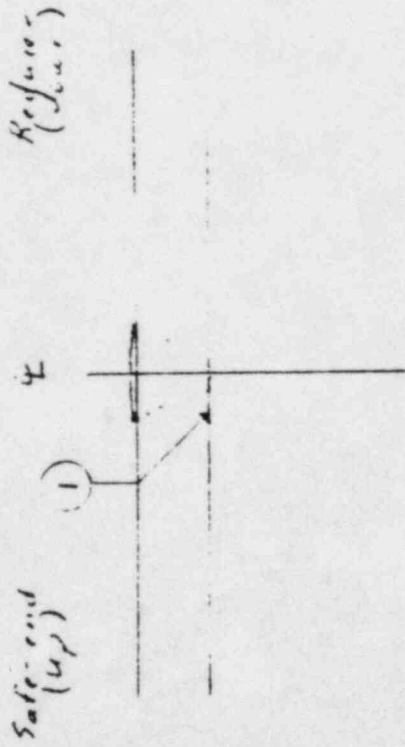
IND. NO.	% OF DAC	W MAX		L ₁	L	L ₂	SEARCH UNIT ANGLE	SEARCH UNIT LOCATION	DAMPS (IF YES, EXPLAIN)	REMARKS	INI
		W	MP	50% DAC	MAX	50% DAC					
1	20	9/16	.48	1/4"	3/4"	1 5/16"	45°	UP	NO	* +14db Switch L ₁ & L ₂ measurements recorded at baseline	FD
							45°	ON WELD MAX 112% metal			FD
							45°	CON W/10 UP/D			FD
							45°	D			FD

REMARKS : AZIMUTH 105° (CW)
 PARTIAL EXAM FROM 0" L TO 4" L AND FROM 10 1/4" L TO 0" L MEASURING COUNTERCLOCKWISE

EXAMINATION AREA LIMITATION (IF NONE , SO STATE) :			
EXAMINATION LIMITED DOWNSTREAM TO 1 1/2" TO 4" AND 1 1/4" TO 1 3/4" DUE TO MAXIMUM OF REDUCER			
REVIEWED BY : Russell L. Turner	SNT LEVEL : II	DATE : 12 Jan 84	PAGE 1 OF 1

SwRI SONIC INSTRUMENT CALIBRATION RECORD

PROJECT NO. 174336		SITE Peach Bottom Atomic Power Station, Unit 2		DATE (DAY MO YR) 11 Jun 84		TIME (24 HR. CLOCK) 2235		SHEET NO. 190011						
1) EXAMINER (SIGNATURE) <i>R. W. Williams</i>		SNT LEVEL <i>II</i>	PROCEDURE No. 800 36 *	INSTRUMENT SONIC MARK <i>I I I I I I I I</i>	SERIAL NO. 04337E	CALIBRATION VERIFICATION								
2) EXAMINER <i>JOHN JOHANSON</i>		SNT LEVEL <i>II</i>	Rev. 24 Dev. 13	COUPLANT <input checked="" type="checkbox"/> Glycerine <input type="checkbox"/> Water <input type="checkbox"/> Other (Specify)						TIME 12 June 1984	<i>FINAL</i>			
SEARCH UNITS			REFERENCE BLOCK S/N <i>SS-DC-2</i>			NOMINAL ANGLE <i>N/A</i>	<i>N/A</i>	<i>N/A</i>						
NOMINAL ANGLE <i>45°</i>	<i>N/A</i>		NOMINAL ANGLE			SIGNAL DISTANCE IN INCHES								
MEASURED ANGLE <i>43°</i>			SIGNAL DISTANCE IN INCHES			SCREEN DISTANCE IN INCHES								
BRAND <i>AEROTECH</i>	SERIAL NUMBER(S) <i>J06943</i>		SCREEN DISTANCE IN INCHES											
SIZE <i>1/4 Rd</i>														
FREQUENCY (MHZ) <i>2.25</i>														
INSTRUMENT SETTINGS			 <p>REFERENCE REFLECTOR <input type="checkbox"/> Flat Block <input checked="" type="checkbox"/> Axial --- <i>11.1x</i> <input checked="" type="checkbox"/> Circumferential --- <i>N.T.H.</i> <input type="checkbox"/> Other</p> <p>10 SCREEN DIVISIONS - 2 INCHES</p> <p>LONGITUDINAL <input type="checkbox"/> SHEAR <input checked="" type="checkbox"/></p>			ADDITIONAL INFORMATION								
REJECT <i>0</i>	<i>N/A</i>					AMPLITUDE DETERMINATION 5/8 VEE PATH								
DEC <i>OFF</i>						45°	<i>3/8</i>	<i>dB</i>	% FSH	60°	<i>3/8</i>	<i>N</i>	<i>dB</i>	% FSH
FINE dB <i>3</i>						5/8	<i>dB</i>	<i>4</i>	% FSH	5/8	<i>dB</i>	<i>4</i>	% FSH	
COARSE dB <i>60</i>						8 dB				8 dB				
5 dB SWITCH <i>UP</i>														
14 dB SWITCH <i>UP</i>														
FREQUENCY <i>2</i>														
DELAY <i>139-1</i>														
MATL. CAL. <i>311</i>														
RANGE <i>2</i>														
DAMPING <i>MIN</i>														
REP. RATE <i>3K</i>														
FILTER <i>H1</i>														
VIDEO <i>NORM</i>														
TRAN. MODE <i>NORMAL</i>														
JACK USED <i>R</i>														
20 ± 14 dB = <i>100 % N/A % %</i>														
METHOD PRIMARY <i>14 dB S.U.T.H</i>														
SECONDARY <i>N/A</i>														
REVIEWED BY <i>Russell L. Turner</i>		SNT LEVEL <i>II</i>	DATE <i>12 Jun 84</i>											
REMARKS <i>Calibrated Reflectors Have been verified at scanning speeds. Hole sensitivity setting at 1/2 cc SW</i>						EXAMINATION AREA <i>PUMP INSTRUMENTATION AT 105° AZIMUTH CW</i>								



JP-A-2
 Russell L. Jensen Level 2
 12 Jan 87

SW. R. I. WELD ULTRASONIC EXAMINATION RECORD

PROJECT NO. : 174336	SITE : Peach Bottom Atomic Power Station, Unit 2	DATE : (DAY-MON.-YR) 12 June 54	TIME (24 HR - CLOCK) SHEET STARTED 00-2 SHEET ENDED 0030	SHEET NO. : 48007	
EXAMINATION AREA : (SYS. / COMPONENT) TFT string	(LINE / SUBASSEMBLY) JF - B	(IDENTIFICATION) 2	L ₀ LOCATION 1	W ₀ LOCATION : 6 of weld	
EXAMINER J M. haliski	SNT LEVEL II	PROCEDURE NO. 80036	CALIBRATION SHEET(S) 140053	ANGLE USED 0° 45° 45°T 60° OTHER	WELD TYPE : SAFE END → REVER
EXAMINER S Sorbern	SNT LEVEL II	REV. 13 4/1/53	SCANNING DB N/A	11/50 * 13/50 * N/A N/A	

IND. NO.	% OF DAC	W MAX		L ₁ 50% DAC	L MAX	L ₂ 50% DAC	SEARCH UNIT ANGLE	SEARCH UNIT LOCATION	DAMPS (IF YES, EXPLAIN)	REMARKS	INI
		W	MP								
1	40	3/8	.28	0	1/2	7/8	45°	Down	NO DAMP	* Plus 14dB switch pm Indication 1 & 2 could be seen	pm
2	56	5/8	.48	13 1/2	1/2	7/8	45°	Down	NO DAMP	Tangentially looking clockwise at lower amplitudes	pm
NO RECORDABLE INDICATIONS							45°	UP			pm
NO RECORDABLE INDICATIONS							45° TAN	UP			pm
NO RECORDABLE INDICATIONS							45° T	UP/Down			pm

REMARKS : PARTIAL Exam from 0 to 4' incl 10' to 11' 0' pm

EXAMINATION AREA LIMITATION (IF NONE , SO STATE) :

Limited from L 2 1/2' to 11 5/8' DUE TO REDUCED ... DOWN STEEL SIDE pm

REVIEWED BY : <i>Russell S. Turner</i>	SNT LEVEL : II	DATE : 12 Jun 54	PAGE 1 OF 1
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SwRI SONIC INSTRUMENT CALIBRATION RECORD

PROJECT NO 174336	SITE Peach Bottom Atomic Power Station, Unit 2	DATE (DAY MO YR) 11 JUN 84	TIME (24 HR CLOCK) 2034	SHEET NO 190053
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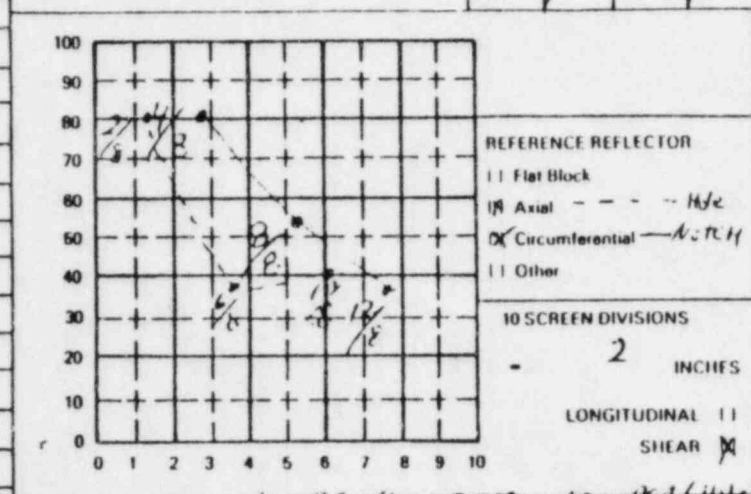
1) EXAMINER (SIGNATURE) <i>John Mikulak</i>	SNT LEVEL II	PROCEDURE No. 11-A	INSTRUMENT SONIC MARK M I I I I I I I I I	SERIAL NO 31158	CALIBRATION VERIFICATION				
2) EXAMINER S. SORBERN	SNT LEVEL II	Dev.:	COMPLIANT <input checked="" type="checkbox"/> Glycine <input type="checkbox"/> Water <input type="checkbox"/> Other (Specify)						

SEARCH UNITS		
NOMINAL ANGLE	45°	N/A
MEASURED ANGLE	44°	N/A
BRAND	SERIAL NUMBER(S)	
AZK TECH	0C1953	
SIZE	1/4 RD	
FREQUENCY (MHZ)	2.25	

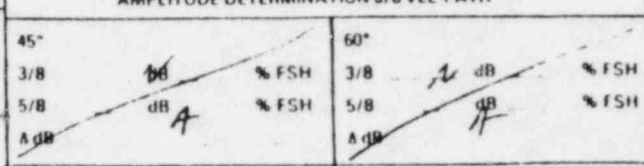
REFERENCE BLOCK S/N 55-DC-2	NOMINAL ANGLE N/A	N/A
SIGNAL DISTANCE IN INCHES		
SCREEN DISTANCE IN INCHES	V	V

N/A (TEMPERATURE)					
INITIALS	pm	pm			

INSTRUMENT SETTINGS		
REJECT	0	N/A
DEC	OFF	N/A
FINE dB	13	N/A
COARSE dB	50	N/A
8 dB SWITCH	UP	
14 dB SWITCH	UP	
FREQUENCY	2	
DELAY	192-1	
MATL CAL	283	
RANGE	2	
DAMPING	MIN	
REP RATE	3K	
FILTER	H1	
VIDEO	NORM	
TRAN. MODE	NORMAL	
JACK USED	R	
20% +14 dB =	100%	N/A
METHOD PRIMARY	+14dB switch	
SECONDARY	N/A	



ADDITIONAL INFORMATION



CABLE TYPE		INITIAL CAL. BLOCK	
RG 62	RG 174	TEMP	PYROMETER S/N
Other:	Other:	INST LINEARITY SHEET No	
Length:	Length:	REAM SPREAD SHEET No(s)	
1.21 in		N/A	

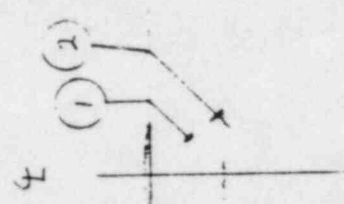
BASIC CALIBRATION BLOCK NO.	4-55-80-337-10-PEB (Hole)
REMARKS:	Calibration Reflectors have been verified at scanning speed per Hole sensitivity setting 17/50

EXAMINATION AREA	Actual Exam JET pump
	Instrumentation AT 285° Azimuth
	J.P.B.

REVIEWED BY: <i>Maxwell L. Turner</i>	SNT LEVEL: II	DATE: 12 Jun 84
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Safe end
(up)

red end
(down)



TP-8-2

Russell S. Turner Level II

12 Jan 84

June 15, 1984

PEACH BOTTOM UNIT #3

ULTRASONIC EXAMINATION OF
JET PUMP INSTRUMENTATION PENETRATION SEAL WELD NO. 2

June 10 and 11, 1984

SUPPLEMENT NO. 1 TO SUMMARY REPORT DATED JUNE 11, 1984

The General Electric Company, in conjunction with our NDE subcontractor, Sonic Systems International, performed ultrasonic examinations on the five Jet Pump Instrumentation safe end and penetration assembly welds on Peach Bottom Unit #3. Since indications were found only in the No. 2 weld on both the A and B assemblies, this Supplement will therefore deal with only the examination of the No. 2 welds.

The configuration of the #2 weld in the jet pump instrumentation penetration seal assembly does not allow a complete examination. The restriction is caused by insufficient scanning area due to interference from the weld crown and the taper on the reducer. (See attached Figure 1.)

The first (information only) examination was attempted with a 3/8" diameter, 45° search unit calibrated for sweep distance only. This examination revealed the following:

- 1) A smaller search unit would be required.
- 2) The configuration was more restrictive than originally anticipated.
- 3) Indications were detected at very low amplitudes suggesting that modification to the search unit would be required to obtain additional examination volume.

As a result of the first examination, 1/4" diameter 45° search units were obtained, and the wedges were field modified to allow the maximum scanning possible. The modifications consisted of removing the maximum possible amount of wedge material from both the leading and trailing wedge surfaces. The leading surface was radiused to reflect the modification induced wedge noise away from the transducer. The radius was designed to retain the maximum amount of potting material and all signal splitting grooves. The over-all wedge size reduction (gain in scanning area) was .160".

The modified wedge was then used to examine the No. 2 welds on both the "A" and "B" loop penetration seals. At the time of the examination, the effects of the restriction had not been determined due to the lack of detailed information on the actual configuration.

When the design and construction information was made available, the restriction to the examination was determined by creating a full-scale stretch-out of the configuration and applying the modified wedge dimensions. The gain in scanning dimensions was .080" in the forward direction and .080" in the rearward direction. Figure 2 shows a standard and a modified 45° wedge, their dimensions, and the examined volume for each. Please note that, had only standard (non-modified) wedges been used, the indication could have gone undetected.

The ultrasonic data from both of the No. 2 welds exhibited crack-like indications. Both the graphic plotting and UT operator's observations confirmed that IGSCC was a definite possibility. The restrictions to the examination discussed above, and further detailed in the attached sketches, prevented gathering of necessary sizing data. These restrictions also prevented use of alternate standard (60° or 70°) search angles. Attempts to field modify 60° and 70° shoes resulted in wedge noise that rendered them useless for examination purposes.

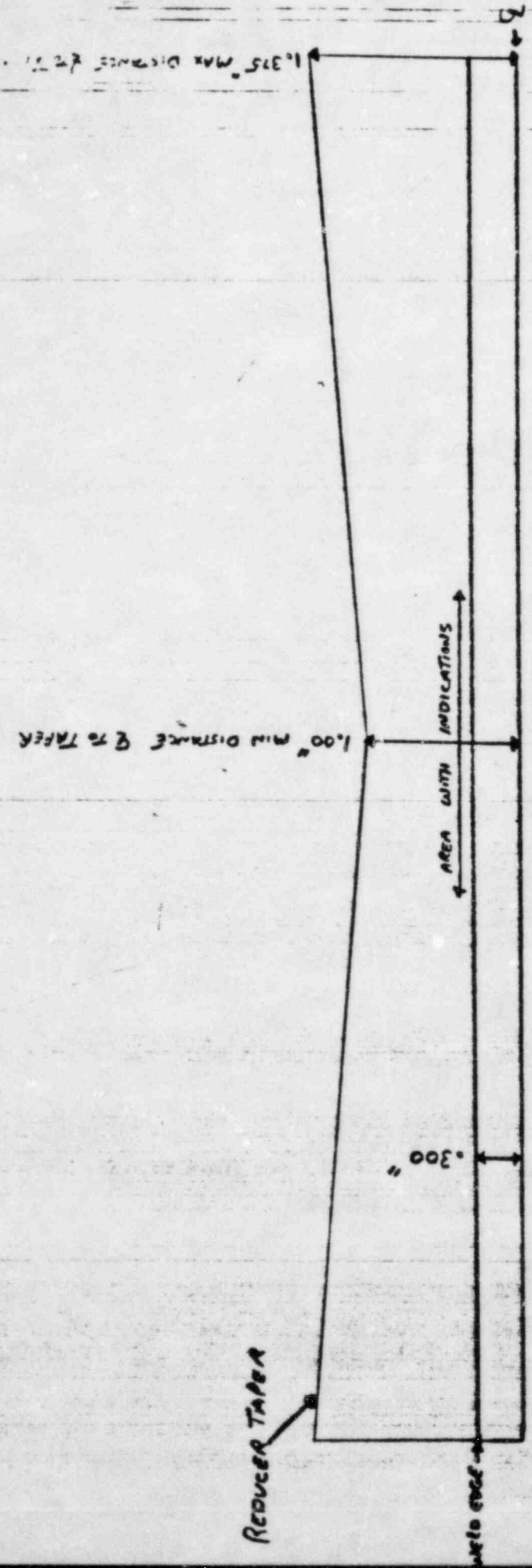
Following the GE examinations, PECO had a third party examine portions of the No. 2 welds in an attempt to confirm GE's data. It is our understanding that data correlation was excellent.

As a result of the restrictions, sizing for through-wall dimension had to be attempted on a best-effort basis using available data. The crack depths were shown as 22% and 49% with the caveat that more, rather than less, depth was to be expected. Due to the magnitude of the restrictions on the examination, it was not possible to determine if the crack depths exceeded the stated percentages or, if so, by how much.

The attached plots, sketches, reports, and data sheets document the efforts by GE/PECO to examine and analyze these weldments.

Wade F. Miller

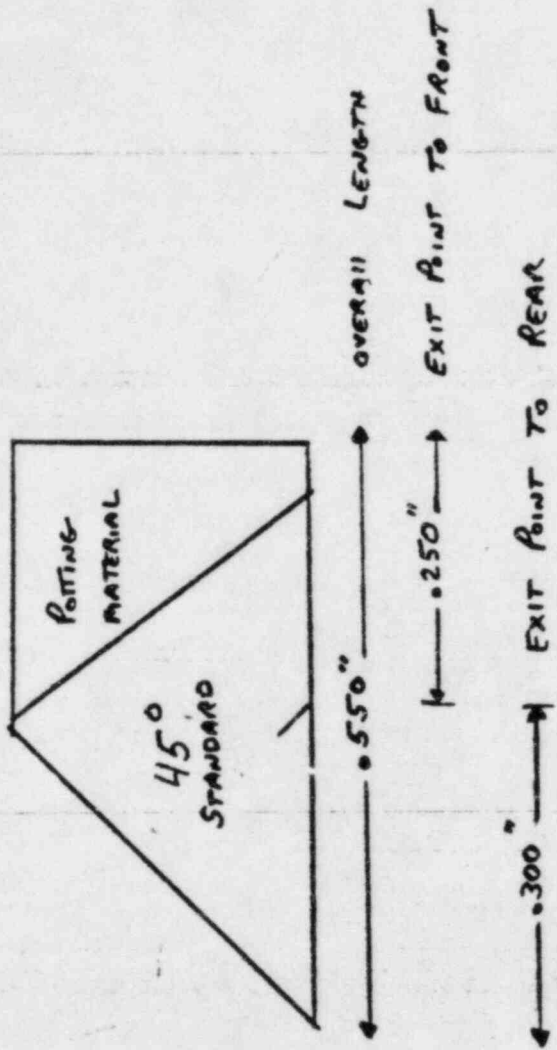
Wade F. Miller
GE/A&ES - Eastern Service Department
Level III Examiner



THIS SKETCH SHOWS THE CONFIGURATION AND DIMENSIONS THAT CAUSED
 A LIMITED EXAMINATION OF THE #2 WELDS.

WTH
 6/15/84

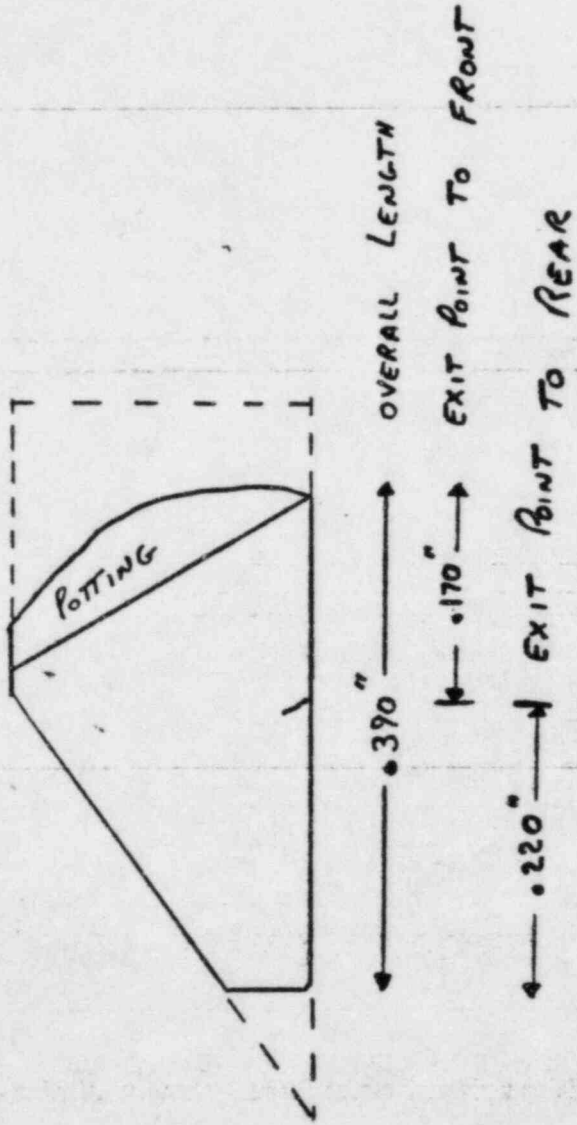
FIGURE 1



THIS SKETCH SHOWS THE DIMENSIONS OF A STANDARD 45° WEDGE DESIGNED FOR A 1/4" DIAMETER TRANSDUCER.

WFM
6/15/84

FIGURE 2a

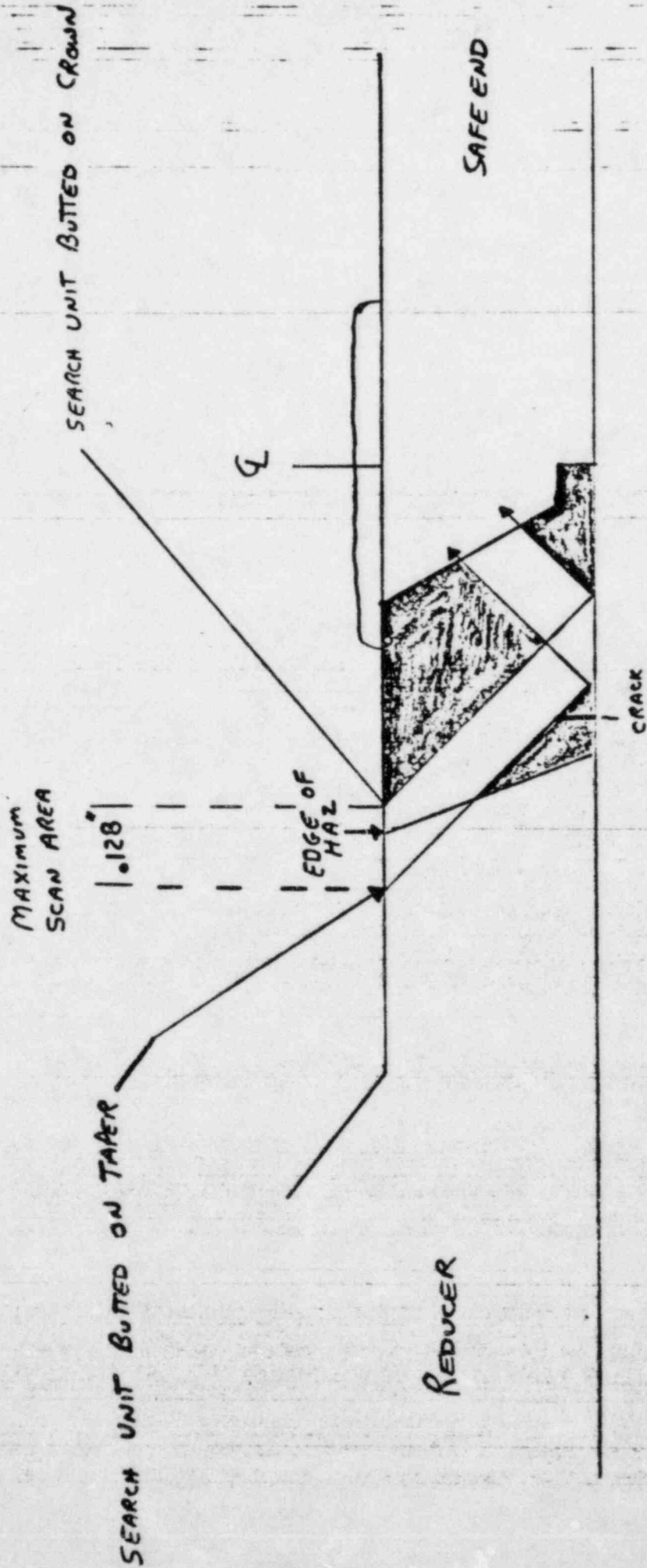


THIS SKETCH SHOWS THE DIMENSIONS OF THE FIELD MODIFIED
 WEDGE USED TO EXAMINE THE #2 WELDS

WFM
 6/15/84

FIGURE 2b

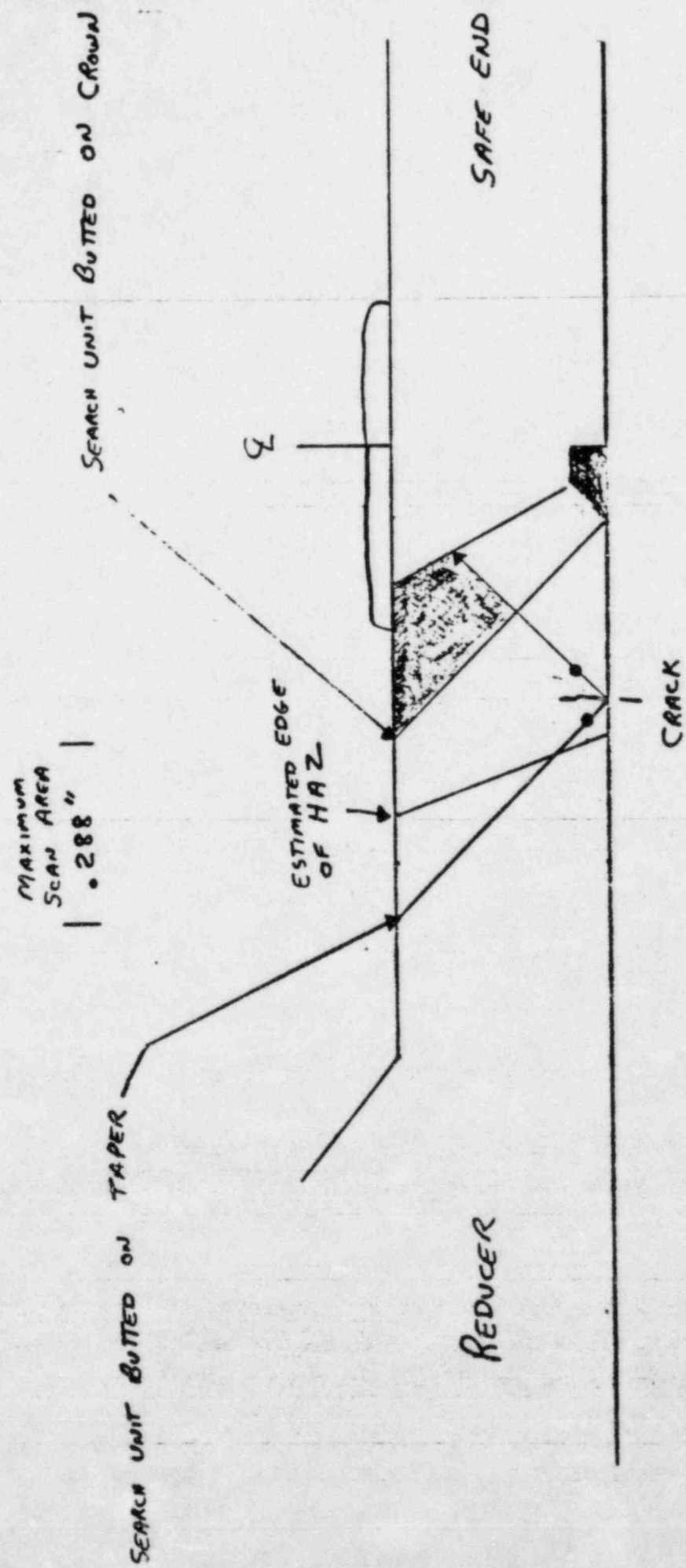
FIGURE 2 C



SKETCH SHOWING MAXIMUM SCAN AREA USING A STANDARD 45° WEDGE. SKETCH DRAWN AT 4 X FOR CLARITY. UNEXAMINED VOLUME SHADED. NOTE CRACK LOCATION.

WFM
6/15/84

FIGURE 2 d



SKETCH SHOWING MAXIMUM SCAN AREA USING THE MODIFIED
45° WEDGE. SKETCH DRAWN AT 4X FOR CLARITY. UNEXAMINED
VOLUME SHADED.

WFM
6/15/84



EASTERN SERVICE DEPARTMENT

PEACH BOTTOM ATOMIC POWER STATION

SUBJECT	ULTRASONIC EXAMINATION OF WELDS IN PIPE			
No.	P.B. 83-1	REV	4 PAGE	10F 20
PREPARED BY/DATE	E. J. Rye		3/16/83	
APPROVED BY/DATE	E. J. Rye		3/16/83	
QA APPROVED BY/DATE	[Signature]		3/17/83	

STATEMENT OF INTENDED USE

THIS DOCUMENT CONTAINS INFORMATION PREPARED BY THE GENERAL ELECTRIC COMPANY FOR THE PHILADELPHIA ELECTRIC COMPANY AND IS INTENDED FOR USE BY THE EMPLOYEES OF BOTH COMPANIES. IT IS SUBMITTED TO THE PHILADELPHIA ELECTRIC COMPANY UPON THE CONDITION THAT IT WILL BE USED IN THE CONDUCT OF PHILADELPHIA ELECTRIC COMPANY INTERNAL TECHNICAL WORK AND WILL NOT BE RELEASED BY THE PHILADELPHIA ELECTRIC COMPANY TO COMPETITORS OF THE GENERAL ELECTRIC COMPANY, WILL NOT BE DISTRIBUTED FOR GENERAL INDUSTRY AND WILL NOT BE USED DIRECTLY OR INDIRECTLY IN AN UNFAIR COMPETITIVE MANNER TO THE INTERESTS OF THE GENERAL ELECTRIC COMPANY.

PROCEDURE CHANGES

CHANGES TO THIS PROCEDURE WILL BE MADE IN ACCORDANCE WITH GENERAL ELECTRIC QUALITY ASSURANCE MANUAL, AND APPROVED BY PECO ENGINEERING.

PECO APPROVAL

PECO Engineering Approval A R Diederich Date 4/5/83
PCG 4/5/83

REVIEWED BY [Signature]

APR 7 1983

PHILA. ELECTRIC CO. INSPECTION SECTION

REVIEWED BY



LIST OF EFFECTIVE PAGES

<u>PAGE</u>	<u>REVISION</u>	<u>DATE</u>	<u>COMMENTS</u>
• 1	4	03/14/83	Cover Page
• LA	4	03/14/83	List of Effective Pages
2	0	12/01/82	
3	2	01/03/83	
4	3	03/14/83	
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6	0	12/01/82	
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8	1	12/03/82	
9	3	02/04/83	
10	1	12/03/82	
11	3	02/04/83	
12	1	12/03/82	
13	0	12/01/82	
14	2	01/03/83	
15	2	01/03/83	
16	2	01/03/83	
17	2	01/03/83	
18	2	01/03/83	
19	2	01/03/83	
20	2	01/03/83	



1.0 SCOPE

- 1.1 The ultrasonic pulse echo contact method examination described herein is applicable to full penetration circumferential and longitudinal welds in piping systems.
- 1.2 The applicable material thickness range is from 0.200 to 2.50 inches.
- 1.3 This procedure covers angle beam shear wave ultrasonic examination of piping welds and a straight beam longitudinal wave examination of piping base material through which the angle beam passes.

2.0 APPLICABLE DOCUMENTS

- 2.1 Codes and Standards. The following documents form a part of this specification to the extent specified herein.
 - a. American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code
 - (1) Section V, Nondestructive Examination, Article 5, 1974 Edition, Summer 1975 Addenda
 - (2) Section XI, Inservice Inspection of Nuclear Power Plant Components, 1974 Edition, Summer 1975 Addenda
 - b. American Society for Nondestructive Testing (ASNT)
 - (1) Recommended Practice for Nondestructive Testing Personnel Qualification and Certification, SNT-TC-1A, Ultrasonic Testing Method - 1975 Edition

3.0 DESCRIPTION

- 3.1 The objective of the methods given herein is the location and recording of indications within the counter bore area, the heat affected zone, the fusion zone and the base material within two thicknesses (2T) of the weld. The examination shall be performed from the outside surface of the piping system.

4.0 REQUIREMENTS

4.1 Personnel

- 4.1.1 All personnel performing ultrasonic examinations shall be certified to at least Level I in accordance with SNT-TC-1A, Ultrasonic Testing. Level I personnel shall perform the



- 4.1.2 All personnel reviewing the results of the ultrasonic examinations shall be certified to at least Level II in accordance with SNT-TC-1A, Ultrasonic Testing.
- 4.1.3 When actual samples containing IGSCC are available at the jobsite, all inspection teams shall be trained on these samples prior to their performing any actual examinations. The purpose of this training is to allow the inspection teams to become familiar with the appearance and behavior of IGSCC indications in welded samples and to demonstrate their proficiency to the satisfaction to the person(s) responsible for evaluating the results of the examinations. The duration of the training shall be at the discretion of the responsible individual(s).

4.2 Equipment

- 4.2.1 Pulse echo ultrasonic equipment shall be used with contact search units. The ultrasonic instrument shall be equipped with a dB calibrated gain or attenuation control.
- 4.2.2 Angle beam shear wave examination shall be performed using single element transmit/receive or dual element pitch-catch ceramic type search units having a nominal frequency from 1.0 to 2.25 MHz. Other frequencies may be used to obtain adequate penetration or resolution.
 - 4.2.2.1 The size and configuration of search units should conform to the chart below. If piping geometry (weld crown width, mismatch, etc.) preclude the use of the recommended search unit(s), alternative search units may be used. The use of any alternative search unit(s) shall be documented as well as the reason the alternative was necessary.

<u>Pipe Outer Diameter (In.)</u>	<u>Wall Thickness (In.)</u>	<u>Search Unit</u>
Less Than 4.500	Less Than .750	1/4 Dia. or 1/4 sq. Single 1/4 x 3/8 *Dual
	Greater Than .750	1/4 x 3/4 *Dual
Over 4.500 Through 12.750	Less Than .750	1/2 Dia. or 1/2 Sq. Single 3/8 x 3/4 *Dual
		1/4 x 3/8 *Dual
	Greater Than .750	3/8 x 3/4 *Dual
		1/4 x 3/8 *Dual 1/2 Dia. or 1/2 Sq. Single



<u>Outer Diameter (In.)</u>	<u>Wall Thickness (In.)</u>	<u>Search Unit</u>
12.750 thru 20.000	Less Than .750	1/2 Dia. or 1/2 Sq. Single
		3/8 x 3/4 *Dual
		1/4 x 3/8 *Dual
	Greater Than .750	3/8 x 3/4 *Dual
		1/4 x 3/8 *Dual
		1/2 Dia. or 1/2 Sq. Single
20.000	Less Than .750	1/2 Dia. or 1/2 Sq. Single
		3/8 x 3/4 *Dual
		1/4 x 3/8 *Dual
	Greater than .750	3/8 x 3/4 *Dual
		1/4 x 3/8 *Dual
		1/2 Dia. or 1/2 Sq. Single

Search units must be qualified on a cracked sample prior to use on piping welds. Qualification may take place on site, if a cracked sample is available, or at a location designated by the plant owner. If an alternative search unit is required due to piping geometry, etc., qualification of the alternative shall be at the discretion of the plant owner.

For piping 12.750" OD and larger, consideration should be given to qualifying the smallest size search unit possible to minimize radiation exposure.

In selection of the focal length of dual element search units should be used. The focal point should fall as close as possible to the pipe ID to avoid crossing over beyond the focal point. When an examination requires a vee path calibration focused dual element search units should not be used.

4.2.3 Wedges shall be used to produce shear wave beam angles of 45 degrees, + 3 deg. - 3 deg., as determined using the IFT-2 ultrasonic calibration block. The distance from the index point of the wedge to the front end of the wedge should be short enough to permit 1/2 node examination of the near side of the weld root fusion zone without placing the transducer on the weld reinforcement. Where a 1/2 node examination cannot be performed, wedges producing shear wave beam angles up to 70° + 3° may be used or a DAC may be constructed to allow for I-1/2 vee path examination.

4.2.4 Couplants. Glycerine, ultra gel - II or Hercules powder 7H and demineralized water shall be used. Alternate couplants require approval by BWRSD Materials Engineering.

4.3 Calibration Blocks

4.3.1 Field Examinations: The primary calibration blocks shall be



- 4.3.2 An IIW-2 ultrasonic calibration block shall be used during calibration to establish angle beam index point and beam angle as required in paragraphs 4.4.6.1 and 4.4.6.2.

4.4 Equipment Calibration

- 4.4.1 Calibration shall include the complete ultrasonic examination system. Any change in search units, test shoes, (wedges), couplants, cables or ultrasonic instruments shall be cause for recalibration.

- 4.4.2 The calibration data shall be recorded and plotted for each calibration on the Calibration Data Sheet (Figure 1). These sheets shall be numbered in sequence with the Examination Data Sheets (Figure 2).

4.4.3 Instrument Calibration

- 4.4.3.1 Laboratory: At the beginning of each period of continuous use, (or every three months, whichever is less), the ultrasonic instrument shall be checked for amplitude linearity and amplitude control linearity per Paragraphs 4.4.4 and 4.4.5, respectively.

- 4.4.3.2 Field: After any transport of the instruments in any commercial carrier, the instruments shall be checked per Paragraphs 4.4.4 and 4.4.5, respectively. These checks shall also be repeated once each week for the duration of the field examination.

4.4.4 Amplitude Linearity Check

An angle beam search unit shall be positioned on a block and signals obtained from two reflectors. The search unit position shall be adjusted to give an exact 2-to-1 ratio of amplitudes between the two. The gain control (sensitivity) shall be adjusted and the larger signal brought to 80 percent of full screen height (FSH), adjust position if necessary, maintaining the 2:1 signal ratio. Without moving the search unit, the gain control shall be adjusted to successively set the larger signal from 100 percent to 20 percent FSH in 10 percent increments. The smaller indication shall be read at each setting. The signal amplitude must be 50 percent of the larger amplitude within five percent of FSH. Instruments that do not meet this requirement shall not be used. The data shall be recorded on the calibration data sheet provided.



4.4.5 Amplitude Control Linearity Check. The angle beam search unit shall be positioned on a calibration block and a peaked signal amplitude obtained from a hole. The indication shall be brought as near as possible to 80 percent FSH with the dB control. If necessary, the final adjustment to 80 percent FSH is made with the variable gain control. Using only the dB control, the dB changes indicated below shall be made and the resulting amplitude compared with the allowable amplitude limits. The resultant signal must fall within the amplitude limits as specified below. Instruments that do not meet these limits shall not be used. The procedure shall be repeated for the 40 percent and 20 percent FSH amplitudes and the data recorded on the calibration data sheet.

<u>Initial Amplitude Set of % FSH</u>	<u>dB Control Change</u>	<u>Amplitude Limits % FSH</u>
80	-6	32 to 48
80	-12	16 to 24
40	+6	64 to 96
20	+12	64 to 96

4.4.6 Beam Angle Determination

4.4.6.1 Determination of Angle Beam Index. The angle beam search unit is positioned on the IIW-2 calibration block so the beam is directed toward the four-inch radius surface. Move the search unit parallel to the sides of the calibration block until a maximum echo is obtained from the reflecting radius. The beam index point is now above the center line of the radius. Place a mark on the side of the angle beam wedge to identify the index point.

4.4.6.2 Determination of Beam Angle. Place the angle beam search unit on the IIW-2 calibration block and obtain a peak signal amplitude from the two-inch diameter hole. Read the refracted beam angle from the side of the calibration block using the angle which corresponds with the beam index point and record it on the Calibration Data Sheet.

4.4.7 Sweep Range Calibration

The calibration block shall be used to calibrate the ultrasonic instrument search unit combination for sweep range over the metal path to be used.



8 Recalibration, Sweep Only

If any indication of the DAC curve has moved on the sweep line more than five percent of the sweep division reading, correct the sweep range calibration and note the correction on the Calibration Data Sheet. If recordable reflectors are noted on the examination data sheets, those data sheets shall be voided and destroyed. A new calibration shall be made and recorded, and the voided examination areas shall be re-examined.

9 Recalibration, Amplitude Only

If the amplitude on the DAC curve has changed by more than 20 percent of its amplitude when a check is made on the calibration standard, all data sheets since the last positive calibration check shall be marked void and destroyed. A new calibration shall be made and recorded and the voided examination areas shall be re-examined.

10 Verification of ZX Scanning Sensitivity

The dB switches required to obtain the scanning sensitivity shall be determined using the calibration standards. A reflected signal from one of the side-drilled calibration holes shall be detected and the amplitude adjusted to a level between 30 percent and 40 percent of Full Screen Height. Using the dB switches, increase the signal amplitude to twice the sensitivity level amplitude and record the setting change required. This dB change shall be used to obtain the minimum scanning sensitivity.

11 Scanning Rate

The manual scanning rate for angle beam scanning shall be sufficiently slow to allow careful observation of the ultrasonic instrument screen and shall not exceed six inches per second of search unit movement.

12 Calibration shall be performed at the beginning of each series of examinations on the calibration block applicable to the system(s) being examined. A calibration verification shall be made at the end of each series of examinations and at intervals not exceeding four hours during the examinations.

A curve representing 20 percent of the DAC level shall be marked on the display screen during calibration to aid in the determination of indication amplitude.



4.5 Surface Preparation

- 4.5.1 The base material scanning surface shall be free of weld spatter and any other condition that would interfere with free movement of the search unit or impair coupling of ultrasonic vibrations to and from the material being examined. Unacceptable surface conditions shall be reported to the customer.
- 4.5.2 Surface preparation and cleaning operations are not within the scope of this procedure.

5.0 CALIBRATION AND EXAMINATION

5.1 0 Degree Base Material Sensitivity Calibration

- 5.1.1 Position the search unit on the applicable Plant Owner's calibration standard and obtain a back reflection. Adjust the peak signal amplitude to 75 or 80 percent of the Full Screen Height and mark the position on the display screen. This point represents primary reference level for the base material examination. Record this calibration data on the Calibration Data Sheet.

5.2 0 Degree Base Material Examination

- 5.2.1 Scan the volume of base material through which the angle beam examination will be performed to detect reflectors that could interfere with the performance or the results of the angle beam examination. This examination is not intended to be used for acceptance or rejection of piping welds.

5.3 Angle Beam (45 Degree) Sensitivity and DAC Calibration

- 5.3.1 Position the search unit on the applicable Plant Owner's calibration standard and obtain the first point on the DAC curve using a sound path no less than 3/8 of the full skip distance. Adjust the peak signal amplitude to 75 or 80 percent of the full screen height and mark its position and amplitude on the display screen. Without changing the gain level, obtain the peak signal amplitude for the next two metal paths of the sound beam. Mark their position and amplitudes on the display screen. Signal responses for metal paths less than 3/8 of the full skip distance may be obtained by determining the 2/8 node response (off scale) to determine the shape of the DAC curve. Join the points with a smooth line, the length of which shall cover the examination range. This DAC line



When adjusted for acoustic equivalency, represents the primary reference level (IX Sensitivity) for the angle beam examination. Record this calibration data on the Calibration Data Sheet. This calibration shall be performed using reflectors parallel and transverse to the weld seam as applicable to the examinations to be performed.

* Vee path and skip distance are considered equivalent terms.

5.3.1.1 The 1/2 nodal and, if required, the 1-1/2 nodal point locations for the pipe to be examined shall be determined off the calibration standard notches or corners. Their location(s) shall be marked on the screen and on the calibration sheet. Their location shall be marked on the screen and on the calibration sheet.

5.3.2 Acoustic Equivalency

5.3.2.1 The calibration block shall be checked as follows for use in comparisons with the plant piping for acoustic equivalency:

- a) With the instrument at the primary instrument gain established in 5.3.1, set instrument for pitch/catch operation.
- b) Attach two 45 degree single element search units to the instrument T/R jacks.
- c) Couple the transmitting search unit to the calibration standard.
- d) Manipulate the receiving search unit on the calibration standard to obtain a maximum ($\% \text{ FSH}$) CRF indication from the received signal.
- e) Record the dB change required to bring the amplitude of the signal to approximately 80% FSH.

Angle Beam Examination

5.4.1 Establishing Primary Reference Level

5.4.1.1 The primary reference level shall be adjusted to provide acoustic equivalency between plant piping and the calibration standard as follows:

... shall be performed in 5.3.2.1 (a) and



- b) Set the instrument gain to the level established in 5.3.2.1 (e). In three equally spaced (120 degree) locations on the pipe weld perform the operations outlined in 5.3.2.1 (c) and (d).
- c) Determine average dB increase or decrease necessary to attain approximately 80 percent FSH. Record this dB difference on the ultrasonic examination data form and increase or decrease the instrument gain established in paragraph 5.3.1 by this amount.
- d) These steps (a)-(c) must be performed for each weld examined. Care must be exercised to insure that the instrument is returned to primary instrument gain prior to performing these steps.

5.4.2 Scanning Sensitivity Level

The scanning shall be performed at a gain setting equal to or greater than twice the primary reference level. At the scanning level, the operator should be able to distinguish reflectors from the I.D. root geometry, increasing the gain beyond 2X may be required to accomplish this.

5.4.3 Recording Sensitivity Level

Indications shall be recorded at the primary reference level (1x).

5.4.4 Scanning for Reflectors Oriented Parallel to the Weld

The search unit shall be placed on the contact surface with the beam aimed about 90 degrees to the weld and manipulated laterally and longitudinally so that the ultrasonic beam passes through 2T minimum of base material from the edge of the weld. In addition, the search unit shall be angulated 0 degrees (perpendicular to the weld) through 45 degrees to the right and left of the normal (perpendicular to the weld) scan. See Figure 4. This examination shall be performed from both sides of the weld where component geometry permits.



5.4.5 Scanning for Reflectors Oriented Transverse to the Weld

On prepared or sufficiently smooth surfaces the angle beam unit shall be aimed parallel to the longitudinal centerline of the weld with the search unit contacting the weld surface. The search unit shall be moved along the weld so that the sound beam passes through all the weld metal and weld HAZ on both sides of the weld where practical. Scanning shall be done in two directions 180 degrees to each other. In addition, the search unit shall be angulated from 0 degrees (parallel to the weld through 45 degrees, aimed at the weld) on both sides of the weld for parallel scanning. (See Figure 4).

5.4.6 Specific Area of Interest

Angle beam indications of intergranular stress corrosion cracking (if present) will be evident at the $\frac{4}{8}$ node or $\frac{1}{2}$ "Vee path" metal path distance.

DATA RECORDING

6.1 0 Degree Base Material Indications

6.1.1 Record on the data sheet all areas of base material which exhibit a total loss of back reflection. In addition, record all areas where intermediate reflector(s) with signal amplitudes equal to or greater than the remaining back reflection appear. If numerous overlapping indications of lesser amplitudes exist which in the opinion of the Level II might prevent a meaningful shear wave examination they shall be documented.

6.2 Angle Beam Indications

6.2.1 All angle beam indications in the HAZ or base material in excess of 20 percent of the primary reference level DAC shall be recorded on the Examination Data Sheets, Figure 2. Indications observed on the CRT, which emanate at the root (I.D. surface) and travel along the sweep toward the O.D. shall be investigated regardless of amplitude. Indications indicative of IGSCC shall be recorded.

6.3 Reference Positions for Physical Measurements

6.3.1 W_0 shall be the weld's centerline and shall be used for measuring transducer movements perpendicular to the weld. See Figure 3.

6.4 Selecting the Location of In Reference Point (if not previously)



6.4.1 Piping Within Containment

On horizontal pipe, L_0 reference shall be an axial line or point at the pipe top dead center. On vertical pipe, L_0 reference shall be an axial line or point on the pipe circumference farthest from the reactor pressure vessel.

6.4.2 Piping Outside Containment

On horizontal pipe, L_0 reference shall be an axial line or point at the pipe top dead center. When possible, on vertical pipe, the L_0 reference shall be selected by drawing an imaginary line down from the outermost radius of the next highest elevation elbow. When no elbows are in sight, the L_0 reference shall be an imaginary line on the pipe 180 degrees from the nearest wall or obstruction.

6.4.3 Pipe welds with indications may be stamped with low stress Y stamp. The Y stamp shall be placed on the circumferential weld centerline. The top of the Y shall be L_0 (for circumferential welds) and shall point in the direction from which measurements are made. For longitudinal piping welds, L_0 shall be the pipe circumferential weld centerline.

6.5 Method of Recording Examination Data

6.5.1 Figure 3 sketches the relationship between transducer movements (positions W_1 , W_m , W_2), weld center (W_0), weld reference point (L_0) and location and length of indications (L_1 and L_2). This attachment also contains a sample copy of an Examination Data Sheet. Hypothetical information based on the above sketch has been recorded on it.

6.5.2 Search unit positions W_1 and W_2 shall be recorded only when the wall thickness of the pipe exceeds one inch. Signals caused by geometric changes such as weld crown, mismatch, fitup ID preparations, etc., shall require recording of W_m , MP_m , the peak signal amplitude, and the length of the indication in inches or degrees azimuth.

6.5.3 The following "transducer positions" and "data to be recorded" information shall be recorded on the Examination Data Sheets for indications which exceed



Transducer Positions

- (a) W_1 - Distance between the search unit index point and the weld centerline (W_0) when the signal amplitude decreases to 20 percent DAC when moving towards the weld from W_m .
- (b) W_m - Distance between the search unit index point and the weld centerline (W_0) when the signal amplitude is at maximum.
- (c) W_2 - Distance between the search unit index point and the weld centerline (W_0) when the signal amplitude decreases to 20 percent DAC when moving away from the weld and W_m .

Data to be Recorded

- (1) Distance from referenced centerline (W_0).
- (2) Indicated metal path to reflector distance (MP_1).
- (1) Distance from reference centerline (W_0).
- (2) Indicated metal path to reflector distance (MP_m).
- (3) Signal amplitude in % DAC at Primary Reference Level.
- (1) Distance from reference centerline (W_0).
- (2) Indicated metal path of reflector distance (MP_2).

6.5.3.1 The transducer positions L_1 and L_2 , correspond to the 20 percent DAC length end points of an indication. The end points of the indication at 50 percent DAC shall also be noted on the data sheet.

6.5.4 When indications other than geometric have been identified within the fusion zone, the heat affected zone or the base material, the transducer's positions should be recorded as follows: 1) The transducer's movement for each data point is perpendicular to the length direction. 2) The data shall be obtained at 1/4-inch intervals along the length of the reflector for indications less than 2 inches in length. In addition, the maximum amplitude points shall be checked at 1/4-inch intervals. 3) For indications greater than 2 inches in length, the data shall be taken at 1-inch intervals. 4) The continuity of indications between intervals shall be confirmed.



7.0 REVIEW OF DATA

7.1 The recorded data shall be reviewed by an individual certified to at least Level II to determine if additional examination and/or evaluation is required.

7.2 Evaluation of Indications

Disposition and evaluation of indications shall be as specified in the contract.

7.2.1 Geometric plots of all recordable indications shall be made to show location of the indications with respect to the weld root and weld heat affected zone (HAZ).

7.2.2 To assist in preparation of geometric plots, the responsible individual shall assure that thickness measurements, where required, are available.

7.2.3 Indications that appear to originate from a geometric condition shall be plotted to determine their origin.

7.2.4 When geometric plotting appears to be inconclusive or plotted data appears to result in a condition that may not be correct, such as a reflector that appears to emanate from the far (opposite) side of the weld root, the Level III may elect to evaluate the indication based on signal behavior. Some characteristics of IGSCC signal behavior are:

- A) IGSCC indications will originate at or near the sweep position corresponding to the component ID.
- B) IGSCC indications will walk (travel on the CRT) from ID toward OD.
- C) When the search unit is angulated (per Figure 4) while the indication is peaked, a geometric indication will decrease in amplitude rapidly with a variation in incident angle. An indication caused by IGSCC tends to decrease in amplitude slowly and become more broad based as the search unit is angulated.
- D) At times, an indication will separate from an IGSCC indication, as the search unit is moved toward the indication, and walk toward the OD. This indication, when it appears, is indicative of a crack tip and is associated with indications of IGSCC.



These characteristics of IGSCC indications should be checked at or near the middle of the indication. If the indication is short (less than 3 times the width of the search unit) it will be necessary to move the search unit to an end of the indication before angulation is performed (Step C).

7.2.5

Indications determined not to be from geometric reflectors shall be evaluated as follows:

- 7.2.5.1 0 degree base material indications shall be evaluated to ensure that no interference to the angle beam examination exists.
- 7.2.5.2 Indications which appear to be from IGSCC shall be reported to the Plant Owner within 24 hours of evaluation. The Owner shall supply disposition of the indication.
- 7.2.5.3 Indications shall be reported to the Owner for disposition if the amplitude exceeds the reference level, and discontinuities have lengths which exceed:
 - (1) $1/4$ inch from t up to $3/4$ inch, inclusive
 - (2) $1/3t$ for t from $3/4$ inch to $2-1/4$ inch, inclusive
 - (3) $3/4$ inch for t over $2-1/4$ inch

where t is the thickness of the weld being examined; if a weld joins two members having different thicknesses at the weld, t is the thinner of these two thicknesses.



Bore Size	Depth Inches	Gain @ LX	Max Amp.	"W" Inch	D or MP Inch	SDH or PSH
1/4		LX				
1/2		LX				
3/4		LX				
2x1.0 Notch		LX				
2x0.5 Notch		LX				

Initial Calibration Time _____

Periodic Checks: Last
Time Value Data Sheet

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Final Check: _____

Calibration in Dept. (D) or Metal Path (MP)

Amplitude Linearity Check
(Made Daily)

dB	WFSH	50% WFSH	WFSH
90%	• _____	• 40% _____	• _____
80%	• _____	• 30% _____	• _____
70%	• _____	• 20% _____	• _____
60%	• _____	• _____	• _____

Control Linearity
(Made Daily)

80% WFSH	-5dB	(32-48)
80% WFSH	-12dB	(16-24)
40% WFSH	-5dB	(64-96)
20% WFSH	+12dB	(64-96)

Equip. Data—Straight Beam
For Linearity Checks

LIW-2 _____
 Transducer Data:
 Serial No. _____
 Beam Angle _____
 Size _____ Freq. _____
 Shoe No. _____ Cable No. _____

Check Made By: _____

Checks on LIW-2

Block on 1/8" SEI for Field Calib.
 Checks @ Max Amp. for Both Near/Par
 Position In @ Screen Height

1/8" SEI	Near	Par
Max. Amp.		
Metal Path		

Reviewed by _____
 SNT-TC Level



ULTRASONIC EXAMINATION DATA FORM

Exam Form _____
 Cal. Form No. _____

Site _____ Preoperational I.S.I. Date _____
 System _____ Weld No. _____ Weld Type _____
 Examiner _____ ASNT Level _____
 Date Taker _____ ASNT Level _____
 Search Angle _____ U.T. Procedure _____ Rev. _____
 Scan Sens: X2 _____ Other _____ Evaluation Sens: X1 _____
 Couplant _____ Comp. Temp. _____

EXAMINATIONS:

1. Angle beam for reflectors parallel to weld
2. Angle beam for reflectors transverse to weld (clockwise and counter clockwise)

Performed		Indication	
Yes	No	Yes	No

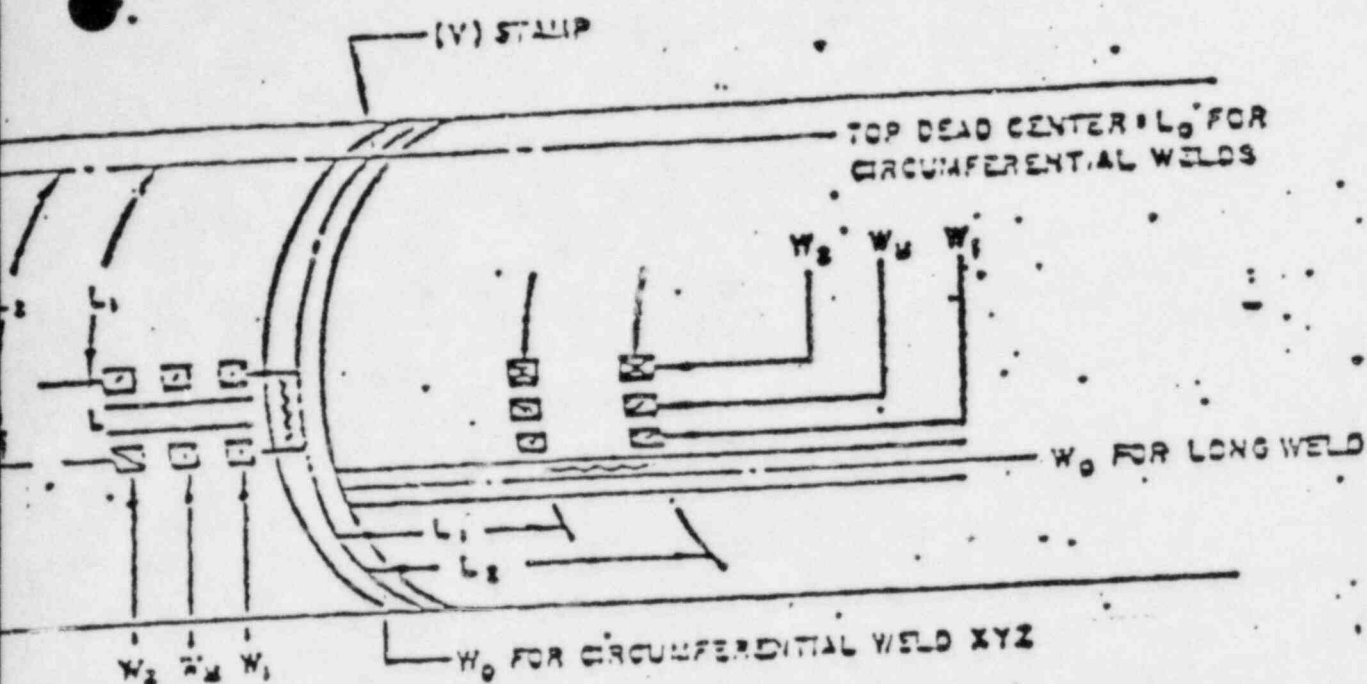
Benchmark or Referenced "O" Location: _____

$L_0 =$ _____ $W_0 =$ _____

AVERAGE ACOUSTIC DIFFERENCE (db) Para. 5.4.1.1 : _____

L ₀	Inches From Ref.	W ₁ Inches	W _m Inches	W ₂ Inches	%DAC 1X Amp. W _m	Metal Path			Examination	Scanning Mode & Remarks
						W ₁	W _m	W ₂		

Reviewed by: _____ ASNT-TC-1A Level II III
 DOES DOES NOT MEET CODE



W ₁ Inches	W ₂ Inches	W ₃ Inches	W ₄ Inches	W ₅ Inches	TAC	Metal Patch			Exam No.	Scraps & Remar
						MP ₁	MP ₂	MP ₃		
	2.0	2.7	3.6	25	2.7	3.5	4.8	3		
.5	2.0	2.6	3.5	35	2.6	3.4	4.7	3		
.0	2.0	2.6	3.4	20	2.7	3.4	4.6	3		
5	2.1	2.4	2.7	20	2.4	2.7	2.9	2		
0	2.1	2.6	2.9	35	2.4	2.8	3.3	2		
	2.1	2.4	2.7	22	2.4	2.7	2.9	2		

FIGURE 3

Tests 263

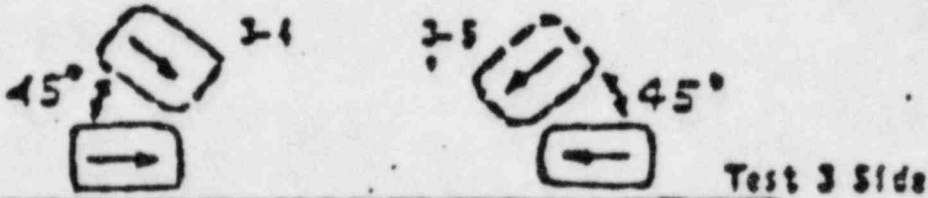
Same as
Test 2 Side

Test 3 Side

WELD



Tests 425



WELD

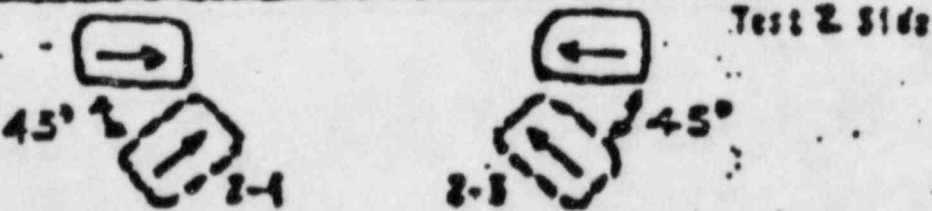


Figure 4. Scanning Pattern