



NUCLEAR ENERGY SERVICES

A UNIT OF QUALCORP

DOCUMENT NO.

83A0764

REV.

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PAGE

1

OF

13

ENCLOSURE 2

TEN YEAR INSPECTION
FINAL REPORT
PREPARED FOR
VERMONT YANKEE NUCLEAR POWER CORPORATION
VERMONT YANKEE NUCLEAR POWER STATION
ULTRASONIC EXAMINATION
OF
FEEDWATER NOZZLE INNER RADIUS

BY

NUCLEAR ENERGY SERVICE
1000 SHELTER ROCK RD.
DANBURY, CT. 06810

Project Application		Copy No		Assigned To	
5545					
APPROVALS					
TITLE / DEPT. - SIGNATURE - DATE					
REV NO	PREPARED BY	Level III	Ops. Dept. Mgr.	Project Mgr.	QA Mgr.
0	PC Note 11/1/85	SF 11/4/85	J. H. 11-17-85	11/6/85	Meeting for cea 11-19-85
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PDR ADOCK 05000271
Q PDR



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FORM # NES 206 2 80



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NUCLEAR ENERGY SERVICES

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1. ABSTRACT

The intent of this report is to present the results, conclusions, and supporting data generated during the Inservice Inspection (ISI) of the Vermont Yankee reactor pressure vessel feedwater nozzle inner radius areas. The examinations were performed by Nuclear Energy Services under contract to Vermont Yankee Nuclear Power Corporation, Vernon, Vermont.

The feedwater nozzle inner radius examinations were performed using manual ultrasonic examination techniques. NES personnel conducted the examinations and provided overall supervisory control of the program.

2. REFERENCE DOCUMENTS

The following documents provided the basic requirements and scope of work to be performed:

1. The American Society of Mechanical Engineers' Boiler and Pressure Vessel Code, Section V, 1974 Edition through Summer of 1975 Addenda.
2. The American Society of Mechanical Engineers' Boiler and Pressure Vessel Code, Section XI, 1974 Edition through Summer of 1975 Addenda, invoking the provisions of IWA-2240.
3. NUREG-0619; BWR Feedwater Nozzle and Control Rod Drive Return Line Nozzle Cracking.
4. NES Division Inservice Inspection Quality Assurance Manual, NES Document 80A9021, Rev. 6.
5. NES Document 80A7616; Ultrasonic Examination Procedure for Reactor Vessel Feedwater Nozzle Inner Radius for Vermont Yankee, Rev. 2.
6. NES Drawing 80E7620; Feedwater Nozzle As Built.

7. NES Drawing 80E7621; Feedwater Nozzle Barrel Plot.
8. NES Drawing 80E7622; Feedwater Nozzle Shell Plot.

3. INTRODUCTION

The purpose for conducting this inservice examination was to provide reference for future inservice examinations as required by Section XI of the American Society of Mechanical Engineers' Boiler and Pressure Vessel Code. This report contains the results and documentation of the inservice examinations performed by NES from September 23, 1985 to September 26, 1985. Also included in this report are summaries of the examination results, descriptions of personnel, procedures, and equipment utilized.

In addition to performing the inservice examinations, NES conducted a demonstration of the examination technique for representatives of Yankee Atomic Electric Company and Vermont Yankee Nuclear Power Station. This successful demonstration took place at the Vermont Yankee Station utilizing their feedwater nozzle mock up. Qualification and examination approval was obtained prior to the actual examination performance at the Vermont facility. The results of the demonstration are included in this report.

In addition to the demonstration, the Vermont Yankee mock up was also used in the training of examination personnel satisfying procedural requirements.

4. SUMMARY

NES prepared and conducted the Vermont Yankee reactor pressure vessel feedwater nozzle inner radius inservice examination program in accordance with the technical requirements of Section 2. The summary of the results of the examinations performed to supplement the program are contained in this section. Refer to Table 1.

In addition, this section provides a summation of the examination areas that could not be examined to the full extent required and includes a statement as to the interfering conditions. Refer to Table 2.

TABLE 1
SUMMARY OF EXAMINATION RESULTS

DATA PACKAGE	EXAMINATION ZONE	EXAMINATION AREA	REPORTABLE CONDITION(S)	REMARKS
7616-1	1	N4-A	No	
7616-2	1	N4-B	No	Limitations
7616-3	1	N4-C	No	
7616-4	1	N4-D	No	
7616-5	2	N4-A	No	
7616-6	2	N4-B	No	Limitations
7616-7	2	N4-C	No	Limitations
7616-8	2	N4-D	No	
7616-9	2	N4-A	No	
7616-10	2	N4-B	No	Limitations
7616-11	2	N4-C	No	Limitations
7616-12	2	N4-D	No	

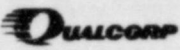
TABLE 2
SUMMARY OF EXAMINATION LIMITATIONS

DATA PACKAGE	EXAMINATION AREA	LIMITATION
7616-2	N4-B	Thermocouples
7616-6	N4-B	Thermocouples
7616-7	N4-C	Thermocouples
7616-10	N4-B	Thermocouples
7616-11	N4-C	Thermocouples

5. CONCLUSION

The results of all feedwater nozzle inner radius examinations completed as of the date of issuance of this report indicate that no code rejectable indications or detrimental conditions currently exist in the Vermont Yankee reactor pressure vessel feedwater nozzle inner radii.



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APPENDIX I
EXAMINATION DATA

Plant/Unit VV #1
Comp/System RTV
ISO N/A Loop A

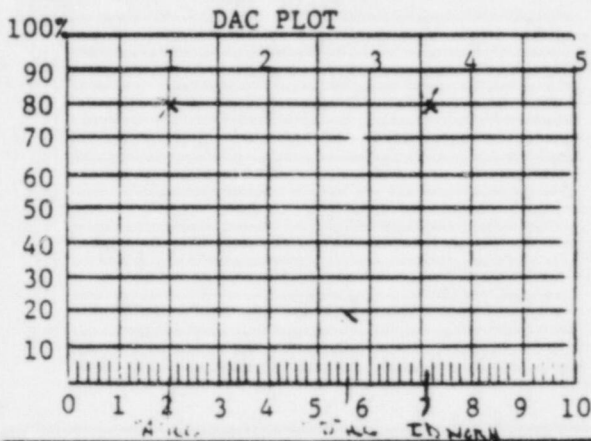
CALIBRATION DATA SHEET

Page 1 of 2
Data Sheet No. 7-116-1
Procedure No. ED07616
Subject: REACTOR START BLOCKS - R
Rev/Change No. 2/15-1
Calibration
Block No. RV-2
Fabrication No. N/A
Surface OD
Block Temp 85 °F
Comp. Temp 96 °F
Thickness 5.50
CRT Calibrated in INCHES
5 INCH DATA
Each Maj. Screen Div = 20
ZONE = 1 EXAM

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>SONO (MRE)</u>
Serial No.:	<u>021901</u>
Sweep Length:	<u>2.25</u>
Sweep Delay:	<u>0.13</u>
Pulse Length/Damping:	<u>10.0</u>
Freq.:	<u>10</u> Rep. Rate: <u>3K</u>
Filter:	<u>1.6K</u> Video: <u>PC</u> Jack: <u>R</u>
DEC/Gate Switch:	<u>FF</u> Range: <u>10</u>
Mode Select:	<u>1.6K</u> Reject: <u>FF</u>
Gain (coarse):	<u>20</u> (fine): <u>0.1</u>
Scan Sensitivity:	<u>91</u>

SEARCH UNIT	
Scan Angle:	<u>70°</u> Mode: <u>HEAL</u>
Fixturing (if any):	<u>LOK W/LOK</u>
Style or Type No.:	<u>GAMMA</u>
Size & Shape:	<u>1.0" Round</u>
Frequency:	<u>1.0</u> MHz
Serial No/Brand:	<u>20005 HATCO</u>
Measured Angle:	<u>70°</u>
Cable Type & Length:	<u>2.6' RSC</u>
Couplant Brand:	<u>ULTRAL I</u>
Couplant Batch:	<u>251</u>

INSTR. LINEARITY CAL.				
Amplitude				
	High	Low	High	Low
1	100	30	5	30
2	90	45	6	25
3	80	60	7	20
4	70	75	8	15



SCAN AREA *	
0° WRV	N/A
0° Mar'l	N/A
= To Weld	N/A
⊥ To Weld	N/A
Calibration	
Axial	N/A
Circ	N/A

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	20
80	-12	20
40	+6	20
20	+12	20

CALIBRATION CHECKS	TIME
Initial Cal.	<u>1:40</u>
Intermediate	—
Intermediate	—
Intermediate	—
Final Cal.	<u>1:35</u>

ADDITIONAL SHEETS?	CHECK BOX
Continuation	<u>N</u> Beam Plot ☒
Supplements	<u>N/A</u> None ☐

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>N/A - A</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>	<u>Complete (OD) and (ID)</u>
				<u>2.00" 7166 (OD) EXAM</u>
				<u>Zone 1</u>

EXAMINERS 1 Robert Smith Date 9/15/85 Level II
2 Chad Smith Date 9/15/85 Level II
REVIEWERS 1 Robert Smith Date 9/15/85
2 Chad Smith Date 9/26/85
3 _____ Date _____

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Plant/Unit W. #1
Comp/System CVT
ISO N/A Loop B

CALIBRATION DATA SHEET

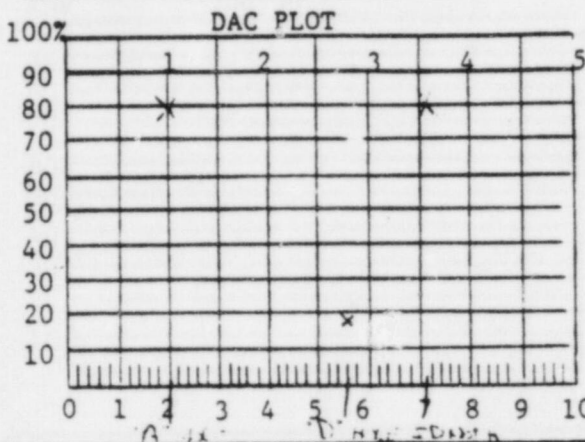
Page 1 of 2
Data Sheet No. 7616-2
Procedure No. 28716
Subject: Reactive Tank Bottoms I
Rev/Change No. 5/1
Calibration
Block No. R1-5
Fabrication No. N/A
Surface SD
Block Temp 25 °F
Comp. Temp 76 °F
Thickness 5.50
CRT Calibrated in Full
of Metal Path
Each Maj. Screen Div = 20

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>ENK MKT</u>
Serial No.:	<u>03190E</u>
Sweep Length:	<u>8.2</u>
Sweep Delay:	<u>0.13</u>
Pulse Length/Damping:	<u>M/V</u>
Freq.:	<u>1</u> Rep. Rate: <u>7</u>
Filter:	<u>Video</u> Jack: <u>R</u>
DEC/Gate Switch:	<u>Range</u> <u>0</u>
Mode Select:	<u>Reject</u> <u>F</u>
Gain (coarse):	<u>3</u> (fine): <u>21</u>
Scan Sensitivity:	<u>1</u>

SEARCH UNIT	
Scan Angle:	<u>70°</u> Mode: <u>Shore</u>
Fixturing (if any):	<u>Loc (N/A)</u>
Style or Type No.:	<u>68mm</u>
Size & Shape:	<u>10" Round</u>
Frequency:	<u>1.0 MHz</u>
Serial No/Brand:	<u>3000 Series</u>
Measured Angle:	<u>70°</u>
Cable Type & Length:	<u>26' BNC</u>
Couplant Brand:	<u>ULTRAGEL II</u>
Couplant Batch:	<u>8501</u>

ZONE 16 GRAM

INSTR. LINEARITY CAL.					
Amplitude					
	High	Low	High	Low	
1	<u>80</u>	<u>2</u>	<u>5</u>	<u>10</u>	<u>30</u>
2	<u>70</u>	<u>5</u>	<u>6</u>	<u>10</u>	<u>25</u>
3	<u>60</u>	<u>4</u>	<u>7</u>	<u>40</u>	<u>20</u>
4	<u>50</u>	<u>3</u>	<u>8</u>	<u>30</u>	<u>15</u>



SCAN AREA	
0° WRV	<u>N/A</u>
0° Mar'l	<u>N/A</u>
= To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	<u>40</u>
80	-12	<u>20</u>
40	+6	<u>30</u>
20	+12	<u>20</u>

CALIBRATION CHECKS		TIME
Initial Cal.	<u>2:00</u>	
Intermediate	<u>—</u>	
Intermediate	<u>—</u>	
Intermediate	<u>—</u>	
Final Cal.	<u>2:15</u>	

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>N4-C</u>	<u>N/A</u>	<u>X</u>	<u>N/A</u>	<u>Limited Space for Scans</u> <u>20 AND 120 SCANS</u> <u>541 Scans Scan Time: 1</u>

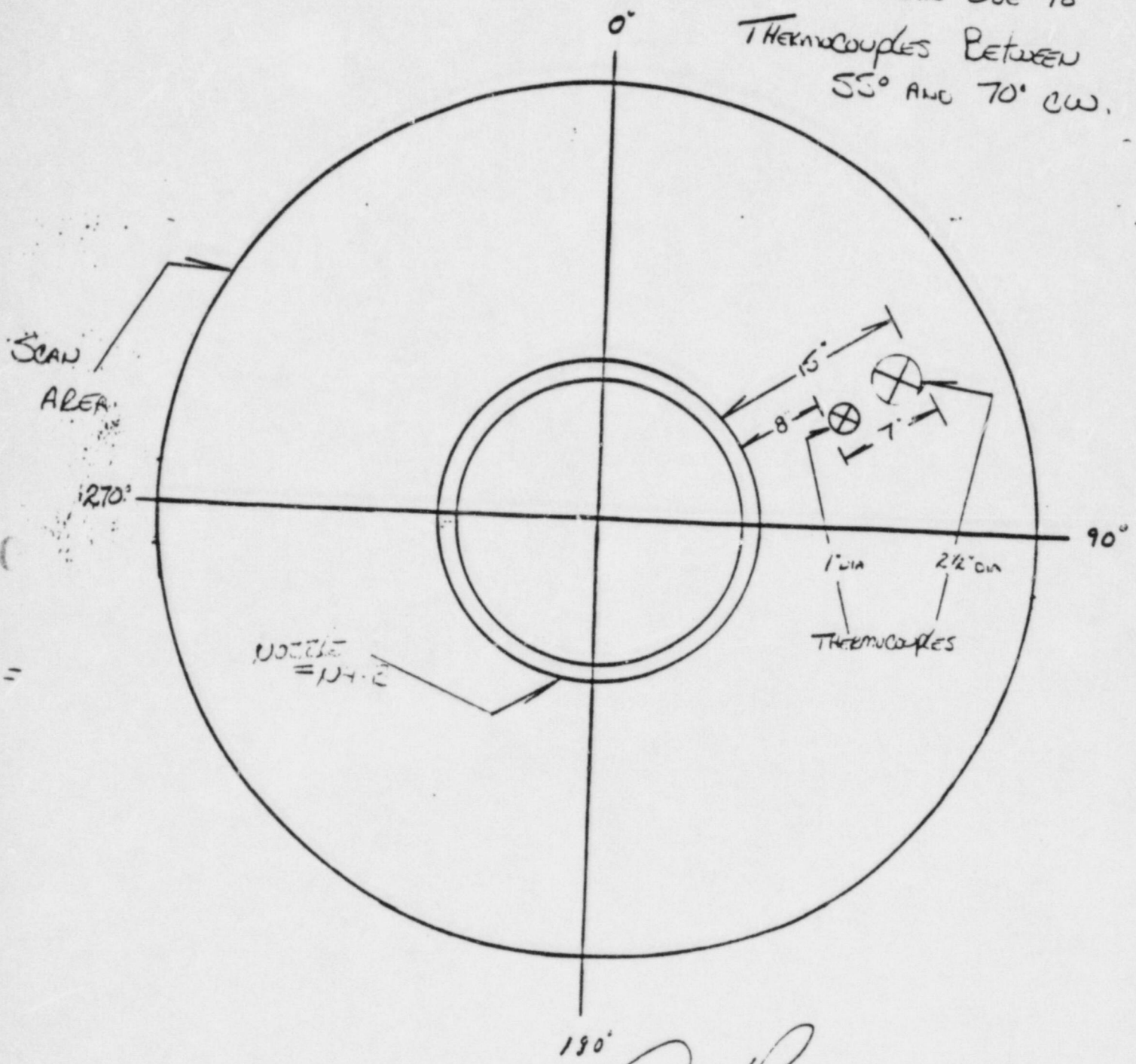
EXAMINERS 1 [Signature] Date 9/25/85 Level II
2 [Signature] Date 9/26/85 Level II
REVIEWERS 1 [Signature] Date 9/25/85
2 [Signature] Date 9/26/85
3 Date

ADDITIONAL SHEETS? CHECK BOX		
Continuation	<u> </u>	Beam Plot <u>N/A</u>
Supplements	<u>X</u>	None <u>N/A</u>



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Limited SCAN DUE TO
 THERMOCOUPLES BETWEEN
 55° AND 70° CW.



EXAMINER: *[Signature]* LEVEL II DATE 92
[Signature] LEVEL II DATE 92
 REVIEWER: *[Signature]* DATE 9/15/92
[Signature] DATE 9/26/92

Plant/Unit VY #1
 Comp/System RPV Feedwater
 ISO N/A Loop C

CALIBRATION DATA SHEET

Page 1 of 1
 Data Sheet No. 7116-3
 Procedure No. 80A766
 Subject: Feedwater Inlet Nozzle
 Rev/Change No. 2/EC#1
 Calibration
 Block No. RV-3
 Fabrication No. N/A
 Surface OD
 Block Temp 85 °F
 Comp. Temp 96 °F
 Thickness 5.50
 CRT Calibrated in Inches
of metal Path
 Each Maj. Screen Div = 2.0
 Zone #/Exam

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>Sonic Mkl</u>
Serial No.:	<u>03190F</u>
Sweep Length:	<u>8.25</u>
Sweep Delay:	<u>0.13</u>
Pulse Length/Damping:	<u>Min</u>
Freq.:	<u>1</u> Rep. Rate: <u>3k</u>
Filter:	<u>High Video</u> Jack: <u>P</u>
DEC/Gate Switch:	<u>OFF</u> Range: <u>10</u>
Mode Select:	<u>Norm</u> <u>OFF</u> Reject:
Gain (coarse):	<u>80</u> (fine): <u>1</u>
Scan Sensitivity:	<u>91</u>

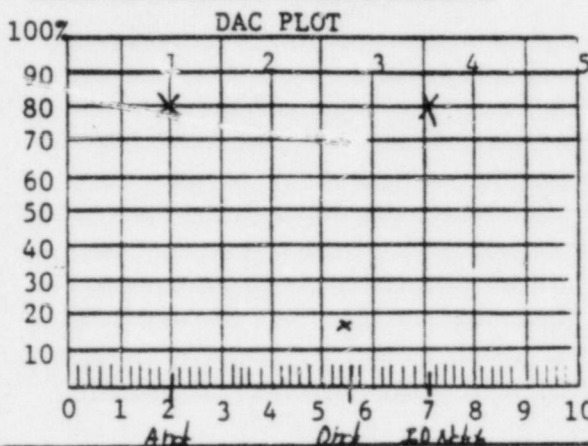
INSTR. LINEARITY CAL.					
Amplitude					
	High	Low		High	Low
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	40
80	-12	20
40	+6	80
20	+12	80

CALIBRATION CHECKS		TIME
Initial Cal.		<u>1410</u>
Intermediate		<u>—</u>
Intermediate		<u>—</u>
Intermediate		<u>—</u>
Final Cal.		<u>1805</u>

ADDITIONAL SHEETS? CHECK BOX		
Continuation	<u>N/A</u>	Beam Plot <u>N/A</u>
Supplements	<u>N/A</u>	None ☒

SEARCH UNIT	
Scan Angle:	<u>70°</u> Mode: <u>Strat</u>
Fixturing (if any):	<u>Lucite</u> <u>wedge</u>
Style or Type No.:	<u>Gamma</u>
Size & Shape:	<u>1.0" Round</u>
Frequency:	<u>1.0 MHz</u>
Serial No/Brand:	<u>102205/PEROTECH</u>
Measured Angle:	<u>70°</u>
Cable Type & Length:	<u>246' BNC</u>
Couplant Brand:	<u>ULTRAGEL</u>
Couplant Batch:	<u>8551</u>



SCAN AREA	
0° WRV	<u>N/A</u>
0° Mat'l	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>N-4-C</u>	<u>N/A</u>	☒	<u>N/A</u>	<u>Complete Zone = 1 Shell</u> <u>Same From Out H/L (C-1)</u>

EXAMINERS 1 [Signature] Date 9-24-85 Level II

2 [Signature] Date 9-24-85 Level II

REVIEWERS 1 [Signature] Date 9/25/85

2 [Signature] Date 9/26/85

3 Date



NUCLEAR ENERGY SERVICES, INC.

Plant/Unit VY #1
 Comp/System RPV Feedwater
 ISO N/A Loop D

CALIBRATION DATA SHEET

Page 1 of 1
 Data Sheet No. 7616-4
 Procedure No. 80A7616
 Subject: Feedwater Inlet Nozzle
 Rev/Change No. 2/Fc-1
 Calibration
 Block No. RV-3
 Fabrication No. N/A
 Surface OD
 Block Temp 85 °F
 Comp. Temp 96 °F
 Thickness 5.50
 CRT Calibrated in Inches
 of metal Path
 Each Maj. Screen Div = 2.0
 Zone #1 EXAM

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>Sonic M51</u>
Serial No.:	<u>03190E</u>
Sweep Length:	<u>8.25</u>
Sweep Delay:	<u>0.13</u>
Pulse Length/Damping:	<u>Min</u>
Freq.:	<u>1</u> Rep. Rate: <u>3K</u>
Filter:	<u>High</u> Video: <u>Jack: R</u>
DEC/Gate Switch:	<u>Range: 10</u>
Mode Select:	<u>Reject:</u>
Gain (coarse):	<u>80</u> (fine): <u>1</u>
Scan Sensitivity:	<u>91</u>

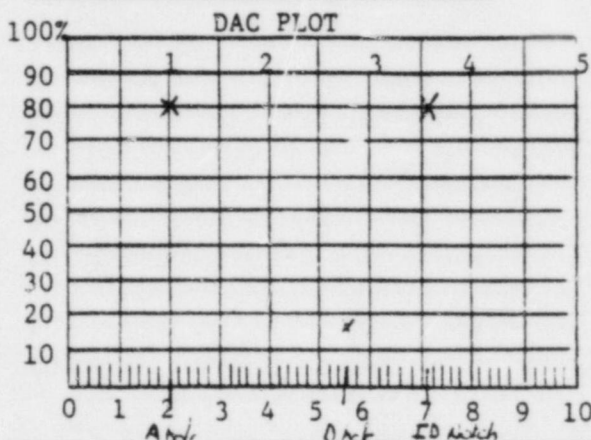
INSTR. LINEARITY CAL.					
Amplitude					
	High	Low	High	Low	
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	40
80	-12	30
40	+6	80
20	+12	80

CALIBRATION CHECKS		TIME
Initial Cal.		<u>1410</u>
Intermediate		<u>—</u>
Intermediate		<u>—</u>
Intermediate		<u>—</u>
Final Cal.		<u>1805</u>

ADDITIONAL SHEETS? CHECK BOX		
Continuation	<u>N/A</u> Beam Plot	<u>N/A</u>
Supplements	<u>N/A</u> None	☒

SEARCH UNIT	
Scan Angle:	<u>70°</u> Mode: <u>Sharp</u>
Fixturing (if any):	<u>Wedge</u>
Style or Type No.:	<u>Gamma</u>
Size & Shape:	<u>1.0" Round</u>
Frequency:	<u>1.0 mHz</u>
Serial No./Brand:	<u>T02205/ARCTECH</u>
Measured Angle:	<u>70°</u>
Cable Type & Length:	<u>246' BNC</u>
Couplant Brand:	<u>ULTRAGEL</u>
Couplant Batch:	<u>B3551</u>



SCAN AREA	
0° WTV	<u>N/A</u>
0° Mar'l	<u>N/A</u>
= To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>

* INNER RADIUS EXAM

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>N4-D</u>	<u>r/f</u>	☒	<u>r/f</u>	<u>Complete Zone #1 Small side Exon Casual (Pul)</u>

EXAMINERS 1 [Signature] Date 9-24-85 Level II
 2 [Signature] Date 9-24-85 Level II
 REVIEWERS 1 [Signature] Date 9/25/85
 2 [Signature] Date 9/26/85
 3 _____ Date _____

Plant/Unit VERMONT YANKEE/I
Comp/System RPV FEEDWATER
ISO N/A Loop A

CALIBRATION DATA SHEET

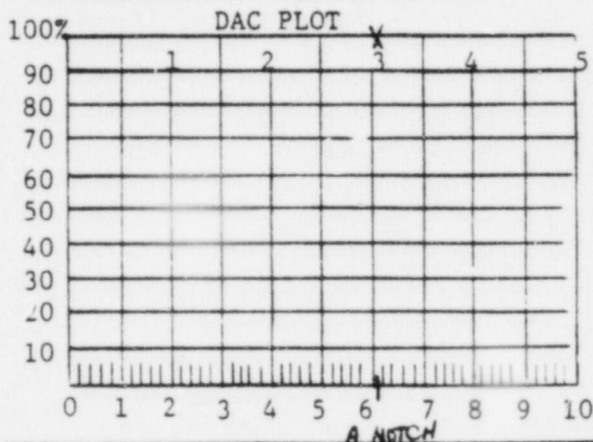
Page 1 of 1
Data Sheet No. 7616-5
Procedure No. 80A7616
Subject: FEEDWATER NOZZLE I.R.
Rev/Change No. 2/FC#2
Calibration
Block No. VY-6-IR
Fabrication No. N/A
Surface 0.D.
Block Temp 85° °F
Comp. Temp 96° °F
Thickness 4.34"
CRT Calibrated in INCHES
OF METAL PATH
Each Maj. Screen Div = 1.0"

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>SONIC Mk I</u>
Serial No.:	<u>03183</u>
Sweep Length:	<u>304</u>
Sweep Delay:	<u>0.18</u>
Pulse Length/Damping:	<u>MTN</u>
Freq.:	<u>2</u> Rep. Rate: <u>1K</u>
Filter:	<u>HI</u> Video: <u>N</u> Jack: <u>R</u>
DEC/Gate Switch:	<u>DEF</u> Range: <u>10</u>
Mode Select:	<u>Normal</u> Reject: <u>OFF</u>
Gain (coarse):	<u>40</u> (fine): <u>9</u>
Scan Sensitivity:	<u>69</u>

SEARCH UNIT	
CAL ANGLE:	<u>45°</u>
Scan Angle:	<u>99/35</u> Mode: <u>SHEAR</u>
CAL WEDGE:	<u>45°</u>
Fixturing (if any):	<u>19°/55° WEDGE</u>
Style or Type No.:	<u>GAMMA</u>
Size & Shape:	<u>0.5" x 1.0" RECT</u>
Frequency:	<u>2.25 MHz</u>
Serial No./Brand:	<u>J05937</u> <u>BA</u> <u>ACROTECH</u>
Measured Angle:	<u>45°</u>
Cable Type & Length:	<u>2'6" BNC</u>
Couplant Brand:	<u>ULTRAGEL II</u>
Couplant Batch:	<u>B551</u>

EXAM ZONE #2

INSTR. LINEARITY CAL.					
Amplitude					
	High	Low		High	Low
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15



SCAN AREA	
0° WRV	<u>N/A</u>
0° Mar'l	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	40
80	-12	18
40	+6	80
20	+12	94

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>N/A INNER RADIUS</u>	<u>—</u>	<u>—</u>	<u>—</u>	
<u>CW SCAN</u>	<u>N/A</u>	<u>X</u>	<u>N/A</u>	<u>COMPLETE SCAN</u>
<u>CCW SCAN</u>	<u>N/A</u>	<u>X</u>	<u>N/A</u>	<u>COMPLETE SCAN</u>

CALIBRATION CHECKS TIME	
Initial Cal.	<u>1310</u>
Intermediate	<u>—</u>
Intermediate	<u>1600</u>
Intermediate	<u>—</u>
Final Cal.	<u>1825</u>

ADDITIONAL SHEETS? CHECK BOX			
Continuation	<u>N/A</u>	Beam Plot	<u>N/A</u>
Supplements	<u>N/A</u>	None	☒

EXAMINERS 1 Rodney J. Barrow Date 9-24-85 Level II
2 Steve Spindler Date 9-24-85 Level II

REVIEWERS 1 [Signature] Date 9/25/85
2 [Signature] Date 9/26/85
3 [Signature] Date

nes

NUCLEAR ENERGY SERVICES, INC.

Plant/Unit VERMONT YANKEE/I
 Comp/System RPV FEEDWATER
 ISO N/A Loop B

CALIBRATION DATA SHEET

Page 1 of 2
 Data Sheet No. 7016-1
 Procedure No. BOA7616
 Subject: FEEDWATER NOISE I.R.
 Rev/Change No. 2/FC#2
 Calibration
 Block No. VY-6-1R
 Fabrication No. N/A
 Surface OD
 Block Temp 85 °F
 Comp. Temp 96 °F
 Thickness 4.34"
 CRT Calibrated in INCHES
 OF MEK PATH
 Each Maj. Screen Div = 1.0"

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>SONIC MK I</u>
Serial No.:	<u>03185E</u>
Sweep Length:	<u>304</u>
Sweep Delay:	<u>0.18</u>
Pulse Length/Damping:	<u>MIN</u>
Freq.:	<u>2</u> Rep. Rate: <u>1K</u>
Filter:	<u>Hz</u> Video: <u>None</u> Jack: <u>R</u>
DEC/Gate Switch:	<u>OFF</u> Range: <u>10</u>
Mode Select:	<u>Normal</u> Reject: <u>OFF</u>
Gain (coarse):	<u>40</u> (fine): <u>9</u>
Scan Sensitivity:	<u>69</u>

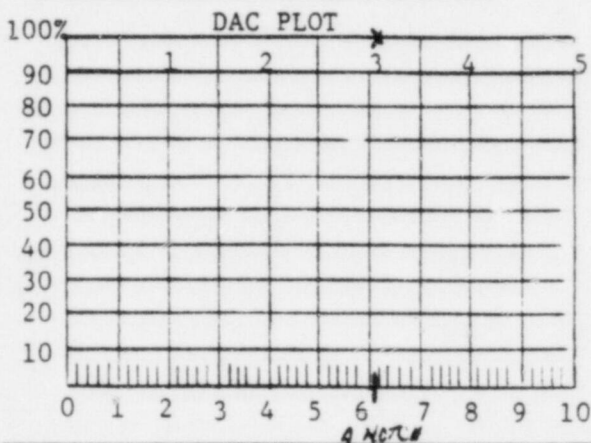
INSTR. LINEARITY CAL.					
Amplitude					
	High	Low	High	Low	
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	40
80	-12	1E
40	+6	80
20	+12	94

CALIBRATION CHECKS		TIME
Initial Cal.		1310
Intermediate		—
Intermediate		1600
Intermediate		—
Final Cal.		1825

ADDITIONAL SHEETS? CHECK BOX		
Continuation	<u>N/A</u>	Beam Plot <u>N/A</u>
Supplements	☒	None <u>N/A</u>

SEARCH UNIT	
CAL ANGLE	<u>45°</u>
Scan Angle:	<u>19°/33°</u> Mode: <u>SWEEP</u>
CAL WEDGE	<u>45°</u>
Fixturing (if any):	<u>19°/33° WEDGE</u>
Style or Type No.:	<u>GAMMA</u>
Size & Shape:	<u>0.5" x 1.0" RECT</u>
Frequency:	<u>2.25 MHz</u>
Serial No/Brand:	<u>JO5437 / J05524 / K2 AEROTON</u>
Measured Angle:	<u>45°</u>
Cable Type & Length:	<u>2x6' BNC</u>
Couplant Brand:	<u>ULTRAGEL II</u>
Couplant Batch:	<u>8551</u>



SCAN AREA	
0° WRV	<u>N/A</u>
0° Mat'l	<u>N/A</u>
— To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>

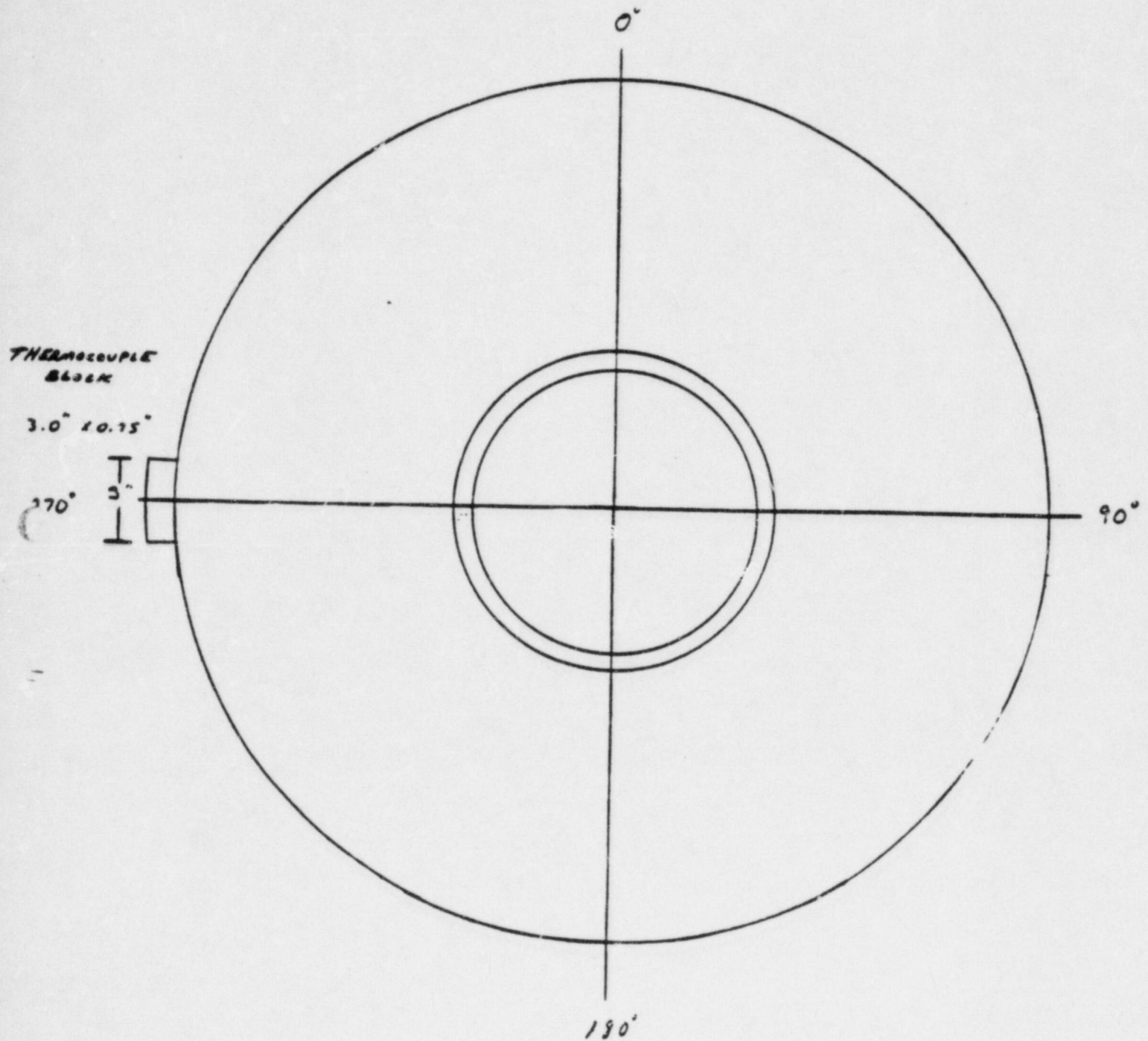
EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>N4B INNER RADIUS</u>	—	—	—	
<u>CW SCAN</u>	<u>N/A</u>	☒	<u>N/A</u>	<u>LIMITED SCAN (SEE SKETCH)</u>
<u>CCW SCAN</u>	<u>N/A</u>	☒	<u>N/A</u>	<u>LIMITED SCAN (SEE SKETCH)</u>

EXAMINERS 1 Richard D. Corcoran Date 9-24-85 Level II
 2 Steve Spindler Date 9-24-85 Level II
 REVIEWERS 1 [Signature] Date 9/25/85
 2 [Signature] Date 9/26/85
 3 [Signature] Date



NUCLEAR ENERGY SERVICES, INC.

FEEDWATER NOZZLE N4B
 ZONE #2 BARREL EXAM OBSTRUCTION



OBSTRUCTION EXISTS IN CW + CCW SCAN

DRAWING NOT TO SCALE

Rodney S. Leman with
 9-24-85

Steve Spindler II

9-24-85

Leifuller 9/24/85

[Signature] 9/25/85

Plant/Unit VERMONT Yankee/I
Comp/System RPV FEEDWATER
ISO N/A Loop C

CALIBRATION DATA SHEET

Page 1 of 2
Data Sheet No. 7616-7
Procedure No. BCA7616
Subject: FEEDWATER NUCLE I.R.
Rev/Change No. 2/FC#2
Calibration
Block No. VY-6-1R
Fabrication No. N/A
Surface OD
Block Temp 85° °F
Comp. Temp 96° °F
Thickness 4.34"
CRT Calibrated in INCHES
OF METAL PATH
Each Maj. Screen Div = 1.0"

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>SONIC MK I</u>
Serial No.:	<u>03183E</u>
Sweep Length:	<u>304</u>
Sweep Delay:	<u>0.18</u>
Pulse Length/Damping:	<u>MIN</u>
Freq.:	<u>2</u> Rep. Rate: <u>1K</u>
Filter:	<u>HL</u> Video: <u>2</u> Jack: <u>R</u>
DEC/Gate Switch:	<u>OFF</u> Range: <u>10</u>
Mode Select:	<u>INCL</u> Reject: <u>OFF</u>
Gain (coarse):	<u>40</u> fine: <u>9</u>
Scan Sensitivity:	<u>69</u>

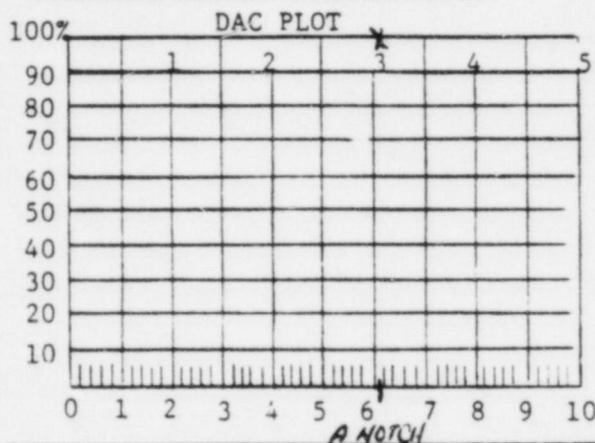
INSTR. LINEARITY CAL.					
Amplitude					
	High	Low	High	Low	
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	40
80	-12	15
40	+6	80
20	+12	94

CALIBRATION CHECKS		TIME
Initial Cal.		1310
Intermediate		-
Intermediate		1600
Intermediate		-
Final Cal.		1825

ADDITIONAL SHEETS? CHECK BOX			
Continuation	<u>N/A</u>	Beam Plot	<u>N/A</u>
Supplements	☒	None	<u>N/A</u>

SEARCH UNIT	
CAL ANGLE:	<u>45°</u>
Scan Angle:	<u>19°/35°</u> Mode: <u>SWEEP</u>
CAL WEDGE:	<u>45°</u>
Fixturing (if any):	<u>17°/55° WEDGE</u>
Style or Type No.:	<u>GAMMA</u>
Size & Shape:	<u>0.5" x 1.0" RECT</u>
Frequency:	<u>2.25 MHz</u>
Serial No.:	<u>705937</u> and <u>K.B. AEROTECH</u>
Measured Angle:	<u>45°</u>
Cable Type & Length:	<u>246' BNC</u>
Couplant Brand:	<u>ULTRACAL II</u>
Couplant Batch:	<u>B551</u>



SCAN AREA	
0° WRV	<u>N/A</u>
0° Mar'l	<u>N/A</u>
≡ To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>NHC INNER RADIUS</u>	-	-	-	
<u>CLW SCAN</u>	<u>N/A</u>	☒	<u>N/A</u>	<u>LIMITED SCAN (SEE SKETCH)</u>
<u>CLW SCAN</u>	<u>N/A</u>	☒	<u>N/A</u>	<u>LIMITED SCAN (SEE SKETCH)</u>

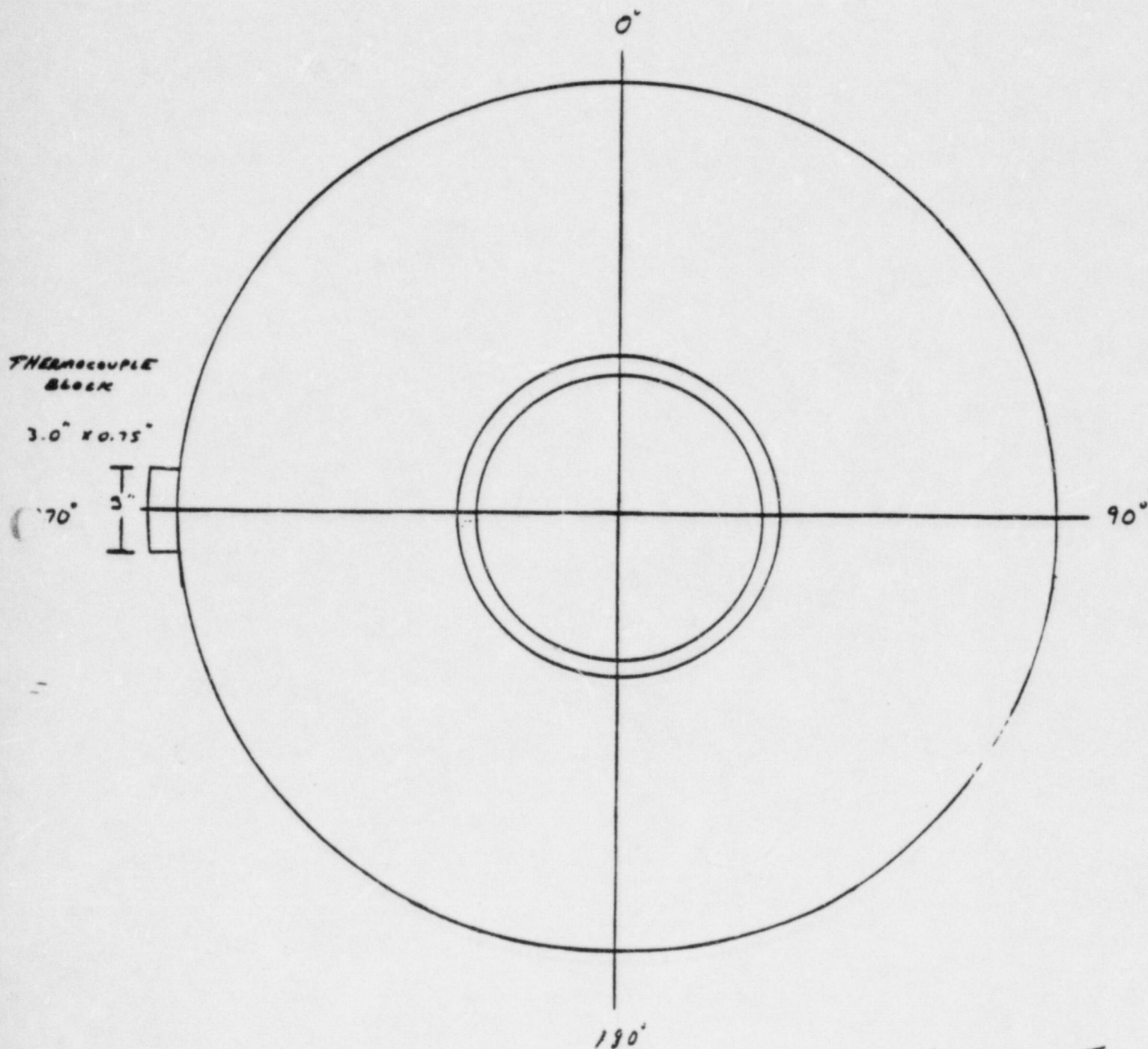
EXAMINERS 1 Robert J. Korman Date 9-24-85 Level II
2 Steve Spindler Date 9-24-85 Level II

REVIEWERS 1 [Signature] Date 9/25/85
2 [Signature] Date 9/26/85
3 _____ Date _____



NUCLEAR ENERGY SERVICES, INC.

FEEDWATER NOZZLE N4C
ZONE #2 BARREL EXAM OBSTRUCTION



OBSTRUCTION EXISTS IN CW + CCW SCAN

DRAWING NOT TO SCALE

Rodney J. Barnes ET
9-24-85

Steve Spindle II
9-24-85

[Signature] 9/25/85
[Signature] 9/26/85

Plant/Unit VERMONT YANKEE / I
 Comp/System RPV FEEDWATER
 ISO N/A Loop 2 E D

CALIBRATION DATA SHEET

Page 1 of 1
 Data Sheet No. 2616-8
 Procedure No. 80A7616
 Subject: FEEDWATER NOZZLE I R
 Rev/Change No. 2/EC#2
 Calibration
 Block No. VY-6-1R
 Fabrication No. N/A
 Surface OD
 Block Temp 85° °F
 Comp. Temp 96° °F
 Thickness 4.34"
 CRT Calibrated in INCHES
OF METAL PATH
 Each Maj. Screen Div = 1.0"

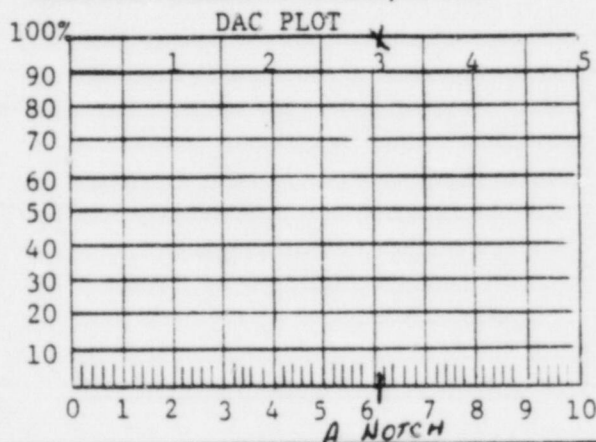
INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>SWAC Mk I</u>
Serial No.:	<u>0318SE</u>
Sweep Length:	<u>3.04</u>
Sweep Delay:	<u>0.18</u>
Pulse Length/Damping:	<u>MIN</u>
Freq.:	<u>2</u> Rep. Rate: <u>1K</u>
Filter:	<u>HI</u> Video: <u>N</u> Jack: <u>R</u>
DEC/Gate Switch:	<u>OFF</u> Range: <u>10</u>
Mode Select:	<u>NORMAL</u> Reject: <u>OFF</u>
Gain (coarse):	<u>40</u> (fine): <u>9</u>
Scan Sensitivity:	<u>69</u>

SEARCH UNIT	
CAL ANGLE	<u>45°</u>
Scan Angle:	<u>19°/33°</u> Mode: <u>SWEAR</u>
CAL WEDGE	<u>45°</u>
Fixturing (if any):	<u>19°/33° WEDGE</u>
Style or Type No.:	<u>GAMMA</u>
Size & Shape:	<u>0.5" x 1.0" RECT</u>
Frequency:	<u>2.25 MHz</u>
Serial No./Brand:	<u>105937 / K.B. AEROTECH</u>
Measured Angle:	<u>45°</u>
Cable Type & Length:	<u>2x6' BNC</u>
Couplant Brand:	<u>ULTRAGEL II</u>
Couplant Batch:	<u>8551</u>

EXAM ZONE #2

SCAN AREA	
0° WRV	N/A
0° Mar'l	N/A
⊥ To Weld	N/A
⊥ To Weld	N/A
Calibration	
Axial	N/A
Circ	N/A

INSTR. LINEARITY CAL.					
Amplitude					
	High	Low	High	Low	
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15



AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	40
80	-12	18
40	+6	80
20	+12	94

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
N40 INNER RADII	—	—	—	—
CW SCAN	N/A	⊗	N/A	COMPLETE SCAN
CCW SCAN	N/A	⊗	N/A	COMPLETE SCAN

CALIBRATION CHECKS TIME	
Initial Cal.	1310
Intermediate	—
Intermediate	1600
Intermediate	—
Final Cal.	1825

EXAMINERS 1 Robert J. Brown Date 9-24-85 Level II
 2 Steve Spindler Date 9-24-85 Level II
 REVIEWERS 1 [Signature] Date 9/25/85
 2 [Signature] Date 9/26/85
 3 _____ Date _____

ADDITIONAL SHEETS? CHECK BOX		
Continuation	<u>N/A</u> Team Plot	<u>N/A</u>
Supplements	<u>N/A</u> None	☒



NUCLEAR ENERGY SERVICES, INC.

Plant/Unit VERMONT YANKEE
 Comp/System RPV FEEDWATER
 ISO N/A Loop A

CALIBRATION DATA SHEET

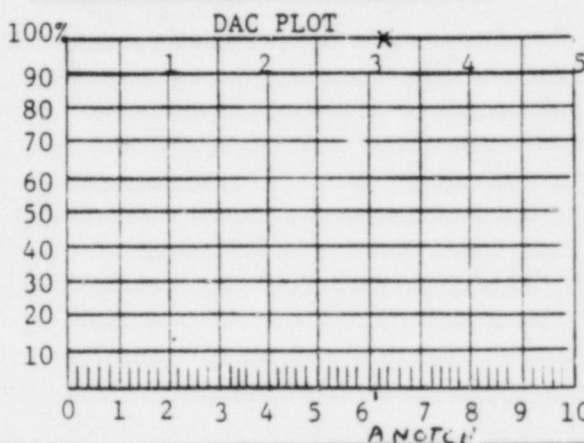
Page 1 of 1
 Data Sheet No. 7616-9
 Procedure No. 80A7616
 Subject: FEEDWATER NOZZLE I.R.
 Rev/Change No. 2/FC 2
 Calibration
 Block No. VY-6-1R
 Fabrication No. N/A
 Surface C.D.
 Block Temp 85 °F
 Comp. Temp 96 °F
 Thickness 4.34"
 CRT Calibrated in INCHES
OF METAL PATH
 Each Maj. Screen Div = 1.0"

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>SONIL/MRE</u>
Serial No.:	<u>03185E</u>
Sweep Length:	<u>3.04</u>
Sweep Delay:	<u>0.18</u>
Pulse Length/Damping:	<u>MIN</u>
Freq.:	<u>2</u> Rep. Rate: <u>1K</u>
Filter:	<u>H</u> Video: <u>NORM</u> Jack: <u>R</u>
DEC/Gate Switch:	<u>OFF</u> Range: <u>10</u>
Mode Select:	<u>NORMAL</u> Reject: <u>OFF</u>
Gain (coarse):	<u>40</u> (fine): <u>9</u>
Scan Sensitivity:	<u>69</u>

SEARCH UNIT	
<u>CAL. ANGLE 45°</u>	
Scan Angle:	<u>19°</u> Mode: <u>SHEAR</u>
<u>WEDGE ANGLE 45°</u>	
Fixturing (if any): <u>19° WEDGE</u>	
Style or Type No.: <u>GAMMA</u>	
Size & Shape: <u>0.5" x 1.0" RECT.</u>	
Frequency: <u>2.25 MHz</u>	
Serial No./Brand: <u>J05437</u> <u>ED 11/9/15</u> <u>J05438/AEROTECH</u>	
Measured Angle: <u>45°</u>	
Cable Type & Length: <u>2X6' BNC</u>	
Couplant Brand: <u>ULTRAGEL II</u>	
Couplant Batch: <u>8551</u>	

EXAM ZONE 2

INSTR. LINEARITY CAL.					
Amplitude					
	High	Low		High	Low
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15



SCAN AREA *	
0° WRV	<u>N/A</u>
0° Mat'l	<u>N/A</u>
= To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>

* NOZZLE INNER RADIUS EXAM FROM BARREL SIDE

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	<u>40</u>
80	-12	<u>18</u>
40	+6	<u>30</u>
20	+12	<u>94</u>

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>NYA INNER RADIUS</u>	<u>N/A</u>	<u>X</u>	<u>N/A</u>	<u>COMPLETE SCAN</u>

CALIBRATION CHECKS		TIME
Initial Cal.		<u>1310</u>
Intermediate		<u>-</u>
Intermediate		<u>1600</u>
Intermediate		<u>-</u>
Final Cal.		<u>1825</u>

EXAMINERS 1 Rodney J. Barnes Date 9-24-85 Level II
 2 Steve Spindler Date 9-24-85 Level II

REVIEWERS 1 [Signature] Date 9/25/85
 2 [Signature] Date 9/26/85
 3 _____ Date _____

ADDITIONAL SHEETS? CHECK BOX		
Continuation	<u>N/A</u> Beam Plot	<u>N/A</u>
Supplements	<u>N/A</u> None	<u>X</u>

Plant/Unit VERMONT Yankee
 Comp/System RPV FEED WATER
 ISO N/A Loop B

CALIBRATION DATA SHEET

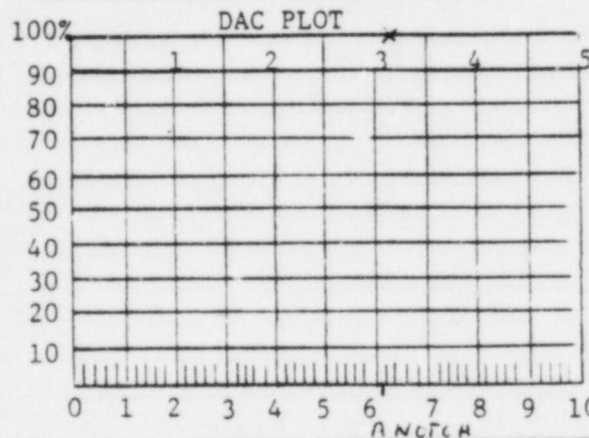
Page 1 of 2
 Data Sheet No. 7616-1
 Procedure No. Y-0A7616
 Subject: FEEDWATER NOZZLE
 Rev/Change No. 2/FC.2
 Calibration
 Block No. VY-6-1A
 Fabrication No. N/A
 Surface OD
 Block Temp 85 °F
 Comp. Temp 96 °F
 Thickness 4.34"
 CRT Calibrated in INCHES
OF METAL PATH
 Each Maj. Screen Div = 1.0"

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>SONIC/ MKI</u>
Serial No.:	<u>03183E</u>
Sweep Length:	<u>3.04</u>
Sweep Delay:	<u>0.18</u>
Pulse Length/Damping:	<u>MIN</u>
Freq.:	<u>2</u> Rep. Rate: <u>1K</u>
Filter:	<u>Hi</u> Video: <u>NORM</u> Jack: <u>R</u>
DEC/Gate Switch:	<u>OFF</u> Range: <u>10</u>
Mode Select:	<u>NORMAL</u> Reject: <u>OFF</u>
Gain (coarse):	<u>40</u> (fine): <u>9</u>
Scan Sensitivity:	<u>69</u>

SEARCH UNIT	
CAL ANGLE	<u>45°</u>
Scan Angle:	<u>19°</u> Mode: <u>SHEAR</u>
CAL WEDGE ANGLE	<u>19°</u>
Fixturing (if any):	<u>19° WEDGE</u>
Style or Type No.:	<u>GAMMA</u>
Size & Shape:	<u>0.5" X 10" RECT.</u>
Frequency:	<u>2.25 MHz</u>
Serial No./Brand:	<u>705937 ECH/1000</u> <u>705934 AER/1000</u>
Measured Angle:	<u>45°</u>
Cable Type & Length:	<u>2x6' BNC</u>
Couplant Brand:	<u>ULTRAGEL II</u>
Couplant Batch:	<u>8551</u>

EXAM ZONE B

INSTR. LINEARITY CAL.					
Amplitude					
	High	Low	High	Low	
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15



SCAN AREA	
0° WRV	<u>N/A</u>
0° Mar'l	<u>N/A</u>
= To Weld	<u>N/A</u>
L To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>

NOZZLE INNER RADIUS
 EXAM FROM BARREL SIDE

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	40
80	-12	18
40	+6	80
20	+12	94

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
N4B INNER RADIUS	<u>N/A</u>	<u>X</u>	<u>N/A</u>	LIMITED SCAN (SEE SKETCH)

CALIBRATION CHECKS TIME	
Initial Cal.	<u>1310</u>
Intermediate	<u>-</u>
Intermediate	<u>1400</u>
Intermediate	<u>-</u>
Final Cal.	<u>1825</u>

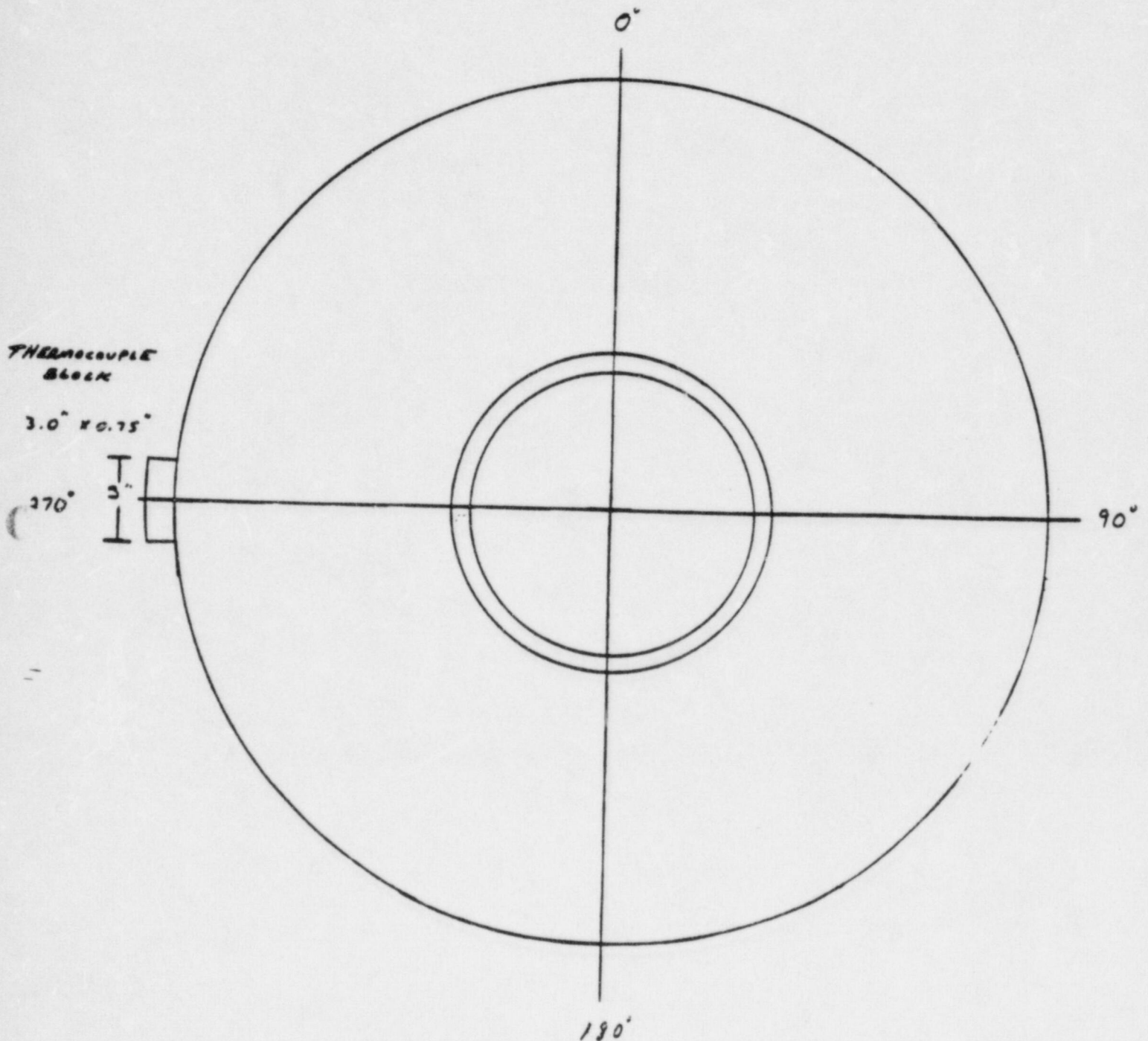
ADDITIONAL SHEETS? CHECK BOX			
Continuation	<u>N/A</u>	Beam Plot	<u>N/A</u>
Supplements	<u>X</u>	None	<u>N/A</u>

EXAMINERS 1 Robney & Bomer Date 9/24/85 Level II
 2 Steve Spindler Date 9/24/85 Level II
 REVIEWERS 1 [Signature] Date 9/25/85
 2 [Signature] Date 9/26/85
 3 _____ Date _____



NUCLEAR ENERGY SERVICES, INC.

FEED WATER NOZZLE N4B
BARREL OBSTRUCTIONS



OBSTRUCTION EXISTS FOR CW + CCW SCAN

Rodney J. Barnes LII
9-24-85

Steve Spindle II
9-24-85

[Signature] 9/25/85

[Signature] 9/26/85

DRAWING NOT TO SCALE

Plant/Unit VERMONT YANKEE
Comp/System RPV FEEDWATER
ISO NIA Loop C

CALIBRATION DATA SHEET

Page 1 of 2
Data Sheet No. 7616-11
Procedure No. 8097616
Subject: FEEDWATER NOZZLE I.R.
Rev/Change No. 2/FC, 2
Calibration
Block No. VY-6-112
Fabrication No. N/A
Surface 0D
Block Temp 85 °F
Comp. Temp 96 °F
Thickness 7.34"
CRT Calibrated in INCHES
OF METAL PATH
Each Maj. Screen Div = 10°

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>SONIC MKT</u>
Serial No.:	<u>03183E</u>
Sweep Length:	<u>3.04</u>
Sweep Delay:	<u>0.18</u>
Pulse Length/Damping:	<u>MIN</u>
Freq.:	<u>2</u> Rep. Rate: <u>1K</u>
Filter:	<u>H</u> Video: <u>Jack: R</u>
DEC/Gate Switch:	<u>UP</u> Range: <u>10</u>
Mode Select:	<u>NORMAL</u> Reject: <u>OFF</u>
Gain (coarse):	<u>40</u> (fine): <u>9</u>
Scan Sensitivity:	<u>69</u>

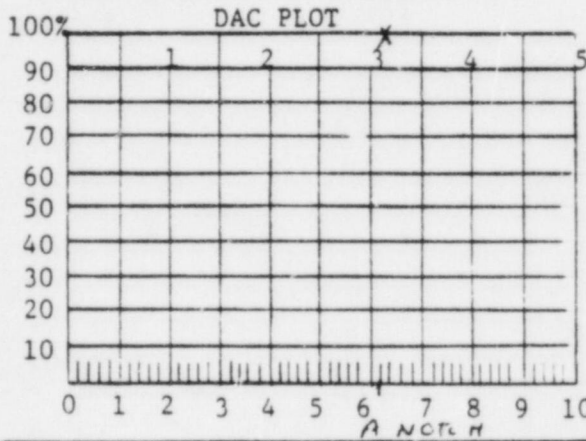
INSTR. LINEARITY CAL.					
Amplitude					
	High	Low		High	Low
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	40
80	-12	18
40	+6	80
20	+12	94

CALIBRATION CHECKS TIME	
Initial Cal.	<u>1310</u>
Intermediate	<u>-</u>
Intermediate	<u>1600</u>
Intermediate	<u>-</u>
Final Cal.	<u>1825</u>

ADDITIONAL SHEETS? CHECK BOX		
Continuation	<u>N/A</u>	Beam Plot <u>N/A</u>
Supplements	<u>X</u>	None <u>N/A</u>

SEARCH UNIT	
CAL. ANGLE	<u>45°</u>
Scan Angle:	<u>19°</u> Mode: <u>SHARP</u>
CAL. WEDGE ANGLE	<u>45°</u>
Fixturing (if any):	<u>19° WEDGE</u>
Style or Type No.:	<u>GAMMA</u>
Size & Shape:	<u>0.5' x 1.0 WEDGE</u>
Frequency:	<u>2.25 MHz</u>
Serial No./Brand:	<u>JOS 937 C 11/1/85</u>
Measured Angle:	<u>45°</u>
Cable Type & Length:	<u>2X6' BNC</u>
Couplant Brand:	<u>ULTRAGEL II</u>
Couplant Batch:	<u>8551</u>



SCAN AREA *	
0° WRV	<u>N/A</u>
0° Mar'l	<u>N/A</u>
= To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>

* NOZZLE INNER RADIUS
EXAM FROM BARREL SIDE

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>N4C INNER RADIUS</u>	<u>N/A</u>	<u>X</u>	<u>N/A</u>	<u>LIMITED SCAN (SEE SKETCH)</u>

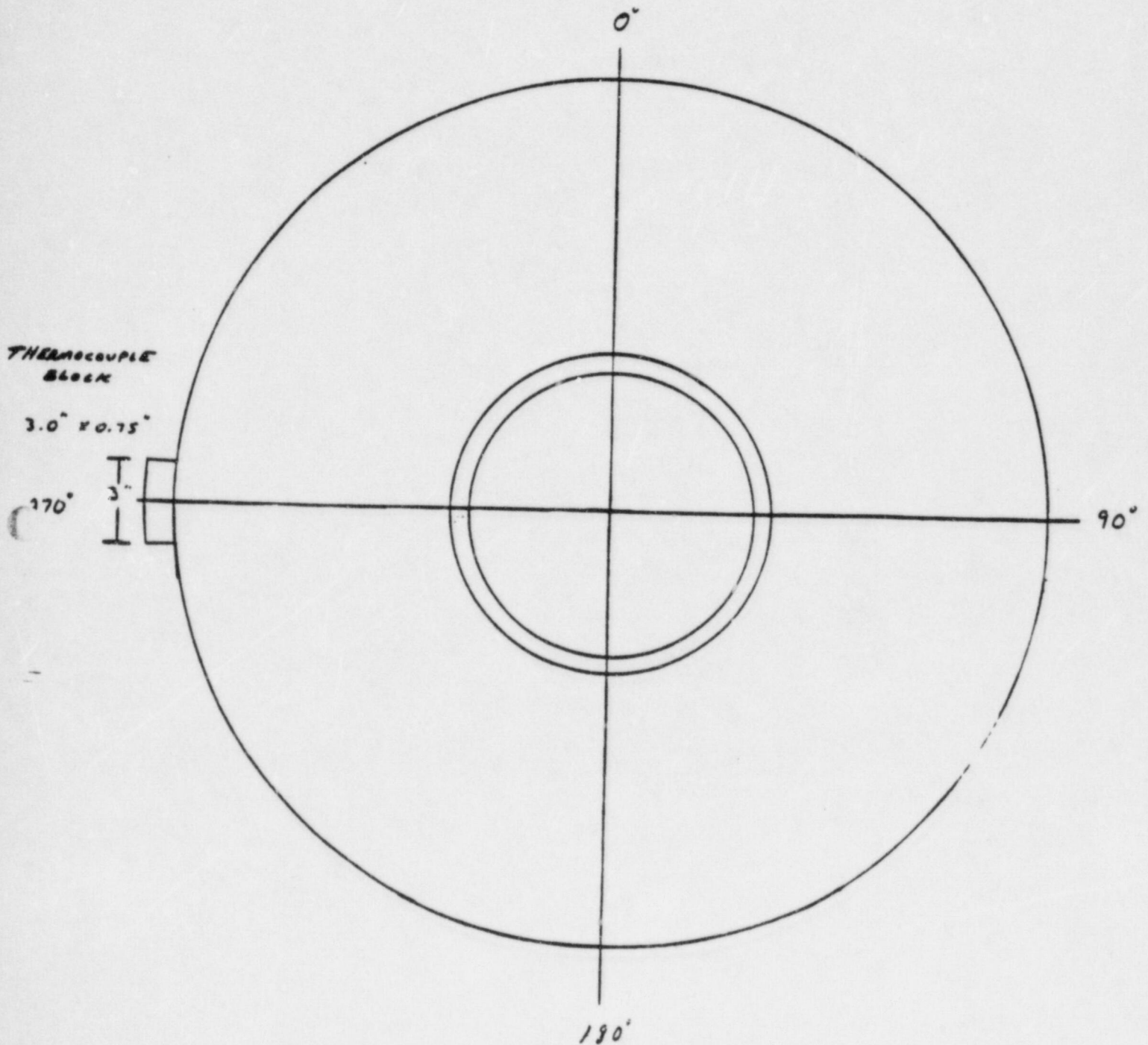
EXAMINERS 1 Rodney S. Barnes Date 9/24/85 Level II
2 Steve Spindle Date 9/24/85 Level II

REVIEWERS 1 R. D. [Signature] Date 9/25/85
2 R. [Signature] Date 9/26/85
3 _____ Date _____



NUCLEAR ENERGY SERVICES, INC.

FEEDWATER NOZZLE N4C
BARREL OBSTRUCTION



OBSTRUCTION EXISTS FOR CW + CCW SCAN

DRAWING NOT TO SCALE

Rodney D Barnes C II
9-24-85

Steve Spindler II
9-24-85

9/25/85
9/26/85

Plant/Unit VERMONT YANKEE
 Comp/System RPV FEED WATER
 ISO N/A Loop D

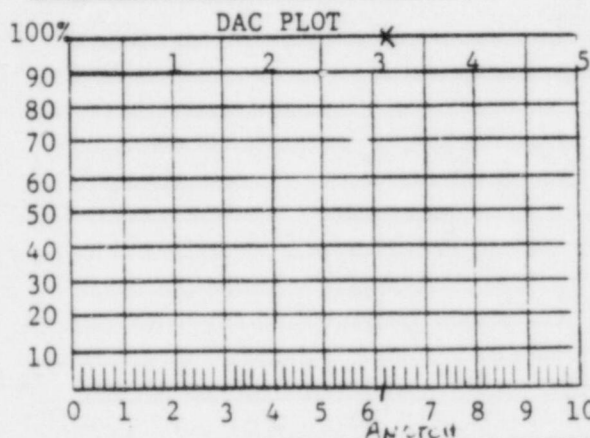
CALIBRATION DATA SHEET

Page 1 of 1
 Data Sheet No. 7616-12
 Procedure No. 89A7616
 Subject: FEED WATER NOZZLE IR
 Rev/Change No. 2/FC.2
 Calibration
 Block No. VY-6-1R
 Fabrication No. N/A
 Surface CD
 Block Temp 85 °F
 Comp. Temp 96 °F
 Thickness 4.34"
 CRT Calibrated in INCHES
OF METAL PATH
 Each Maj. Screen Div = 1.0

INSTRUMENT SETTINGS	
Mfg/Model No.:	SONIC MKI
Serial No.:	03183E
Sweep Length:	3.04
Sweep Delay:	0.18
Pulse Length/Damping:	MIN
Freq.:	2 Rep. Rate: 1K
Filter:	H ₁ Video: ^{INCHES} Jack: R
DEC/Gate Switch:	Range: 10
Mode Select:	^{INCHES} Reject: ^{CD}
Gain (coarse):	40 (fine): 9
Scan Sensitivity:	G1

SEARCH UNIT	
CAL. ANGLE	45°
Scan Angle:	19° Mode: SHEAR
CAL WEDGE ANGLE	45°
Fixturing (if any):	19° WEDGE
Style or Type No.:	GAMMA
Size & Shape:	0.5" X 10" RECT
Frequency:	2.25 MHz
Serial No./Brand:	JO5437 ^{11/14/85} 50544 / AEROFLEX
Measured Angle:	45°
Cable Type & Length:	2X6' BNC
Couplant Brand:	ULTRAGEL II
Couplant Batch:	8551

INSTR. LINEARITY CAL.					
Amplitude					
	High	Low	High	Low	
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15



SCAN AREA	
0° WRV	N/A
0° Mat'l	N/A
= To Weld	N/A
⊥ To Weld	N/A
Calibration	
Axial	N/A
Circ	N/A

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	70
80	-12	18
40	+6	80
20	+12	94

CALIBRATION CHECKS TIME	
Initial Cal.	1310
Intermediate	-
Intermediate	1600
Intermediate	-
Final Cal.	1825

ADDITIONAL SHEETS? CHECK BOX		
Continuation	W/M Beam Plot	☐ N/A
Supplements	N/A None	☒

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
NYP INNER RADIUS	N/A	X	N/A	COMPLETE SCAN

EXAMINERS 1 Robyn J. Bono Date 9-24-85 Level II
 2 Steve Spindle Date 9-24-85 Level II
 REVIEWERS 1 [Signature] Date 9/25/85
 2 [Signature] Date 9/26/85
 3 _____ Date _____



NUCLEAR ENERGY SERVICES, INC.



A UNIT OF **QUALCORP**
NUCLEAR ENERGY SERVICES

DOCUMENT NO. 83A0764

PAGE 10 OF 13

APPENDIX II
DEMONSTRATION DATA

Plant/Unit V4/I
 Comp/System FEEDWATER MCKUP
 ISO N/A Loop N/A

DEMO
 CALIBRATION DATA SHEET

Page 1 of 8
 Data Sheet No. 7416-DEMO
 Procedure No. 8CA7616
 Subject: FW REACTOR 180° CW
 Rev/Change No. 2-FC2
 Calibration
 Block No. RV-3
 Fabrication No. N/A
 Surface OD
 Block Temp 81 °F
 Comp. Temp 61 °F
 Thickness 5.50"
 CRT Calibrated in Inches
of metal Path
 Each Maj. Screen Div = 2.0"

Zone #1 EXOM

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>Sonic/mc-1</u>
Serial No.:	<u>03190E</u>
Sweep Length:	<u>8.20</u>
Sweep Delay:	<u>0.67</u>
Pulse Length/Damping:	<u>Min</u>
Freq.:	<u>1 Rep. Rate: 1K</u>
Filter:	<u>High Video: Jack: R</u>
DEC/Gate Switch:	<u>OFF Range: 10</u>
Mode Select:	<u>NCRm OFF Reject:</u>
Gain (coarse):	<u>70 (Fine): 9</u>
Scan Sensitivity:	<u>91</u>

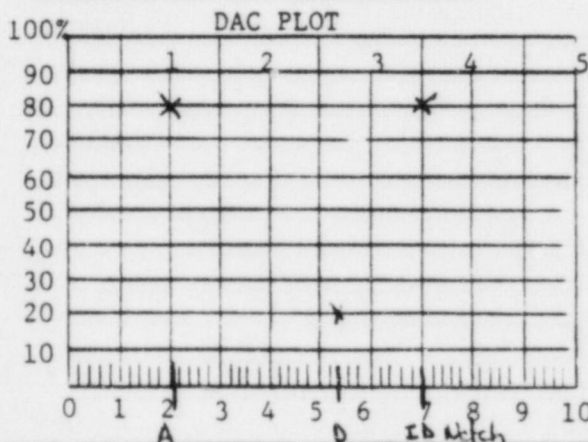
INSTR. LINEARITY CAL.					
Amplitude					
	High	Low	High	Low	
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	40
80	-12	20
40	+6	80
20	+12	80

CALIBRATION CHECKS	TIME
Initial Cal.	<u>1305</u>
Intermediate	<u>—</u>
Intermediate	<u>—</u>
Intermediate	<u>—</u>
Final Cal.	<u>1635</u>

ADDITIONAL SHEETS? CHECK BOX		
Continuation	<u>N/A</u>	Beam Plot <u>N/A</u>
Supplements	<u>X</u>	None <u>N/A</u>

SEARCH UNIT
Scan Angle: <u>70°</u> Mode: <u>Sharp</u>
Fixturing (if any): <u>Lucite wedge</u>
Style or Type No.: <u>Gamma</u>
Size & Shape: <u>10" ALU Round</u>
Frequency: <u>1.0 MHz</u>
Serial No/Brand: <u>AEROTECH JC2305</u>
Measured Angle: <u>70°</u>
Cable Type & Length: <u>6' BCK</u>
Couplant Brand: <u>ULTRAGEL</u>
Couplant Batch: <u>8551</u>



SCAN AREA	
0° WRV	<u>N/A</u>
0° Mar'l	<u>N/A</u>
= To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>
Error Radius EXOM	

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
FW REACTOR	<u>X</u>	<u>N/A</u>	<u>N/A</u>	<u>COMPLETE SHELL SIDE</u>
NUZZLE INNER				<u>90°-180° CW + CCW</u>
RADIUS MCK-UP				
90°-180°				

EXAMINERS 1 [Signature] Date 9/23/85 Level II
 2 [Signature] Date 9/23/85 Level II
 REVIEWERS 1 [Signature] Date 9/24/85
 2 [Signature] Date 9/24/85
 3 _____ Date _____



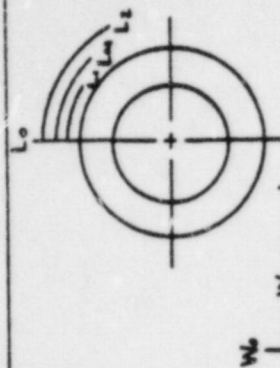
NUCLEAR ENERGY SERVICES, INC.

125

NUCLEAR ENERGY SERVICES, INC.

Project No. 5545		Nozzle: Mock up		Date (Day/Mo./Year) 23-9-85	
Plant Vermont Yankee		Azimuth: N/A		Page 2 of 8	
Unit # 1		Wedge I.D.: 70° Skew Angle 17°		Attached Cal. Data Sheet	
Cal. Block: RV-3		Scanning dB: 91dB		766 - Demo	

IND. NO.	% of DAC	W. MAX.		INBOARD		OUTBOARD		L MAX.		CCW		CW		REMARKS
		W	MP	W1	MP	W2	MP	L	MP	L1	MP	L2	MP	
1	100%	5.45"	8.6"	5.2"	8.4"	5.9"	8.8"	6.1"	8.6"	6.0"	8.8"	6.3"	8.4"	CW
2	80%	9.2"	15.6"	8.2"	14.4"	9.6"	16.2"	7.3"	15.6"	7.1"	15.8"	7.5"	15.2"	CW
3	90%	5.65"	9.0"	5.2"	8.6"	6.1"	9.6"	7.4"	9.0"	7.1"	8.6"	7.5"	8.8"	CW
4	80%	4.0"	16.4"	3.65"	16"	4.5"	17.2"	19.0"	16.4"	18.7"	16.4"	19.2"	16.4"	CW
5	80%	6.8"	14.0"	6.0"	13.4"	7.4"	14.4"	19.2"	14.0"	18.7"	14.0"	19.5"	14.0"	CW
6	50%	5.4"	14.0"	4.9"	13.6"	5.8"	14.4"	17.5"	14.0"	17.3"	14.0"	17.7"	14.0"	CW



MP - Metal Path
 Lo - 0° Datum
 Lm - Distance from Lo at max. response
 L1 - Distance from Lo at 50% Endpoints
 L2 - Distance from Lo at 50% Endpoints

Wo - Vessel Shell
 Wm - Distance from Wo at max. response
 W1 - Distance from Wo at 50% Endpoints
 W2 - Distance from Wo at 50% Endpoints

Note: All measurements are to be taken to transducer centerline.

Sketch: INDICATIONS #1 + 6 - REAL $\approx 110^\circ$
 INDICATIONS #2 + 5 - REAL $\approx 135^\circ$
 INDICATIONS #3 + 4 - REAL $\approx 135^\circ$

Examiner: [Signature] Level: II Date: 9-23-85
 Examiner: [Signature] Level: II Date: 9-23-85
 Reviewer: [Signature] Date: 9-24-85
 Reviewer: [Signature] Date: 9-24-85
 Reviewer: [Signature] Date: 9-24-85

AD [Signature]
 9/24/85

Plant/Unit VERMONT YANKEE
Comp/System FEEDWATER MakeUp
ISO N/A Loop N/A

DEMO
CALIBRATION DATA SHEET

Page 3 of 8
Data Sheet No. 7616-DEMO
Procedure No. 80A7616
Subject: FEEDWATER NOZZLE INNER RADIUS
Rev/Change No. 2 / FC 82
Calibration
Block No. VY-6-1R
Fabrication No. N/A
Surface 0.0
Block Temp 59 °F
Comp. Temp 61 °F
Thickness 4.34"
CRT Calibrated in INCHES
OF METAL PATH
Each Maj. Screen Div = 1.0"

INSTRUMENT SETTINGS	
Mfg/Model No.:	<u>SONIC MKI</u>
Serial No.:	<u>03183E</u>
Sweep Length:	<u>3.04</u>
Sweep Delay:	<u>0.18</u>
Pulse Length/Damping:	<u>MIN</u>
Freq.:	<u>2</u> Rep. Rate: <u>1K</u>
Filter:	<u>Hi Video</u> ^{NORM} Jack: <u>R</u>
DEC/Gate Switch:	<u>OFF</u> Range: <u>10</u>
Mode Select:	<u>NORMAL</u> Reject: <u>OFF</u>
Gain (coarse):	<u>40</u> (fine): <u>9</u>
Scan Sensitivity:	<u>69</u>

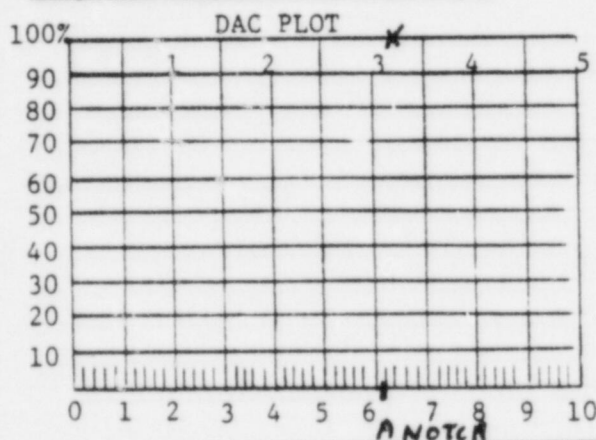
INSTR. LINEARITY CAL.					
Amplitude					
	High	Low	High	Low	
1	100	50	5	60	30
2	90	45	6	50	25
3	80	40	7	40	20
4	70	35	8	30	15

AMPL. CONTROL LINEARITY		
Initial	dB	Result
80	-6	40
80	-12	20
40	+6	80
20	+12	80

CALIBRATION CHECKS TIME	
Initial Cal.	<u>0900</u>
Intermediate	<u>-</u>
Intermediate	<u>1240</u>
Intermediate	<u>-</u>
Final Cal.	<u>1445</u>

ADDITIONAL SHEETS? CHECK BOX		
Continuation	<u>N/A</u> Beam Plot	<u>N/A</u>
Supplements	<u>X</u> None	<u>N/A</u>

SEARCH UNIT	
CAL. ANGLE	<u>45°</u>
Scan Angle:	<u>19°/33°</u> Mode: <u>SHEAR</u>
CAL WEDGE	<u>45°</u>
Fixturing (if any):	<u>19/33° WEDGE</u>
Style or Type No.:	<u>GAMMA</u>
Size & Shape:	<u>0.5" X 1.0" RECT.</u>
Frequency:	<u>2.25 MHZ</u>
Serial No./Brand:	<u>JOS937/KBAEROTON</u>
Measured Angle:	<u>45°</u>
Cable Type & Length:	<u>1X6' BNC</u>
Couplant Brand:	<u>ULTRAGEL II</u>
Couplant Batch:	<u>8551</u>



SCAN AREA	
0° WTV	<u>N/A</u>
0° Mar'l	<u>N/A</u>
≡ To Weld	<u>N/A</u>
⊥ To Weld	<u>N/A</u>
Calibration	
Axial	<u>N/A</u>
Circ	<u>N/A</u>
<u>NOZZLE INNER RADIUS</u> <u>EXAM FROM BARREL SIDE</u>	

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
<u>FW. REACTOR</u>	<u>X</u>	<u>N/A</u>	<u>X</u>	<u>COMPLETE BARREL SIDE</u> <u>90° - 180°</u> <u>C.W. + CCW</u>
<u>NOZZLE INNER</u>				
<u>RADIUS MAKEUP</u>				
<u>90° - 180°</u>				

EXAMINERS 1 Rodney S. Barnes Date 9-23-85 Level II
2 Steve Spindler Date 9-23-85 Level II
REVIEWERS 1 [Signature] Date 9/24/85
2 Thermon D. Berrill Date 9-24-85
3 _____ Date _____



NUCLEAR ENERGY SERVICES, INC.



NUCLEAR ENERGY SERVICES, INC.

Project No. 5545	Nozzle: NICK-UP	Date (Day/Mo./Year) 9-23-85
Plant VY	Azimuth: N/A	Page 4 of 8
Unit I	Wedge I.D.: 19/33	Attached Cal. Data Sheet 7616 DEMO
Cal. Block: VY-6-1R	Scanning dB: 69	

MP - Metal Path

Lo - 0° Datum

Lm - Distance from Lo at max. response

L1 - Distance from Lo at 50% Endpoints

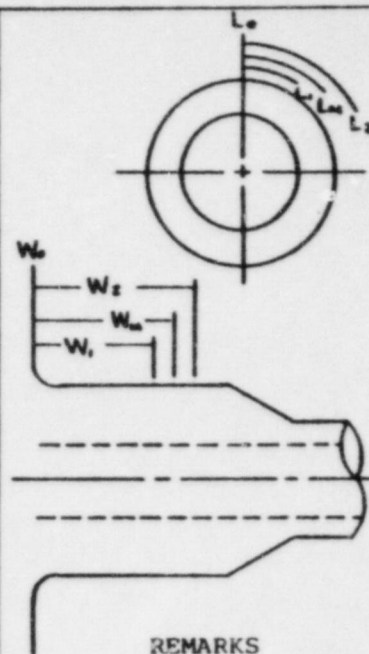
L2 - Distance from Lo at 50% Endpoints

Wo - Vessel Shell

Wm - Distance from Wo at max. response

W1 - Distance from Wo at 50% Endpoints

W2 - Distance from Wo at 50% Endpoints



IND. NO.	% of DAC	W. MAX.		INBOARD		OUTBOARD		L MAX.		CCW		CW		REMARKS
		W	MP	W1	MP	W2	MP	L	MP	L1	MP	L2	MP	
1	50	.20"	8.70"	.25"	8.80"	.75"	8.60"	120°	8.60"	114.25°	8.60"	121.75°	8.60"	SHOOTING CW
2	40	C.O."	8.50"	.20"	8.70"	*	*	170°	8.50"	167.75°	8.80"	171.0°	8.40"	SHOOTING CW
3	32	C.O."	8.90"	.20"	9.10"	*	*	155°	8.90"	154°	9.20"	157.75°	9.20"	SHOOTING CW

Note: All measurements are to be taken to transducer centerline.

* MEASUREMENTS COULD NOT BE TAKEN DUE TO LIFT OFF

Examiner	Robert J. Lerner	Level	II	Date	9-21-85
Examiner	Steve Brundage	Level	II	Date	9-24-85
Reviewer	Steve Brundage	Date	9/24/85		
Reviewer	Thomas M. Kennell	Date	9-24-85		
Reviewer		Date			

Sketch: INDICATION #1 - GEOMETRY
INDICATIONS #2+3 - REAL 160°AUG 20 1985
LTH
9/24/85

NOTE: BACK SIDE OF WEDGE FOR FROM-NOZZLE TRANSITION USED FOR ALL "W" MEASUREMENTS.
ON INDICATION #1 THE CW WEDGE EDGE USED FOR "L" MEASUREMENTS
ON INDICATION #2+3 WEDGE E USED FOR "L" MEASUREMENTS

Plant/Unit VERMONT YANKEEComp/System FEEDWATER MAKEUP CALIBRATION DATA SHEETISO N/A Loop N/ADEM40Page 5 of 8Data Sheet No. 7616 DEMOProcedure No. 80A7616Subject: FEEDWATER NOZZLE
INNER RADIUSRev/Change No. 2 / FC#2

Calibration

Block No. VY-6-1RFabrication No. N/ASurface OPBlock Temp 80 °FComp. Temp 59 °FThickness 4.34CRT Calibrated in INCHES

OF METAL PATH

Each Maj. Screen Div = 1.0EXAM ZONE#2

INSTRUMENT SETTINGS

Mfg/Model No.: SONIC MKISerial No. : 03183ESweep Length : 3.04Sweep Delay : 0.18Pulse Length/Damping: MINFreq.: 2 Rep. Rate: 1KFilter: Hi Video: NORM Jack: RDEC/Gate Switch: OFF Range: 10Mode Select: NORMAL Reject: OFFGain (coarse): 40 (Fine): 9Scan Sensitivity: 69

SEARCH UNIT

CAL. ANGLE 45°Scan Angle: 19°133 Mode: SHEARCAL WEDGE 45°Fixturing (if any): 19° WEDGEStyle or Type No. : GAMMASize & Shape: 0.5" X 1.0" RECT.Frequency : 2.25 MHzSerial No./Brand: J05937/KBAGWELMeasured Angle : 45°Cable Type & Length: 1X6' BNCCouplant Brand: UNTRAGEL IICouplant Batch: 8551

INSTR. LINEARITY CAL.

Amplitude

	High	Low	High	Low
1	100	50	60	30
2	90	45	50	25
3	80	40	40	20
4	70	35	30	15

AMPL. CONTROL LINEARITY

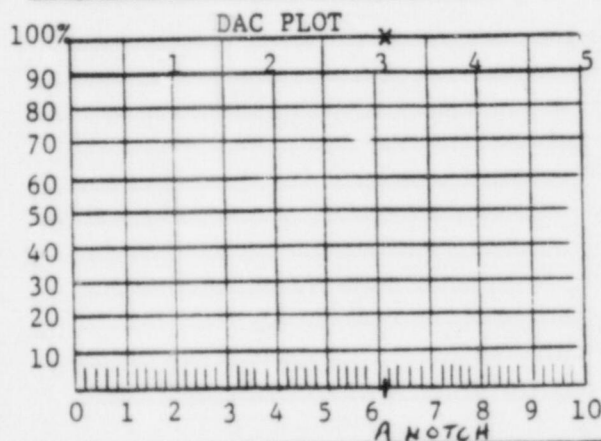
Initial	dB	Result
80	-6	40
80	-12	18
40	+6	80
20	+12	94

CALIBRATION CHECKS TIME

Initial Cal.	1030
Intermediate	-
Intermediate	-
Intermediate	-
Final Cal.	1100

ADDITIONAL SHEETS? CHECK BOX

Continuation	<u>N/A</u>	Beam Plot	<u>N/A</u>
Supplements	<u>X</u>	None	<u>N/A</u>



SCAN AREA

0° WRV	N/A
0° Mar'l	N/A
= To Weld	N/A
⊥ To Weld	N/A
Calibration	
Axial	N/A
Circ	N/A

EXAMINATION WELD/AREA	Recordable Indications			COMMENTS/REASON FOR INCOMPLETED SCAN (S)
	Yes	No	Geom	
FW. REACTOR	<u>X</u>	<u>N/A</u>	<u>N/A</u>	<u>COMPLETE BARREL SIDE</u> <u>90° - 180°</u> <u>CW + CCW.</u>
NOZZLE INNER				
RADIUS MAKEUP				
<u>90° - 180°</u>				

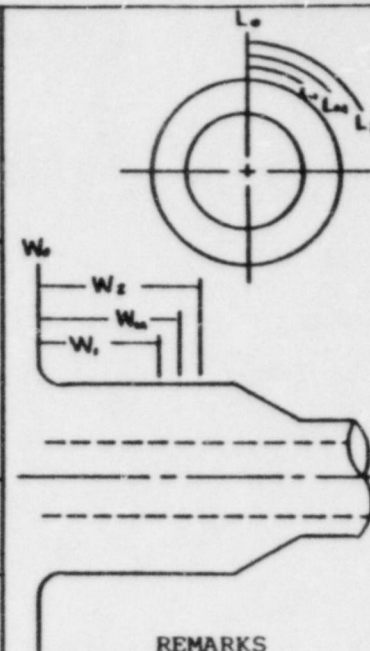
EXAMINERS 1 Rodney D Barnes Date 9-24-85 Level II2 Steve Spindle Date 9-24-85 Level IIREVIEWERS 1 [Signature] Date 9/24/852 Thomas M Kennell Date 9-24-85

3 _____ Date _____

nes

NUCLEAR ENERGY SERVICES INC.

Project No. 5545	Nozzle: MOCK-UP	Date (Day/Mo./Year) 9-24-85
Plant VY	Azimuth: N/A	Page 6 of 8
Unit I	Wedge I.D.: 19°	Attached Cal. Data Sheet 7616-DEMO
Cal. Block: VY-6-1R	Scanning dB: 69	



MP - Metal Path
 Lo - 0° Datum
 Lm - Distance from Lo at max. response
 L1 - Distance from Lo at 50% Endpoints
 L2 - Distance from Lo at 50% Endpoints
 Wo - Vessel Shell
 Wm - Distance from Wo at max. response
 W1 - Distance from Wo at 50% Endpoints
 W2 - Distance from Wo at 50% Endpoints

IND. NO.	% of DAC	W. MAX.		INBOARD		OUTBOARD		L MAX.		CCW		CW		REMARKS
		W	MP	W1	MP	W2	MP	L	MP	L1	MP	L2	MP	
1	100	.20"	7.0"	.35"	7.0"	0.0"	7.0"	171.75°	7.0"	170.5°	7.2"	174°	6.9°	SHOOTING CCW
2	110	.25"	7.1"	.40"	7.2"	.05"	7.2"	143°	7.1"	141°	7.4"	143.5°	6.9°	SHOOTING CW

Note: All measurements are to be taken to transducer centerline.

Sketch: INDICATION 1+2-REAL $\approx 155^\circ$

Examiner <u>Rodney J. Borne</u>	Level <u>II</u>	Date <u>9-24-85</u>
Examiner <u>Steve Spindler</u>	Level <u>II</u>	Date <u>9-24-85</u>
Reviewer <u>[Signature]</u>	Date <u>9/24/85</u>	
Reviewer <u>Thomas M. Kennell</u>	Date <u>9-24-85</u>	
Reviewer _____	Date _____	

Note: FRONT OF WEDGE USED FOR ALL "L" MEASUREMENTS AND OUTBOARD WEDGE EDGE FROM NOZZLE TRANSITION USED FOR ALL "W" TRANSECTIONS

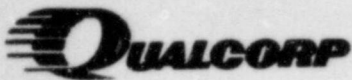
[Signature]
 LTII
 9/24/85

APPENDIX III**PERSONNEL CERTIFICATIONS**

In the performance of the examinations, NES utilized qualified individuals who were certified to perform their particular job function. NES Document 80A9068 defines the requirements for testing, training, and certifying nondestructive test examiners. All individuals involved with the Vermont Yankee examinations were properly certified in accordance with this procedure. Verification of employees' qualifications are included in this appendix and includes the following documentation:

Individual Certification Packages - Required by NES Procedure 80A9068. Each package includes:

- a. Certification of Personnel Qualification
- b. Eye Examination Report
- c. Resume



SHELTER ROCK ROAD
DANBURY, CONNECTICUT 06810
(203) 796-5000
Inter-Office Correspondence

To:	File	Date:	November 5, 1985
From:	S. L. Foote - Level III	Business Unit:	Engineering and Technical Services
Subject:	Nozzle Inner Radius Training	No.:	028-1655
Reference:			

As required by Vermont Yankee Procedure 80A7616, Rev. 2, the following individuals have received 10 hours of nozzle inner radius training:

R. Barnes
R. Linden
S. Spindler
P. Anderson

In addition, a practical examination was administered and the results are attached.

SLF/im
Attachment

MEMORANDUM

YANKEE ATOMIC - FRAMINGHAM

To	L.E. Mullins	Date	September 30, 1985
From	T.M. Rennell	Group #	MSG 315/85
		W.O. #	4903
Subject	Qualification of NES Procedure 80A7616, Rev. 2	I.M.S. #	
	On VY Feedwater Nozzle Mock-Up		

Reference: Memo, MSG 303/85, dated September 16, 1985

DISCUSSION

On September 23 and 24, 1985, NES personnel demonstrated the qualification on the subject procedure at Vermont Yankee. Those witnessing the demonstration were:

M. Landers/D. Dyer	YNSD/OQA
T.M. Rennell	YNSD/MSG

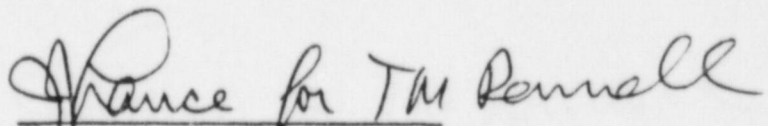
The qualification consisted of an examination of the 90°-180° quadrant the mock-up inner radius and barrel ID using the following techniques:

- Inner Radius and Barrel - compound angles using shear waves (19° and 33°) from the barrel OD clock-wise and counter clock-wise
- Inner Radius - 70° shear wave from the shell side clock-wise and counter clock-wise
- Barrel Inside Diameter - 19° shear wave from barrel OD clock-wise and counter clock-wise

Recordable identifications were plotted on full scale drawings of the nozzle.

RESULTS

NES detected 100% of the notch reflectors in the 90°-180° quadrant of the mock-up, with no overcalls.


Thomas M. Rennell
Mechanical Services Group

TMR/meb

cc: D.A. Hansen
J.J. Lance
D. Dyer - VY, OQA
F. Burger - VY
D. Girroir - VY
S. Foote - NES

NAME Rodney Barnes

CERTIFICATIONS				EXAM SCORES				TNG.	RECERTIFICATION/RESTRICTIONS
METHOD	LEVEL	DATE	EXAMINER (LEVEL III)	GEN.	SPEC.	PRAC.	COMP.	HRS.	
UT	II	5/11/78	<i>L. J. Lan</i>	74	100	90	88	100	Corrective Lenses
PT	II	11/9/78	<i>L. J. Lan</i>	70	86	95	84.8	32	" " (Visible dye only)
PT	II	5/15/80	<i>E. J. Anderson</i>	97.5	85	98	93.5	35	" " (re-certification)
VT	II	2/13/81	<i>E. J. Anderson</i>	93	99.5	100	97.5	30	* VT-I Corrective Lenses
UT	II	5/7/81	<i>L. J. Lan</i>	96	91	100	96.1	162	Corrective Lenses (re-certification)
									* When working to ASME Code Section XI
									1977 ed., Winter 1977 or later
				(.3)	(.3)	(.4)	(1.0)		addenda, limited to VT-I exams.

EXPERIENCE			NDT METHODS & HIGHEST LEVEL ATTAINED
From	To	Company	
5/75	Present	Nuclear Energy Services, Inc.	UT, RT, PT, Visual II, VT III
1973	1975	Seatrains Shipbuilding Corp.	UT, RT, PT, Visual II
1962	1973	Newport News Shipbuilding & D.D.	UT, II RT I

VERIFIED BY

L. J. Lan
In accordance with the NES, Inc. QA Manual 80A9021, NES Division Procedure 80A9068 and/or 80A9069 and the 1975 Edition of SNT-TC-1A.

"All historical information supplied by me to compile this certification is true and correct to the best of my knowledge".

Examinee

Date

EDUCATION AND TRAINING (HIGHEST PUBLIC, ADVANCED AND NDT)

SCHOOL	LOCATION	DATE	LENGTH	SUBJECT
Newport News D.D.	Newport News Va.	1963	42 hrs.	Basic Ultrasonics
Seatrains	Brooklyn NY	1973	20 hrs.	Ultrasonic weld
Conam Div.	Rahway, NJ	1975	18 hrs.	ISI Ultrasonics
Conam Div.	Danbury, CT	1977	20 hrs.	Automated Ultras
Newport News, D.D.	Newport News, VA	1970	40 hrs.	Radiography
Seatrains	Brooklyn, NY	1974	40 hrs.	Radiography
Seatrains	Brooklyn, NY	1974	16 hrs.	Visual Inspection
Seatrains	Brooklyn, NY	1973	16 hrs.	Liquid Penetrant
Conam Div.	Rahway, NJ	1975	16 hrs.	Liquid Penetrant
N.E.S.	Danbury, Ct.	1980	3 hrs.	Liquid Penetrant
EPRI Round Robin	Oyster Creek	1978	30 hrs.	No.2 Inner Radif
EPRI Round Robin	Battelle-Ohio	1979	12 hrs.	IGSCC
N.E.S. Visual	Oswego, NY	1981	14 hrs.	VT-I & VT-II
N.E.S.	Oswego, NY	1981	10 hrs.	ICSCC
N.E.S.	Oswego, NY	1981	10 hrs.	Nozzle Inner Radif
EPRI	Charlotte, NC	9/81	8 hrs.	IGSCC

[illegible]

*Examined by EPRI-see attached memo

EXPERIENCE

[illegible]

VERIFIED BY

in accordance with the NES, Inc. QA Manual
80A9021, NES Division Procedure 80A9068
and/or 80A9069 and the 1975 Edition of
NT-TC-1A.

"All historical information supplied by me to compile this certification is true and correct to the best of my knowledge".

Richard S. Barnes
EXAMINEE

9-22-87
DATE

EDUCATION AND TRAINING (HIGHEST PUBLIC ADVANCED AND NDT)

SCHOOL	LOCATION	DATE	LENGTH	SUBJECT
EPRI	Charlotte, NC	1/82	40hrs.	Visual training LI
EPRI	Charlotte, NC	3/82	24hrs.	IGSCC
EPRI	Charlotte, NC	5/82	40hrs.	Visual LII
EPRI	Charlotte, NC	7/82	40hrs.	Visual LIII
EPRI	Charlotte, NC	6/83	40hrs.	Visual LIII
EPRI	Charlotte, NC	6/83	40hrs.	IGSCC
NUCLEAR ENERGY SERVC	OSWEGO, NY	6/85	50 hrs	IGSCC DETECTION
Newport News High School	Newport News, VA	1961	4 years	Graduate

NUCLEAR ENERGY SERVICES, INC.

SHELTER ROCK ROAD
DANBURY, CONNECTICUT 06810
(203) 796-5000
Writer's direct number 796-
Inter-Office Correspondence

Ref. No.: NQA-979

Date: July 22, 1983

To: QA File

From: M. J. Dizdul *mjd*

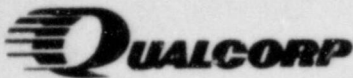
Subject: Level III, VT Certification of R. Barnes

Ref.: Nuclear Inservice Inspection for the Certification of Visual
Examination Personnel (80A9069, Revision 5)

This is to verify that R. Barnes has been certified in all categories of VT, effective June 24, 1983, as per the requirements of the referenced procedure. The written tests for this certification were administered and graded by the EPRI NDE Center and the test grades based on EPRI's grading criteria (Paragraph 4.4).

MJD/lap

cc R. Barnes



SHELTER ROCK ROAD
DANBURY, CONNECTICUT 06810
(203) 796-5000
Inter-Office Correspondence

To: Personnel Certification File Date: October 31, 1983

From: Michael Walcoff, Level III UT *RPW* Business Unit: Engineering and
Technical Services

Subject: UT LEVEL II "IGSCC SPECIAL" CERTIFICATION No.:
OF RODNEY BARNES

Reference: PROCEDURE FOR CERTIFYING NONDESTRUCTIVE EXAMINATION
PERSONNEL (80A9068, Rev. 1)

This is to verify that RODNEY BARNES is certified as a Level II UT, "IGSCC Special" in accordance with the requirements of the referenced procedure. The written and practical tests were administered and graded by the EPRI NDE Center and the test grades are based on EPRI's grading criteria. All exams administered by EPRI are kept on file at the EPRI NDE Center, Charlotte, North Carolina.

/maa

Rodney Barnes

Abstract of Experience

Actively employed in NDT since 1962. Has had extensive experience in both Ultrasonic and Radiographic Inspection of pipe welds, plus visual inspection both nuclear and non-nuclear.

Education

High School Graduate
 UT Training School, Newport News Shipbuilding - 42 hours
 UT Weld Inspection, Seatrain Shipbuilding Corp. - 20 hours
 RT at Newport News, Virginia - 40 hours
 Radiographic Inspection, Seatrain Shipbuilding Corp. - 40 hours
 On-job-training, Visual Inspection, Seatrain Shipbuilding Corp. - 16 hours
 Liquid Penetrant Training, Seatrain Shipbuilding, 1973 - 16 hours
 Liquid Penetrant Training, Conam Inspection, 1975 - 16 hours
 Advanced UT Training, Conam Inspection, 1975 - 18 hours
 Automated UT Examination, Conam Inspection, 1977 - 20 hours
 Visual Examination, NES, 1981 - 14 hours
 IGSCC Training, NES, 1981 - 10 hours
 Nozzle Inner Radii, NES, 1981 - 10 hours
 Liquid Penetrant, NES, 1980 - 3 hours
 EPRI, Inner Radii #2, 1978 - 30 hours
 EPRI, IGSCC, 1979 - 12 hours
 EPRI, IGSCC, 1981 - 8 hours
 EPRI, Visual Training Level I, 1982 - 40 hours
 EPRI, IGSCC, 1982 - 24 hours
 EPRI, Visual Training Level II, 1982 - 40 hours
 EPRI, Visual Training Level III, 1982 - 40 hours
 EPRI, Visual Training Level III, 1983 - 40 hours
 EPRI, IGSCC, 1983 - 40 hours

Experience

1975 to Present NUCLEAR ENERGY SERVICES, INC.

Authored module for EPRI IGSCC course entitled "Detection & Evaluation of IGSCC Spatial Factors". Instructor for IGSCC at the EPRI NDE center, Charlotte, North Carolina.

Has participated in the inservice inspection of: Surry, Maine Yankee, Shoreham, Millstone, Nine Mile Point, Three Mile Island, Indian Point, Shippingport, Quad Cities and H.B. Robinson.

1973 to 1975 SEATRAN SHIPBUILDING
 Brooklyn, New York

Level II Ultrasonics, Radiography, Penetrant, Visual

Rodney S. Barnes (Continued)

1962 to 1973

NEWPORT NEWS SHIPBUILDING AND DRYDOCK CO.
Newport News, VirginiaLevel II Ultrasonics
Level I RadiographyCertifications

Level II	Penetrant
Level II	Ultrasonics
Level II	Ultrasonics - IGSCC Special (EPRI)
Level III	Visual (EPRI)

EYE EXAMINATION REPORT

NAME: RODNEY BARNES

NEAR ACUITY

(THE EXAMINEE IS REQUIRED TO PASS A JAEGER J-1 OR EQUIVALENT AT 16 INCHES)

<u>UNCORRECTED</u>	<u>CORRECTED</u> (if applicable)
RIGHT EYE <u>N/A</u>	<u>J-1</u>
LEFT EYE <u>N/A</u>	<u>J-1</u>
BOTH <u>N/A</u>	<u>J-1</u>

DISTANCE ACUITY

<u>UNCORRECTED</u>	<u>CORRECTED</u> (if applicable)
RIGHT EYE <u>N/A</u>	<u>20/20</u>
LEFT EYE <u>N/A</u>	<u>20/30</u>
BOTH <u>N/A</u>	<u>20/20</u>

COLOR PERCEPTION

(THE EXAMINEE IS REQUIRED TO DISTINGUISH BETWEEN CONTRASTING COLORS)

TEST USED ISHIHARA PLATES 1-14

PASSED

FAILED

LIMITED

*PLEASE EXPLAIN THE DEGREE OF IMPAIRMENT (if any) _____

ARE CORRECTIVE LENSES REQUIRED? YES

FOR WHAT PURPOSE? (NEAR, DISTANCE, OR BOTH) BOTH

VISUAL FIELD DEFECT YES _____ NO X

SIGNED

[Signature]

TITLE

Level III

DATE

12/12/84



LEAR ENERGY SERVICES, INC.

CERTIFICATION OF PERSONNEL QUALIFICATION

NAME Steve Foote

CERTIFICATIONS				EXAM SCORES				TNG. HRS.	RECERTIFICATION/RESTRICTIONS
METHOD	LEVEL	DATE	EXAMINER (LEVEL III)	GEN.	SPEC.	PRAC.	COMP.		
U.T.	II	12/11/79	<i>L. J. Carr</i>	84	90	98	90.6	150	
UT	III	8/6/81	<i>W. C. Samsby</i>	90.8	100	100	96.3	150	Corrective lenses Req'd.
VT	III	9/25/81	<i>W. C. Samsby</i>	92.1	93	100	93.4	39	When working to ASME Code Section XI
									1977 ed., Winter 1977 or later addenda,
									limited to VT-1 exams. Corrective lenses
VT	III	11/29/82	<i>W. C. Samsby</i>	81*	87*	87*	N/A*	120	Certified to all categories as per
									80A9069 Rev. 4 Corrective lenses
UT	III	8/7/84	<i>Michael T. Wolcott</i>	89.6	100	96.5	89	70 ¹⁷⁴	Recertification Corrective lenses
			Level III	(.4)	(.4)	(.2)	(1.0)		
			Level II	(.3)	(.3)	(.4)	(1.0)		

*Examined by EPRI-see attached memo

EXPERIENCE

From	To	Company
10/1/79	Present	Nuclear Energy Services
3/24/74	9/30/79	Joslyn Stainless Steel

NDT METHODS & HIGHEST LEVEL ATTAINED

U.T. Level II, UT Level III, VT-III
U.T. Level III

VERIFIED BY

L. J. Carr
EPRI

In accordance with the NES, Inc. QA Manual 80A9021, NES Division Procedure 80A9068 and/or 80A9069 and the 1975 Edition of SNT-TC-1A.

"All historical information supplied by me to compile this certification is true and correct to the best of my knowledge".

Stephen J. Foote
Examinee12/18/79
Date

EDUCATION AND TRAINING (HIGHEST PUBLIC, ADVANCED AND NDT)

SCHOOL	LOCATION	DATE	LENGTH	SUBJECT
High School Graduate	Syracuse, Ind.	1968	4 yrs.	Academic
Purdue University	Fort Wayne, Ind.	1975	3 yrs.	Mech Engr.
Ivy Tech	Fort Wayne, Ind.	1976	3 mo.	Metallurgy
U.T.E.C.	Detroit, Mich.	11/74	40hrs.	Basic U.T.
Kraut kramer Branson	Charlotte, N.C.	10/77	40hrs.	U.T. Level II
N.E.S.	Danbury, Ct.	12/79	70Hrs.	Automated U.T.
EPRI NDE Center	Charlotte, NC	1/82	40 HRS	Visual
EPRI NDE Center	Charlotte, NC	3/82	24 HRS	ICSCC
EPRI NDE Center	Charlotte, NC	4/82	40 HRS	Visual
EPRI NDE CENTER	Charlotte, NC.	7/82	40 Hrs	Visual

NUCLEAR ENERGY SERVICES, INC.

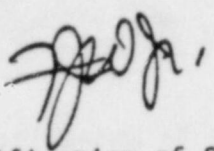
SHELTER ROCK ROAD
NORWICH, CONNECTICUT 06810
J31 748-3581

Inter-Office Correspondence

Ref. No.: FJW-041

Date: November 29, 1982

To: QA File

From: F. J. Williams, Jr. 

Subject: Level III, VT Certification of S. Foote

Ref.: Nuclear Inservice Inspection for the Certification of Visual Examination
Personnel (80A9069, Rev. 4)

This is to verify that S. Foote has been certified in all categories of VT as per the requirements of the referenced procedure. The written tests for this certification were administered and graded by the EPRI NDE Center and the test grades based on EPRI's grading criteria (paragraph 4.4).

FJW:bb

cc: S. Foote ✓

EYE EXAMINATION REPORT

NAME: FLOTE S BROWN

NEAR ACUITY

(THE EXAMINEE IS REQUIRED TO PASS A JAEGER J-1 OR EQUIVALENT AT 16 INCHES)

	<u>UNCORRECTED</u>	<u>CORRECTED</u> (if applicable)
RIGHT EYE	<u>J 1</u>	<u>J 1</u>
LEFT EYE	<u>J 1</u>	<u>J 1</u>
BOTH	<u>J 1</u>	<u>J 1</u>

DISTANCE ACUITY

	<u>UNCORRECTED</u>	<u>CORRECTED</u> (if applicable)
RIGHT EYE	<u>20/200+2</u>	<u>20/20</u>
LEFT EYE	<u>20/80+4</u>	<u>20/20</u>
BOTH	<u>20/60+3</u>	<u>20/20</u>

COLOR PERCEPTION

(THE EXAMINEE IS REQUIRED TO DISTINGUISH BETWEEN CONTRASTING COLORS)

TEST USED ISHIHARA'S PLST

PASSED

FAILED

LIMITED

*PLEASE EXPLAIN THE DEGREE OF IMPAIRMENT (if any) COLOR VISION GOOD

ARE CORRECTIVE LENSES REQUIRED? YES

FOR WHAT PURPOSE? (NEAR, DISTANCE, OR BOTH)

CONSIDERATION FIELD ONLY

BOTH DISTANCE AND NEAR

FOR DISTANCE

VISUAL FIELD DEFECT

YES

NO

SIGNED

[Signature]

TITLE

OPTOMETRIST

DR. PETER B. LERNER

Ophthalmologist

Berkshire Shopping Center
67 Newtown Road, Route 6
Greenwich, Connecticut 06030

DATE

10/5/84

STEPHEN FOOTEEDUCATION

1975 Purdue University Fort Wayne, IN
3 years Mechanical Engineering

NDE TRAINING

IVY TECHNOLOGICAL INSTITUTE FORT WAYNE, IN

1976 39 hours Metallurgy

ULTRASONIC TESTING ENGINEERS AND CONSULTANTS DETROIT, MI

1974 40 hours Ultrasonics

KRAUTKRAMER BRANSON CHARLOTTE, NC

1977 40 hours Ultrasonics

NUCLEAR ENERGY SERVICES DANBURY, CT

1979 70 hours Ultrasonics - Automated

EPRI NDE CENTER CHARLOTTE, NC

1982	40 hours	Visual Examination I
	24 hours	Ultrasonics - IGSCC
	40 hours	Visual Examination II
	40 hours	Visual Examination III

EXPERIENCE

1979 to NUCLEAR ENERGY SERVICES DANBURY, CT
Present A unit of Qualcorp

Visual Examination Section Manager

Assigned to the Inservice Inspection Service Line. Experience includes over five years of preservice and inservice examinations at a broad cross section of nuclear power plants. Responsible for coordinating preservice and inservice visual examinations.

STEPHEN FOOTEREPRESENTATIVE NUCLEAR EXPERIENCE

<u>Plant</u>	<u>Utility</u>
*Nine Mile Point I	Niagara Mohawk Power Corp.
*Vermont Yankee	Vermont Yankee Nuclear Power Corp.
*Virgil C. Summer I	South Carolina Electric & Gas Co.
*J. A. Fitzpatrick	New York Power Authority
*Yankee Rowe	Yankee Atomic Electric Co.
Callaway I	Union Electric Co.
Limerick I	Philadelphia Electric Co.
Millstone I & II	Northeast Utilities
Nine Mile Point II	Niagara Mohawk Power Corp.
St. Lucie I	Florida Power & Light Co.
Seabrook I	Public Service Co. of New Hampshire
Susquehanna I & II	Pennsylvania Power & Light Co.
Wolfcreek I	Kansas Gas & Electric Co.
Zimmer I	Cincinnati Gas & Electric Co.

* ISI Experience

CERTIFICATIONS

Level III Ultrasonics
Level III Visual Examination (EPRI)



NUCLEAR ENERGY SERVICES, INC.

Page 1 of 2

CERTIFICATION OF PERSONNEL QUALIFICATION

NAME LINDEN, RANDY

CERTIFICATIONS								TNG. HRS.	RECERTIFICATION/RESTRICTIONS
METHOD	LEVEL	DATE	EXAMINER LEVEL III	GEN.	SPEC.	PRAG.	COMP.		
UT	I	4/30/81	<i>J.L. Anderson</i>	88	85.5	100	92.1	66hrs.	Trainee
PT	II	5/19/82	<i>M. Stumm</i>	95	100	98	97.7	575+	15 hrs <i>HP</i>
UT	II	7/26/82	<i>M. Stumm</i>	92	94	96	94.7	100+	
VT	IL	4/18/83	<i>J.L. Anderson</i>	85	88	81	84.3	80	All categories
		10/14/83							
UT	II	10/5/83	<i>Michael L. Walcott</i>	80*	83*	90*	84.9	199	IGSCC Special
PT	II	5/6/85	<i>Michael L. Walcott</i>	86.7 #	93.3 #	96 #	92.7 #	15 hrs	RECERTIFICATION + <i>HP 6/13/85</i>
UT	II	6/13/85	<i>Michael L. Walcott</i>	77.5 #	87.5 #	100 #	80.7 #	209 hrs	RECERTIFICATION 90.7 Composite
									UTII 6/13/85 Manual Only
				(.3)	(.3)	(.4)	(1.0)		
				(.3) #	(.2) #	(.5) #	(1.0) #		

*Examined by EPRI - See attachment

+ Color Contrast Only

EXPERIENCE			NDT METHODS & HIGHEST LEVEL ATTAINED
FROM	TO	COMPANY	
4/30/81	Present	Nuclear Energy Services, Inc.	Level I Trainee UT, UTII, VT, II.
8/81		Nuclear Energy Services, Inc.	UT training status removed, PT II <i>HP/N.D.</i>

VERIFIED BY

J.L. Anderson

In accordance with the NES, Inc. QA Manual 80A9021, NES Division Procedure 80A9068 and/or 80A9069 and the 1975 Edition of SNT-TC-1A.

"All historical information supplied by me to compile this certification is true and correct to the best of my knowledge".

EXAMINEE

DATE

5/11/81

EDUCATION AND TRAINING (HIGHEST PUBLIC, ADVANCED AND NDT)

SCHOOL	LOCATION	DATE	LENGTH	SUBJECT
Coudersport High School	Pennsylvania	1975		General
Nuclear Energy Services	Nine Mile Pt.	1981	66hrs.	Ultrasonics
NUCLEAR ENERGY SERVICES	NINE MILE PT	1981	15 hrs.	Liquid Penetrant
Nuclear Energy Services	Various Sites	8/1/82	575 hrs.	On Job Train LP
General Dynamics Home Study	Nine Mile PT.	5/82	40hrs.	Ultrasonics
Nuclear Energy Services	Nine Mile PT.	6/82	16 hrs.	Ultrasonics
Nuclear Energy Services	Nine Mile Pt.	6/82	16hrs.	IGSCC
EPRI	Oswego, NY	8/82	40 hrs	Visual Level I trng.
EPRI	Oswego, NY	8/82	40 hrs	Visual Level II trng.
EPRI	Charlotte, NC	7/83	40 hrs.	IGSCC Training <i>HP</i>
Nuclear Energy Services	Danville, VA	10/83	16 hrs	Gen. Dyn. Basic <i>HP</i>
Nuclear Energy Services	Danville, PA	10/83	5 hrs	IGSCC trng.
Nuclear Energy Services	Danbury, Ct.	8/81	24 hrs	MT I & II

CERTIFICATIONS

EXAM SCORES

RECERTIFICATION/RESTRICTIONS

METHOD	LEVEL	DATE	EXAMINER (LEVEL III)	Gen.	Spec.	Prac.	Comp.	

EXPERIENCE

FROM	TO	COMPANY	NDT METHOD & HIGHEST LEVEL ATTAINED	LEVEL
		See Page 1		

This individual is certified in accordance with NES Division Procedure 80A9068 and the 1975 and 1980 Editions of SNT-TC-1A.

"All historic information supplied by me to compile this certification is true and correct to the best of my knowledge."

EDUCATION AND TRAINING HIGHEST PUBLIC, ADVANCED AND NDT

SCHOOL	LOCATION	DATE	LENGTH	SUBJECT	LEVEL III
NES	Danbury, CT	6/84	10 hrs.	UT Noz. Inner Radius	
NES	Danbury, CT	7/84	160 hrs.	VT-RPV Internals	
NES	NMP, OSWEGO	3/84	1.75 hrs	80A2819R2 PT	SP/MPW
NES	NMP, OSWEGO	3/84	2.5 hrs	UT-IGSCC 80A2818	SP/MPW
NES	NMP, OSWEGO	4/85	10 hrs	UT Nozzle Inner Radius	SP/MPW

EYE EXAMINATIONS

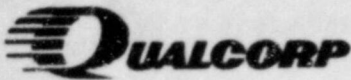
DATE	EXAMINED BY:	DATE	EXAMINED BY:	DATE	EXAMINED BY:
4/14/84	S. L. Foote, LIII				
3/21/85	R. Peters, QD				

See Page 1
Examinee

Verified by

Date

Date



SHELTER ROCK ROAD
DANBURY, CONNECTICUT 06810
(203) 796-5000
Inter-Office Correspondence

To: Certification File: Randy Linden Date: February 22, 1985

From: Michael Walcoff, Level III UT MPW Business Unit: Engineering and
Technical Services

Subject: IGSCC Special Certification No.: 024-057
Randy Linden

Reference: Procedure for Certifying Nondestructive Examination Personnel (80A9068, Rev. 1)

This is to verify that Randy Linden was certified as a Level II UT, "IGSCC Special" on 10/14/83 in accordance with the requirements of the referenced procedure. The written and practical examinations were administered and graded by the EPRI NDE Center and the test scores are based on EPRI's grading criteria. All exams administered by EPRI are kept on file at the EPRI NDE Center, Charlotte, N.C.

/kpt

NUCLEAR ENERGY SERVICES, INC.

SHELTER ROCK ROAD
DANBURY, CONNECTICUT 06810
(203) 796-5000
Writer's direct number 796-

Inter-Office Correspondence

Ref. No.: SLF - 024

Date:

10/31/83
MAY
~~April~~ 14, 1983

To:

File

From:

S. L. Foote, VT Level III

Subject:

Level II, VT Certification of R. Linden

Ref.: Nuclear Inservice Inspection for the Certification of
Visual Examination Personnel (80A9069, Rev. 5)

This is to verify that R. Linden has been certified in all categories of VT as per the requirements of the referenced procedure. The practical test for this certification was administered, in my presence, and graded by the EPRI NDE Center. The written tests for this certification were administered and graded by NES. Certification is based on NES grading criteria.

The experience requirements have been satisfied based on the work performed during the period of 6/82 to 5/83, at Nine Mile Point Unit 1. This work included visual examinations performed during the recirculation pipe replacement. (i.e., check of hangers and snubbers, weld fit-up, weld preps and general conditions). Approximately 80 hours a month were spent performing visual related examination.

SLF/cjy

cc: G. M. Griffiths

NUCLEAR ENERGY SERVICES, INC.

SHELTER ROCK ROAD
DANBURY, CONNECTICUT 06810
(203) 796-5000
Writer's direct number 796-

Inter-Office Correspondence

Ref. No.: SYA-NMP2-011

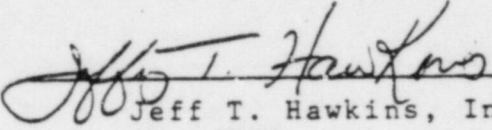
Date: April 1, 1985
To: File
From: Jeff T. Hawkins UT L/III
Subject: Nozzle Inner Radius Training

The individuals listed below have had 10 hrs. of Nozzle Inner Radius Training performed by myself at Nine Mile Point Unit I Training Nozzle on these dates.

Wed.	3/27/85	2 hrs.
Thur.	3/28/85	3 hrs.
Fri.	3/29/85	5 hrs.

Randy Linden	L/II
Tim Beck	L/II
Andre Moreau	L/II
→ Ken Smith	L/I
Neal MacNamara	L/III

All have satisfactorily completed practical examination and training.

 4/1/85
Jeff T. Hawkins, Instructor
UT L/III

JH/mh

EYE EXAMINATION REPORT

NAME: Bandy Binder

NEAR FIELD ACUITY

The examinee is required to pass a Jaeger J-1 or equivalent.

LEFT EYE Pass RIGHT EYE Pass BOTH Pass

Chart used: AO 1456 - no lenses required
(If corrected lenses were used-please note.)

FAR FIELD ACUITY

LEFT EYE 20/20 RIGHT EYE 20/20 BOTH 20/20

COLOR PERCEPTION

The examinee is required to distinguish between contrasting colors.

Test used: Amer. Opt. H.R.P. Plates

Passed ☒ Failed ☐ Limited ☐

Please explain the degree of impairment (if any) _____

Corrective lenses required? No

What purpose? _____

Signed [Signature] Title _____ Date 3-2-85

RANDY LINDENEDUCATION

1975 High School Graduate

NDE TRAININGNUCLEAR ENERGY SERVICES DANBURY, CT

1981	66 hours	Ultrasonics
	15 hours	Penetrant
	24 hours	Magnetic Particle
1982	40 hours	Ultrasonics
	16 hours	Ultrasonics
	16 hours	Ultrasonics - IGSCC
1983	16 hours	Ultrasonics
	5 hours	Ultrasonics - IGSCC
1984	10 hours	Ultrasonics - Nozzle Inner Radius
	160 hours	Visual Examination - RPV Internals

EPRI NDE CENTER CHARLOTTE, NC

1982	80 hours	Visual Examination I, II
1983	40 hours	Ultrasonics - IGSCC

EXPERIENCE

1981 to Present NUCLEAR ENERGY SERVICES DANBURY, CT
A Unit of Qualcorp

Assigned to the Inservice Inspection Serviceline. Experience includes sixteen months of Preservice Inspection at San Onofre, St. Lucie, Susquehanna, and Limerick Nuclear Power Stations.

OUTAGE EXPERIENCE

9/81 to 10/81	St Lucie
4/82 to 12/82	Niagara Point
1/83 to 5/83	Niagara Point
3/84	Niagara Point
4/84 to 5/84	Yankee Rowe
5/84	Niagara Point
6/84	Verde : Yankee

CERTIFICATIONS

Level II	Penetrant
Level II	Ultrasonics
Level II	Ultrasonics - IGSCC (EPRI)
Level II	Visual Examination (EPRI)

1705

NUCLEAR ENERGY SERVICES, INC.

CERTIFICATION OF PERSONNEL QUALIFICATION

NAME Steven P. Spindler

CERTIFICATIONS								TNG. HRS.	RECERTIFICATION/RESTRICTIONS
METHOD	LEVEL	DATE	EXAMINER LEVEL III	GEN.	SPEC.	PRAC.	COMP.		
UT	I-trainee	2/22/82	<i>Stephen D. Dow</i>	90	100	90	93	40hrs	Corrective lenses req'd. contact only
PT	II	2/28/83	<i>M. S. ...</i>	97.5	100	98	98.45	20hrs	Corrective lenses req'd.
UT	II	7/05/83	<i>M. S. ...</i>	92.5	80	94	89.35	80 hrs.	Corrective lenses required Manual
UT	II	11/11/83	<i>M. S. ...</i>	92.5	80	100	91.75	116 hrs.	Automated - corrective lenses req'd
							93.75		
				(.3)	(.3)	(.4)	(1.0)		

+NES-Procedure 80A9068 Rev. 1, effective 9/1/83

EXPERIENCE			NDT METHODS & HIGHEST LEVEL ATTAINED
FROM	TO	COMPANY	
2/82	Present	Nuclear Energy Services, Inc.	UT Level I-trainee, PT II, UT II
9/13/82			UT Training status removed as of this date.

VERIFIED BY

Stephen D. Dow

In accordance with the NES, Inc. QA Manual 80A9021, NES Division Procedure 80A9068 and/or 80A9069 and the 1975 Edition of SNT-TC-1A.

"All historical information supplied by me to compile this certification is true and correct to the best of my knowledge".

Steve Spindler
EXAMINEE

2-22-82
DATE

EDUCATION AND TRAINING (HIGHEST PUBLIC, ADVANCED AND NDT)

SCHOOL	LOCATION	DATE	LENGTH	SUBJECT
Heritage High School	Hoagland, Ind.	1972	4 yrs	Academic
NES	Danbury, CT	2/82	40 hrs	Ultrasonics
Krautkramer-Branson	Hamden, CT	7/82	40 hrs	Ultrasonics
EPRI	Oswego, NY	8/82	40 hrs	Visual Level I
EPRI	Oswego, NY	8/82	40 hrs	Visual Level II
Nuclear Energy Services	Oswego, NY	9/82	20 hrs	Liquid Penetrant
Nuclear Energy Services	Fulton, MO.	10/83	36 hrs	Auto UT <i>SP/MAW</i>
NES	Danbury, CT.	11/83	98 hrs	Auto UT <i>SP/MAW</i>

EYE EXAMINATION REPORT

NAME: STEVE SPINDLER

NEAR ACUITY

(THE EXAMINEE IS REQUIRED TO PASS A JAEGER J-1 OR EQUIVALENT AT 16 INCHES)

	<u>UNCORRECTED</u>	<u>CORRECTED</u> (if applicable)
RIGHT EYE	<u>N/A</u>	<u>J-1</u>
LEFT EYE	<u>N/A</u>	<u>J-1</u>
BOTH	<u>N/A</u>	<u>J-1</u>

DISTANCE ACUITY

	<u>UNCORRECTED</u>	<u>CORRECTED</u> (if applicable)
RIGHT EYE	<u>N/A</u>	<u>20/20</u>
LEFT EYE	<u>N/A</u>	<u>20/20</u>
BOTH	<u>N/A</u>	<u>20/20</u>

COLOR PERCEPTION

(THE EXAMINEE IS REQUIRED TO DISTINGUISH BETWEEN CONTRASTING COLORS)

TEST USED ISHIHARA PLATES 1-14

PASSED

FAILED

LIMITED

*PLEASE EXPLAIN THE DEGREE OF IMPAIRMENT (if any) _____

ARE CORRECTIVE LENSES REQUIRED? YES

FOR WHAT PURPOSE? (NEAR, DISTANCE, OR BOTH) BOTH

VISUAL FIELD DEFECT YES _____ NO X

SIGNED [Signature]

TITLE LEVEL III

DATE 1/14/85

Steve Spindler

Education

Heritage High School, 1972 Graduated
Nuclear Energy Services 1982 - 40 hrs. Ultrasonics
Krautkramer-Branson, Hamden, CT 1982 40 hrs. Ultrasonics
EPRI, Oswego, NY 1982 - 40 hrs. Visual Level I training
EPRI, Oswego, NY 1982 - 40 hrs. Visual Level II training
Nuclear Energy Services, Oswego, NY 1982 - 20 hrs. Liquid Penetrant
Nuclear Energy Services, Oswego, NY 1983 - 36 hrs. Automated Ultrasonics

Experience

2/82 to Present	NUCLEAR ENERGY SERVICES, INC. ISI Division
4/81 to 1/82	Preferred Utilities Inventory Control
9/80 to 3/81	Hydro Systems Material Expeditor

Certifications

Level I trainee	- Ultrasonics, 2/82
Level I	- Ultrasonics, 9/13/82
Level II	- Liquid Penetrant, 2/28/83
Level II	- Ultrasonics, 7/05/83

REVISED 2/21/81

CERTIFICATIONS								TNG. HRS.	RECERTIFICATION/RESTRICTIONS
METHOD	LEVEL	DATE	EXAMINER LEVEL III	GEN.	SPEC.	PRAC.	COMP.		
PT	I trainee	1/23/81	<i>P. Anderson</i>	87.1	100	100	96.1	32	Restricted to Level I activity corrected lenses
UT	I trainee	1/29/81	<i>P. Anderson</i>	98	96	92	95	64	" " " " "
VT	I T	3/29/81	<i>P. Anderson</i>	93	87	96	92	14	Corrected lenses *
PT	II	7/18/81	<i>M. J. J. J.</i>	95.5	100	95	95.25	32	Corrected lenses
UT	II	5/2/83	<i>Stephen J. J.</i>	92.5	90	97	93.55	104	Corrected lenses
									* When working to ASME Code Section XI 1977 ed., Winter 1977 or later addenda limited to VT-I exams.
				(.3)	(.3)	(.4)	(1.0)		

EXPERIENCE				NDT METHODS & HIGHEST LEVEL ATTAINED
FROM	TO	COMPANY		
1/12/81	Present	Nuclear Energy Services, Inc.		Trainee Level I PT, UT, PT II, UT II
1/81	4/26/81	Nuclear Energy Services, Inc.		UT I trainee status removed 528 hrs.
1/81	6/2/81	Nuclear Energy Services, Inc.		PT I and VT-I trainee status removed
3/29/81	9/2/81	Nuclear Energy Services, Inc.		VT I trainee status removed

VERIFIED BY

P. Anderson

In accordance with the NES, Inc. QA Manual 80A9021, NES Division Procedure 80A9068 and/or 80A9069 and the 1975 Edition of SNT-TC-1A.

"All historical information supplied by me to compile this certification is true and correct to the best of my knowledge".

Patrick J. Anderson
EXAMINEE

30 Jun 81
DATE

EDUCATION AND TRAINING (HIGHEST PUBLIC, ADVANCED AND NDT)

SCHOOL	LOCATION	DATE	LENGTH	SUBJECT
High School	Glen Falls, NY	1977	3yrs.	General
Nuclear Energy Services	Danbury, CT	1-23-81	32hrs.	Liquid Penetrant
Sperry Schools	Columbus, Ohio	1-16-81	40hrs.	Ultrasonic
Nuclear Energy Services	Danbury, CT	1-29-81	24hrs.	Ultrasonic
Nuclear Energy Services	Oswego, NY	2/21/81	10hrs.	UT IGSCC
Nuclear Energy Services	Oswego, NY	2/27/81	10hrs.	Nozzle Inspection
Nuclear Energy Services	Oswego, N.Y.	3/25/81	14hrs.	Visual
Sperry Schools	Columbus, Ohio	4/7/82	40hrs.	Ultrasonic Weld

CERTIFICATIONS				EXAM SCORES					RECERTIFICATION/RESTRICTIONS
METHOD	LEVEL	DATE	EXAMINER (LEVEL III)	Gen.	Spec.	Prac.	Comp.	TNG. HRS.	
PT	II	1/28/85	Michael P. Wolcott	82.5	76.6	100	90	32	Corrective Lenses - Recertification

EXPERIENCE		NDE Level II Weights (.3) (.2) (.5)			NDT METHOD & HIGHEST LEVEL ATTAINED		LEVEL I
FROM	TO	COMPANY					
		See Page 1					

This individual is certified in accordance with NES Division Procedure 80A9068 and the 1975 and 1980 Editions of SNT-TC-1A.

"All historic information supplied by me to compile this certification is true and correct to the best of my knowledge."

EDUCATION AND TRAINING HIGHEST PUBLIC, ADVANCED AND NDT						LEVEL III
SCHOOL	LOCATION	DATE	LENGTH	SUBJECT		
NES	DANBURY, CT	10/84	10 HRS	UT: NOZZLE INNER RADIUS		MPG

See Page 1

Examinee

Steve Provost
Verified by

Date

1/28/85
Date

EYE EXAMINATIONS					
DATE	EXAMINED BY:	DATE	EXAMINED BY:	DATE	EXAMINED BY:
1/3/85	Bedlock, O.D.	1/3/84	Bedlock, O.D.		

PATRICK ANDERSON

EDUCATION

1977 High School Graduate

NDE TRAINING

SPERRY SCHOOLS FOR NDT COLUMBUS, OH

1981	40 hours	Ultrasonics
1982	40 hours	Ultrasonics

NUCLEAR ENERGY SERVICES DANBURY, CT

1981	30 hours	Penetrant
	24 hours	Ultrasonics
	10 hours	Ultrasonics - IGSCC
	10 hours	Ultrasonics - Nozzle Inner Radius
	14 hours	Visual Examination

EXPERIENCE

1981 to Present NUCLEAR ENERGY SERVICES DANBURY, CT
A Unit Of QUALCORP

Assigned to the Inservice Inspection Service Line. Experience includes more than three years of preservice examinations at the Perry Nuclear Plant.

OUTAGE EXPERIENCE

2/81 to 6/81 Nine Mile Point

CERTIFICATIONS

Level II	Penetrant
Level II	Ultrasonics



NUCLEAR
ENERGY
SERVICES, INC.

EYE EXAMINATION REPORT

NAME: Patrick Anderson

DATE 1-3-85

NEAR ACUITY

(THE EXAMINEE IS REQUIRED TO PASS A JAEGER J-1 OR EQUIVALENT AT 16 INCHES)

UNCORRECTED

RIGHT EYE J-10
LEFT EYE J-10
BOTH J-8

CORRECTED

J-1
J-5
J-1

DISTANCE ACUITY

UNCORRECTED

RIGHT EYE 20/40
LEFT EYE 20/200
BOTH 20/40

CORRECTED

20/20
20/200
20/20

COLOR PERCEPTION

(THE EXAMINEE IS REQUIRED TO DISTINGUISH BETWEEN CONTRASTING COLORS)

TEST USED A.O. H-R-L-PSEUDOISOCROMATIC PLATES

PASSED

FAILED

LIMITED

*PLEASE EXPLAIN THE DEGREE OF IMPAIRMENT (IF ANY) _____

ARE CORRECTIVE LENS REQUIRED? YES

FOR WHAT PURPOSE? (NEAR, DISTANCE, OR BOTH) _____

VISUAL FIELD DEFECT _____ YES _____ NO NO

SIGNED B+L BUSHNICK PER 146762
U.E. Bushnick-M.R. TITLE G.D.



A UNIT OF **QUALCORP**
NUCLEAR ENERGY SERVICES

DOCUMENT NO. 83A0764

PAGE 12 OF 13

APPENDIX IV
EQUIPMENT CERTIFICATIONS

nes

ULTRASONIC INSTRUMENT LINEARITY RECORD

ULTRASONIC INSTRUMENT

CALIBRATION BLOCK

MODEL NO. SONIC SERIAL NO. 03183E TYPE ILW SERIAL NO. 4608

TRANSDUCER

BRAND Aerotech Gamma FREQUENCY 2.25 SIZE .75 STRAIGHT BEAM (✓)
BRAND m2220 FREQUENCY NA SIZE NA ANGLE BEAM ()

VERTICAL LINEARITY

SIGNAL AMPLITUDES IN % FSH

HORIZONTAL LINEARITY

BACK REFLECTOR	GRID LOC.	ACCEPT LIMITS
1	1	1
2	2.0	1.90-2.10
3	2.9	2.85-3.15
4	3.8	3.80-4.20
5	4.8	4.75-5.25
6	5.8	5.70-6.30
7	6.8	6.65-7.35
8	7.8	7.60-8.40
9	8.9	8.55-9.45
10	10	10

NO.	ACTUAL HIGHER SIGNAL	(CALCULATE)		ACTUAL LOWER SIGNAL
		1/2 OF HIGHER	ACCEPT. LIMITS*	
1	100	(50)	(45)-(55)	50
2	90	(45)	(40)-(50)	45
3	80	(40)	(35)-(45)	40
4	70	(35)	(30)-(40)	35
5	60	(30)	(25)-(35)	30
6	50	(25)	(20)-(30)	25
7	40	(20)	(15)-(25)	20
8	30	(15)	(10)-(20)	15
9	20	(10)	(5)-(15)	10
10	10	(5)	(0)-(10)	5

*ACCEPTANCE LIMITS ARE 1/2 OF THE HIGHER SIGNAL $\pm$ 5% FSH
AMPLITUDE CONTROL LINEARITY

INITIAL AMPLITUDE	db CHANGE	RESULT	LIMIT
80% FSH	DOWN 6	40	32% - 48%
80% FSH	DOWN 12	20	16% - 24%
40% FSH	UP 6	80	64% - 96%
20% FSH	UP 12	80	64% - 96%

THIS INSTRUMENT IS CONSIDERED:

(✓) ACCEPTABLE
() NOT ACCEPTABLE

SIGNED

D. J. [Signature]

LEVEL

DATE

8-22-85

NUCLEAR ENERGY SERVICES, INC.

ULTRASONIC INSTRUMENT

CALIBRATION BLOCK

MODEL NO. SONIC SERIAL NO. 03189E TYPE TDW SERIAL NO. 4608

TRANSDUCER

BRAND Aerotech Gamma FREQUENCY 2.25 SIZE .75" STRAIGHT BEAM (☒)
 BRAND NA FREQUENCY NA SIZE NA ANGLE BEAM ()
mp210

VERTICAL LINEARITY

SIGNAL AMPLITUDES IN % FSH

HORIZONTAL LINEARITY

BACK REFLECTOR	GRID LOC.	ACCEPT LIMITS
1	1	1
2	2.0	1.90-2.10
3	3.0	2.85-3.15
4	4.0	3.80-4.20
5	5.0	4.75-5.25
6	6.0	5.70-6.30
7	7.0	6.65-7.35
8	8.0	7.60-8.40
9	9.0	8.55-9.45
10	10	10

NO.	ACTUAL HIGHER SIGNAL.	(CALCULATE)		ACTUAL LOWER SIGNAL
		1/2 OF HIGHER	ACCEPT. LIMITS*	
1	100	(50)	(45)-(55)	50
2	90	(45)	(40)-(50)	45
3	80	(40)	(35)-(45)	40
4	70	(35)	(30)-(40)	35
5	60	(30)	(25)-(35)	30
6	50	(25)	(20)-(30)	25
7	40	(20)	(15)-(25)	20
8	30	(15)	(10)-(20)	15
9	20	(10)	(5)-(15)	10
10	10	(5)	(0)-(10)	5

*ACCEPTANCE LIMITS ARE 1/2 OF THE HIGHER SIGNAL $\pm$ 5% FSH
 AMPLITUDE CONTROL LINEARITY

INITIAL AMPLITUDE	db CHANGE	RESULT	LIMIT
80% FSH	DOWN 6	45	32% - 48%
80% FSH	DOWN 12	24	16% - 24%
40% FSH	UP 6	74	64% - 96%
20% FSH	UP 12	68	64% - 96%

THIS INSTRUMENT IS CONSIDERED:

(☒) ACCEPTABLE
 () NOT ACCEPTABLE

SIGNED V. M. Murray LEVEL II DATE 8-21-85

NUCLEAR ENERGY SERVICES, INC.

ULTRASONIC INSTRUMENT LINEARITY RECORD

ULTRASONIC INSTRUMENT

CALIBRATION BLOCK

MODEL NO. SONIC SERIAL NO. 03190E TYPE FIW SERIAL NO. 4608

TRANSDUCER

BRAND Artech Gamma FREQUENCY 2.25
BRAND M22310 FREQUENCY N/A

SIZE 7" STRAIGHT BEAM (☒)
SIZE N/A ANGLE BEAM ()

VERTICAL LINEARITY

SIGNAL AMPLITUDES IN % FSH

HORIZONTAL LINEARITY

BACK REFLECTOR	GRID LOC.	ACCEPT LIMITS
1	1	1
2	2.0	1.90-2.10
3	2.9	2.85-3.15
4	3.9	3.80-4.20
5	4.9	4.75-5.25
6	5.9	5.70-6.30
7	6.9	6.65-7.35
8	7.9	7.60-8.40
9	9.0	8.55-9.45
10	10	10

NO.	ACTUAL HIGHER SIGNAL	(CALCULATE)		ACTUAL LOWER SIGNAL
		1/2 OF HIGHER	ACCEPT. LIMITS*	
1	100	(50)	(45)-(55)	50
2	90	(45)	(40)-(50)	45
3	80	(40)	(35)-(45)	40
4	70	(35)	(30)-(40)	35
5	60	(30)	(25)-(35)	30
6	50	(25)	(20)-(30)	25
7	40	(20)	(15)-(25)	20
8	30	(15)	(10)-(20)	15
9	20	(10)	(5)-(15)	10
10	10	(5)	(0)-(10)	5

*ACCEPTANCE LIMITS ARE 1/2 OF THE HIGHER SIGNAL $\pm$ 5% FSH
AMPLITUDE CONTROL LINEARITY

INITIAL AMPLITUDE	db CHANGE	RESULT	LIMIT
80% FSH	DOWN 6	40	32% - 48%
80% FSH	DOWN 12	20	16% - 24%
40% FSH	UP 6	80	64% - 96%
20% FSH	UP 12	82	64% - 96%

THIS INSTRUMENT IS CONSIDERED: (☒) ACCEPTABLE
() NOT ACCEPTABLE

SIGNED D. J. Mearns LEVEL II DATE 8-21-85

NUCLEAR ENERGY SERVICES, INC.

NEC

NUCLEAR
ENERGY
SERVICES, INC.

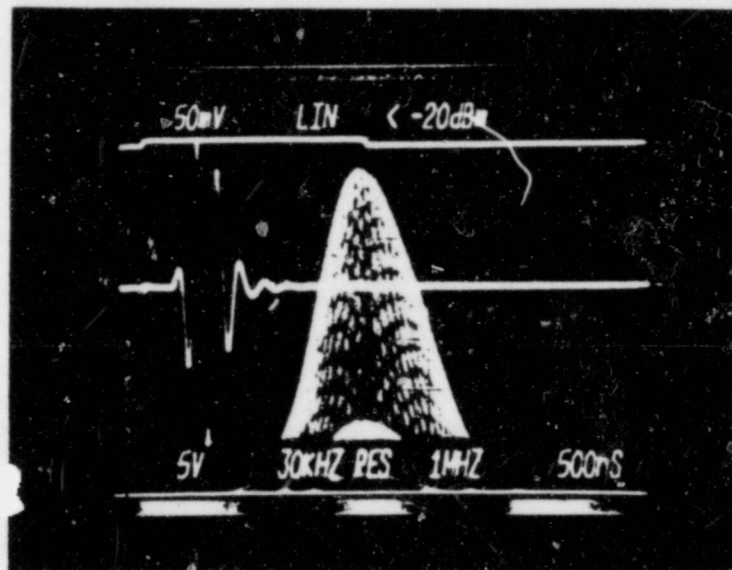
FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: KB AEROTECH

S/N C20120

MARKED FREQUENCY: 5.0 MHz

SIZE .50 x 1.0



RESULTS

Central Scale 5.0 MHz (1.0 MHz/Division)

Transducer Central Frequency 4.6 MHz

X Acceptable

 Unacceptable

Interpretation By *J. L. Anderson*

1/21/81
Date

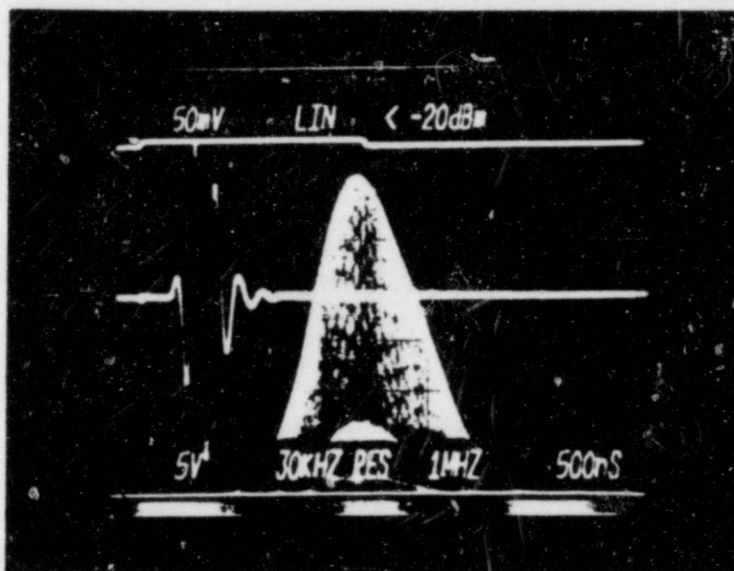


NUCLEAR
ENERGY
SERVICES, INC.

FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: KB AEROTECH S/N C20122

MARKED FREQUENCY: 5.0 MHz SIZE .50 x 1.0



RESULTS

Central Scale 5.0 MHz (1.0 MHz/Division)

Transducer Central Frequency 4.6 MHz

X Acceptable

 Unacceptable

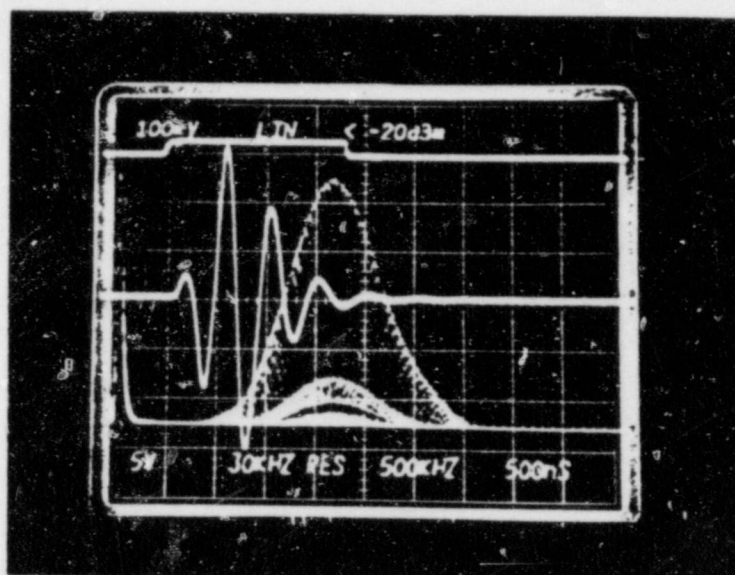
Interpretation By *E. L. Anderson* 4/21/81
Date

1125

NUCLEAR
ENERGY
SERVICES, INC.

FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: KRAUTKRAMER BRANSON S/N B04359
MARKED NOMINAL FREQUENCY: 2.25 SIZE 1.0



RESULTS

HORIZONTAL SCALE 5 MHz (.5 MHz/DIVISION)

TRANSDUCER CENTRAL FREQUENCY 2.2 MHz

XX ACCEPTABLE

 UNACCEPTABLE

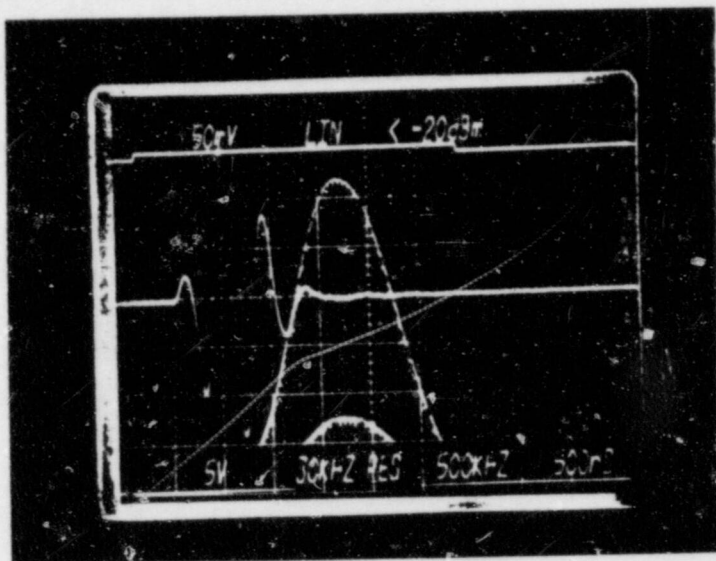
INTERPRETATION BY *S. L. Foote* DATE 10/3/83
S. L. Foote, Level III

nes

NUCLEAR
ENERGY
SERVICES, INC.

FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: KB AEROTECH S/N M30028
MARKED FREQUENCY: 2.25 MHz SIZE 1.0



RESULTS

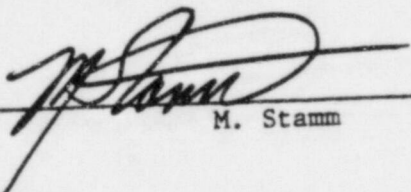
Central Scale 2.25 MHz (.50 MHz/Division)

Transducer Central Frequency 2.2 MHz

☒ Acceptable

☐ Unacceptable

Interpretation By


M. Stamm

3-3-81
Date

NUCLEAR ENERGY SERVICES, INC.

NES DIVISION

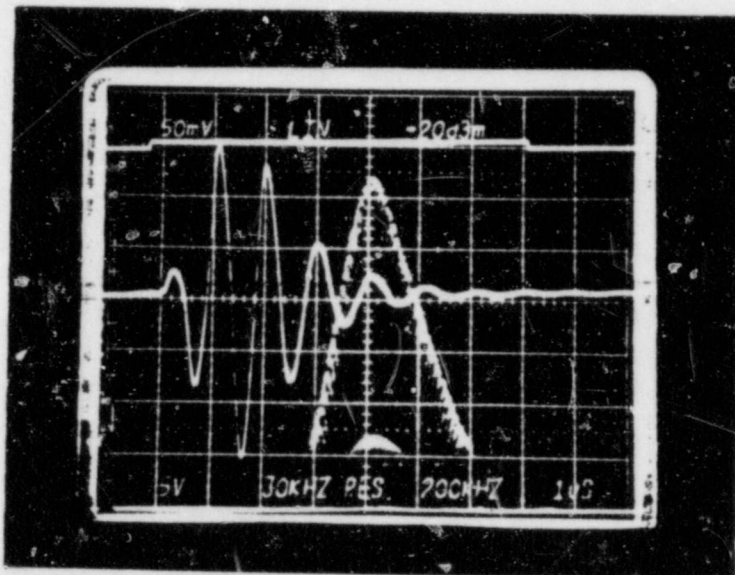
SHELTER ROCK ROAD
DANBURY, CONN. 06810
(203) 748-3581

FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: KB AEROTECH S/N M15014

MARKED FREQUENCY: 1.0 MHz SIZE 1.0 in.

DATA SUPPLIED BY: KB AEROTECH



RESULTS

Central Scale 1.0 MHz (.2 MHz/Division)

Transducer Central Frequency 1.0 MHz

☒ Acceptable

☐ Unacceptable

Interpretation By M. Stamm 11/19/81
Date

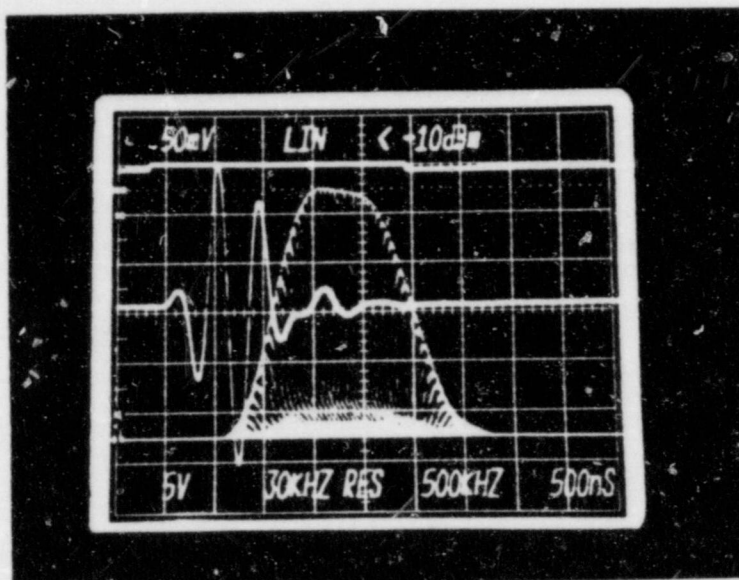
M. Stamm



NUCLEAR
ENERGY
SERVICES, INC.

FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: Aerotech S/N K02158
MARKED FREQUENCY: 2.25 MHz SIZE .50 x 1.0



RESULTS

Central Scale 2.50 MHz (.5 MHz/Division)

Transducer Central Frequency 2.3 MHz

X Acceptable

 Unacceptable

Interpretation By M. Stamm

M. Stamm

4/13/82
Date



NUCLEAR
ENERGY
SERVICES INC.

FREQUENCY SPECTRUM ANALYSIS

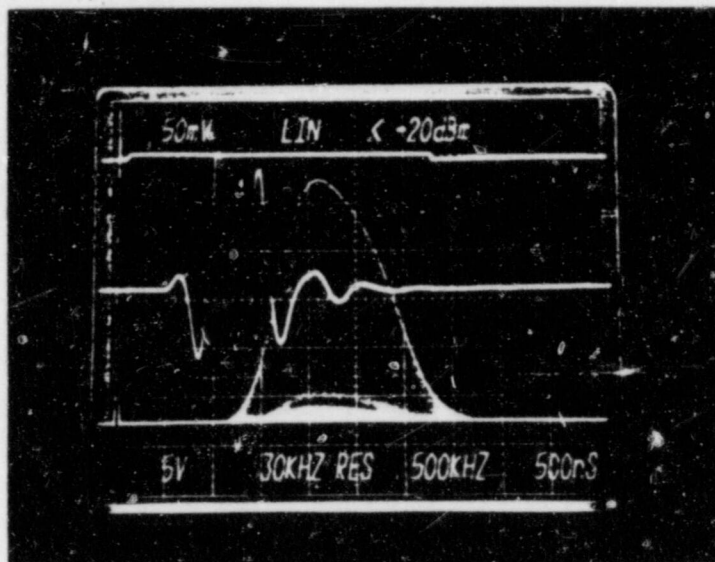
MANUFACTURER: Aerotech

S/N L03117

MARKED FREQUENCY: 2.25

MHz

SIZE .5 x 1.0



RESULTS

Central Scale 2.5 MHz (.5 MHz/Division)

Transducer Central Frequency 2.25 MHz

☒ Acceptable

☐ Unacceptable

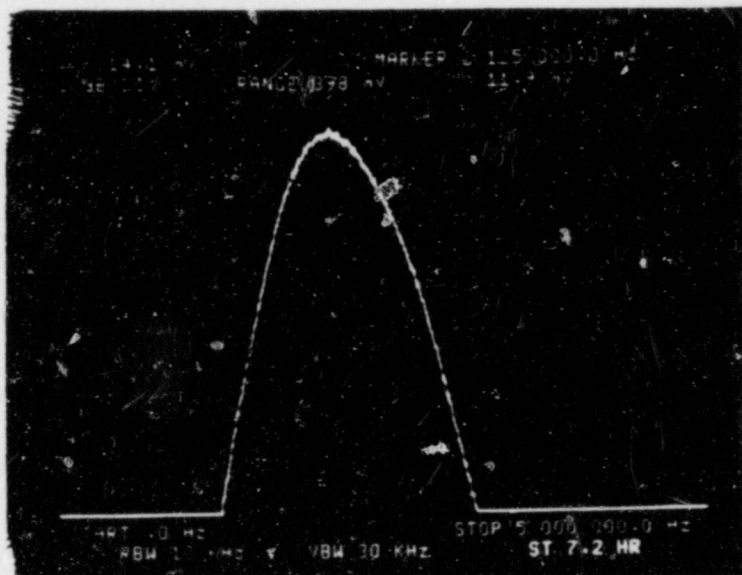
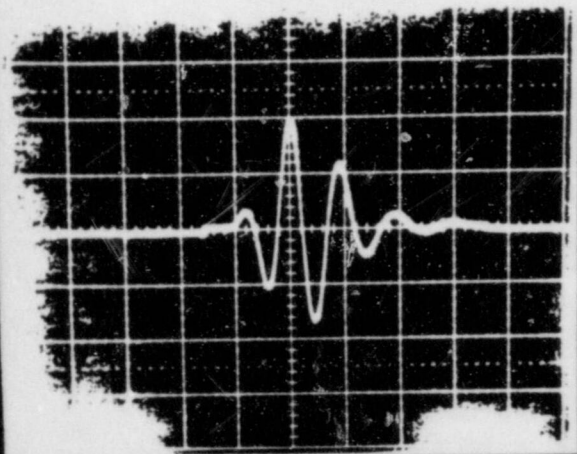
Interpretation By

M. Stamm
M. Stamm

1/13/82
Date

FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: KB Aerotech S/N K08729
MARKED NOMINAL FREQUENCY: 2.25 MHz SIZE .5" Round



RESULTS

HORIZONTAL SCALE 5.0 MHz (.5 MHz/DIVISION)

TRANSDUCER CENTRAL FREQUENCY 2.125 MHz

X ACCEPTABLE

 UNACCEPTABLE

INTERPRETATION BY Peter P. Ryan DATE 10-17-82

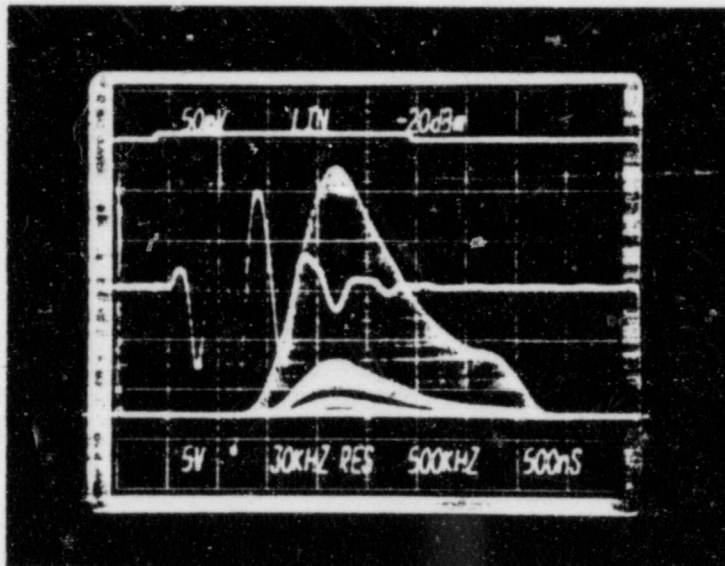
Peter P. Ryan, Level III

1125

NUCLEAR
ENERGY
SERVICES, INC.

FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: K. B. AEROTECH S/N B01354
MARKED NOMINAL FREQUENCY: 2.25 SIZE 1.0



RESULTS

HORIZONTAL SCALE 5 MHz (.5 MHz/DIVISION)

TRANSDUCER CENTRAL FREQUENCY 2.25 MHz

X ACCEPTABLE

 UNACCEPTABLE

INTERPRETATION BY S. L. Foote, Level III

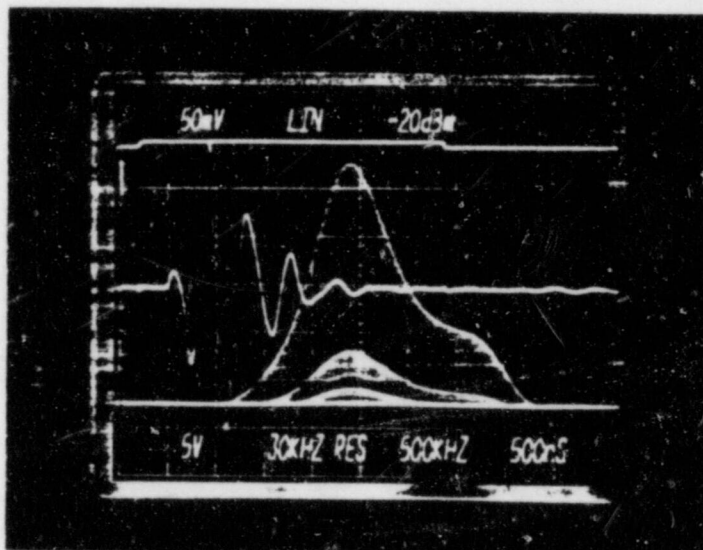
DATE 4/5/83



NUCLEAR
ENERGY
SERVICES, INC.

FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: K. B. Aerotech S/N M22212
MARKED NOMINAL FREQUENCY: 2.25 SIZE .75



RESULTS

HORIZONTAL SCALE 5 MHz (.5 MHz/DIVISION)

TRANSDUCER CENTRAL FREQUENCY 2.45 MHz

XX ACCEPTABLE

 UNACCEPTABLE

INTERPRETATION BY S. L. Foote, Level III DATE 4/15/83

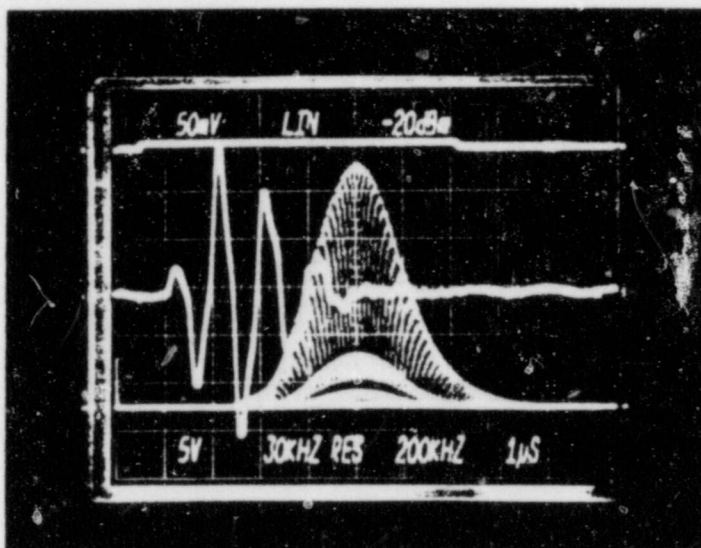


NUCLEAR
ENERGY
SERVICES, INC.

FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: KB Aerotech S/N J02205

MARKED FREQUENCY: 1.0 MHz SIZE 1.0"



RESULTS

Central Scale 2 MHz (.2 MHz/Division)

Transducer Central Frequency 1.0 MHz

☒ Acceptable

☐ Unacceptable

Interpretation By *Stephen L. Foote* 3/15/83

Stephen L. Foote, LIII

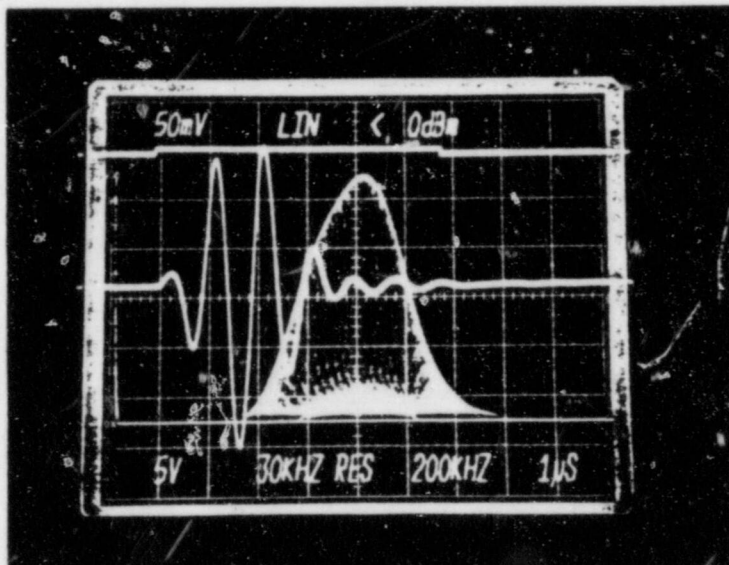
Date

nes

NUCLEAR
ENERGY
SERVICES, INC.

FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: Aerotech S/N M12109
MARKED FREQUENCY: 1.0 MHz SIZE 1.0



RESULTS

Central Scale 1.0 MHz (.2 MHz/Division)

Transducer Central Frequency 1.0 MHz

☒ Acceptable

☐ Unacceptable

Interpretation By

M. Stamm
M. Stamm

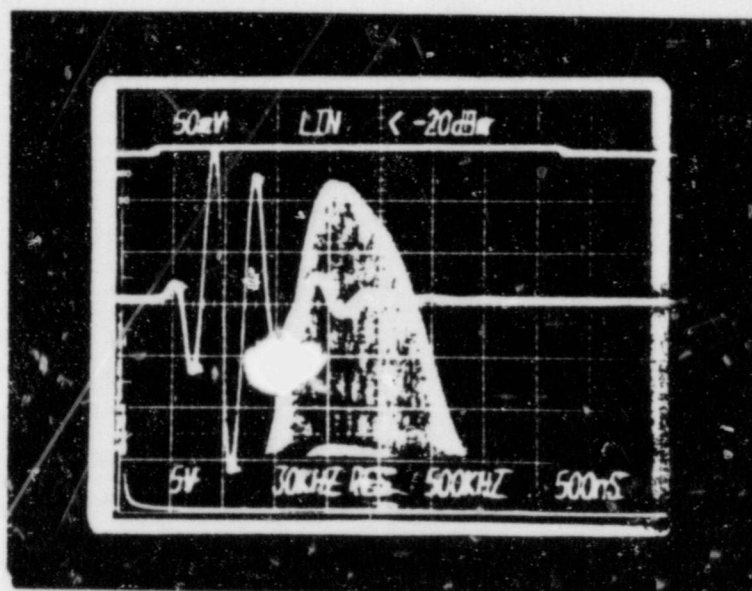
1/13/82
Date

NES DIVISION

SHELTER ROCK ROAD
DANBURY, CONN. 06810
(203) 748-3581

FREQUENCY SPECTRUM ANALYSIS

MANUFACTURER: KB-Aerotech S/N J05937
MARKED FREQUENCY: 2.25 MHz SIZE .5x1.0 in
DATA SUPPLIED BY: KB-Aerotech

RESULTS

Central Scale 2.5 MHz (.5 MHz/Division)

Transducer Central Frequency 2.25 MHz

X Acceptable

— Unacceptable

Interpretation By

F. T. Carr

10/11/79
Date

AUTOMATION INDUSTRIES, INC.

SPERRY PRODUCTS DIVISION

SHELTER ROCK ROAD
DANBURY, CONN. 06810
(203) 748-3581

CERTIFICATE OF COMPLIANCE

TO: Nuclear Energy Services
Danbury, Ct.

DATE: February 3, 1981
P.O.# N26874
AUTOMATION ORDER # 11-3214-1

<u>ITEM</u>	<u>QUANTITY</u>	<u>MODEL</u>	<u>DESCRIPTION</u>	<u>SERIAL</u>
1	12	57A4248-19	Miniature Angle Beam Calibration block	783089 783924 783108 783925 783919 783926 783913 783918 783920 783922 783921 785363

The blocks are certified to have been manufactured in accordance with Automation Industries drawings and meets the specifications of the drawings. They have been inspected with equipment traceable to the National Bureau of Standards.

[Signature]

QUALITY ASSURANCE MANAGER

BRANCH OFFICES
Chicago, Illinois
Philadelphia, Pennsylvania

International Testing Laboratories, Inc.

Material Testing and Consulting Engineers
Weighers, Samplers and Assayers

578-582 MARKET STREET
NEWARK, N. J. 07105

PHONE (201) 589-4772-3-4

Cable Address: INTEL

Telex: 139187

REPORT OF TEST

DATE March 11, 1985

No. 507360

From Echo Ultrasound
R.E. #4, Box 76
Lewistown, Penna.

Sample of : Ultragel II

Marked : Batch #8551, Spec. ASTM-D-129 and D-808, 1980.
P.O.#014022-RFB

RESULTS:

Halogens (Chlorides)	: 31.5 ppm
Sulphur	: 3.2 ppm

I, David N. Hoffman, Director of Laboratories, do hereby certify that the above is true and correct.

Sworn to and subscribed before
me this 11th day of March 1985.

My Notary Public Commission
expires August 13, 1989.

To

Echo Ultrasound
Lewistown, Penna.

INTERNATIONAL TESTING LABORATORIES, INC.



The liability of the International Testing Laboratories, Inc. with respect to the services charged for herein, shall in no event exceed the amount of the invoice.

Our reports pertain to the sample tested only. Information contained herein is not to be reproduced, except with our permission.

David N. Hoffman

ITL 102 REV. 2200 11-80

MAGNAFLUX

C.T.

M.S.B

Nuclear Energy Serv.
202 Twin Oaks Dr.
E. Syracuse, NY 13206
Attn: Chuck Taylor

Date: January 26, 1983

Purchase Order No. _____

SUBJECT: Spotcheck Cleaner/Remover, Type: SKC-NF/ZC-7B, Batch No. 83A040

We hereby certify that when tested at the time of manufacture, the above material:

1. Meets the requirements of and has been tested for sulfur and halogens according to:
 - (a) ASME Boiler and Pressure Vessel Code, 1980 Edition, Section V Nondestructive Examination, with Summer 1980 through Winter 1982 Addenda, Paragraph T-644, and Article 24 as applicable.
 - (b) ASTM E-165-80, Paragraph 7.1.
 - (c) NAVSEA 250-1500-1 (Rev. 10 June 1979) Paragraphs 12.5.1.1 and 12.5.1.1.1.
 - (d) MIL-STD-271E, (31 October 1973) and ACN-1 (24 October 1980), Paragraph 5.3.1.
 - (e) MIL-STD-271E, NTR-1E, June 16, 1978, Paragraph 5.3.
 - (f) RDT Standard F3-6T, May 1974 and October 1975 including Amendments 1 (1-6-76) and 2 (2-9-78), Article 6, Paragraph T-630.

The following test results were obtained:

Sulfur: NA % of residue. Halogen: NA % of residue.
Cleaner residue (see Note 3) 0.0011 g/100g, 0.0008 g/100 mL.

2. Meets the requirements of MIL-I-25135C (Amendment 3 and Interim Amendment 4).
3. Does not contain mercury as a basic element, and no mercury bearing equipment was used in its manufacture.

MAGNAFLUX CORPORATION

A. S. Britton

R. W. Gathman - Director of Quality Assurance
A. S. Britton - Supervisor, Quality Control

- NOTES:
1. Our batch number appears on the bottom of all spray containers and on the label of all other containers.
 2. Most specifications require test results stated in percent but some require parts per million (PPM). To convert "percent" figures to "parts per million" move the decimal four places to the right.
 3. NAVSEA 250-1500-1, MIL-STD 271, RDT F3-6T and ASME Section V all require that materials be subject to a procedure to evaporate off volatile solvents before analysis for sulfur and halogen. According to these specifications, only those residues higher than 0.005 g/100g shall be analyzed for sulfur and halogen. Lower residues shall be reported.
 4. The above certification gives the results obtained at the time of manufacture. Age and use may alter the properties of any material.

Form No. 1568 - R 12/82

(FIGURE 1)
**TEMPERATURE INDICATOR
CHECK RECORD**

(S/N)

Identification JL 85-01

CHECK DATE	VOID DATE	CHECK READINGS 50°F Δ				SIGNATURE
		STD.	LOW METER	STD.	HIGH METER	
8-5-85	11-5-85	38°	37°	92°	94°	

FULL SCALE READING OF INDICATOR BEING CHECKED = 150°

INSTRUCTIONS:

- (1) Place your indicator and the control indicator side by side
- (2) Read and record the readings from both
- (3) Place the two (2) indicators in a fairly warm area (50°F hotter)
- (4) Wait a minimum of 10 minutes
- (5) Read and record the readings from both
- (6) The respective readings shall agree within $\pm 10\%$ of full scale of the indicator being checked, relative to the actual temperature value shown by the test indicator.
- (7) Retain a copy of this form for your records, mail original to the home office file

Reference Standard Identification (S/N) 791

Reference Standard Calibration Date 7-10-86

APPENDIX V

EXAMINATION PROCEDURE

AND

QUALIFICATION RECORD

NES Document 80A9084 requires that all nondestructive examination procedures be qualified for use prior to their implementation in the field. The procedure developed and used for the Vermont Yankee Feedwater Nozzle Inner Radius Examinations was qualified as required, and the records verifying this qualification are included in this appendix.

ATTACHMENT A PROCEDURE QUALIFICATION RECORD

Procedure Document Number: 80A7616 Rev. 2 F.C.2

Title: REACTOR VESSEL FEEDWATER NOZZLE
INNER RADIUS

Method of Qualification: (Check applicable method)

Radiograph of Part _____

Radiograph of Specimen _____

Calibration on UT Calibration Block _____

MT Field Indicator Demonstration _____

PT of Comparator Block _____

Other Methods: (Describe Below) - X

Comments: PERFORM TECHNIQUE QUALIFICATION ON VV FEEDWATER
NOZZLE MOCK-UP. MOCK-UP WAS SEALED BEFORE QUALIFICATION
TO HIDE DEFECTS. EXAMINERS LOCATED AND IDENTIFIED ALL
INDICATIONS CORRECTLY

The Subject Procedure has been qualified for use on ISI Projects.

Attachments:
(List below)

DATA PKGS FOR ZONE
1+2 EXAMINATION TURNED
OVER TO YAEC.
(TOM REMNELL)

Date: 9/24/85

Examiner performing
Qualification:

R. BARNES
R. LINDEN
S. SPIROLER P. ANDERSON

Approved:

[Signature]
Level III Examiner

Witnessed:

[Signature]
Tom Remnell

6/20/84

Date

ISI FIELD CHANGE AUTHORIZATION

Document Title NOZZLE INNER RADIUS

Document No. 8007616 Rev. 2

Field Change No. FC-1

Originator S. FOOTE

Description of Field Change:

PARA 8.3(B)(1) REVISE TO READ —
RECALIBRATE THE SWEEP AND NOTE...

Reason for Change:

CUSTOMER COMMENT

APPROVALS:

Title	Signature	Date
<u>LEVEL II</u>	<u>[Signature]</u>	<u>6/20/84</u>
<u>LEVEL III UT</u>	<u>James G. McQuillen</u>	<u>6/20/84</u>
<u>ANII NSB</u>	<u>Tom J. Holmes</u>	<u>6/20/84</u>

Distribute to all Controlled Copy holders of affected Document.

NOTE: A copy of this authorization shall be attached to the affected document until a subsequent revision incorporates the field change