



H. B. Barron
Vice President

Duke Energy Corporation
McGuire Nuclear Station
12700 Hagers Ferry Road
Huntersville, NC 28078-9340
(704) 875-4800 OFFICE
(704) 875-4809 FAX

April 25, 2000

U. S. Nuclear Regulatory Commission
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Washington, D.C. 20555-0001

Subject: Revision 1 of the Inservice Inspection Report for
McGuire Refueling Outage 1/EOC-10
McGuire Nuclear Station Unit 1
Docket No. 50-369

Attachment 2 contains the revised sections (revision 1) to the subject Inspection Report. Attachment 1 describes how attachment 2 affects the previous submittal of this report. Section 9 of attachment 2 contains two relief requests, which are included as references to the subject Inspection Report. NRC staff review of these relief requests have been requested through previous submittals.

Questions on this matter should be directed to Norman T. Simms, McGuire Licensing and Compliance, at (704) 875-4685.

Sincerely,

 for HBB

H. B. Barron, Vice President
McGuire Nuclear Station

Attachments

A047

U.S. Nuclear Regulatory Commission
April 25, 2000
Page 2 of 2

cc: Mr. L. A Reyes
Regional Administrator, Region II
U. S. Nuclear Regulatory Commission
101 Marietta Street, NW, Suite 2900
Atlanta, Georgia 30323

Mr. F. Rinaldi, Project Manager
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
One White Flint North, Mail Stop 9H3
Washington, D.C. 20555

S. M. Shaeffer
Senior NRC Resident Inspector
McGuire Nuclear Station

bxc w/o att: N.T. Simms
J.O. Barbour
R. Branch
G.J. Underwood
D.E. Caldwell
R.K. Rhyne
G.D. Scarboro
R.D. Klein (MG01MM)

bxc w/ att: Master File
RGC File
NRIA File/ELL

UNIT1 OUTAGE3/EOC-10
Attachment 1

Delete	ADD
NIS-1 dated 03/26/96 Pages 1 and 2 Supercede keep for historical record	NIS-1 dated 09/22/99 Pages 1 and 2
Inservice Inspection Report Coversheet Rev. 0	Inservice Inspection Report Coversheet Rev. 1
Table of Contents Rev.0	Table of Contents Rev.1
Section 2.0 Rev. 0 Pages 1-21	Section 2.0 Rev. 1 Pages 1-21
Section 3.0 Rev.0 Pages 1-4	Section 3.0 Rev.1 Pages 1-4
Section 4.0 Pages 1 and 2 Rev.0	Section 4.0 Pages 1 and 2 Rev.1
Section 4.0 (Plan Report 03/26/96) Page 20	Section 4.0 (Plan Report 09/21/1999) Page 20
Section 5.0 Pages 1 and 2 Rev.0	Section 5.0 Pages 1 and 2 Rev.1
Section 5.2 Page 3 Rev.0	Section 5.2 Page 3 Rev.1
Section 5.0 (Run-D, 03/26/96) Pages 1,4 and 5	Section 5.0 (Run-D, 09/21/1999) Pages 1,4 and 5
Section 8.0 Page 1 Rev.0	Section 8.0 Page 1 Rev.1 and add PIP 0- G99-0198 after 1-M94-1467
Section 9.0 Page 1 Rev. 0	Section 9.0 Page 1 Rev. 1 add Request for Relief 98-004 and Request for Alternative 99-002 after 94-GO-002

ATTACHMENT 2

**REVISED SECTIONS OF THE INSERVICE INSPECTION REPORT
FOR McGUIRE REFUELING OUTAGE 1/EOC-10**

FORM NIS-1 (Back)

- 8. Examination Dates 10/28/94 to 01/25/96
- 9. Inspection Period Identification: Second Period of the Second Interval
- 10. Inspection Interval Identification: Second Inservice Inspection Interval
- 11. Applicable Edition of Section XI 1989 Addenda None
- 12. Date/Revision of Inspection Plan: February 27, 1995 / Revision 1
- 13. Abstract of Examinations and Test. Include a list of examinations and tests and a statement concerning status of work required for the Inspection Plan. See Sections 3.0 and 4.0
- 14. Abstract of Results of Examination and Tests. See Section 5.0
- 15. Abstract of Corrective Measures. See Section 8.0

We certify that a) the statements made in this report are correct b) the examinations and tests meet the Inspection Plan as required by the ASME Code, Section XI, and c) corrective measures taken conform to the rules of the ASME Code, Section XI.

Certificate of Authorization No. (if applicable) N/A Expiration Date N/A

Date 9/22 19 99 Signed Duke Energy Corp. By R. Kevin Rhyme
 Owner

CERTIFICATE OF INSERVICE INSPECTION

I, the undersigned, holding a valid commission issued by the National Board of Boiler and Pressure Vessel Inspectors and the State of Province of N.C. employed by * The HSBI&I Co. of HARTFORD, CT. have inspected the components described in this Owners' Report during the period 10-28-94 to 1-25-96, and state that to the best of my knowledge and belief, the Owner has performed examinations and tests and taken corrective measures described in the Owners' Report in accordance with the Inspection Plan and as required by the ASME Code, Section XI. By signing this certificate neither the Inspector nor his employer makes any warranty, expressed or implied, concerning the examinations, test, and corrective measures described in this Owners' Report. Furthermore, neither the Inspector nor his employer shall be liable in any manner for any personal injury or property damage or a loss of any kind arising from or connected with this inspection

R. Klein Commissions NB7728, NC853, N-I
 Inspector's Signature National Board, State, Province, and Endorsements
 Date 9-25 19 99

* The Hartford Steam Boiler Inspection & Insurance Co.
 200 Ashford Center North
 Suite 300
 Atlanta, GA. 30338

INSERVICE INSPECTION REPORT

**UNIT 1 McGuire 1995 REFUELING
OUTAGE 10**

NRC Docket No. 50-369

Location: Hwy 73, Cowans Ford, North Carolina

National Board NO. 44

Commercial Service Date: December 1, 1981

Owner: Duke Power Company
526 S. Church St.
Charlotte, N. C. 28201-1006
Revision 1

Prepared By: Gary Underwood Date 9/22/99
Reviewed By: Gary D. Stulow Date 9/22/99
Approved By: R. Kevin Phyne Date 9/22/99

Copy No. 2 Assigned To NRC Document Control
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4.	Final Inservice Inspection Plan for Outage 10	1
5.	Results of Inspections Performed During Outage 10	1
6.	Reportable Indications	0
7.	Personnel, Equipment, and Material Certifications	0
8.	Corrective Action	1
9.	Reference Documents	1
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2.0 Summary of Inservice Inspections for Outage 10

The information shown below provides an abstract of ASME Section XI Class 1, Class 2, and Augmented Items scheduled and examined during Outage 10 at McGuire Nuclear Station Unit 1.

2.1 Class 1 Inspection

Section XI Category B-A Pressure Retaining Welds in Reactor Vessel

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
B01.010	Shell Welds		
B01.011	Circumferential	0	0
B01.012	Longitudinal	0	0
B01.020	Head Welds		
B01.021	Circumferential	0	0
B01.022	Meridional	0	0
B01.030	Shell to Flange Weld	0	0
B01.040	Head to Flange Weld	0	0
B01.050	Repair Welds	None	None
B01.051	Beltline Region	N/A	N/A
TOTALS		0	0

Section XI Category B-B

**Pressure Retaining Welds in Vessels
Other than Reactor Vessels**

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	Pressurizer		
B02.010	Shell to Head Welds		
B02.011	Circumferential	0	0
B02.012	Longitudinal	1	1
B02.020	Head Welds		
B02.021	Circumferential	N/A	N/A
B02.022	Meridional	N/A	N/A
	Steam Generators (Primary Side)		
B02.030	Head Welds		
B02.031	Circumferential	N/A	N/A
B02.032	Meridional	N/A	N/A
B02.040	Tubesheet to Head Weld	0	0
	Heat Exchangers (Primary Side)Head		
B02.050	Head Welds	N/A	N/A
B02.051	Circumferential	N/A	N/A
B02.052	Meridional	N/A	N/A
	Heat Exchangers (Primary Side)Shell		
B02.060	Tubesheet to Head Welds	N/A	N/A
B02.070	Longitudinal Welds	N/A	N/A
B02.080	Tubesheet to Shell Welds	N/A	N/A
TOTALS		1	1

**Section XI Category B-D Full Penetration Welds of Nozzles
in Vessels - Inspection Program B**

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	Reactor Vessel		
B03.090	Nozzle to Vessel Welds	0	0
B03.100	Nozzle Inside Radius Section	0	0
	Pressurizer		
B03.110	Nozzle to Vessel Welds	0	0
B03.120	Nozzle Inside Radius Section	0	0
	Steam Generators (Primary Side)		
B03.130	Nozzle to Vessel Welds	N/A	N/A
B03.140	Nozzle Inside Radius Section	4	4
	Heat Exchangers (Primary Side)		
B03.150	Nozzle to Vessel Welds	N/A	N/A
B03.160	Nozzle Inside Radius Section	N/A	N/A
TOTALS		4	4

**Section XI Category B-E Pressure Retaining Partial Penetration
Welds in Vessels**

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
B04.010	Partial Penetration Welds		
B04.011	Vessel Nozzles	N/A	N/A
B04.012	Control Rod Drive Nozzles	0	0
B04.013	Instrumentation Nozzles	0	0
	Pressurizer		
B04.020	Heater Penetration Welds	0	0
TOTALS		0	0

Section XI Category B-F Pressure Retaining Dissimilar Metal Welds

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
Reactor Vessel			
B05.010	NPS 4" or Larger Nozzle to Safe End Butt Welds	0	0
B05.020	Less Than NPS 4" Nozzle to Safe End Butt Welds	N/A	N/A
B05.030	Nozzle to Safe End Socket Welds	N/A	N/A
Pressurizer			
B05.040	NPS 4" or Larger Nozzle to Safe End Butt Welds	3	3
B05.050	Less Than NPS 4" Nozzle to Safe End Butt Welds	N/A	N/A
B05.060	Nozzle to Safe End Socket Welds	N/A	N/A
Steam Generator			
B05.070	NPS 4" or Larger Nozzle to Safe End Butt Welds	2	2
B05.080	Less Than NPS 4" Nozzle to Safe End Butt Welds	N/A	N/A
B05.090	Nozzle to Safe End Socket Welds	N/A	N/A
Heat Exchangers			
B05.100	NPS 4" or Larger Nozzle to Safe End Butt Welds	N/A	N/A
B05.110	Less Than NPS 4" Nozzle to Safe End Butt Welds	N/A	N/A
B05.120	Nozzle to Safe End Socket Welds	N/A	N/A
Piping			
B05.130	NPS 4" or Larger Dissimilar Metal Butt Welds	2	2
B05.140	Less Than NPS 4" Dissimilar Metal Butt Welds	N/A	N/A
B05.150	Dissimilar Metal Socket Welds	N/A	N/A
TOTALS		7	7

Section XI Category B-G-1

**Pressure Retaining Bolting,
Greater Than 2" in Diameter**

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
Reactor Vessel			
B06.010	Closure Head Nuts	21	21
B06.020	Closure Studs (in place)	0	0
B06.030	Closure Studs (when removed)	21	21
B06.040	Threads in Flange	0	0
B06.050	Closure Washers, Bushings	21	21
Pressurizer			
B06.060	Bolts and Studs	N/A	N/A
B06.070	Flange Surface (when connection disassembled)	N/A	N/A
B06.080	Nuts, Bushings and Washers	N/A	N/A
Steam Generators			
B06.090	Bolts and Studs	N/A	N/A
B06.100	Flange Surface (when connection disassembled)	N/A	N/A
B06.110	Nuts, Bushings and Washers	N/A	N/A
Heat Exchangers			
B06.120	Bolts and Studs	N/A	N/A
B06.130	Flange Surface (when connection disassembled)	N/A	N/A
B06.140	Nuts, Bushings and Washers	N/A	N/A
Piping			
B06.150	Bolts and Studs	N/A	N/A
B06.160	Flange Surface (when connection disassembled)	N/A	N/A
B06.170	Nuts, Bushings and Washers	N/A	N/A

Section XI Category B-G-1

**Pressure Retaining Bolting,
Greater Than 2" in Diameter
Continued**

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
Pumps			
B06.180	Bolts and Studs	0	0
B06.190 ***	Flange Surface (when connection disassembled)	0	0
B06.200	Nuts , Bushings and Washers	0	0
Valves			
B06.210	Bolts and Studs	N/A	N/A
B06.220	Flange Surface (when connection disassembled)	N/A	N/A
B06.230	Nuts, Bushings and Washers	N/A	N/A
TOTALS			
		63	63

*** Note: Items to be inspected but will not be counted in percentages for the B-G-1 category

Section XI Category B-G-2

Pressure Retaining Bolting, 2" and Less in Diameter

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
Reactor Vessel			
B07.010	Bolts, Studs and Nuts	N/A	N/A
Pressurizer			
B07.020	Bolts, Studs and Nuts	0	0
Steam Generators			
B07.030	Bolts, Studs and Nuts	4	4
Heat Exchangers			
B07.040	Bolts, Studs and Nuts	N/A	N/A
Piping			
B07.050	Bolts, Studs and Nuts	0	0

Section XI Category B-G-2 Pressure Retaining Bolting, 2" and Less in Diameter

Continued

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	Pumps		
B07.060	Bolts, Studs and Nuts	0	0
	Valves		
B07.070	Bolts, Studs and Nuts	1	1
	CRD Housing		
B07.080	Bolts, Studs and Nuts	0	0
TOTALS		5	5

Section XI Category B-H Integral Attachments for Vessels

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	Reactor Vessel		
B08.010	Integrally Welded Attachments	0	0
	Pressurizer		
B08.020	Integrally Welded Attachments	1	1
	Steam Generators		
B08.030	Integrally Welded Attachments	N/A	N/A
	Heat Exchangers		
B08.040	Integrally Welded Attachments	N/A	N/A
TOTALS		1	1

Section XI Category B-J Pressure Retaining Welds in Piping

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
B09.010	NPS 4" or Larger		
B09.011	Circumferential Welds	10	10
B09.012	Longitudinal Welds *	N/A	N/A
B09.020	Less than NPS 4"		
B09.021	Circumferential Welds	3	3
B09.022	Longitudinal Welds *	N/A	N/A
B09.030	Branch Pipe Connection Welds		
B09.031	NPS 4" or Larger	1	1
B09.032	Less than NPS 4"	3	3
B09.040	Socket Welds	8	8
TOTALS		25	25

* Longitudinal welds that intersect circumferential welds are examined as required by Table IWB-2500-1, Category B-J. However, for reporting purposes, the totals do not reflect the number of longitudinal welds examined during this outage.

Section XI Category B-K-1 Integral Attachments for Piping, Pumps and Valves

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	Piping		
B10.010	Integrally Welded Attachments	N/A	N/A
	Pumps		
B10.020	Integrally Welded Attachments	N/A	N/A
	Valves		
B10.030	Integrally Welded Attachments	N/A	N/A
TOTALS		N/A	N/A

**Section XI Category B-L-1 Pressure Retaining Welds in Pump Casings;
 B-M-1 Pressure Retaining Welds in Valve Bodies;
 B-L-2 Pump Casings; B-M-2, Valve Bodies**

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
Pumps			
B12.010	Pump Casing Welds (B-L-1)	N/A	N/A
B12.020	Pump Casing (B-L-2)	0	0
Valves			
B12.030	Valves, Less than NPS 4" Valve Body Welds (B-M-1)	N/A	N/A
B12.040	Valves, NPS 4" or Larger Valve Body Welds (B-M-1)	N/A	N/A
B12.050	Valve Body, Exceeding NPS 4" (B-M-2)	1	1
TOTALS		1	1

**Section XI Category B-N-1 Interior of Reactor Vessel
 B-N-2 Integrally Welded Core Support Structures and Interior Attachments to Reactor Vessels
 B-N-3 Removable Core Support Structures**

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
Reactor Vessel			
B13.010	Vessel Interior (B-N-1)	1	** 1
Reactor Vessel (PWR)			
B13.050	Interior Attachments Within Beltline Region (B-N-2)	N/A	N/A
B13.060	Interior Attachments Beyond Beltline Region (B-N-2)	0	0
B13.070	Core Support Structure (B-N-3)	0	0
TOTALS		1	** 1

** Reference Section 9, Request for Relief 94-10 & Section 8, Problem Investigation Process Report 1M94-1467.

Section XI Category B-O Pressure Retaining Welds in Control Rod Housings

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	Reactor Vessel		
B14.010	Welds in CRD Housing	1	1
TOTALS		1	1

Section XI Category B-P All Pressure Retaining Components

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	Reactor Vessel		
B15.010	Pressure Retaining Boundary	COVERED IN B15.050	COVERED IN B15.050
B15.011	Pressure Retaining Boundary	COVERED IN B15.051	COVERED IN B15.051
	Pressurizer		
B15.020	Pressure Retaining Boundary	COVERED IN B15.050	COVERED IN B15.050
B15.021	Pressure Retaining Boundary	COVERED IN B15.051	COVERED IN B15.051
	Steam Generators		
B15.030	Pressure Retaining Boundary	COVERED IN B15.050	COVERED IN B15.050
B15.031	Pressure Retaining Boundary	COVERED IN B15.051	COVERED IN B15.051
	Heat Exchangers		
B15.040	Pressure Retaining Boundary	N/A	N/A
B15.041	Pressure Retaining Boundary	N/A	N/A
	Piping		
B15.050	Pressure Retaining Boundary	1	1
B15.051	Pressure Retaining Boundary	0	0

Section XI Category B-P All Pressure Retaining Components
Continued

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	Pumps		
B15.060	Pressure Retaining Boundary	COVERED IN B15.050	COVERED IN B15.050
B15.061	Pressure Retaining Boundary	COVERED IN B15.051	COVERED IN B15.051
	Valves		
B15.070	Pressure Retaining Boundary	COVERED IN B15.050	COVERED IN B15.050
B15.071	Pressure Retaining Boundary	COVERED IN B15.051	COVERED IN B15.051
TOTALS		1	1

Section XI Category B-Q Steam Generator Tubing

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
B16.020	Steam Generator Tubing in U-Tube Design	* N/A	* N/A
TOTALS		*	*

* Steam Generator Tubing is examined and documented by the Diversified Services Group of the Electric System Support Department as required by the Station Technical Specifications and is not included in this report. See Eddy Current Examination Report (RFO-10, 1995).

F01.010 Class 1 Component Supports

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
F01.010	Reference Section 4.0 of this report	8	8
TOTALS		8	8

2.2 Class 2 Inspection

Section XI Category C-A Pressure Retaining Welds in Pressure Vessels

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
C01.010	Shell Circumferential Welds	2	** 1
C01.020	Head Circumferential Welds	5	** 4
C01.030	Tubesheet to Shell Weld	1	** 0
TOTALS		8	** 5

** 2 Welds were deleted after report, 1 weld rescheduled to another outage

Section XI Category C-B Pressure Retaining Nozzle Welds in Vessels

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
C02.010	Nozzles in Vessels $\leq 1/2$ " Nominal Thickness		
C02.011	Nozzle to Shell (or Head) Weld	0	0
C02.020	Nozzles Without Reinforcing Plate in Vessels $>1/2$ " Nominal Thickness		
C02.021	Nozzle to Shell (or Head) Weld	1	1
C02.022	Nozzle Inside Radius Section	* 1	* 1
C02.030	Nozzles With Reinforcing Plate in Vessels $>1/2$ " Nominal Thickness		
C02.031	Reinforcing Plate Welds to Nozzle and Vessel	0	0
C02.032	Nozzle to Shell (or Head) Welds when Inside of Vessel is Accessible	N/A	N/A

Section XI Category C-B Pressure Retaining Nozzle Welds in Vessels
Continued

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
C02.033	Nozzle to Shell (or Head) Welds when Inside of Vessel is Inaccessible	4	4
TOTALS		6	6

* (Item # C02.022) Nozzle Inside Radius Section welds are examined as required by table IWC-2500-1 Category C-B. However, for reporting purposes, the totals do not reflect the number of Nozzle Inside Radius Section welds examined during this outage. Nozzle Inside Radius Section welds are to be examined in conjunction with C02.021. examinations.

Section XI Category C-C Intergal Attachments for Vessels, Piping, Pumps, and Valves

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	Pressure Vessels		
C03.010	Intergally Welded Attachments	0	0
	Piping		
C03.020	Integrally Welded Attachments	2	2
	Pumps		
C03.030	Integrally Welded Attachments	0	0
	Valves		
C03.040	Integrally Welded Attachments	N/A	N/A
TOTALS		2	2

**Section XI Category C-D Pressure Retaining Bolting
Greater Than 2" in Diameter**

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	Pressure Vessels		
C04.010	Bolts and Studs	N/A	N/A
	Piping		
C04.020	Bolts and Studs	N/A	N/A
	Pumps		
C04.030	Bolts and Studs	N/A	N/A
	Valves		
C04.040	Bolts and Studs	N/A	N/A
TOTALS		N/A	N/A

Section XI Category C-F-1

Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
C05.010	Piping Welds $\geq 3/8$ " Nominal Wall Thickness for Piping $> \text{NPS } 4$ "		
C05.011	Circumferential Weld	12	12
C05.012	Longitudinal Weld *	9	9
C05.020	Piping Welds $> 1/5$ " Nominal Wall Thickness for Piping $\geq \text{NPS } 2$ " and $\leq \text{NPS } 4$ "		
C05.021	Circumferential Weld	6	6
C05.022	Longitudinal Weld *	N/A	N/A
C05.030	Socket Welds	5	5
C05.040	Pipe Branch Connections of Branch Piping $\geq \text{NPS } 2$ "		
C05.041	Circumferential Weld	1	1
C05.042	Longitudinal Weld *	N/A	N/A
TOTALS		33	33

* Longitudinal welds that intersect circumferential welds are examined as required by Table IWC-2500-1, Category C-F-1. However, for reporting purposes, the totals do not reflect the number of longitudinal welds examined during this outage.

Section XI Category C-F-2

Pressure Retaining Welds in Carbon or Low Alloy Steel Piping

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
C05.050	Piping Welds $\geq 3/8$ " Nominal Wall Thickness for Piping $> \text{NPS } 4$ "		
C05.051	Circumferential Weld	4	4
C05.052	Longitudinal Weld *	3	3
C05.060	Piping Welds $> 1/5$ " Nominal Wall Thickness for Piping $\geq \text{NPS } 2$ " and $\leq \text{NPS } 4$ "	N/A	N/A
C05.061	Circumferential	N/A	N/A
C05.062	Longitudinal Weld *	N/A	N/A
C05.070	Socket Welds	N/A	N/A
C05.080	Pipe Branch Connections of Branch Piping $\geq \text{NPS } 2$ "	N/A	N/A
C05.081	Circumferential Weld	N/A	N/A
C05.082	Longitudinal Weld *	N/A	N/A
TOTALS		7	7

* Longitudinal welds that intersect circumferential welds are examined as required by Table IWC-2500-1, Category C-F-2. However, for reporting purposes, the totals do not reflect the number of longitudinal welds examined during this outage.

Section XI Category C-G

Pressure Retaining Welds in Pumps and Valves

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	Pumps		
C06.010	Pump Casing Welds	N/A	N/A
	Valves		
C06.020	Valve Body Welds	1	1
TOTALS		1	1

Section XI Category C-H All Pressure Retaining Components

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
Pressure Vessels			
C07.010	Pressure Retaining Components	COVERED IN C07.030	COVERED IN C07.030
C07.020	Pressure Retaining Components	COVERED IN C07.040	COVERED IN C07.040
Piping			
C07.030	Pressure Retaining Components	27	27
C07.040	Pressure Retaining Components	0	0
Pumps			
C07.050	Pressure Retaining Components	COVERED IN C07.030	COVERED IN C07.030
C07.060	Pressure Retaining Components	COVERED IN C07.040	COVERED IN C07.040
Valves			
C07.070	Pressure Retaining Components	COVERED IN C07.030	COVERED IN C07.030
C07.080	Pressure Retaining Components	COVERED IN C07.040	COVERED IN C07.040
TOTALS		27	27

F01.020 Class 2 Component Supports

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
F01.020	Reference Section 4.0 of this report	23	23
TOTALS		23	23

F010.40 Supports Other than Piping Supports

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
F01.040	Reference Section 4.0 of this report	4	4
TOTALS		4	4

F01.050 Class 1, 2, & 3 Component Support Snubbers

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
F01.050	Reference Section 4.0 of this report	351	351
TOTALS		351	351

2.3 Augmented Inspection

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
G01.001	RCP Flywheel Exam	2	2
G02.001	S/G (Eddy Current)	*	*
G03.001	Pipe Rupture Protection	5	5
G04.001	S/G Feedwater Modification	1	1
TOTALS		8	8

* Steam Generator Tubing is examined and documented by the Diversified Services Group of the Electric System Support Department as required by the Station Technical Specifications and is not included in this report. See Eddy Current Examination Report (RFO-10, 1995).

2.4 Alternate Examinations

Item Number	Description	Total Scheduled During Outage	Total Examined During Outage
	None Required this Outage	0	0
TOTALS		0	0

A detailed description of each examination listed in Sections 2.1 through 2.4 are located in Section 4 of this report. Results of each examination are located in Section 5 of this report.

3.0 Second Ten Year Interval Inspection Status

The completion status of inspections required by the 1989 ASME Code Section XI is summarized in this section. The requirements are listed by the ASME Section XI Examination Category as defined in Table IWB-2500-1 for Class 1 Inspections, in Table IWC-2500-1 for Class 2 Inspections. Augmented and alternate inspections are also included.

Class 1 Inspections

Section XI Category	Description	Inspections Required	Inspections Completed	Percentage Completed	¹ Deferral Allowed
B-A	Pressure Retaining Welds in Reactor Vessel	28 welds	5 welds	17.85%	Yes
B-B	Pressure Retaining Welds in Vessels Other than Reactor Vessel	5 welds	3 welds	60%	No
B-D	Full Penetration Welds of Nozzles in Vessels Inspection Program B	36 inspections	16 inspections	44.44%	Partial
B-E	Pressure Retaining Partial Penetration Welds in Vessels	55	0	0%	Yes
B-F	Pressure Retaining Dissimilar Metal Welds	46 welds	17.66 welds	38.39%	No
B-G-1	Pressure Retaining Bolting Greater than 2 Inch Diameter	264 items	174 items	65.90%	No
B-G-2	Pressure Retaining Bolting 2 Inches and Less in Diameter	32 connections	15 connections	46.87%	No
B-H	Integral Attachment for Vessels	12 attachments	5 attachments	41.66%	No
B-J	Pressure Retaining Welds in Piping	221 welds	97 welds	43.89%	No
B-K-1	Integral Attachments for Piping, Pumps and Valves	N/A	N/A	N/A	No
B-L-1	Pressure Retaining Welds in Pump Casings	N/A	N/A	N/A	Yes
B-L-2	Pump Casings	1	1	100%	Yes
B-M-1	Pressure Retaining Welds in Valve Bodies	N/A	N/A	N/A	N/A
B-M-2	Valve Body > 4 in. Nominal Pipe Size	7 valves	3 valves	42.85%	Yes

Class 1 Inspections

(Continued)

Section XI Category	Description	Inspections Required	Inspections Completed	Percentage Completed	¹ Deferral Allowed
B-N-1	Interior of Reactor Vessel	3 items	1 items	**33.38%	No
B-N-2	Integrally Welded Core Support Structures and Interior Attachments to Reactor Vessels	2 items	0 items	0%	Yes
B-N-3	Removable Core Support Structures	1 item	0 items	0%	Yes
B-0	Pressure Retaining Welds in Control Rod Housings	3 welds	2 weld	66.66%	Yes
B-P	All Pressure Retaining Components				
	System Leakage Test	6	3	50.00%	No
	System Hydrostatic Test	1	0	0%	Yes
B-Q	Steam Generator Tubing	100% Station Technical Specifications Met	*	*	N/A
F-A F01.010	Class 1 Component Supports (Code Case N-491)	67 supports	29 supports	43.28%	No

* Steam Generator Tubing is examined and documented by the Diversified Services Group of the Electric System Support Department as required by the Station Technical Specifications and is not included in this report. See Eddy Current Examination Report (RFO-10, 1995).

** See Section 2 Category (B-N-1) for additional information.

Class 2 Inspections

Section XI Category	Description	Inspections Required	Inspections Completed	Percentage Completed	¹ Deferral Allowed
C-A	Pressure Retaining Welds in Pressure Vessels	32 welds	* 14 welds	43.75%	No
C-B	Pressure Retaining Nozzle Welds in Vessels	19 welds	10 welds	52.63%	No
C-C	Integral Attachments for Vessels, Piping, Pumps and Valves	21 attachments	7 attachments	33.33%	No
C-D	Pressure Retaining Bolting Greater Than 2 Inches in Diameter	N/A	N/A	N/A	No
C-F-1	Pressure Retaining Welds in Austenitic Stainless Steel or High Alloy Piping	222 welds	98 welds	44.14%	No
C-F-2	Pressure Retaining Welds in Carbon or Low Alloy Steel Piping	56 welds	22 welds	39.28%	No
C-G	Pressure Retaining Welds in Pumps and Valves	8 valves	3 valves	37.50%	No
C-H	All Pressure Retaining Components				
	System or Component Inservice/Functional Test	94	62	65.95%	No
	System Hydrostatic Test	47	0	0%	Yes
F-A F1.20	Class 2 Component Supports (Code Case N-491)	176 supports	82 supports	46.59%	No

* 2 Welds were deleted after report, 1 weld rescheduled to another outage

Additional Component Support Examinations Class 1, 2 & 3

Section XI Category	Description	Inspections Required	Inspections Completed	Percentage Completed	¹ Deferral Allowed
F-A F01.040	Supports other than Piping Supports Class 1, 2 & 3	24 Supports	10 Supports	41.66%	No
F01.050	Class 1, 2 & 3 Snubber Examinations	351 Snubbers	351 Snubbers	100%	No

¹ Deferral of inspection to the end of the interval as allowed by ASME Section XI Tables IWB-2500-1 and IWC-2500-1.

Augmented Inspections

Augmented	Description	Inspections Required	Inspections Completed	Percentage Completed
G01.001	Reactor Coolant Pump Flywheel Examinations	20 inspections	9 inspections	45%
G02.001	Steam Generator Preheater Section Tube Examinations	*	*	
G03.001	Pipe Rupture Protection	8 welds	5 welds	62.50%
G04.001	Steam Generator Feedwater Modification	1 xxx	1 xxx	

* Steam Generator Tubing is examined and documented by the Diversified Services Group of the Electric System Support Department as required by the Station Technical Specifications and is not included in this report. See Eddy Current Examination Report (RFO-10, 1995).

xxx 100% of Requirements Met for Outage 10.

Alternate Inspections

Section XI Category	Description	Inspections Required	Inspections Completed	Percentage Completed	¹ Deferral Allowed
N/A	N/A	N/A	N/A	N/A	N/A

¹ Deferral of inspection to the end of the interval as allowed by ASME Section XI Tables IWB-2500-1 and IWC-2500-1.

4.0 Final Inservice Inspection Plan For Outage 10

The final ISI Plan presented in this section lists all examinations credited for Outage 10 at McGuire Unit 1. This includes ASME Section XI Class 1 and 2, augmented and any alternate examinations required by the plant technical specifications, NRC Bulletins and Problem Investigation Process Forms.

4.1 The information shown below is a field description for the reporting format included in this section of the report:

A. Items examined by NDE methods

Item Number	= ASME Section XI Tables IWB-2500-1 (Class 1), IWC-2500-1 (Class 2), IWF-2500-1 (Class 1, Class 2), Augmented and Alternate Requirements
ID Number	= Unique Identification Number
Drawing Number	= Location and/or Detail Drawing
Locs.	= Location
Insp. Req.	= Examination Technique - Magnetic Particle, Dye Penetrant, etc.
Proc. Numbers	= Examination Procedures
Material Type/Grade	= General Description of Material
Diam./Thick	= Diameter/Thickness
Calib. Block	= Calibration Block Number
Comments	= General and/or Detail Description

**CATEGORY B-H, Integral Attachments for
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Inservice Inspection Plan for Interval 2 Outage 3

ITEM NUMBER	ID NUMBER	ISO/DWG NUMBERS	PROC	INSP REQ	MAT/SCH	DIATHK	CAL BLOCKS	COMMENTS
**** Integrally Welded Attachments ****								
B08.020.001	1PZR-SKIRT	MCM-1201.01-170	NDE-25	MT	CS	87.000	-----	PZR SUPPORT SKIRT TO LOWER HEAD
	Other	EDSK-379441B				1.500		RFO 9 EXAMINED PER IWB-2430
	Class A							REF. PIP 1-M94-1233, Request for Alternative 99-002
								Reference PIP 0-G99-0198
Total B08.020 Items:		1						
Total B08 Items:		1						

B. Items examined by Pressure Testing

Item Number = ASME Section XI Tables IWB-2500-1
(Class 1), IWC-2500-1 (Class 2)

Drawing Number = Number of the Flow Diagram

Revision = Revision of the Flow Diagram

Test = Type of Pressure Test

Comp = Vessel, Piping or Pump

Comp Name = Example: Reactor Vessel, etc.; for
piping-System designation will be
used

Req. Insp = Type inspection performed, i.e., VT2

Req. Proc = Required inspection procedure

Comments = General and/or Detail Description

5.0 Results Of Inspections Performed During Outage 10

The results of each examination shown in the final ISI Plan (Section 4 of this report) are included in this section. The completion date and status for each examination are shown. All examinations revealing reportable indications are described in further detail in Section 6.

5.1 The information shown below is a field description for the reporting format included in this section of the report:

A. Items examined by NDE methods

Item Number	=	ASME Section XI Tables IWB-2500-1 (Class 1), IWC-2500-1 (Class 2), IWF-2500-1 (Class 1, Class 2), Augmented and Alternate Requirements
ID Number	=	Unique Identification Number
Inspection Date	=	Date of Examination
Inspection Status	=	
CLR	=	Clear
REC	=	Recordable
REP	=	Reportable
*Inspection Limited	=	*Reference paragraph 5.2
L	=	Limited
-	=	No
Geo. Ref.	=	Geometric Reflector (Applies only to UT)
N	=	No
Y	=	Yes
Comments	=	General and/or Detail Description

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ITEM NUMBER	ID NUMBER	SYSTEM	INSP DATE	INSP STATUS	INSP LIMITED	GEO REF	RFR	COMMENTS
B02.012.002	1PZR-9		12/29/95	CLR	---	N	N	
B03.140.001	1SGA-INLET		01/16/96	CLR	75.93%	N	Y	Reference Request for Relief 98-004
B03.140.002	1SGA-OUTLET		01/16/96	CLR	75.93%	N	Y	Reference Request for Relief 98-004
B03.140.007	1SGD-INLET		01/16/96	CLR	75.93%	N	Y	Reference Request for Relief 98-004
B03.140.008	1SGD-OUTLET		01/16/96	CLR	75.93%	N	Y	Reference Request for Relief 98-004
B05.040.002	1PZR-W2SE		01/16/96	CLR	---	N	N	
B05.040.002A	1PZR-W2SE		12/21/95	CLR	---	N	N	
B05.040.003	1PZR-W3SE		12/28/95	CLR	---	N	N	
B05.040.003A	1PZR-W3SE		12/26/95	CLR	---	N	N	
B05.040.004	1PZR-W4ASE		12/28/95	CLR	---	N	N	
B05.040.004A	1PZR-W4ASE		12/27/95	CLR	---	N	N	
B05.070.001	1SGA-INLET-SE		01/22/96	CLR	48.61%	N	Y	Reference Request for Relief 98-004
B05.070.001A	1SGA-INLET-SE		01/10/96	CLR	---	N	N	
B05.070.002	1SGA-OUTLET-SE		01/22/96	CLR	48.61%	N	Y	Reference Request for Relief 98-004
B05.070.002A	1SGA-OUTLET-SE		01/10/96	CLR	---	N	N	
B05.130.002	1NC1F-1-2		01/22/96	CLR	48.61%	N	Y	Reference Request for Relief 98-004
B05.130.002A	1NC1F-1-2		01/10/96	CLR	---	N	N	
B05.130.003	1NC1F-1-3		01/22/96	CLR	48.61%	N	Y	Reference Request for Relief 98-004
B05.130.003A	1NC1F-1-3		01/10/96	CLR	---	N	N	
B06.010.016	1RPV-449-02-16		01/02/96	CLR	---	N	N	
B06.010.017	1RPV-449-02-17		01/02/96	CLR	---	N	N	
B06.010.018	1RPV-449-02-18		01/02/96	CLR	---	N	N	
B06.010.019	1RPV-449-02-19		01/02/96	CLR	---	N	N	
B06.010.020	1RPV-449-02-20		01/03/96	CLR	---	N	N	
B06.010.021	1RPV-449-02-21		01/03/96	CLR	---	N	N	
B06.010.022	1RPV-449-02-22		01/03/96	CLR	---	N	N	
B06.010.023	1RPV-449-02-23		01/02/96	CLR	---	N	N	
B06.010.024	1RPV-449-02-24		01/03/96	CLR	---	N	N	
B06.010.025	1RPV-449-02-25		01/03/96	CLR	---	N	N	
B06.010.026	1RPV-449-02-26		01/02/96	CLR	---	N	N	
B06.010.027	1RPV-449-02-27		01/03/96	CLR	---	N	N	
B06.010.028	1RPV-449-02-28		01/02/96	CLR	---	N	N	
B06.010.029	1RPV-449-02-29		01/02/96	CLR	---	N	N	
B06.010.030	1RPV-449-02-30		01/02/96	CLR	---	N	N	
B06.010.031	1RPV-449-02-31		01/03/96	CLR	---	N	N	
B06.010.032	1RPV-449-02-32		01/02/96	CLR	---	N	N	

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ITEM NUMBER	ID NUMBER	SYSTEM	INSP DATE	INSP STATUS	INSP LIMITED	GEO REF	RFR	COMMENTS
B08.020.001	1PZR-SKIRT		12/21/95	CLR	50.00%	N	Y	Request For Alternative 99-002
B09.011.053	1NCP-224-1	NC	01/17/96	CLR	---	N	N	Reference PIP 0-G99-0198
B09.011.053A	1NCP-224-1	NC	12/26/95	CLR	---	N	N	
B09.011.054	1NC1F-546	NC	01/17/96	CLR	---	N	N	
B09.011.054A	1NC1F-546	NC	12/26/95	CLR	---	N	N	
B09.011.055	1NC1F-547	NC	01/17/96	CLR	---	N	N	
B09.011.055A	1NC1F-547	NC	12/26/95	CLR	---	N	N	
B09.011.056	1NC-128-2	NC	01/02/96	REC	---	Y	N	
B09.011.056A	1NC-128-2	NC	12/21/95	CLR	---	N	N	
B09.011.057	1NC-128-1	NC	01/02/96	REC	---	Y	N	
B09.011.057A	1NC-128-1	NC	12/21/95	CLR	---	N	N	
B09.011.058	1NC-102-2	NC	01/02/96	CLR	---	N	N	
B09.011.058A	1NC-102-2	NC	12/20/95	CLR	---	N	N	
B09.011.059	1NC-102-1	NC	01/02/96	CLR	---	N	N	
B09.011.059A	1NC-102-1	NC	12/20/95	CLR	---	N	N	
B09.011.060	1NC1F-109	NC	01/17/96	CLR	---	N	N	
B09.011.060A	1NC1F-109	NC	12/21/95	CLR	---	N	N	
B09.011.226	1NI1F-266	NI	01/02/96	CLR	---	N	N	
B09.011.226A	1NI1F-266	NI	12/21/95	CLR	---	N	N	
B09.011.227	1NI-180-1	NI	01/02/96	CLR	---	N	N	
B09.011.227A	1NI-180-1	NI	12/21/95	CLR	---	N	N	
B09.021.001	1NC1F-2643	NC	12/26/95	CLR	---	N	N	
B09.021.002	1NC1F-2652	NC	12/26/95	CLR	---	N	N	
B09.021.005	1NC1F-525	NC	12/26/95	CLR	---	N	N	
B09.031.004	1NC47-WN8	NC	12/27/95	CLR	47.40%	N	Y	Reference Request for Relief 98-004
B09.031.004A	1NC47-WN8	NC	12/21/95	CLR	---	N	N	
B09.032.005	1NC23-WN2	NC	12/21/95	CLR	---	N	N	
B09.032.006	1NC24-WN2	NC	12/21/95	CLR	---	N	N	
B09.032.007	1NC32-WN8	NC	12/27/95	CLR	---	N	N	
B09.040.001	1NC1F-281	NC	12/27/95	CLR	---	N	N	
B09.040.216	1NV1F-5418	NV	12/21/95	CLR	---	N	N	
B09.040.218	1NV1F-5425	NV	12/21/95	CLR	---	N	N	
B09.040.219	1NV1F-5431	NV	12/21/95	CLR	---	N	N	
B09.040.220	1NV1F-5685	NV	12/21/95	CLR	---	N	N	
B09.040.222	1NV1F-6573	NV	12/21/95	CLR	---	N	N	
B09.040.223	1NV1F-5694	NV	12/21/95	CLR	---	N	N	

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B09.040.224	1NV1F-5698	NV	12/21/95	CLR	---	N	N	
B12.050.004F	1NI-82		01/01/96	CLR	---	N	N	
B13.010.001	1RPV-INTERIOR		01/05/96	CLR	---	N	N	
B14.010.010	1RPV-CRDM-64		12/26/95	CLR	---	N	N	
C01.010.080	1ACSHX-SH-47		//		0.00%	N	Y	Deleted after issuance of Report
C01.010.090	1RCPA-8-1		12/18/95	REC	---	Y	N	(Reference Plan Addenda 1MNS-070)
C01.020.001	1SGD-06B-07		01/16/96	REC	---	Y	N	
C01.020.050	1LDHX-04-03		//		0.00%	N	Y	Deleted after issuance of Report
C01.020.080	1RCPA-10-1		12/18/95	CLR	---	N	N	(Reference Plan Addenda 1MNS-070)
C01.020.090	1RCPSS-SH-3		08/23/95	REC	---	Y	N	
C01.020.091	1RCPSS-SH-2		08/23/95	CLR	---	N	N	
C01.030.010	1ACSHX-SH-48		//		0.00%	N	Y	Rescheduled after issuance of Report
C02.021.002	1SGA-SB-02		01/01/96	CLR	---	N	N	to be examined during EOC-13
C02.021.002A	1SGA-SB-02		12/29/95	CLR	---	N	N	
C02.022.002	1SGA-SB-02		01/01/96	CLR	---	N	N	
C02.033.001	1RHR-1A-INLET		01/11/96	CLR	---	N	N	
C02.033.002	1RHR-1A-OUTLET		01/11/96	CLR	---	N	N	
C02.033.005	1ACSHX-1A-INLET		09/11/95	CLR	---	N	N	
C02.033.006	1ACSHX-1B-OUTLET		09/11/95	CLR	---	N	N	
C03.020.001	1MCR-CF-158		12/27/95	CLR	---	N	N	
C03.020.003	1MCR-CF-174		12/27/95	CLR	---	N	N	
C05.011.007	1ND12A-1	ND	09/12/95	CLR	---	N	N	
C05.011.007A	1ND12A-1	ND	08/14/95	CLR	---	N	N	
C05.011.010	1ND1F21A	ND	09/12/95	CLR	---	N	N	
C05.011.010A	1ND1F21A	ND	08/14/95	CLR	---	N	N	
C05.011.011	1ND1F125	ND	08/23/95	CLR	---	N	N	
C05.011.011A	1ND1F125	ND	08/08/95	CLR	---	N	N	
C05.011.012	1ND133-1	ND	08/18/95	CLR	---	N	N	
C05.011.012A	1ND133-1	ND	08/08/95	CLR	---	N	N	
C05.011.029	1ND1F-87	ND	08/23/95	CLR	---	N	N	
C05.011.029A	1ND1F-87	ND	08/14/95	CLR	---	N	N	
C05.011.030	1ND72-6A		08/23/95	CLR	---	N	N	
C05.011.030A	1ND72-6A		08/14/95	CLR	---	N	N	
C05.011.031	1ND72-5A	ND	08/23/95	CLR	---	N	N	
C05.011.031A	1ND72-5A	ND	08/14/95	CLR	---	N	N	
C05.011.032	1ND72-4	ND	08/23/85	CLR	---	N	N	

B. Items examined by Pressure Testing

Item Number = ASME Section XI Tables IWB-2500-1
(Class 1),
IWC-2500-1 (Class 2)

Drawing Number = Number of the Flow Diagram

Examination Date = Latest Examination date

Condition = Partial or Complete test

Status = Clear, Recordable or Reportable

Comments = General and/or Detail Description

5.2 Limited Examinations (90% or Less Examination Coverage)

- A. There were nine item numbers inspected for which the greater than 90% examination coverage was not obtained. These item numbers are listed below along with the Request for Relief Number that will be filed for these limited inspections.

Item Number	Request for Relief Serial Number
B03.140.001	98-004
B03.140.002	98-004
B03.140.007	98-004
B03.140.008	98-004
B05.070.001	98-004
B05.070.002	98-004
B05.130.002	98-004
B05.130.003	98-004
B09.031.004	98-004
B08.020.001	Request For Alternative 99-002

8.0 Corrective Action

The following are the Problem Investigation Process reports (PIP'S) issued to document items involving Outage 10:

1-M94-1467 (Reactor Vessel Interior) B13.010.001
0-G99-0198 (1PZR-SKIRT) B08.020.001

General Office
Problem Investigation Process - PIP
Problem Investigation Form

PIP Serial No: 0-G99-0198	Action Category: 3
LER No:	Other Report:

I. Problem ID

Discovered Time/Date: 07/07/99 Occurred Time/Date:

Unit(s):

<u>Status at Time Discovered</u>	<u>Unit 1</u>	<u>Unit 2</u>
Mode		
% Power		

Unit Status Remarks:

System(s) Affected:

<u>WMS Equipment ID No.</u>	Affected Equipment	
	<u>Code</u>	<u>Manufacturer</u>

Location of Problem - Bldg: Column Line: Elev:

Location Remarks:

Method Used to Discover Problem:

Brief Problem Description:

During a comparison of Inservice Inspection examinations between Catawba and McGuire Nuclear Stations, it was discovered that McGuire Unit 1 Pressurizer Support Skirt Weld coverage (Item Number B08.020.001, IPZR-SKIRT) did not agree with Catawba's examination coverage.

Detailed Problem Description:

During McGuire Unit 1 EOC 9 and EOC 10 a Magnetic Particle (MT) exam was performed on the Pressurizer Skirt Support Weld. ASME Section XI Code requires that both ID and OD sides of the weld be examined. During the MT exams only the OD side of the weld was examined. In addition, the incorrect acceptance standards were used for the evaluations. Incorrect examination coverage led to only one side of a two-sided exam being performed. Due to design of the ID area it was impossible to perform MT examinations in this area, however the design problem was never addressed. The exam coverage status was reported as 100% coverage on the MT inspection records, which led to the Inservice Inspection Report reporting the inspection coverage as greater than 90%. Since only one side of the weld was examined, the greater than 90% coverage required by Code Case N-460 was not met.

Entered for Gary Underwood

General Office
Problem Investigation Process - PIP
Problem Investigation Form

PIP Serial No: 0-G99-0198	Action Category: 3
LER No:	Other Report:

Originated By: KWS8302: SCHMIDT, KENNETH W Team: KWS8302 Group: QAT Date: 07/07/99

Other Units/Components/Systems/Areas Affected (Y,N,U): N

Industry Plants Affected (Y,N,U): U

Immediate Corrective Actions:

Problem Found While Working with Document No. :

Immediate Corrective Action Work Request / Work Order No. :

	<u>Indiv</u>	<u>Team</u>	<u>Group</u>	<u>Date:</u>
Problem Identified By:	KWS8302	KWS8302	QAT	07/07/99
Problem Entered By:	KWS8302	KWS8302	QAT	07/07/99

II. Screening

Is the Problem Significant? N Action Category: 3

OEP No:

Other Report Nos:

Event Codes: A1 Failure to follow procedures/directives/policies

Screening Remarks:

This meets the criteria for a level 3 PIP

Originated By: KWS8302: SCHMIDT, KENNETH W Team: KWS8302 Group: QAT Date: 07/07/99

Responsible Group(s) for Problem Evaluation: QAT QA Tech. Services

Responsible Group for Present Operability: N/A

Responsible Group for Past Operability: N/A

Responsible Group for Reportability: N/A

Responsible Group for Overall PIP approval: QAT QA Tech. Services

	<u>Indiv</u>	<u>Team</u>	<u>Group</u>	<u>Date</u>
Screened By:	KWS8302	KWS8302	QAT	07/07/99

General Office
Problem Investigation Process - PIP
Problem Investigation Form

PIP Serial No: 0-G99-0198	Action Category: 3
LER No:	Other Report:

III. Operability

Present Operability:

Responsible Group: Status:

Sys/Comp Operable?(Y,N,C,E) :

Required Mode:

Comments:

Indiv Team Group Date
No current Signatures for this section.

Past Operability:

Responsible Group: Status:

Sys/Comp Operable?(Y,N,C,E) :

Required Mode:

Comments:

Indiv Team Group Date
No current Signatures for this section.

IV. Reportability/Investigation

Responsible Group: Status:

Problem Reportable(Y,N,E):

Reportable Per:

Comments:

Indiv Team Group Date
No current Signatures for this section.

Investigation Report:

General Office

Problem Investigation Process - PIP

Problem Investigation Form

PIP Serial No:	0-G99-0198	Action Category:	3
LER No:		Other Report:	

Responsible Group: _____ Act Date: _____

Investigator: _____ Due Date: _____

Date Due to VP or Sta. Mgr: _____

Date Regulatory or Agency Rpt Due: _____

Date Investigation Report Approved: _____

NRC Cause Codes: _____

V. Problem Evaluation

System(s) Affected: _____

<u>WMS Equipment ID No.</u>	<u>Affected Equipment</u>	<u>Manufacturer</u>
	Comp.	
	Code	

<u>Event</u>	<u>Cause Cd</u>	<u>Cause Description</u>	<u>Primary</u>	<u>Causing Group(s)</u>
A1	YYY	Incomplete Problem Evaluation	No	

Problem Evaluation From: Resp. Group: QAT Status: Open OEDB Checked: No

<u>Due Date:</u>	<u>Indiv</u>	<u>Team</u>	<u>Group</u>	<u>Date</u>
Accepted By:	KWS8302	KWS8302	QAT	07/07/99
Assigned To:	TLT8302	KWS8302	QAT	07/07/99

VII. Corrective Actions

Seq. No: 1

Resp Group: QAT	Status: Closed
Orig Group: QAT	Event Code: A1
Prop CAC: B3	Cause Code: YYY

Proposed Corrective Action:

Level III MT inspector to evaluate the acceptance standards used to determine if code requirements were met for OD portion of weld.

General Office

Problem Investigation Process - PIP

Problem Investigation Form

PIP Serial No:	0-G99-0198	Action Category:	3
LER No:		Other Report:	

Entered for Gary Underwood

Originated By: KWS8302: SCHMIDT, KENNETH W Team: KWS8302 Group: QAT Date: 07/07/99

	<u>Indiv</u>	<u>Team</u>	<u>Group</u>	<u>Date</u>
Ready For Approval:	KWS8302	KWS8302	QAT	07/07/99
Approval Assigned To:	KWS8302	KWS8302	QAT	07/07/99
Approved By:	KWS8302	KWS8302	QAT	07/07/99

General:

Outage: Mode:

Other Tracking Processes

<u>Type</u>	<u>Number</u>	<u>Text</u>

Actual Corrective Action: Actual CAC: Status: Open
 Due Date: 10/05/99

	<u>Indiv</u>	<u>Team</u>	<u>Group</u>	<u>Date</u>
Due Date:	10/05/99			
Accepted By:	KWS8302	KWS8302	QAT	07/07/99
Assigned To:	TLT8302	KWS8302	QAT	07/07/99

Seq. No: 2

Resp Group: QAT Status: Closed
 Orig Group: QAT Event Code: A1
 Prop CAC: A2 Cause Code: YYY

Proposed Corrective Action:

File Request for Relief to address the issue of no surface exam coverage for the ID of the Pressurizer Support Skirt Weld.

Entered for Gary Underwood

Originated By: KWS8302: SCHMIDT, KENNETH W Team: KWS8302 Group: QAT Date: 07/07/99

	<u>Indiv</u>	<u>Team</u>	<u>Group</u>	<u>Date</u>
Ready For Approval:	KWS8302	KWS8302	QAT	07/07/99
Approval Assigned To:	KWS8302	KWS8302	QAT	07/07/99
Approved By:	KWS8302	KWS8302	QAT	07/07/99

General Office

Problem Investigation Process - PIP

Problem Investigation Form

PIP Serial No:	0-G99-0198	Action Category:	3
LER No:		Other Report:	

Indiv	Team	Group	Date
Due Date:	10/05/99		
Accepted By:	KWS8302	QAT	07/07/99
Assigned To:	TLT8302	QAT	07/07/99

Seq. No: 4

Resp Group:	QAT	Status:	Closed
Orig Group:	QAT	Event Code:	AI
Prop CAC:	A3	Cause Code:	YYY

Proposed Corrective Action:

Inservice Inspection Group to revise EOC 9 and EOC 10 Reports to address the reporting status

Entered for Gary Underwood

Originated By: KWS8302: SCHMIDT, KENNETH W Team: KWS8302 Group: QAT Date: 07/07/99

	<u>Indiv</u>	<u>Team</u>	<u>Group</u>	<u>Date</u>
Ready For Approval:	KWS8302	KWS8302	QAT	07/07/99
Approval Assigned To:	KWS8302	KWS8302	QAT	07/07/99
Approved By:	KWS8302	KWS8302	QAT	07/07/99

General:

Outage: Mode:

Other Tracking Processes

<u>Type</u>	<u>Number</u>	<u>Text</u>
-------------	---------------	-------------

Actual Corrective Action:

Actual CAC: Status: Open
 Due Date: 10/05/99

	<u>Indiv</u>	<u>Team</u>	<u>Group</u>	<u>Date</u>
Due Date:	10/05/99			
Accepted By:	KWS8302	KWS8302	QAT	07/07/99
Assigned To:	GJU8302	KWS8302	QAT	07/07/99

Seq. No: 5

Resp Group:	QAT	Status:	Closed
Orig Group:	QAT	Event Code:	AI
Prop CAC:	B3	Cause Code:	YYY

General Office

Problem Investigation Process - PIP

Problem Investigation Form

PIP Serial No:	0-G99-0198	Action Category:	3
LER No:		Other Report:	

Proposed Corrective Action:

Level III UT inspector to evaluate the feasibility of performing UT exam on the ID surface of the subject weld in lieu of the required MT exam.

Entered for Gary Underwood

Originated By: KWS8302: SCHMIDT, KENNETH W Team: KWS8302 Group: QAT Date: 07/07/99

	<u>Indiv</u>	<u>Team</u>	<u>Group</u>	<u>Date</u>
Ready For Approval:	KWS8302	KWS8302	QAT	07/07/99
Approval Assigned To:	KWS8302	KWS8302	QAT	07/07/99
Approved By:	KWS8302	KWS8302	QAT	07/07/99

General:

Outage: Mode:

Other Tracking Processes

<u>Type</u>	<u>Number</u>	<u>Text</u>

Actual Corrective Action: Actual CAC: Status: Open
 Due Date: 10/05/99

	<u>Indiv</u>	<u>Team</u>	<u>Group</u>	<u>Date</u>
Due Date:	10/05/99			
Accepted By:	KWS8302	KWS8302	QAT	07/07/99
Assigned To:	JJM0948	KWS8302	QAT	07/07/99

VIII. Final and Overall PIP Approval

Responsible Group: QAT Status: Screened

	<u>Indiv</u>	<u>Team</u>	<u>Group</u>	<u>Date</u>
Assigned To:			QAT	07/07/99

Closure Document Type Closure Document No

Supplemental Concurrences - These do not affect PIP closure.

General Office
Problem Investigation Process - PIP
Problem Investigation Form

PIP Serial No: 0-G99-0198	Action Category: 3
LER No:	Other Report:

Concurrences Associated with External Commitments:

Concurred By: Indiv Team Group Date

IX. Attachments

Generic Applicability

Generic Applicability Review Not Required for this PIP.

Environmental

No Environmental for this PIP.

Failure Prevention Investigation:

No FPI for this PIP.

Remarks

No Remarks for this PIP

Maintenance Rule

No Maintenance Rule for this PIP

End of the Document for PIP No: 0-G99-0198
The status of this PIP is: Screened
The duration of this PIP was: 0 days

9.0 Reference Documents

The following reference documents apply to the inservice inspection performed during Outage 10 at McGuire Unit 1:

- (1) Request for Relief (94-010)
- (2) Request for Relief (94-G0-001)
- (3) Request for Relief (94-G0-002)
- (4) Request for Relief (98-004)
- (5) Request for Alternative (99-002)

Duke Energy Corporation

Station McGuire Unit 1 & 2

SECOND 10-YEAR INTERVAL REQUEST FOR ALTERNATIVE NO. 99-002

Pursuant to 10CFR50.55a (a)(3) (i & ii), Duke Energy Corporation requests the use of an alternative to the ASME Boiler and Pressure Vessel Code Section XI for McGuire Units 1 and 2. Specifically, Duke Energy requests approval to use the provisions of Code Case N-323-1, "Alternative Examination for Welded Attachments to Pressure Vessels Section XI, Division 1." This Code Case has not been listed in the latest published revision (Revision 12) of NRC Regulatory Guide 1.147, "Inservice Inspection Code Case Acceptability, ASME Section XI, Division 1." A copy of Code Case N-323-1 is included for your information as Attachment 1 of the Request for Alternative.

The Code Case states: (a) "for the configuration shown in Figs. 1 and 2, a surface examination from the accessible side of the attachment weld may be performed." Utilization of the above Code Case would alleviate the need to do the inside surface of the support skirt weld. The inside surface of this weld has insufficient clearance to permit the required surface examination.

I. System / Component(s) for Which the Alternative is Requested:

Safety-related ASME Section XI Code Class 1 Pressurizer Integrally Welded Attachments (Pressurizer Support Skirt to Lower Head.)

McGuire 1

Item Number	ID Number	Description
B08.020.001	1PZR-SKIRT	Pressurizer Support Skirt to Lower Head

McGuire 2

Item Number	ID Number	Description
B08.020.001	2PZR-SKIRT	Pressurizer Support Skirt to Lower Head

II. Code Requirement:

It is required by the 1989 ASME Boiler and Pressure Vessel Section XI Code (no addenda) that the surface of Class A Pressurizer Integrally Welded Attachments, Table IWB-2500-1, Examination Category B-H, Item Number B8.20 be examined per Examination Requirements IWB-2500-13, 14 and 15.

III. Code Requirement for which the Alternative is Requested:

ASME Boiler and Pressure Vessel Code Section XI, 1989 Edition (no addenda), Table IWB-2500-1 Examination Category B-H, Item No. B8.20, Figure No. IWB-2500-13. Examination Requirements Figure Number IWB-2500-13 requires a surface examination to areas (A-B) and (C-D). And Note 2 which states "The extent of the examination includes essentially 100% of the length of the attachment weld at each attachment subject to examination.

IV. Basis for Alternative Examination

Duke Energy request approval of Code Case N-323-1 and proposes to apply it as an alternative to the rules for surface examination of the Pressurizer Support Skirt to Lower Head Weld specified in Table IWB-2500-1, Examination Category B-H, Item Number B8.20. Code Case N-323-1 (a) allows "for the configuration shown in Figs. 1 and 2, a surface examination from the accessible side of the attachment weld may be performed". Figure 1 shows the surface examination areas to be (A-B) or (C-D).

V. Alternate Examination or Testing:

The OD surface (surface area A-B) of the weld will be examined by magnetic particle testing. The ID surface (surface area C-D) of the weld will not be examined.

VI. Justification for the Granting of Relief:

There is inadequate accessibility of the inside surface (surface C-D) of the Pressurizer Support Skirt Weld to perform the required surface examination.

VII. Implementation Schedule:

The weld will be scheduled in accordance with ASME Section XI requirements as shown in the McGuire Nuclear Station Inservice Inspection Plan Second Ten Year Interval for Unit 1 & Unit 2.

The following individuals contributed to the development of this RFA. Gary Underwood (Plan Manager McGuire) sections I-VII, Mark Pyne (Nuclear G.O. Engineering) review, Kevin Rhyne (Nuclear G.O. Supervising Engineer) final review.

Sponsored By: Gary Underwood Date 9/20/99

Approved By: K. Kevin Rhyne Date 9/20/99

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

Approval Date: December 31, 1996

*See Numerical Index for expiration
and any reaffirmation dates.*

Case N-323-1

Alternative Examination for Welded Attachments
to Pressure Vessels
Section XI, Division 1

Inquiry: What alternative to the requirements of Examination Category B-K of the 1995 Addenda or Examination Category B-H from the Winter 1991 Addenda, through the 1995 Edition may be performed for welded attachments to pressure vessels as shown in Figs. 1 and 2 when only one side of the attachment weld is accessible for examination?

Reply: It is the opinion of the Committee that as an alternative to the requirements of Examination Category B-K of the 1995 Addenda or Examination Category B-H from Winter 1991 Addenda to the 1995 Edition:

(a) for the configuration shown in Figs. 1 and 2, a surface examination from the accessible side of the attachment weld may be performed or;

(b) for the configuration shown in Fig. 2, a volumetric examination of Volume A-B, C-D from the accessible side of the attachment weld may be performed.

CASES OF ASME BOILER AND PRESSURE VESSEL CODE

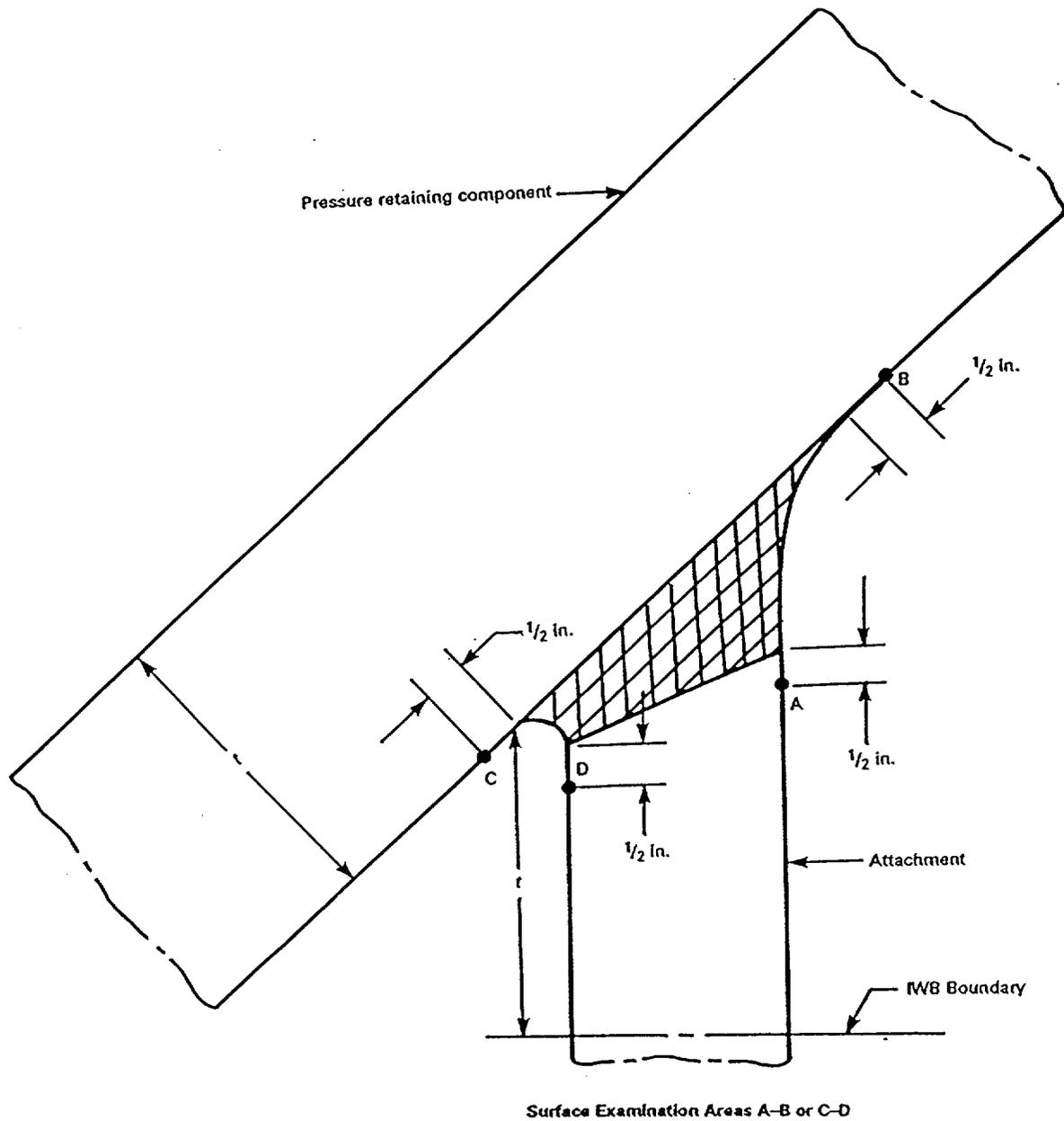
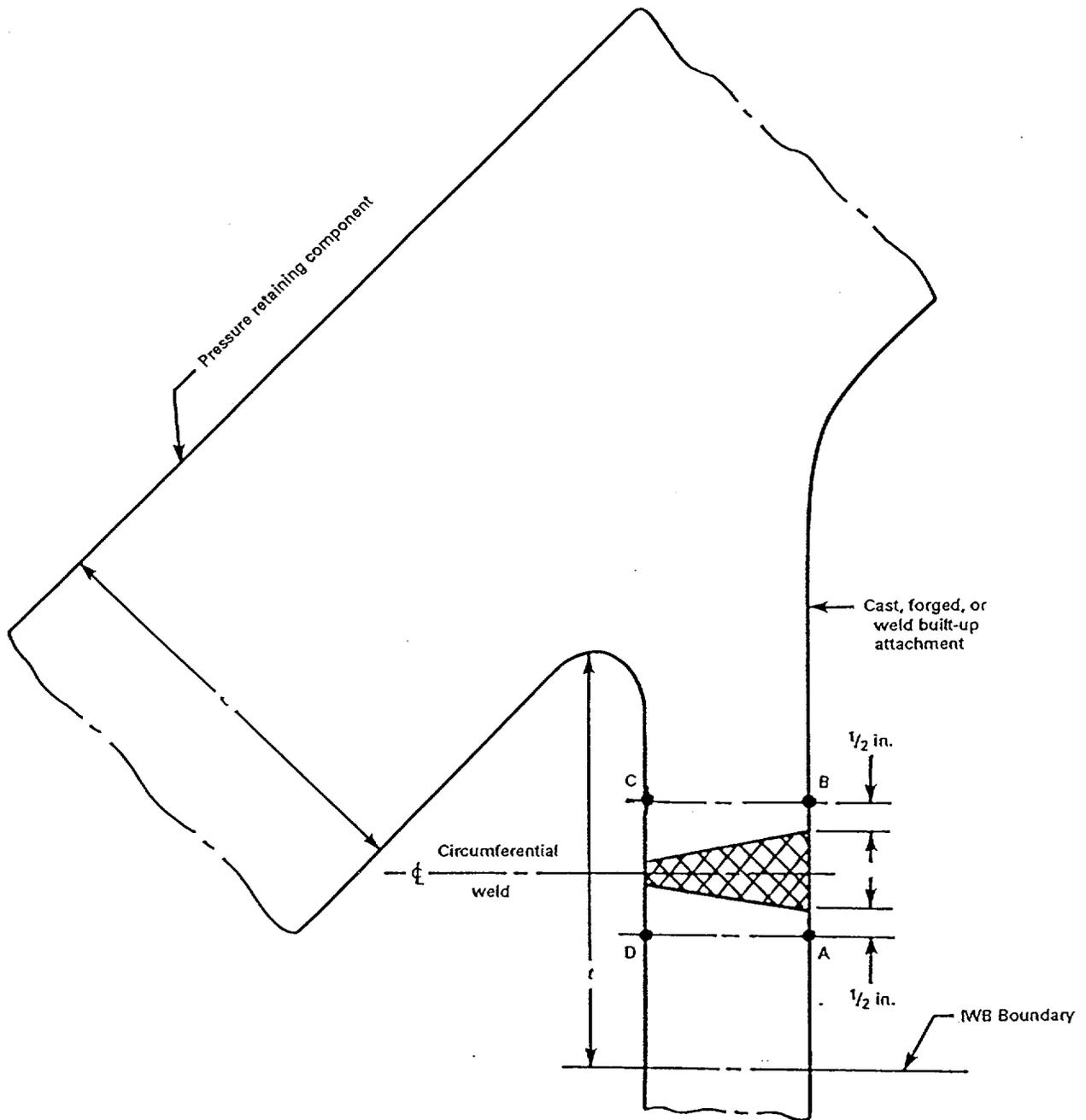


FIG. 1 WELDED ATTACHMENT

CASES OF ASME BOILER AND PRESSURE VESSEL CODE



Surface Examination Areas A-B or C-D

FIG. 2 WELDED ATTACHMENT

Duke Energy Corporation

Station McGuire Unit 1SECOND 10-YEAR INTERVAL REQUEST FOR RELIEF NO. 98-004

Pursuant to 10CFR50.55a (g) (5) (iii), Duke Energy Corporation has determined that compliance with the specified requirements would result in hardship or unusual difficulty without a compensating increase in the level of quality and safety. Conformance with examination requirements of ASME Section XI is not practical. Information is therefore being submitted in support of this determination and request is being sought for relief from the applicable ASME Section XI requirement (s).

I. System / Components(s) for Which Relief is Requested:

ASME Section XI Class 1 Components listed below:

Examination Category B-A: (Pressure Retaining Welds in Reactor Vessel)

Reactor Vessel (Head Circumferential Welds)

<u>ID Numbers</u>	<u>Item Numbers</u>	<u>End of Cycle</u>
1RPV6-446B	B01.021.001	11

Examination Category B-D: (Full Penetration Welds of Nozzles in Vessels)

Pressurizer (Nozzle-to-Vessel Welds)

<u>ID Numbers</u>	<u>Item Numbers</u>	<u>End of Cycle</u>
1PZR-10	B03.110.001	11

Steam Generator (Nozzle Inside Radius Section)

<u>ID Numbers</u>	<u>Item Numbers</u>	<u>End of Cycle</u>
ISGA-INLET	B03.140.001	10
ISGA-OUTLET	B03.140.002	10
ISGC-INLET	B03.140.005	12
ISGC-OUTLET	B03.140.006	12
ISGD-INLET	B03.140.007	10
ISGD-OUTLET	B03.140.008	10

Examination Category B-F: (Pressure Retaining Dissimilar Metal Welds)

Reactor Vessel (Nozzle-to-Safe End Butt Welds)

<u>ID Numbers</u>	<u>Item Numbers</u>	<u>End of Cycle</u>
1RPV 1-462A-SE	B05.010.009	11
1RPV 1-462B-SE	B05.010.010	11
1RPV 1-462C-SE	B05.010.011	11
1RPV 1-462D-SE	B05.010.012	11

Steam Generator (Nozzle-to-Safe End Butt Welds)

<u>ID Numbers</u>	<u>Item Numbers</u>	<u>End of Cycle</u>
1SGA-INLET-SE	B05.070.001	10
1SGA-OUTLET-SE	B05.070.002	10

Piping (Dissimilar Metal Butt Welds)

<u>ID Numbers</u>	<u>Item Numbers</u>	<u>End of Cycle</u>
1NC1F-1-2	B05.130.002	10
1NC1F-1-3	B05.130.003	10
1NI1FW-38-3	B05.130.017	11
1NI1FW-38-2	B05.130.018	11
1NI1FW-38-1	B05.130.019	11
1NI1FW-38-4	B05.130.020	11

Examination Category B-J: (Pressure Retaining Welds in Piping)

Branch Pipe Connection Welds (NPS 4" or Larger)

<u>ID Numbers</u>	<u>Item Numbers</u>	<u>End of Cycle</u>
1NC47-WN8	B09.031.004	10
1NC48-WN4A	B09.031.005	11
1NC48-WN4B	B09.031.006	11
1NC52-WN6	B09.031.007	12

II. Code Requirement:

ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition Table IWB-2500, lists the following requirements for each Examination Category as shown below:

“Examination Category B-A, Pressure Retaining Welds in Reactor Vessels; Figure Number IWB-2500-3”

Note (2) adds the words: “Includes essentially 100% of the weld length.”

“Examination Category B-D, Full Penetration Welds of Nozzles in Vessels- Inspection Program B; Figure Number IWB-2500-7 (a) through (d)”

“Examination Category B-F, Pressure Retaining Dissimilar Metal Welds; Figure Number IWB-2500-8”

“Examination Category B-J, Pressure Retaining Welds in Piping; Figure Number IWB-2500-9, 10, and 11”

Note (3) adds the words: “Includes essentially 100% of weld length.”

Note: Duke Energy Corporation with NRC approval has adopted Code Case N-460 which defines “essentially 100%” as greater than 90% coverage.

III. Code Requirement from which Relief is Requested:

Relief is requested from the requirement of examining essentially 100% of the weld length. Due to part geometry and actual physical barriers, obtaining greater than 90% of the weld volume as outlined in Code Case N-460, which is utilized by Duke Energy, is not possible.

Examination Category B-A: (Pressure Retaining Welds in Reactor Vessel)

Reactor Vessel (Head Circumferential Welds)

<u>Item Numbers</u>	<u>Actual Coverage Obtained</u>	
B01.021.001	74.87%	See Note 1

Note 1

ASME Section V, T-441.3.2 Scanning Requirements, 1989 Edition with no addenda as modified by Code Case N-460.

This Paragraph requires scanning of the examination volume(s) using three angle beams and a straight beam from both sides of the weld.

When scanning for reflectors parallel to the weld, the angle beams shall be aimed at right angles to the weld axis, with the search unit(s) manipulated so that the ultrasonic beams pass through the entire volume of weld metal. The adjacent base metal in the examination volume must be completely scanned by two angle beams, but need not be completely scanned by both angle beams from both directions (any combination of two angle beams will satisfy the requirement).

When scanning for reflectors transverse to the weld, the angle beam search units shall be aimed parallel to the axis of longitudinal and circumferential welds. The search unit shall be manipulated so that the ultrasonic beams pass through all of the examination volume. Scanning shall be done in two directions 180

degrees to each other to the extent possible. Areas blocked by geometric conditions shall be examined from at least one direction.

Code Case N-460 allows credit for full volume coverage if it can be shown that greater than 90% of the required weld volume has been examined.

Examination Category B-D: (Full Penetration Welds of Nozzles in Vessels)

Pressurizer (Nozzle-to-Vessel Welds)

<u>Item Numbers</u>	<u>Actual Coverage Obtained</u>	
B03.110.001	74.78%	See Note 2

Note 2

ASME Section V, Article 4, T-441.3.2 Scanning Requirements, 1989 Editions with no addenda as modified by Code Case N-460.

This paragraph requires scanning of the examination volume(s) using two angle beams and a straight beam from both sides of the weld.

When scanning for reflectors parallel to the weld, the angle beams shall be aimed at right angles to the weld axis, with the search unit(s) manipulated so that the ultrasonic beams pass through the entire volume of weld metal. The adjacent base metal in the examination volume must be completely scanned by two angle beams, but need not be completely scanned by both angle beams from both directions (any combination of two angle beams will satisfy the requirement).

When scanning for reflectors transverse to the weld, the angle beam units shall be aimed parallel to the axis of longitudinal and circumferential welds. The search unit shall be manipulated so that the ultrasonic beams pass through all of the examination volume. Scanning shall be done in two directions 180 degrees to each other to the extent possible. Areas blocked by geometric conditions shall be examined from at least one direction.

Code Case N-460 allows for full volume coverage if it can be shown that greater than 90% of the required volume has been examined.

Examination Category B-D: (Full Penetration Welds of Nozzles in Vessels)

Steam Generator (Nozzle Inside Radius Section)

<u>Item Numbers</u>	<u>Actual Coverage Obtained</u>	
B03.140.001	75.93%	See Note 3
B03.140.002	75.93%	See Note 3
B03.140.005	83.28%	See Note 3
B03.140.006	83.28%	See Note 3
B03.140.007	75.93%	See Note 3

B03.140.008 75.93% See Note 3

Note 3

Examination volume as shown in ASME Section XI, Figure IWB-2500-7(b).

Examination Category B-F: (Pressure Retaining Dissimilar Metal Welds)

Reactor Vessel (Nozzle-to-Safe-End Butt Welds)

<u>Item Numbers</u>	<u>Actual Coverage Obtained</u>	
B05.010.009	89.13%	See Note 4
B05.010.010	89.13%	See Note 4
B05.010.011	89.13%	See Note 4
B05.010.012	89.13%	See Note 4

Steam Generator (Nozzle-to-Safe End Butt Welds)

<u>Item Numbers</u>	<u>Actual Coverage Obtained</u>	
*B05.070.001	48.61%	See Note 4
*B05.070.002	48.61%	See Note 4

***Item numbers B05.070.001 and B05.070.002 were cut out and re-welded due to the Steam Generators being replaced.**

Piping (Dissimilar Metal Butt Welds)

<u>Item Numbers</u>	<u>Actual Coverage Obtained</u>	
*B05.130.002	48.61%	See Note 4
*B05.130.003	48.61%	See Note 4
B05.130.017	82.67%	See Note 4
B05.130.018	82.67%	See Note 4
B05.130.019	82.67%	See Note 4
B05.130.020	82.67%	See Note 4

***Item numbers B05.130.002 and B05.130.003 were cut out and re-welded due to the Steam Generators being replaced.**

Note 4

ASME Section XI, Appendix III, Paragraph III-4420, 1989 Edition with no addenda as modified by Code Case N-460. "The examination shall be performed using a sufficiently long examination beam path to provide coverage of the required examination volume in two beam path directions. The examination shall be performed from two sides of the weld, where practicable, or from one side of the weld, as a minimum."

Code Case N-460 allows credit for full volume coverage if it can be shown that greater than 90% of the required weld volume has been examined.

Examination Category B-J: (Pressure Retaining Welds in Piping)

Branch Pipe Connection Welds (NPS 4" or Larger)

<u>Item Numbers</u>	<u>Actual Coverage Obtained</u>	
B09.031.004	47.40%	See Note 5
B09.031.005	77.90%	See Note 5
B09.031.006	77.90%	See Note 5
B09.031.007	29.81%	See Note 5

Note 5

ASME Section XI, Appendix III, Paragraph III-4420, 1989 Edition with no addenda as modified by Code Case N-460. "The examination shall be performed using a sufficiently long examination beam path to provide coverage of the required examination volume. in two beam path directions. The examination shall be performed from two sides of the weld, where practicable, or from one side of the weld, as a minimum."

Code Case N-460 allows credit for full volume coverage if it can be shown that greater than 90% of the required weld volume has been examined.

IV. Basis for Relief:**ASME Section XI Class I Components listed below:****Examination Category B-A, Item B01.021, Pressure Retaining Welds in Reactor Vessel**

During the ultrasonic examination of the Reactor Vessel Closure Head Weld 1RPV 6-446B (Item Number B01.021.001) shown in Attachment 1, coverage of required examination volume could not be obtained. The examination coverage was limited to 74.87%. Geometric limitations caused by the 18.5 degree taper and lifting lug interference resulted in limited coverage of the required volume. In order to achieve more coverage the lifting lugs would have to be relocated away from the weld and the taper would have to be redesigned to allow scanning completely over the weld.

Examination Category B-D, Items B03.110, B03.140., Full Penetration Welds of Nozzles in Vessels

During the ultrasonic examination of the Pressurizer Surge Nozzle to Lower Head 1PZR-10 (Item Number B03.110.001) shown in Attachment 2, coverage of required examination volume could not be obtained. The examination coverage was limited to 74.78%. Single-sided access caused by the nozzle geometry

resulted in limited coverage of the required volume. In order to achieve more coverage, the nozzle would have to be redesigned to allow access from both sides.

During the ultrasonic examination of the Steam Generator Nozzles (Nozzle Inside Radius Section):

1SGA-Inlet (B03.140.001)

1SGA-Outlet (B03.140.002)

1SGD-Inlet (B03.140.007)

1SGD-Outlet (B03.140.008)

shown in Attachment 3, coverage of required examination volume could not be obtained. The examination coverage was limited to 75.93%. Limitations are caused by the ratio of the nozzle O.D. to the vessel thickness. When the nozzle O.D. is large in relation to the vessel thickness, less coverage can be obtained when scanning from the vessel side. See Note 6

During the ultrasonic examination of the Steam Generator Nozzles (Nozzle Inside Radius Section):

1SGC-Inlet (B03.140.005)

1SGC-Outlet (B03.140.006)

shown in Attachment 3, coverage of required examination volume could not be obtained. The examination coverage was limited to 83.28%. Limitations are caused by the ratio of the nozzle O.D. to the vessel thickness. When the nozzle O.D. is large in relation to the vessel thickness, less coverage can be obtained when scanning from the vessel side. See Note 6

Note 6

Examinations from the nozzle boss and O.D. blend radius using compound angles, determining which angles to use, metal paths to calibrate for and area of coverage is not accurate with manual calculations. Duke Energy Corporation is investigating the use of computer modeling to solve the limitation problems.

Examination Category B-F Items B05.010., B05.070., B05.130., Pressure Retaining Dissimilar Metal Welds

During the ultrasonic examination of the Reactor Vessel Head to UHI Tube Welds:

1RPV 1-462A-SE (B05.010.009)

1RPV 1-462B-SE (B05.010.010)

1RPV 1-462C-SE (B05.010.011)

1RPV 1-462D-SE (B05.010.012)

shown in Attachments 4 and 5, coverage of required examination volume could not be obtained. The examination coverage was limited to 89.13%.

See Note 7

During the ultrasonic examination of the Steam Generator Nozzle-to-Safe End Butt Welds:

1SGA-Inlet SE (B05.070.001)

1SGA-Outlet SE (B05.070.002)

shown in Attachment 6, coverage of required examination volume could not be obtained. The examination coverage was limited to 48.61%. See Note 7

During the ultrasonic examination of the Piping Dissimilar Metal Butt Welds (Steam Generator Safe End to Pipe):

1NC1F-1-2 (B05.130.002)

1NC1F-1-3 (B05.130.003)

shown in Attachment 6, coverage of required examination volume could not be obtained. The examination coverage was limited to 48.61%. See Note 7

During the ultrasonic examination of the Piping Dissimilar Metal Butt Welds (UHI Tube to End Cap Welds):

1NI1FW-38-3 (B05.130.017)

1NI1FW-38-2 (B05.130.018)

1NI1FW-38-1 (B05.130.019)

1NI1FW-38-4 (B05.130.020)

shown in Attachments 4 and 5, coverage of required examination volume could not be obtained. The examination coverage was limited to 82.67%. See Note 7

Note 7

Material characteristics and single sided access caused by the component geometry prevents two beam path direction coverage of the examination volume.

The most effective ultrasonic technique for the examination of dissimilar metal welds uses refracted longitudinal waves. The longitudinal wave is preferred as the austenitic weld metal and buttering *when present* create highly attenuative barriers to shear wave ultrasound. Longitudinal waves provide superior penetration and improved signal to noise ratio over shear waves. However, the longitudinal wave is affected by mode conversion when it strikes the inside surface of the safe end or pipe at any angle other than a right angle to the surface.

The calculations below show that a 45° refracted longitudinal wave striking the inside surface of a pipe will produce a 22.9° refracted shear wave in addition to the normally expected 45° reflected longitudinal wave.

$$\sin^{-1} = (\sin 45^\circ \times V_s) \div V_L$$

$$= (0.707 \times 0.123) \div 0.223$$

Where: \sin^{-1} is the shear wave angle

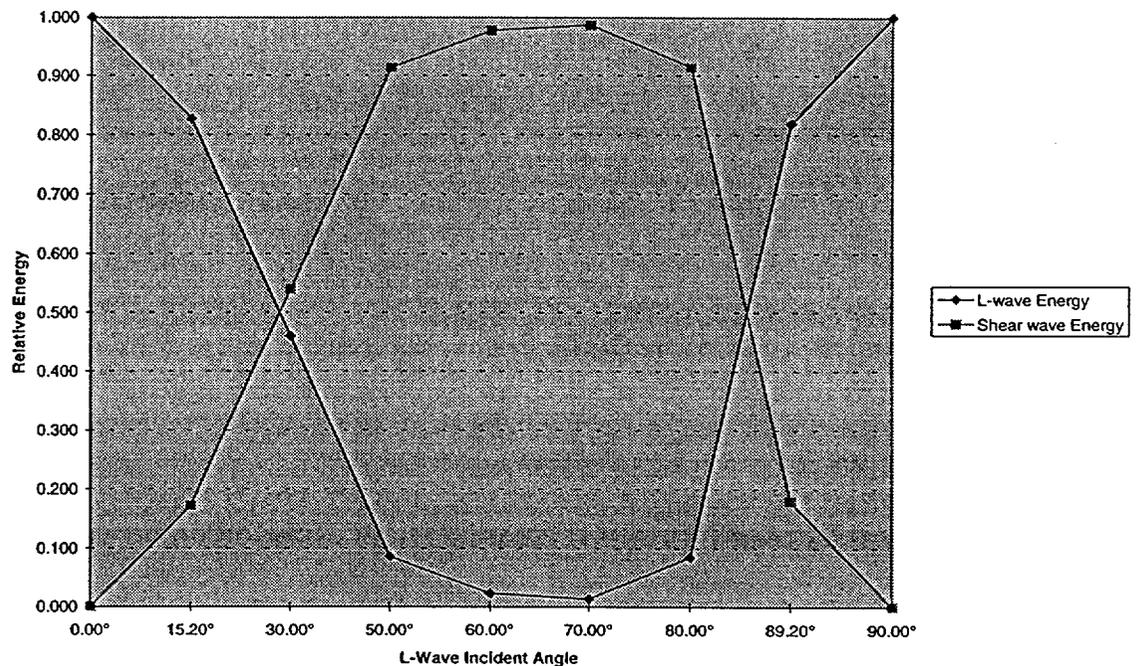
V_s is the shear wave velocity of the stainless steel safe end/pipe material in inches/ μ sec.

V_L is the longitudinal wave velocity of the stainless steel safe/pipe end material in inches/ μ sec.

As shown in the graph below, the mode conversion process creates two sound beams of differing intensities reflecting off of the inside surface.¹ At incident angles greater than 30° the shear wave will predominate. However, the shear wave is attenuated and scattered by the austenitic weld metal and the layer of buttering. The examination sensitivity is degraded to such an extent that any examination using the second sound path leg is meaningless. Therefore, the two beam path direction coverage requirement is impractical.

In order to obtain the required two-beam path direction coverage, welds would have to be re-designed to allow scanning from both sides.

Reflected Sound Beam Energy In Steel on A Free Face



¹ Firestone, F. A. : Tricks with the Supersonic Reflectoscope, *J. Soc. Nondestructive Testing*, vol. 7, no. 2 Fall 1948.

Examination Category B-J Item B09.031., Pressure Retaining Welds in Piping

During the ultrasonic examination of Weld Number INC47-WN8 (B09.031.004) shown in Attachment 7, coverage of required examination volume could not be obtained. The examination coverage was limited to 47.40%. See Note 8

During the ultrasonic examination of Weld Number INC48-WN4A (B09.031.005) shown in Attachment 8, coverage of required examination volume could not be obtained. The examination coverage was limited to 77.90%. See Note 8

During the ultrasonic examination of Weld Number INC48-WN4B (B09.031.006) shown in Attachment 9, coverage of required examination volume could not be obtained. The examination coverage was limited to 77.90%. See Note 8

During the ultrasonic examination of Weld Number INC52-WN6 (B09.031.007) shown in Attachment 10, coverage of required examination volume could not be obtained. The examination coverage was limited to 29.81%. See Note 8

Note 8

Single sided access caused by the branch connection geometry prevents scanning from both sides of the weld.

In both cases cast stainless steel characteristics mandate the use of refracted longitudinal waves. This type of ultrasonic wave produces mode conversion at the pipe inside surface, thus preventing the use of sound path distances beyond the first "leg". Therefore, coverage of the required examination volume in two-beam path directions is not practical.

In order to obtain the required two beam path direction coverage, the branch connections would have to be re-designed to allow scanning from both sides of the weld over the required examination volume.

V. Alternate Examinations or Testing:

The use of radiography as an alternate volumetric examination for all the above listed components is not practical due to component thickness and geometric configurations. Other restrictions making radiography impractical are the

physical barriers prohibiting access for placement of source, film, image quality indicator, etc.

Since radiography is impractical, Duke Energy Corporation will continue to use ultrasonic examination procedures to obtain maximum coverage to the extent practical of the Item Numbers referenced in Section I of this Request for Relief. No additional ultrasonic examinations are planned during the current interval for the welds referenced in Section I of this request.

For the Class 1 Components listed in Section I above, Duke Energy proposes to use the system leakage test to compliment the limited examination coverage. The Code requires (reference Table IWB-2500-1, Item Number B15.) that a system leakage test be performed after each refueling outage. This test requires a VT-2 visual examination for evidence of leakage. This testing will provide adequate assurance of pressure boundary integrity.

VI. Justification for the Granting of Relief

Examination Category B-A, Item B01.021, Pressure Retaining Welds in Reactor Vessel

During the ultrasonic examination of the Reactor Vessel Closure Head Weld IRPV 6-446B (Item Number B01.021.001), coverage of required examination volume could not be obtained. The examination coverage was limited to 74.87%. Geometric limitations caused by the 18.5 degree taper and lifting lug interference resulted in limited coverage of the required volume. In order to achieve more coverage the lifting lugs would have to be relocated **away** from the weld and the taper would have to be redesigned to allow scanning completely over the weld. Therefore, the 100% volumetric examination is impractical for this weld. The imposition of this requirement would create a considerable burden on Duke Energy Corporation. Reference Attachment 1 for scan coverage.

Although the examination volume requirements as defined in ASME Section XI 1989 Edition, Figure IWB-2500-3 could not be met, the amount of coverage obtained for these examinations provides an acceptable level of quality and integrity.

The Reactor Vessel Closure Head Weld listed above is located on the McGuire Unit 1 Reactor Vessel. This weld is not exposed to significant neutron fluence and is not prone to negative material property changes (i.e., embrittlement) associated with neutron bombardment. This weld was rigorously inspected by radiography and dye penetrant during construction and verified to be free from unacceptable fabrication defects. If a leak were to occur at the weld in question, the reactor coolant leakage calculation which is normally performed daily (and required by Technical Specifications to be performed every 72 hours) would provide an early indication of leakage. The unidentified leakage specification in

required by Technical Specifications to be performed every 72 hours) would provide an early indication of leakage. The unidentified leakage specification in Technical Specification 3.4.6.2 is 1 gpm. Several other indicators such as containment radiation monitors EMF-38,-39, and -40, the containment floor and equipment sump levels, containment humidity instruments and the ventilation unit condensate drain tank level would provide early indication of weld leakage for prompt Operations and Engineering evaluation.

Pursuant to 10 CFR 50.55a(g)(6)(i), granting this relief for the Reactor Vessel Flange to Upper Shell Weld will provide reasonable assurance of weld/component integrity, and is authorized by law. In addition, the requested relief will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Examination Category B-D, Items B03.110, B03.140., Full Penetration Welds of Nozzles in Vessels

During the ultrasonic examination of the Pressurizer Surge Nozzle to Lower Head 1PZR-10 (Item Number B03.110.001), coverage of the required examination volume could not be obtained. The examination coverage was limited due to single sided access caused by the nozzle geometry resulting in limited coverage of the required volume. In order to achieve more coverage the nozzle would have to be redesigned to allow access from both sides. Therefore, the 100% volumetric examination is impractical for this weld. The imposition of this requirement would create a considerable burden on Duke Energy Corporation. Reference Attachment 2 for scan coverage.

Steam Generator (Nozzle Inside Radius Sections):

- 1SGA-Inlet (B03.140.001)
- 1SGA-Outlet (B03.140.002)
- 1SGC-Inlet (B03.140.005)
- 1SGC-Outlet (B03.140.006)
- 1SGD-Inlet (B03.140.007)
- 1SGD-Outlet (B03.140.008)

During the ultrasonic examination of the Steam Generator Nozzle Inside Radius Sections listed above, coverage of required examination volume could not be obtained, limitations are caused by the ratio of the nozzle O.D. to the vessel thickness. When the nozzle O. D. is large in relation to the vessel thickness, less coverage can be obtained when scanning from the vessel side. Examinations from the nozzle boss and O. D. blend radius using compound angles, determining which angles to use, metal paths to calibrate for and area of coverage is not accurate with manual calculations. Therefore, the 100% volumetric examination is impractical for this weld. The imposition of this requirement would create a considerable burden on Duke Energy Corporation.

Duke Energy Corporation is investigating the use of computer modeling to solve the limitation problems. Reference Attachment 3 for scan coverage.

Although the examination volume requirements as defined in ASME Section XI 1989 Edition, Figure IWB-2500-7⁴ could not be met, the amount of coverage obtained for these examinations provides an acceptable level of quality and integrity.

The seven welds listed above are located within the reactor coolant loop. These welds are not exposed to significant neutron fluence and are not prone to negative material property changes (i.e., embrittlement) associated with neutron bombardment. These welds were rigorously inspected by radiography and dye penetrant during construction and verified to be free from unacceptable fabrication defects. If a leak were to occur at any of the welds in question, the reactor coolant leakage calculation which is normally performed daily (and required by Technical Specifications to be performed every 72 hours) would provide an early indication of leakage. The unidentified leakage specification in Technical Specification 3.4.6.2 is 1 gpm. Several other indicators such as containment radiation monitors EMF-38, -39, and -40, the containment floor and equipment sump levels, containment humidity instruments and the ventilation unit condensate drain tank level would provide early indication of weld leakage for prompt Operations and Engineering evaluation.

Note: On the four exams that took place prior to the Steam Generator Replacement (1SGA-Inlet, 1SGA-Outlet, 1SGD-Inlet, 1SGD-Outlet) 75.93% coverage was obtained. On the two exams that took place after the Steam Generator Replacement (1SGC-Inlet, 1SGC-Outlet) 83.28% coverage was obtained.

Pursuant to 10 CFR 50.55a(g)(6)(i), granting this relief for the welds listed under Examination Category B-D Welds will provide reasonable assurance of weld/component integrity, and is authorized by law. In addition, the requested relief will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Examination Category B-F Items B05.010., B05.070., B05.130., Pressure Retaining Dissimilar Metal Welds

Reactor Vessel Head to UHI Tube Welds:

1RPV 1-462A-SE (B05.010.009)

1RPV 1-462B-SE (B05.010.010)

1RPV 1-462C-SE (B05.010.011)

1RPV 1-462D-SE (B05.010.012)

Piping Dissimilar Metal Butt Welds (UHI Tube to End Cap Welds):

1NI1FW-38-3 (B05.130.017)

1NI1FW-38-2 (B05.130.018)

1NI1FW-38-1 (B05.130.019)

1NI1FW-38-4 (B05.130.020)

These eight Dissimilar Metal Welds are limited due to material characteristics and single sided access caused by the component geometry prevents two-beam path direction coverage of the examination volume. In order to obtain the required two-beam path direction coverage, these welds would have to be re-designed to allow scanning from both sides. Replacement or re-design of these Class 1 welds is not a viable alternative and would create an undue burden on Duke Energy Corporation. During the examination of these welds, techniques were utilized to obtain the maximum possible coverage. Reference Attachments 4 and 5 for scan coverage.

Although the examination volume requirements as defined in ASME Section XI 1989 Edition, Figure IWB-2500-8 could not be met, the amount of coverage obtained for these examinations provides an acceptable level of quality and integrity.

The reactor coolant system welds listed above are located on the reactor vessel closure head. These welds are not exposed to significant neutron fluence and are not prone to negative material property changes (i.e., embrittlement) associated with neutron bombardment. These welds were rigorously inspected by radiography and dye penetrant during construction and verified to be free from unacceptable fabrication defects. If a leak were to occur at any of the welds in question, the reactor coolant leakage calculation which is normally performed daily (and required by Technical Specifications to be performed every 72 hours) would provide an early indication of leakage. The unidentified leakage specification in Technical Specification 3.4.6.2 is 1 gpm. Several other indicators such as containment radiation monitors EMF-38, -39, and -40, the containment floor and equipment sump levels, containment humidity instruments and the ventilation unit condensate drain tank level would provide early indication of weld leakage for prompt Operations and Engineering evaluation.

Steam Generator Nozzle-to-Safe End Butt Welds:

1SGA-Inlet-SE (B05.070.001)

1SGA-Outlet-SE (B05.070.002)

Piping Dissimilar Metal Butt Welds (Steam Generator Safe End to Pipe):

1NC1F-1-2 (B05.130.002)

1NC1F-1-3 (B05.130.003)

These four Dissimilar Metal Butt Welds are limited due to material characteristics and single-sided access caused by the component geometry prevents two-beam path direction coverage of the examination volume. In order to obtain the required two-beam path direction coverage, these four welds would have to be re-designed to allow scanning from both sides.

The Steam Generator Nozzle to Safe End Butt Welds (Weld Numbers 1SGA-INLET-SE and 1SGA-OUTLET-SE) are located on the inlet and outlet of the steam generators for the reactor coolant piping. The Steam Generator Nozzle to Safe End Weld geometry prevented obtaining greater than 90% volumetric examination coverage. The imposition of this requirement would create a considerable burden on Duke Energy Corporation. During the examination of these welds, techniques were utilized to obtain the maximum possible coverage. Reference Attachment 6 for scan coverage.

Although the examination volume requirements as defined in ASME Section XI 1989 Edition, Figure IWB-2500-8 could not be met, the amount of coverage obtained for these examinations provided an acceptable level of quality and integrity. Furthermore, these welds were cutout and re-welded during the steam generator replacement (1EOC11 outage). These new welds were performed by FTI and received a complete radiographic examination, which were also performed by FTI, and verified to be free from unacceptable fabrication defects. There is no safety significance to the lack of weld examination coverage for the previous cycle.

Pursuant to 10 CFR 50.55a(g)(6)(i), granting this relief for the welds listed under Examination Category B-F Welds will provide reasonable assurance of weld/component integrity, and is authorized by law. In addition, the requested relief will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

Examination Category B-J Item B09.031., Pressure Retaining Welds in Piping

Branch Pipe Connection Welds:

During the ultrasonic examination of Weld Number INC47-WN8 (B09.031.004) shown in Attachment 7, coverage of required examination volume could not be obtained. The examination coverage was limited due to single-sided access caused by the branch connection geometry that prevents scanning from both sides of the weld.

During the ultrasonic examination of Weld Number INC48-WN4A (B09.031.005) shown in Attachment 8, coverage of required examination volume could not be obtained. The examination coverage was limited due to

single-sided access caused by the branch connection geometry that prevents scanning from both sides of the weld.

During the ultrasonic examination of Weld Number 1NC48-WN4B (B09.031.006) shown in Attachment 9, coverage of required examination volume could not be obtained. The examination coverage was limited due to single-sided access caused by the branch connection geometry that prevents scanning from both sides of the weld.

During the ultrasonic examination of Weld Number 1NC52-WN6 (B09.031.007) shown in Attachment 10, coverage of required examination volume could not be obtained. The examination coverage was limited due to single-sided access caused by the branch connection geometry that prevents scanning from both sides of the weld.

In order to obtain the required coverage these welds would have to be redesigned. The 100% volumetric examination is impractical due to nozzle or weld material geometry, or branch piping interferences. Replacement or re-design of this piping Class 1 piping is not a viable alternative and would create an undue burden on Duke Energy Corporation. During the examination of these welds, techniques were utilized to obtain the maximum possible coverage. Reference Attachments 7 thru 10 for scan coverage.

Although the examination volume requirements as defined in ASME Section XI 1989 Edition, Figures IWB-2500-9 thru -11 could not be met, the amount of coverage obtained for these examinations provides an acceptable level of quality and integrity.

The reactor coolant system piping branch connection nozzle welds listed above are located on the reactor coolant loop piping. These welds are not exposed to significant neutron fluence and are not prone to negative material property changes (i.e., embrittlement) associated with neutron bombardment. These welds were rigorously inspected by radiography and dye penetrant during construction and verified to be free from unacceptable fabrication defects. If a leak were to occur at any of the welds in question, the reactor coolant leakage calculation which is normally performed daily (and required by Technical Specifications to be performed every 72 hours) would provide an early indication of leakage. The unidentified leakage specification in Technical Specification 3.4.6.2 is 1 gpm. Several other indicators such as containment radiation monitors EMF-38,-39, and -40, the containment floor and equipment sump levels, containment humidity instruments and the ventilation unit condensate drain tank level would provide early indication of weld leakage for prompt Operations and Engineering evaluation.

Pursuant to 10 CFR 50.55a(g)(6)(i), granting this relief for the welds listed under Examination Category B-J will provide reasonable assurance of weld/component integrity, and is authorized by law. In addition, the requested relief will not endanger life or property or the common defense and security and is otherwise in the public interest giving due consideration to the burden upon the licensee that could result if the requirements were imposed on the facility.

VII. Implementation Schedule:

These examinations will continue to be scheduled in accordance with the requirements of ASME Section XI for future inspection intervals at McGuire Nuclear Station, Unit 1.

VIII. References:

Attachment 1 . Drawings of affected weld details including calculation methods for:

B01.021.001

Attachment 2 . Drawings of affected weld details including calculation methods for:

B03.110.001

Attachment 3 . Drawings of affected weld details including calculation methods for:

B03.140.001

B03.140.002

B03.140.005

B03.140.006

B03.140.007

B03.140.008

Attachment 4 . Drawings of affected weld details including calculation methods for:

B05.010.009

B05.010.010

B05.130.017

B05.130.018

Attachment 5 . Drawings of affected weld details including calculation methods for:

B05.010.011

B05.010.012

B05.130.019

B05.130.020

B05.070.002
B05.130.002
B05.130.003

Attachment 7 . Drawings of affected weld details including calculation methods
for:

B09.031.004

Attachment 8 . Drawings of affected weld details including calculation methods
for:

B09.031.005

Attachment 9 . Drawings of affected weld details including calculation methods
for:

B09.031.006

Attachment 10 . Drawings of affected weld details including calculation methods
for:

B09.031.007

The following individuals were involved in the development of this request for relief. Jeff Nolin (McGuire Engineering) provided the engineering justification for granting relief. Jim McArdle (NDE Level III) provided Code requirements from which relief is requested and basis for relief descriptions. Gary Scarboro (ISI Plan Technical Specialist) wrote the request and addressed the Code requirements.

Evaluated By: Gary D. Scarboro Date 11/10/98

Reviewed By: Gary J. Underwood Date 11/11/98

Reviewed By
NDE Level III James J. McQuillen Date 11/10/98

Approved By: R. Kevin Rhyme Date 11/10/98

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 2/21/97 Sheet Number: 9701025

Procedure: NDE-660 Rev: 2 FC: N/A Couplant: ULTRAGEL II Batch Number: 95325

Examiner: James W. Setzer *James W Setzer* Level: III Calibration Block ID: 50376 Pyrometer S/N: MCNDE 27023

Examiner: James H. Resor *James H Resor* Level: II Calibration Block Temp: 74°F Cal Due: 9/18/97

REFERENCE BLOCK

SIMULATOR BLOCK

ID: 783142
 Type: IIV Material: CS

ID: 96-6520 Reflector Type: BW
 Gain: 15.5 Signal Ampl: 80% Metal Path: 4.0

INSTRUMENT

TRANSDUCER

Manufacturer: KRAUTKRAMER
 Serial No: 32810-4022

Type: Single Dual Size: 1.0 Freq: 2.25 Mhz Wedge: INT
 Manufacturer: KBA Ser no: J19012(SP) Meas. 0 °

INSTRUMENT SETTINGS

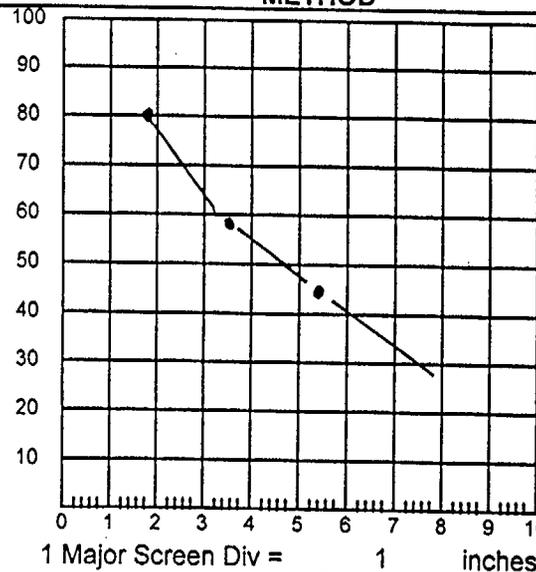
CALIBRATION

METHOD

CABLES

Gain	<u>15.5</u>
Range	<u>10</u>
MTVEL	<u>233.0</u>
Delay	<u>0.0</u>
Pulser	<u>HIGH</u>
Reject	<u>0%</u>
Freq	<u>1-5</u>
Zero	<u>0.47</u>
Display	<u>FULL</u>
PRF	<u>HIGH</u>

Reflector Type	Amplitude %FSH	Metal Path inches
1 /8 node	80%	1.7
2 /8 node	58%	3.5
3 /8 node	45%	5.2
/8 node		
other		
Cal Direction: axial <input checked="" type="checkbox"/> circ. <input checked="" type="checkbox"/>		
Wave Mode: Long. <input checked="" type="checkbox"/> shear <input type="checkbox"/>		
surf. <input type="checkbox"/>		



RG58
 RG174
 Length: 6 FT

Initial Cal Time
1715

Cal Checks

Time	Initials
<u>2051</u>	<i>[Signature]</i>
<u>2240</u>	<i>[Signature]</i>
<u>FINAL</u>	

Remarks: "CALIBRATION REFLECTORS VERIFIED"

Item No: B01.021.001, B01.022.004, B01.022.005

Jack: T R

Reviewer: Rod Sheffield

Level: II

Date: 2-27-97

Authorized Inspector: *[Signature]*

Date: 3-6-97

SERIAL NO. 95-CCV
 Attachment 1
 PAGE 1 of 18

FILE

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire	Unit: 1	Date: 2/21/97	Sheet Number: 9701026
Procedure: NDE-660	Rev: 2	FC: N/A	Couplant: ULTRAGEL II
Examiner: Gary J. Moss <i>Gary J. Moss</i>	Level: II	Calibration Block ID: 50376	Batch Number: 95325
Examiner: Jay A. Eaton <i>Jay A. Eaton</i>	Level: II	Calibration Block Temp: 74°F	Pyrometer S/N: MCNDE 27023
		Cal Due: 9/18/97	

REFERENCE BLOCK

SIMULATOR BLOCK

ID: 783142	ID: 96-6520	Reflector Type: RADIUS
Type: IIW	Material: CS	Gain: 25.5
		Signal Ampl: 80%
		Metal Path: 2.0

INSTRUMENT

TRANSDUCER

Manufacturer: KRAUTKRAMER	Type: Single <input checked="" type="checkbox"/> Dual <input type="checkbox"/>	Size: 1.0	Freq: 2.25 Mhz	Wedge: AWS
Serial No: 32810-4020	Manufacturer: KBA	Ser no: E30939	Meas: <input checked="" type="checkbox"/> 35°	

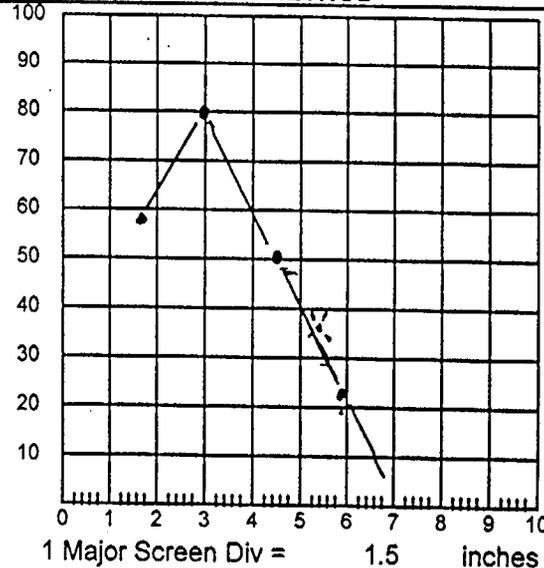
INSTRUMENT SETTINGS

CALIBRATION

METHOD

CABLES

Gain	37.5	Reflector Type	HOLE	Amplitude %FSH	Metal Path inches
Range	15	1	/8 node	58%	2.3
MTVEL	126.8	2	/8 node	80%	4.3
Delay	9.7	3	/8 node	50%	6.6
Pulser	HIGH	5	/8 node	22%	10.7
Reject	0%	other	NOTCH	38%	9.0
Freq	1-5	Cal Direction: axial <input checked="" type="checkbox"/> circ. <input checked="" type="checkbox"/>			
Zero	10.3	Wave Mode: Long. <input type="checkbox"/> shear <input checked="" type="checkbox"/>			
Display	FULL	surf. <input type="checkbox"/>			
PRF	HIGH	Remarks: "CALIBRATION REFLECTORS VERIFIED"			



RG58 <input type="checkbox"/>
RG174 <input checked="" type="checkbox"/>
Length: 6 FT
Initial Cal Time: 1805
Cal Checks
Time Initials
2052 <i>OK</i>
2240 <i>OK</i>
FINAL

Item No: B01.021.001, B01.022.004, B01.022.005

Jack: T <input type="checkbox"/> R <input checked="" type="checkbox"/>	Reviewer: Rod Sheffield <i>Rod Sheffield</i>	Level: II	Date: 2-27-97	Authorized Inspector: <i>William</i>	Date: 3-6-97
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Attachment 1
Page 2 of 18

B
3/17/97

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 2/21/97 Sheet Number: 9701027

Procedure: NDE-660 Rev: 2 FC: N/A Couplant: ULTRAGEL II Batch Number: 95325

Examiner: Winfred C. Leeper *Winfred C. Leeper* Level: II Calibration Block ID: 50376 Pyrometer S/N: MCNDE 27023

Examiner: David Zimmerman *David K Zimmerman* Level: II Calibration Block Temp: 74°F Cal Due: 9/18/97

REFERENCE BLOCK

ID: 783142
 Type: IIV Material: CS

SIMULATOR BLOCK

ID: 96-6520 Reflector Type: RADIUS
 Gain: 25.5 Signal Ampl: 60% Metal Path: 2.0

INSTRUMENT

Manufacturer: KRAUTKRAMER
 Serial No: 32810-4019

TRANSDUCER

Type: Single Dual Size: 1.0 Freq: 2.25 Mhz Wedge: AWS
 Manufacturer: KBA Ser no: M18423 Meas. 45 °

INSTRUMENT SETTINGS

Gain	<u>40.5</u>
Range	<u>20</u>
MTVEL	<u>126.8</u>
Delay	<u>9.5</u>
Pulser	<u>HIGH</u>
Reject	<u>0%</u>
Freq	<u>1-5</u>
Zero	<u>10.3</u>
Display	<u>FULL</u>
PRF	<u>HIGH</u>

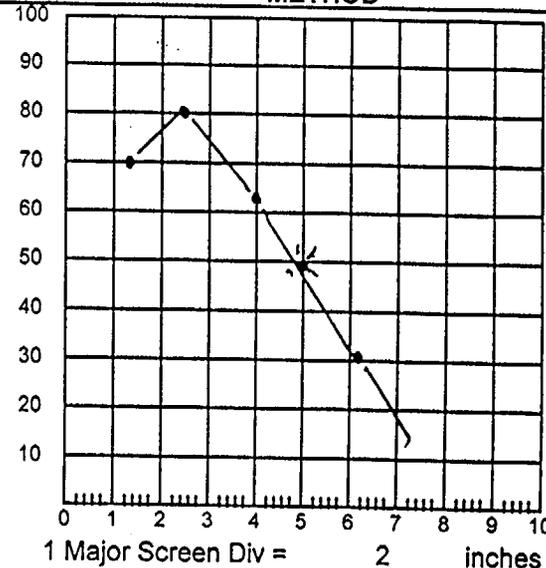
CALIBRATION

Reflector Type	Amplitude %FSH	Metal Path inches
<u>HOLE</u>		
<u>1 /8 node</u>	<u>70%</u>	<u>2.5</u>
<u>2 /8 node</u>	<u>80%</u>	<u>5.06</u>
<u>3 /8 node</u>	<u>62%</u>	<u>7.7</u>
<u>5 /8 node</u>	<u>30%</u>	<u>12.4</u>
<u>other NOTCH</u>	<u>48%</u>	<u>10.2</u>

Cal Direction: axial circ.
 Wave Mode: Long. shear
 surf.

Remarks: "CALIBRATION REFLECTORS VERIFIED"

METHOD



CABLES

RG58
 RG174
 Length: 6 FT

Initial Cal Time
1737

Cal Checks
 Time | Initials

<u>2053</u>	<u>WCL</u>
<u>2256</u>	<u>WCL</u>
<u>FINAL</u>	

Item No: B01.021.001, B01.022.004, B01.022.005

Jack: T R

Reviewer: Rod Sheffield *Rod Sheffield* Level: II Date: 2-27-97 Authorized Inspector: ADK *ADK* Date: 3-6-97

Attachment 1
PAGE 2 of 18

R
3-6-97

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS
 (Reg. Guide 1.150)

Exam Start: 2100 Form NDE-UT-2A/RPV
 Exam Finish: 2200 Revision 4

Station: McGuire Unit: 1 Component/Weld ID: 1RPV 6-446B Date: 2/21/97

Weld Length (in.): 456" Surface Condition: AS GROUND Lo: 9.2.1 Surface Temperature: 66 ° F

Examiner: James W. Setzer *James W. Setzer* Level: III

Examiner: James H. Resor *James H. Resor* Level: II

Procedure: NDE-660 Rev: 2 FC: N/A

Calibration Sheet No:
9701025

Scans:
 45 _____ dB 70 _____ dB
 45T _____ dB 70T _____ dB
 60 _____ dB
 60T _____ dB
 Other: 0 - 29.5 dB

Pyrometer S/N: MCNDE 27023
 Cal Due: 9/18/97

Configuration: CIRC. WELD
 PC446-03=S2 to PC446-04=S1

Scan Surface: OD

IND #	<input checked="" type="checkbox"/>	Max % DAC	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac		DO NOT WRITE IN THIS SPACE								
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
NRI	0°															

Remarks:

Limitations: (see NDE-UT-4) 90% or greater coverage obtained: yes no Sheet _____ of _____

Reviewed By: Rod Sheffield *Rod Sheffield* Level: II Date: 2-27-97 Authorized Inspector: *[Signature]* Date: 3-6-97 Item No: B01.021.001

Attachment 1
PAGE 4 of 18

RGC
2/21/97

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS
(Reg. Guide 1.150)

Station: McGuire	Unit: 1	Component/Weld ID: 1RPV 6-446B	Exam Start: 2100	Form NDE-UT-2A/RPV
			Exam Finish: 2200	Revision 4
Date: 2/21/97				
Weld Length (in.): 456"	Surface Condition: AS GROUND	Lo: 9.2.1	Surface Temperature: 66 ° F	
Examiner: Gary J. Moss <i>Gary J. Moss</i> Level: II	FC: N/A	Scans:	Pyrometer S/N: MCNDE 27023	
Examiner: Jay A. Eaton <i>Jay A. Eaton</i> Level: II		45 <input type="checkbox"/> _____ dB 70 <input type="checkbox"/> _____ dB	Cal Due: 9/18/97	
Procedure: NDE-660 Rev: 2		45T <input type="checkbox"/> _____ dB 70T <input type="checkbox"/> _____ dB	Configuration: CIRC. WELD	
Calibration Sheet No: 9701026		60 <input type="checkbox"/> _____ dB	PC446-03=S2 to PC446-04=S1	
		60T <input type="checkbox"/> _____ dB	Scan Surface: OD	
		Other: 35 - 51.5 dB		

IND #	<input checked="" type="checkbox"/>	Max % DAC	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac	20%dac	20%dac	20%dac	20%dac	20%dac		DO NOT WRITE IN THIS SPACE	WRITE	
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI	35°														

Remarks:			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>		Sheet _____ of _____	
Reviewed By: Rod Sheffield <i>Rod Sheffield</i>	Level: II	Date: 2-27-97	Authorized Inspector: <i>[Signature]</i> Date: 3-6-97
		Item No: B01.021.001	

Attachment 1
PAGE 5 of 18

RGS
3/17/97

DUKE POWER COMPANY										Exam Start: 2100		Form NDE-UT-2A/RPV	
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS										Exam Finish: 2200		Revision 4	
(Reg. Guide 1.150)													
Station: McGuire			Unit: 1		Component/Weld ID: 1RPV 6-446B					Date: 2/21/97			
Weld Length (in.): 456"			Surface Condition: AS GROUND			Lo: 9.2.1		Surface Temperature: 66 ° F					
Examiner: Winfred C. Leeper <i>Winfred C. Leeper</i>			Level: II		Scans:					Pyrometer S/N: MCNDE 27023			
Examiner: David Zimmerman <i>David Zimmerman</i>			Level: II		45 <input checked="" type="checkbox"/> 54.5 dB		70 <input type="checkbox"/> _____ dB		Cal Due: 9/18/97				
Procedure: NDE-660			Rev: 2		45T <input checked="" type="checkbox"/> 54.5 dB		70T <input type="checkbox"/> _____ dB		Configuration: CIRC. WELD				
FC: N/A					60 <input type="checkbox"/> _____ dB				PC446-03=S2 to PC446-04=S1				
Calibration Sheet No: 9701027					60T <input type="checkbox"/> _____ dB				Scan Surface: OD				
Other: _____ dB													

IND #	<input checked="" type="checkbox"/>	Max % DAC	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac	20%dac	20%dac	20%dac	20%dac	20%dac			DO NOT WRITE IN THIS SPACE		
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
NRI	45°															

Remarks:			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: Rod Sheffield <i>Rod Sheffield</i>	Level: II	Date: 2-27-97	Authorized Inspector: <i>R. D. Klein</i> 3-6-97
Item No: B01.021.001			

Attachment 1
PAGE 6 of 18

R. D. Klein
3/1/97

DUKE POWER COMPANY ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1RPV 6-446B

Item No: B01.021.001

Remarks:

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input checked="" type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> cw <input checked="" type="checkbox"/> ccw	
FROM L <u>0+454"</u> to L <u>0+2"</u>	INCHES FROM WO <u>C/L+6"</u> to <u>C/L-12"</u>		
ANGLE: <input checked="" type="checkbox"/> 0 <input checked="" type="checkbox"/> 45 <input type="checkbox"/> 60 <input checked="" type="checkbox"/> Other <u>35°</u>	FROM _____ DEG to _____ DEG		

1RPV-HD-LUG-1

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input checked="" type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> cw <input checked="" type="checkbox"/> ccw	
FROM L <u>0+150.5"</u> to L <u>0+154.5"</u>	INCHES FROM WO <u>C/L+6"</u> to <u>C/L-12"</u>		
ANGLE: <input checked="" type="checkbox"/> 0 <input type="checkbox"/> 45 <input checked="" type="checkbox"/> 60 <input type="checkbox"/> Other <u>35°</u>	FROM _____ DEG to _____ DEG		

1RPV-HD-LUG-2

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input checked="" type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> cw <input checked="" type="checkbox"/> ccw	
FROM L <u>0+302"</u> to L <u>0+306"</u>	INCHES FROM WO <u>C/L+6"</u> to <u>C/L-12"</u>		
ANGLE: <input checked="" type="checkbox"/> 0 <input checked="" type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other <u>35°</u>	FROM _____ DEG to _____ DEG		

1RPV-HD-LUG-3

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input checked="" type="checkbox"/> LIMITED SCAN	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> cw <input checked="" type="checkbox"/> ccw	
FROM L _____ to L _____	INCHES FROM WO <u>C/L+4"</u> to <u>BEYOND</u>		
ANGLE: <input checked="" type="checkbox"/> 0 <input checked="" type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other <u>35°</u>	FROM <u>0</u> DEG to <u>360</u>		

MACHINE TAPER

Prepared By: Jay Eaton Level: II Date: 2/21/97 Sketch(s) attached yes no Sheet _____ of _____

Reviewed By: Rod Sheffield Date: 2-27-97 Authorized Inspector: Date: 3-6-97

Attachment 1
PAGE 1 of 18

R
CW
3/17/97

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
TOTAL AGGREGATE COVERAGE FOR WELD AND BASE METAL COMBINED. UT WAS NOT PERFORMED FROM THE ID SURFACE TO OBTAIN MORE COVERAGE DUE TO RADIATION LEVELS.	

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
				BASE METAL	60968.4	85924.8	70.96
				WELD	32860.8	39398.4	83.41
				AGGREGATE	93829.2	125323.2	74.87

	Item No:	B01.021.001
Prepared By: Jay Eaton	Level: II	Date: 3/4/97
Reviewed By: Larry Mauldin	Level: III	Date: 3/5/97

EJ/179

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
$7.0 / 2 \times (3.5 + 3.0) = 22.75 \times 2 = 45.5$ $45.5 + (2.5 \times 1.0 / 2) = 46.8$	$46.8 \times 456" = 31340.8 \text{ cu.in.}$

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	0	N/A	31.1	444	13808.4	20779.2	66.45
1	0	N/A	0	12	0	561.6	0.00
2	35/45	S1	46.2	444	20512.8	20779.2	98.72
3	35	S2	0.2	12	2.4	561.6	0.43
4	45	S2	0.4	12	4.8	561.6	0.85
5	35/45	CW	30	444	13320	20779.2	64.10
5	35/45	CW	0	12	0	561.6	0.00
6	35/45	CCW	30	444	13320	20779.2	64.10
6	35/45	CCW	0	12	0	561.6	0.00
TOTAL					60968.4	85924.8	70.96

Prepared By: Jay Eaton	Level: II	Date: 3/4/97	Item No: B01.021.001
Reviewed By: Larry Mauldin	Level: III	Date: 3/5/97	

3/5/97

DUKE POWER COMPANY	NDE-91-1
Limited Examination Coverage Worksheet	Revision 0

Examination Volume/Area Defined				
<input type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
1.375 X 7.0 = 9.625 = 9.65 SQ.IN.	9.6 X 456 = 4377.6 CU.IN.

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	0	N/A	9.6	444	4262.4	4262.4	100.00
1	0	N/A	0	12	0	115.2	0.00
2	35	S1	9.5	444	4218	4262.4	98.96
2	35	S1	0	12	0	115.2	0.00
3	35	S2	1.4	444	621.6	4262.4	14.58
3	35	S2	0	12	0	115.2	0.00
4	45	S1	9.6	444	4262.4	4262.4	100.00
4	45	S1	0	12	0	115.2	0.00
5	45	S2	5.5	444	2442	4262.4	57.29
5	45	S2	0.4	12	4.8	115.2	4.17

CONT. ON NEXT PAGE

Prepared By: Jay Eaton		Level: II	Date: 3/4/97
Reviewed By: Larry Mauldin		Level: III	Date: 3/5/97

FILE

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

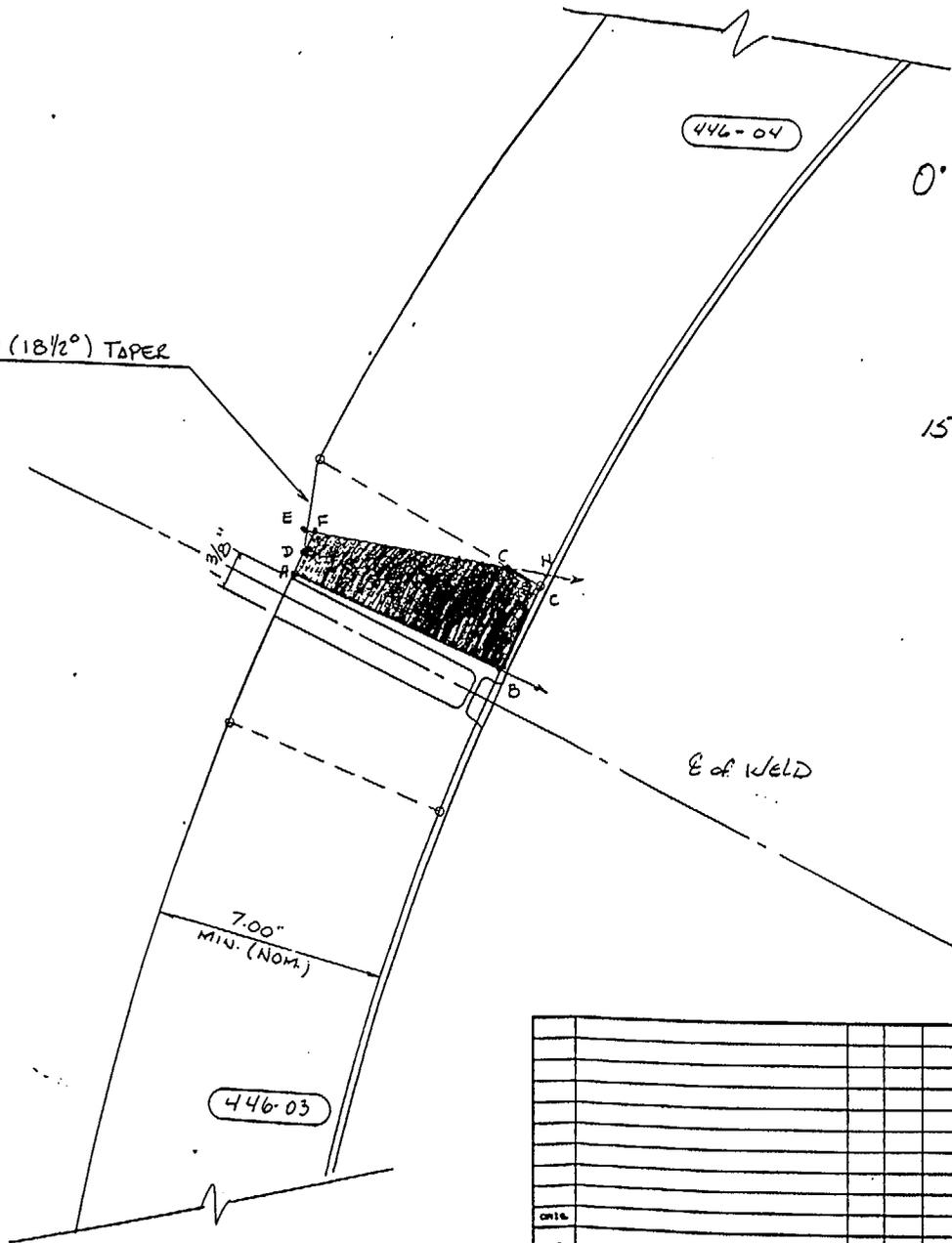
Examination Volume/Area Defined	
<input type="checkbox"/> Base Metal <input checked="" type="checkbox"/> Weld <input type="checkbox"/> Near Surface <input type="checkbox"/> Bolting <input type="checkbox"/> Inner Radius	
Area Calculation	Volume Calculation
1.375 X 7.0 = 9.625 = 9.65 SQ.IN.	9.6 X 456 = 4377.6 CU.IN.

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
6	35	CW	9.6	444	4262.4	4262.4	100.00
6	35	CW	0	12	0	115.2	0.00
7	35	CCW	9.6	444	4262.4	4262.4	100.00
7	35	CCW	0	12	0	115.2	0.00
8	45	CW	9.6	444	4262.4	4262.4	100.00
8	45	CW	0	12	0	115.2	0.00
9	45	CCW	9.6	444	4262.4	4262.4	100.00
9	45	CCW	0	12	0	115.2	0.00
TOTAL					32860.8	39398.4	83.41

		Item No:	B01.021.001
Prepared By: Jay Eaton		Level:	II Date: 3/4/97
Reviewed By: Larry Mauldin		Level:	III Date: 3/5/97

65
3/1/97

3/1 (18 1/2°) TAPER



REACTOR VESSEL HEAD

0° BASE MAT'L

Loss (A·B·H·F) - (C·G·H) + (D·E·F)

A·B·H·F $\frac{7.0'}{2} \times (1.3 + 3.2) = 15.75$

C·G·H $\frac{.4 \times .6}{2} = .12$

D·E·F $\frac{.7 \times .3}{2} = .105$

15.75 - .12 + .105 = 15.735 = 15.7 sq. in.

46.8 sq. in. - 15.7 sq. in. = 31.1

31.1 sq. in. COVERAGE

WELD MAT'L

TOTAL COVERAGE

BY: [Signature]
DATE: 3/4/97

ITEM NO. B01.021.001

										DUKE POWER COMPANY			
										RV MERIDIAN WELD PC. 446-04 TO 446-03			
										SCALE ~ 1" = 4.0" W.D. CABE 10-7-92			
										DESIGNER	DATE	INSP.	DATE
										DRAWN	DATE	INSP.	DATE
										CHECKED	DATE	APPR.	DATE
NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC	MEDL	DWG. NO.		REV.
								INSPECTED					

Attachment 1
PAGE 14 of 17

REACTOR VESSEL HEAD

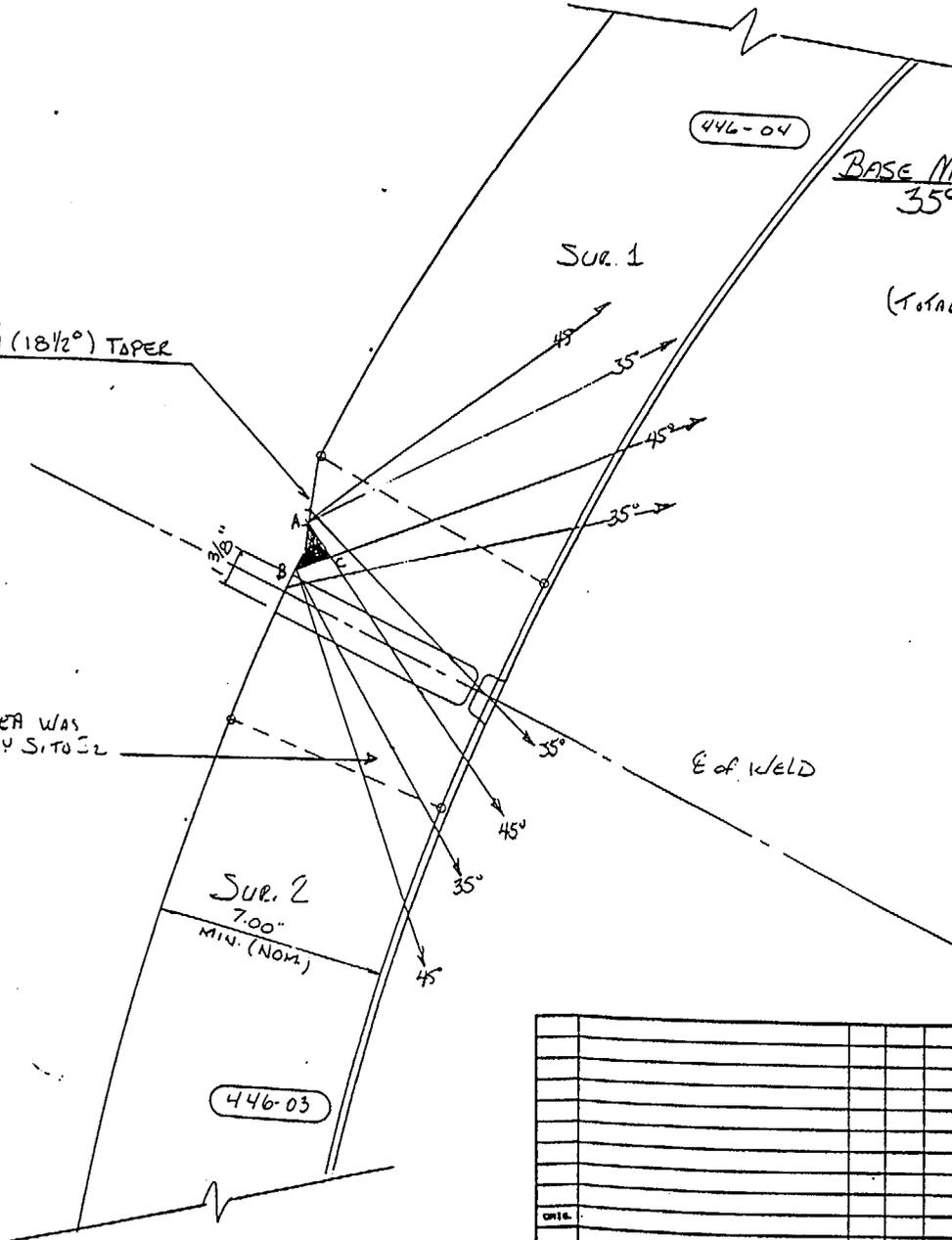
BASE MAT'L

35° or 45° S₂ TO S₁ & S₁ TO S₂
(LOSS) A-B-C $\frac{1.4 \times .8}{2} = .56 \text{ sq. in.}$

(Total Area) 46.8 - .56 = 46.24 = 46.2 sq. in. COVERAGE

THIS AREA WAS
SCANNED BY S1 TO S2
SCANS.

3/1 (18 1/2°) TAPER



BY: [Signature]
DATE: 3/4/97

ITEM NO. B01.021.001

										DUKE POWER COMPANY		
										RV MERIDIAN WELD PC. 446-04 TO 446-03		
										SCALE ~ 1" = 4.0" W.D. CABE 10-7-92		
DESIGNER	DATE	INSP.	DATE	INSP.	DATE	CIVIL	ELEC.	MED.	INSPECTED	DWG. NO.	RE	
DRAWN	DATE	INSP.	DATE	INSP.	DATE							
CHECKED	DATE	APPR.	DATE	APPR.	DATE							
NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE					

446-03

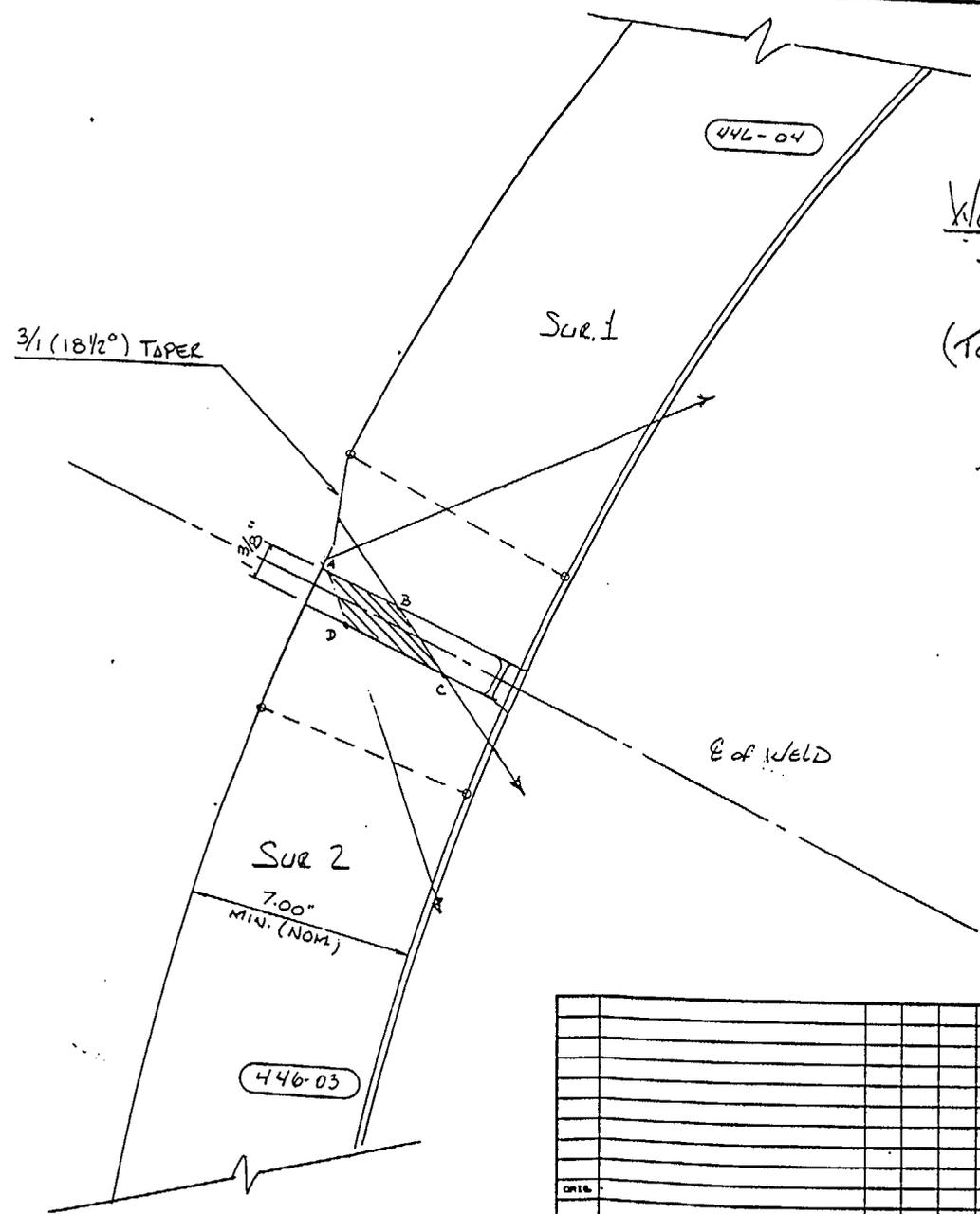
446-04

SUR. 1

SUR. 2
7.00"
MIN. (NOM.)

E of WELD

Attachment 1
PAGE 16 of 17

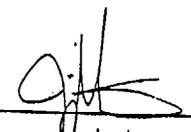


REACTOR VESSEL HEAD

WELD MAT'L

45° S1 TO S2
 (LOSS) A-B-C-D = $\frac{1.375}{2} \times (2.5 + 3.4) = 4.056$
 (TOTAL AREA) $9.6 \text{ sq.in.} - 4.056 \text{ sq.in.} = 5.54 =$
5.5 sq.in. COVERAGE

45° S2 TO S1
TOTAL COVERAGE

By: 
 Date: 3/4/97

ITEM NO. BOI.021.001

										DUKE POWER COMPANY			
										RV MERIDIAN WELD PC. 446-04 TO 446-03			
										SCALE ~ 1" = 4.0" W.D. CABE 10-7-92			
DATE	DESIGNER	DATE	INSP.	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
	CHECKED	DATE	INSP.	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE	DATE
NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MED.	INSPECTED	DWG. NO.	REV

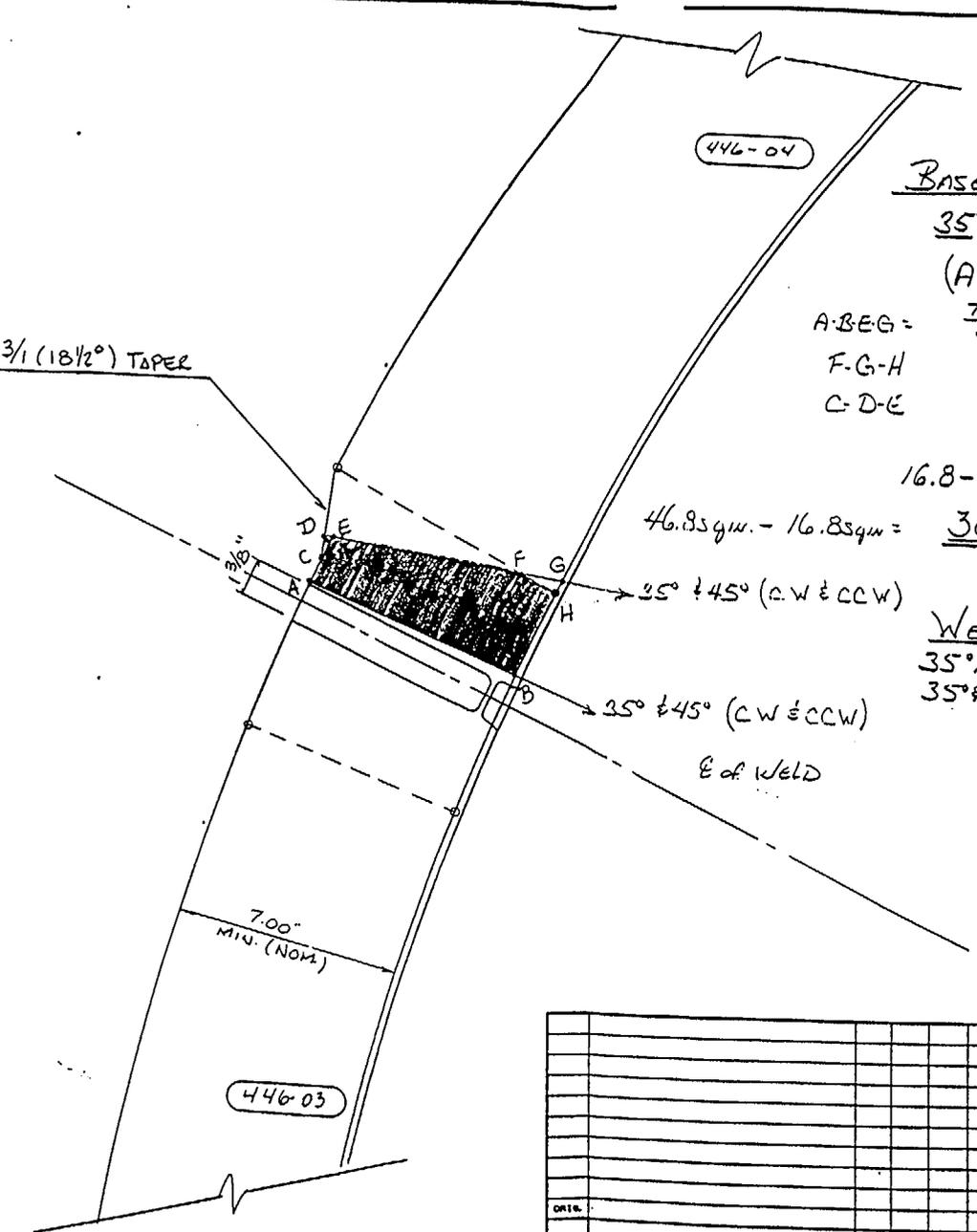
DUKE-POWER, INC. ENGINEERING AND TECHNOLOGY

Attachment 1
PAGE 17 of 18

REACTOR VESSEL HEAD

446-04

3/1 (18 1/2°) TAPER



BASE MAT'L

35° ±/or 45° (CW ±/or CCW) LOSS

(A·B-E-G) - (F·G-H) + (C·D-E)

A·B-E-G = $\frac{70}{2} \times (.15 + 3.3) = 16.8$

F·G-H = $\frac{4 \times 6}{2} = .12$

C·D-E = $\frac{7 \times 3}{2} = .105$

16.8 - .12 + .105 = 16.785 =

46.8 sqw. - 16.8 sqw. = 30.0 sqw. COVERAGE (@ DIRECTION)

WELD MAT'L

35° ±/or 45° (CW)

35° ±/or 45° (CCW)

TOTAL COVERAGE

TOTAL COVERAGE

BY: [Signature]

DATE: 3/4/97

35° ± 45° (CW ± CCW)

35° ± 45° (CW ± CCW)

E of WELD

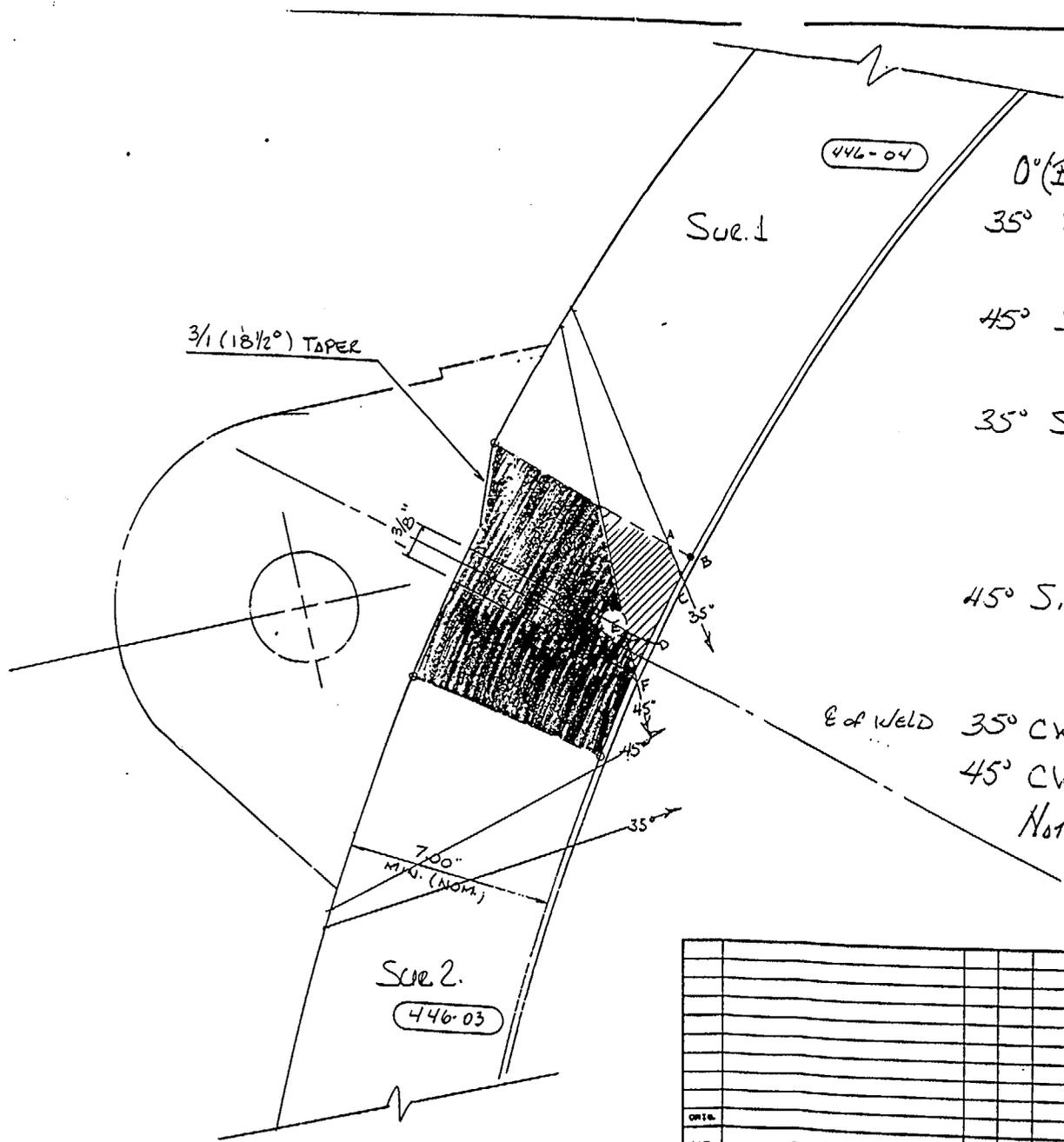
7.00"
MIN. (NOM)

446-03

										DUKE POWER COMPANY			
										RV MERIDIAN WELD PC. 446-04 TO 446-03			
										SCALE ~ 1" = 4.0" W.D. CABE 10-7-92			
ORIG.										DESIGNER	DATE	INSP	DATE
										DRAWN	DATE	INSP	DATE
										CHECKED	DATE	APPR	DATE
NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC	MEDS	DWG. NO.		REV

ITEM NO. B01.021.001

LIFTING LUG LIMITATIONS



- 0° (BASE MAT'L & WELD) No COVERAGE
 - 35° S₂ TO S₁ WELD No COVERAGE
BASE No COVERAGE
 - 45° S₂ TO S₁ WELD No COVERAGE
BASE No COVERAGE
 - 35° S₁ TO S₂ WELD No COVERAGE
BASE No COVERAGE
 - 45° S₁ TO S₂ WELD No COVERAGE
E-F-D = $\frac{1.0 \times .9}{2} = .45 \text{ sq. in.}$
.45 sq. in. COVERAGE
 - 35° CW & CCW No COVERAGE
 - 45° CW & CCW No COVERAGE
- Note: 3 LUGS, 4" WIDE = LIMITED COVERAGE FOR 12"

BY:
DATE: 3/4/97

DUKE POWER COMPANY

RV MERIDIAN WELD
PC. 446-04 TO 446-03

SCALE ~ 1" = 4.0" W.D. CABE
10-7-92

NO.	REVISIONS	DRN	DATE	CHKD	DATE	APPR	DATE	CIVIL	ELEC.	MECH.	INSPECTED

DESIGNER	DATE	INSP.	DATE

ITEM NO. B01.021.001

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DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR SONIC-136 INSTRUMENTS

FORM NDE-UT-1D

REVISION 2

Station: McGuire	Unit: 1	Date: 2/25/97	Sheet Number: 9701037
Procedure: NDE-620	Rev: 5	FC: N/A	Couplant: ULTRAGEL II
Examiner: Jay A. Eaton	Level: II	Batch Number: 95325	Calibration Block ID: 50337
Examiner: <i>Rodney G. Sheffield</i>	Level: II	Pyrometer S/N: MCNDE 27017	Calibration Block Temp: 74°F
Examiner: Rodney G. Sheffield	Level: II	Cal Due: 1/21/98	

REFERENCE BLOCK

SIMULATOR BLOCK

ID: 789753	ID: 96-6519	Reflector Type: RADIUS
Type: IIW	Material: CS	Gain: 37
	Signal Ampl: 90%	Metal Path: 2.0

INSTRUMENT

TRANSDUCER

Manufacturer: STAVELEY	Type: Single <input checked="" type="checkbox"/> Dual <input type="checkbox"/>	Size: 1.0	Freq: 2.25 Mhz	Wedge: AWS
Serial No: 181A	Manufacturer: KBA	Ser no: B07963	Meas. <input checked="" type="checkbox"/> 35°	

INSTRUMENT SETTINGS

CALIBRATION

METHOD

CABLES

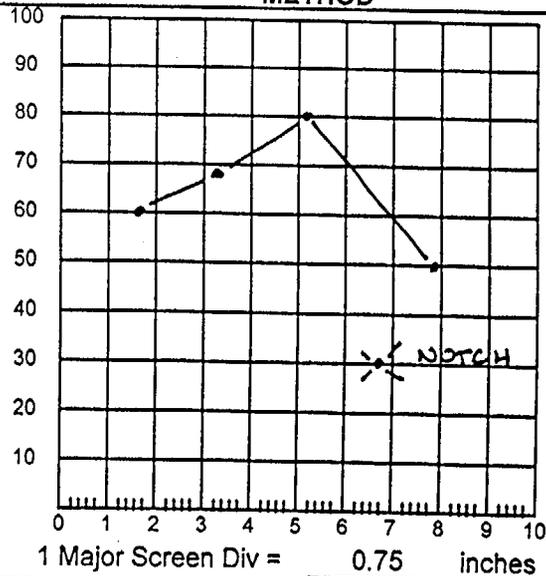
Range	7.5
Delay	0.684
Velocity	126.0
Units	IN
Gain	47
Display	FILT1
Freq	2.25
Reject	OFF
Pulse	222
Damping	500
Rep Rate	2000

Reflector Type	Amplitude %FSH	Metal Path inches
HOLE		
1 /8 node	60%	1.25
2 /8 node	68%	2.55
3 /8 node	80%	3.80
5 /8 node	50%	5.95
other NOTCH	30%	5.10

Cal Direction: axial circ.

Wave Mode: Long. shear
 surf.

Remarks:



RG58
 RG174
 Length: 10 FT

Initial Cal Time: 0840

Cal Checks

Time	Initials
1230	<i>JS</i>
1245	<i>JS</i>
1431	<i>JS</i>
FINAL	

Dual Pulse Echo

Jack: T R

Item No: B03 110.001

Reviewer: *Larry Mauldin* Level: III Date: 2/26/97

Authorized Inspector: *AKlein* Date: 2-28-97

SERIAL NO: 98-004
 Attachment 2
 PAGE 1 of 15
 8/25/97

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR SONIC-136 INSTRUMENTS

FORM NDE-UT-1D

REVISION 2

Station: McGuire	Unit: 1	Date: 2/25/97	Sheet Number: 9701038
Procedure: NDE-620	Rev: 5	FC: N/A	Couplant: ULTRAGEL II
			Batch Number: 95325
Examiner: Jay A. Eaton	Level: II	Calibration Block ID: 50337	Pyrometer S/N: MCNDE 27017
Examiner: Rodney G. Sheffield	Level: II	Calibration Block Temp: 74°F	Cal Due: 1/21/98

REFERENCE BLOCK		SIMULATOR BLOCK	
ID: 789753		ID: 96-6519	Reflector Type: RADIUS
Type: IIW	Material: CS	Gain: 37	Signal Ampl: 90%
			Metal Path: 2.0
INSTRUMENT		TRANSDUCER	
Manufacturer: STAVELEY	Type: Single <input checked="" type="checkbox"/> Dual <input type="checkbox"/>	Size: .5x1.0	Freq: 2.25 Mhz
Serial No: 181A	Manufacturer: KBA	Ser no: G14819	Wedge: AWS
			Meas. <input checked="" type="checkbox"/> 45°

INSTRUMENT SETTINGS	CALIBRATION	METHOD	CABLES		
Range: 10.0	Reflector Type: HOLE		RG58 <input checked="" type="checkbox"/>		
Delay: 0.570	1 1/8 node		80%	1.5	RG174 <input type="checkbox"/>
Velocity: 126.0	2 1/8 node		45%	3.0	Length: 10 FT
Units: IN	3 1/8 node		30/80	4.45	Initial Cal Time: 0835
Gain: 39.2/47	5 1/8 node		30%	6.9	Cal Checks
Display: FILT1	other NOTCH		36%	5.8	Time Initials
Freq: 2.25	Cal Direction: axial <input checked="" type="checkbox"/> circ. <input type="checkbox"/>	Remarks:		1245 <i>[Signature]</i>	
Reject: OFF	Wave Mode: Long. <input type="checkbox"/> shear <input checked="" type="checkbox"/>	Item No: B03 110.001		1300 <i>[Signature]</i>	
Pulse: 222	surf. <input type="checkbox"/>	Reviewer: Larry Mauldin		1432 <i>[Signature]</i>	
Damping: 500		Level: III		FINAL	
Rep Rate: 2000		Date: 2/26/97			
Dual <input type="checkbox"/> Pulse Echo <input checked="" type="checkbox"/>		Authorized Inspector: <i>[Signature]</i>			
Jack: T <input type="checkbox"/> R <input checked="" type="checkbox"/>		Date: <i>[Signature]</i>			

Attachment 2
PAGE 2 of 15

[Handwritten initials]

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1230 Form NDE-UT-2A

Exam Finish: 1300 Revision 4

Station: McGuire Unit: 1 Component/Weld ID: 1PZR-10 Date: 2/25/97

Weld Length (in.): 78" Surface Condition: AS GROUND Lo: W AXIS Surface Temperature: 79 ° F

Examiner: Jay A. Eaton Level: II

Examiner: Rodney G. Sheffield Level: II

Procedure: NDE-620 Rev: 5 FC: N/A

Calibration Sheet No:
9701037, 9701038

Scans:

45 61.4 dB 70 _____ dB

45T 61.4 dB 70T _____ dB

60 _____ dB

60T _____ dB

Other: 35&35T-61 dB

Pyrometer S/N: MCNDE 27017

Cal Due: 1/21/98

Configuration: NOZZLE TO HEAD

S1 _____ Flow _____ S2 _____

HEAD to NOZZLE

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: N/A

IND #	<input checked="" type="checkbox"/>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac HMA		DO NOT WRITE IN THIS SPACE								
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
NRI	35°															
NRI	45°															

Remarks:

Limitations: (see NDE-UT-4) 90% or greater coverage obtained: yes no Sheet _____ of _____

Reviewed By: Larry Mauldin Level: III Date: 2/26/97 Authorized Inspector: [Signature] Date: 2-28-97 Item No: B03.110.001

Attachment 2
PAGE 3 of 15
R
3/17/97

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1230

Form NDE-UT-2A

Exam Finish: 1245

Revision 4

Station: McGuire

Unit: 1

Component/Weld ID: 1PZR-10

Date: 2/25/97

Weld Length (in.): 78"

Surface Condition: AS GROUND

Lo: W AXIS

Surface Temperature: 79 ° F

Examiner: Jay A. Eaton

Level: II

Scans:

Pyrometer S/N: MCNDE 27017

Examiner: Rodney G. Sheffield

Level: II

 45 _____ dB 70 _____ dB

Cal Due: 1/21/98

Procedure:

Rev:

FC:

 45T _____ dB 70T _____ dB

Configuration: NOZZLE TO HEAD

NDE-640

1

 60 _____ dB

S1 _____ Flow _____ S2 _____

Calibration Sheet No:

95-18&19

 60T _____ dB

HEAD to NOZZLE

9701035

Other: 0°-20 dB

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: N/A

IND #	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
4	DO NOT WRITE IN THIS SPACE				20%dac HMA		DO NOT WRITE IN THIS SPACE							
					50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
					100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI	0°													

Remarks:

 Limitations: (see NDE-UT-4) 90% or greater coverage obtained: yes no

Reviewed By:

Level:

Date:

Authorized Inspector:

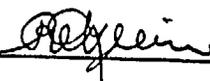
Date:

Sheet _____ of _____

Larry Mauldin

III

2/26/97



2-28-97

Item No:

B03.110.001

 R
3/17/97

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1 Revision 0
--	------------------------

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
TOTAL AGGREGATE COVERAGE FOR WELD AND BASE METAL COMBINED	

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
				BASE METAL	1879.8	3042	61.79
				WELD	2862	3299.4	86.74
				AGGREGATE	4741.8	6341.4	74.78

Prepared By: Jay Eaton Reviewed By: Larry Mauldin	<div style="text-align: right; margin-bottom: 10px;"> Item No: B03.110.001 </div> Level: II Date: 2/26/97 Level: III Date: 2/26/97
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2/26/97

DUKE POWER COMPANY	NDE-91-1
Limited Examination Coverage Worksheet	Revision 0

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
2.6 / 2 X (1.3 + 1.7) X 2 = 7.8 SQ.IN.	TOTAL VOLUME = 7.8 X 78" = 608.4 CU. IN.

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	0	N/A	4.4	78	343.2	608.4	56.41
2	45	S2	6.7	78	522.6	608.4	85.90
3	35	S2	5.4	78	421.2	608.4	69.23
4	35/45	CW	3.8	78	296.4	608.4	48.72
5	35/45	CCW	3.8	78	296.6	608.4	48.75
				TOTAL	1879.8	3042	61.79

Prepared By: Jay Eaton		Level: II	Date: 2/26/97
Reviewed By: Larry Mauldin <i>Larry Mauldin</i>		Level: III	Date: 2/26/97

Item No: B03.110.001

A 35/45

DUKE POWER COMPANY	NDE-91-1
Limited Examination Coverage Worksheet	Revision 0

Examination Volume/Area Defined				
<input type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
$2.6 / 2 \times (2.6 + 1.0) = 4.68 = 4.7 \text{ SQ. IN.}$	TOTAL VOLUME = $4.7 \times 78" = 366.6 \text{ CU. IN.}$ HEATER BUNDLE VOL. = $4.7 \times 48" = 225.6 \text{ CU. IN.}$

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	0	N/A	4.7	78	366.6	366.6	100.00
2	45	S2	4.7	30	141	141	100.00
3	45	S2	4.2	48	201.6	225.6	89.36
4	45	S1	2.1	78	163.8	366.6	44.68
5	45	CW	4.7	78	366.6	366.6	100.00
6	45	CCW	4.7	78	366.6	366.6	100.00
7	35	S1	4.6	30	138	141	97.87
8	35	S1	4.6	48	220.8	225.6	97.87
9	35	S2	2.1	78	163.8	366.6	44.68
10	35	CW	4.7	78	366.6	366.6	100.00

(CONT. ON NEXT PAGE)

Prepared By: Jay Eaton	Level: II	Date: 2/26/97
Reviewed By: Larry Mauldin	Level: III	Date: 2/26/97

Item No:	B03.110.001
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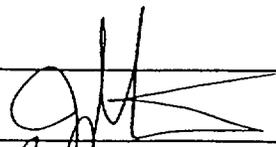
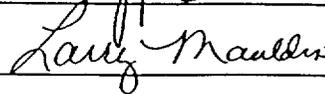
R
2/26/97

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

Examination Volume/Area Defined				
<input type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
$2.6 / 2 \times (2.6 + 1.0) = 4.68 = 4.7 \text{ SQ. IN.}$	TOTAL VOLUME = $4.7 \times 78" = 366.6 \text{ CU. IN.}$ HEATER BUNDLE VOL. = $4.7 \times 48" = 225.6 \text{ CU. IN.}$

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
11	35	CCW	4.7	78	366.6	366.6	100.00
				TOTAL	2862	3299.4	86.74

Prepared By: Jay Eaton		Level: II	Date: 2/26/97	Item No: B03.110.001
Reviewed By: Larry Mauldin		Level: III	Date: 2/26/97	

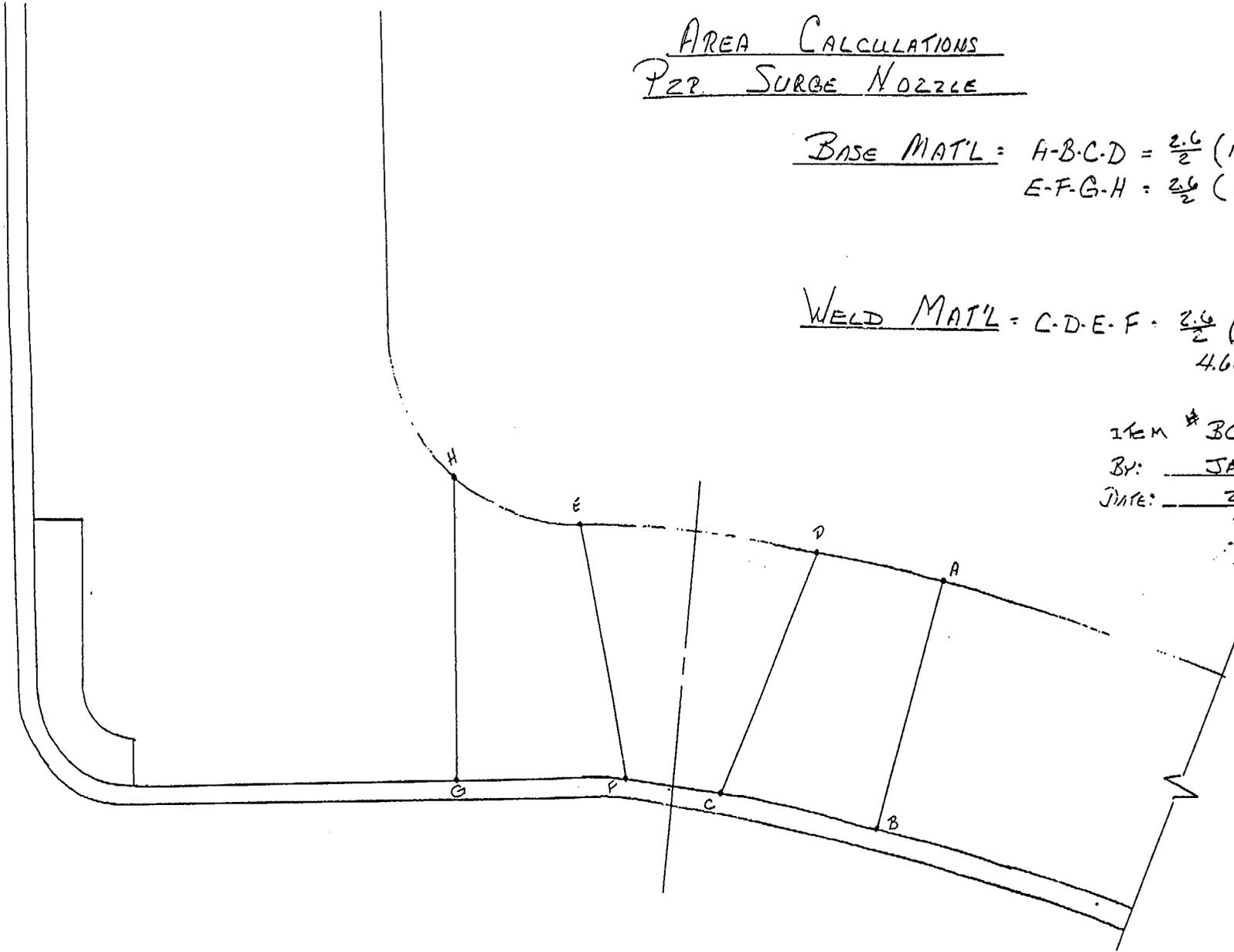
R
GC
3/17

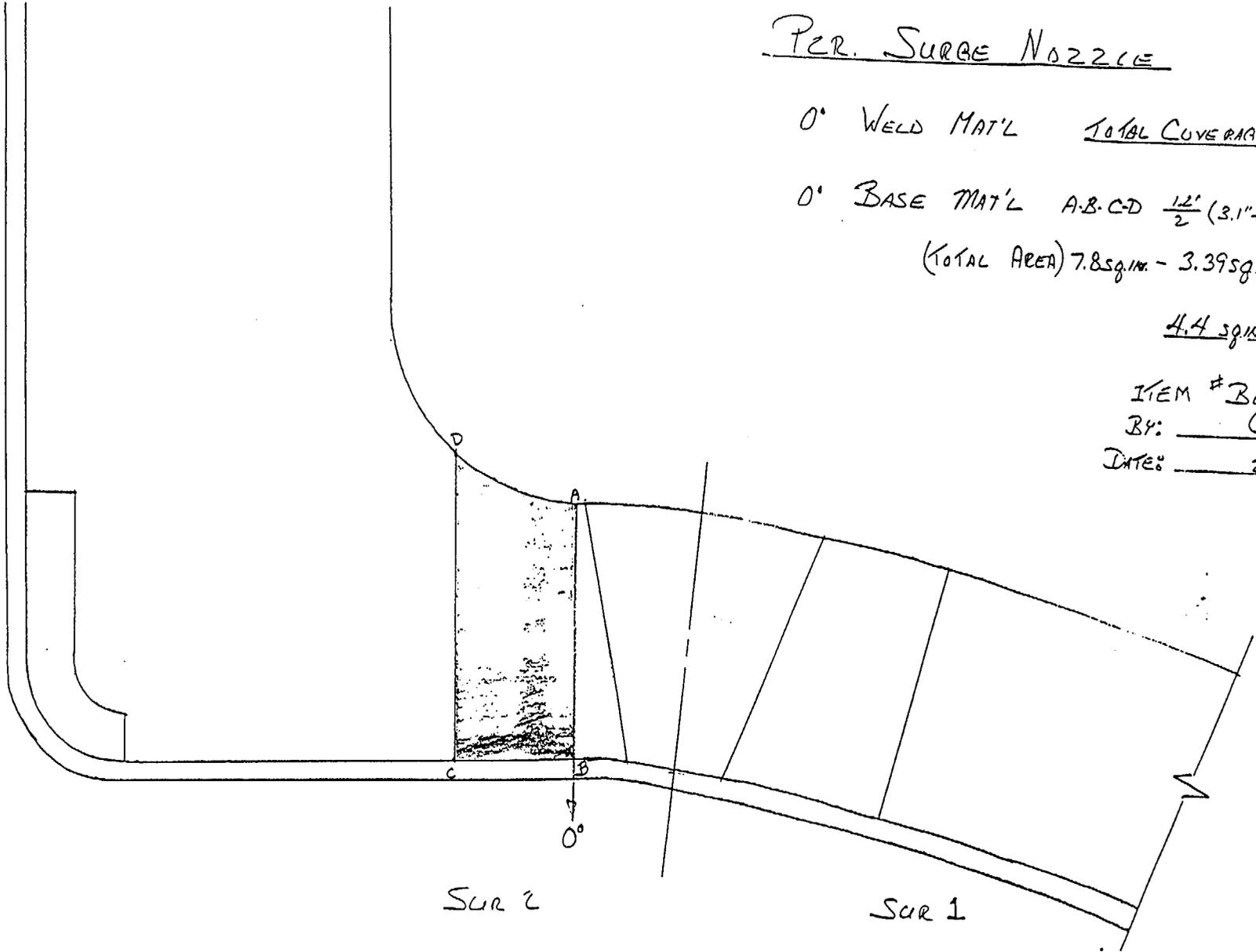
AREA CALCULATIONS
PZR SURGE NOZZLE

BASE MAT'L = A-B-C-D = $\frac{2.6}{2} (1.3' + 1.7') = 3.9 \text{ sq ft}$
E-F-G-H = $\frac{2.6}{2} (1.3' + 1.7') = 3.9 \text{ sq ft}$
7.8 sq ft

WELD MAT'L = C-D-E-F = $\frac{2.6}{2} (2.6' + 1.0') =$
 $4.68' = \underline{4.7 \text{ sq ft}}$

ITEM # 302.110.011
BY: JAM EARL
DATE: 2/26/97





PER. SURGE NOZZLE 0°

0° WELD MAT'L TOTAL COVERAGE

0° BASE MAT'L A-B-C-D $\frac{12'}{2} (3.1' + 2.55') = 3.39$
 (TOTAL AREA) 7.8 sq.in. - 3.39 sq.in. = 4.4 sq.in.

4.4 sq.in. COVERAGE

ITEM # B03 / 10 001
 BY: [Signature]
 DATE: 2/26/97

PER SURGE NOZZLE

BASE MATL

45° S1 to S2 LOSS A.B.C $\frac{1.8 \times 1.2}{2} = 1.1 \text{ sqm}$

(TOTAL AREA) 7.8 sqm. - 1.1 sqm = 6.7 sqm COVERLAGE

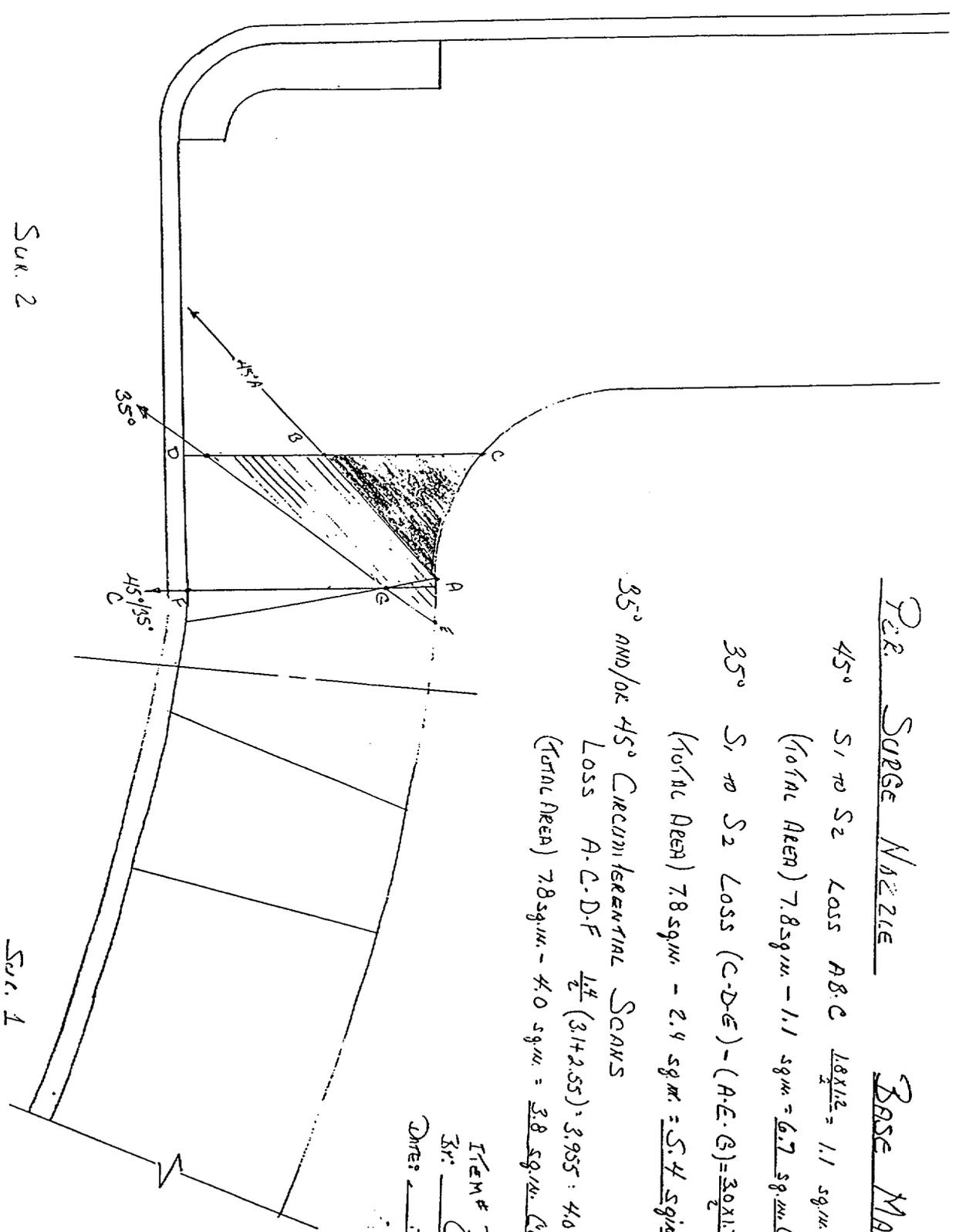
35° S1 to S2 LOSS (C-D-E) - (A-E-G) = $\frac{3.0 \times 1.7}{2} - \frac{1.7 \times 1.4}{2} = 2.4 \text{ sqm}$

(TOTAL AREA) 7.8 sqm. - 2.4 sqm = 5.4 sqm COVERLAGE

35° AND/OR 45° CIRCUMFERENTIAL SCANS

LOSS A.C.D.F $\frac{L^2}{2} (3.1 + 2.55) = 3.955 = 4.0 \text{ sqm}$
 (TOTAL AREA) 7.8 sqm. - 4.0 sqm = 3.8 sqm COVERLAGE

ITEM# B 13. 110 111
 BY: [Signature]
 DATE: 2/26/17



Sur. 2

Sur. 1

PZR SURGE NOZZLE

HEATEX BUNDLE AREA

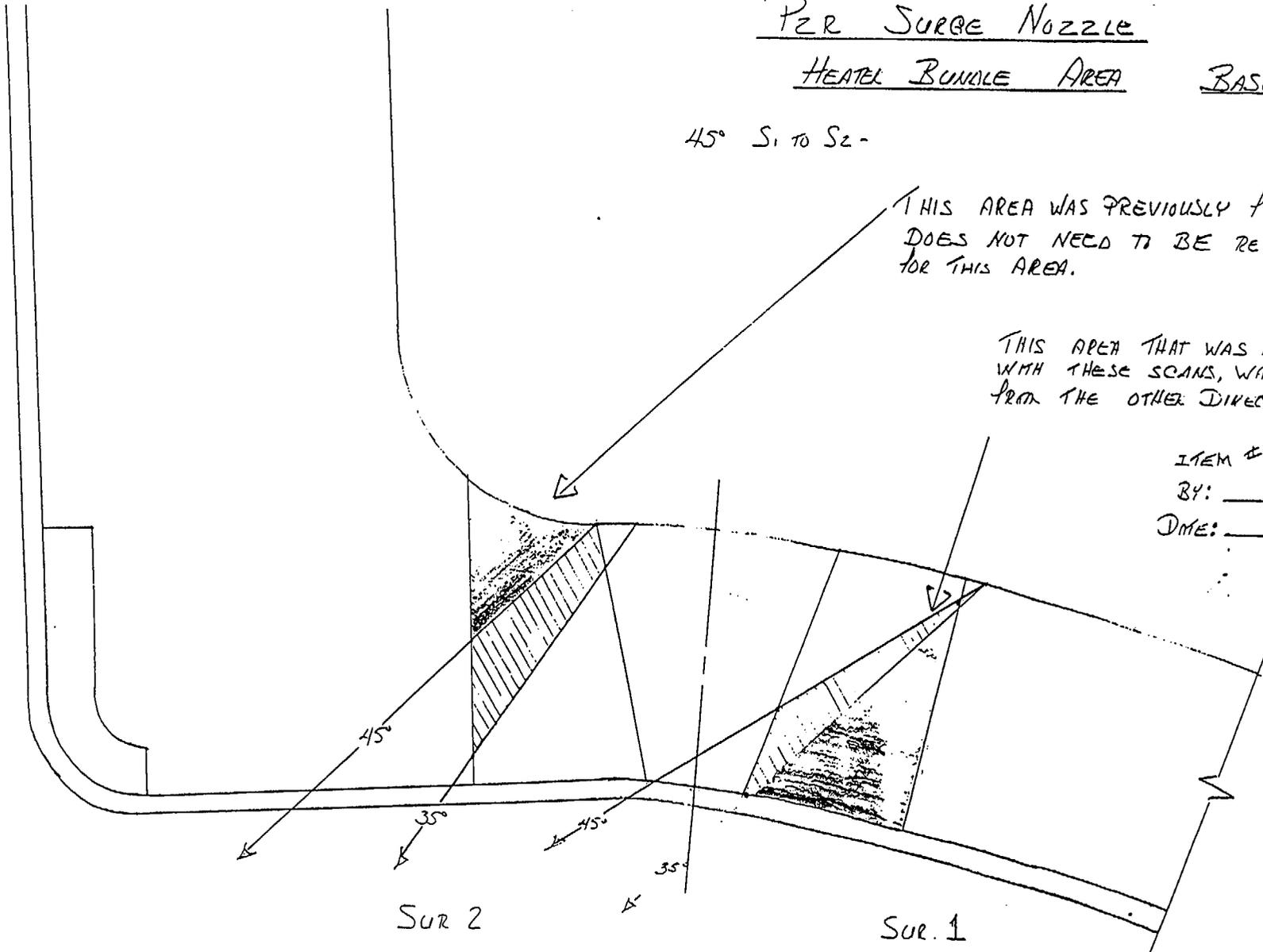
BASE MAT'L

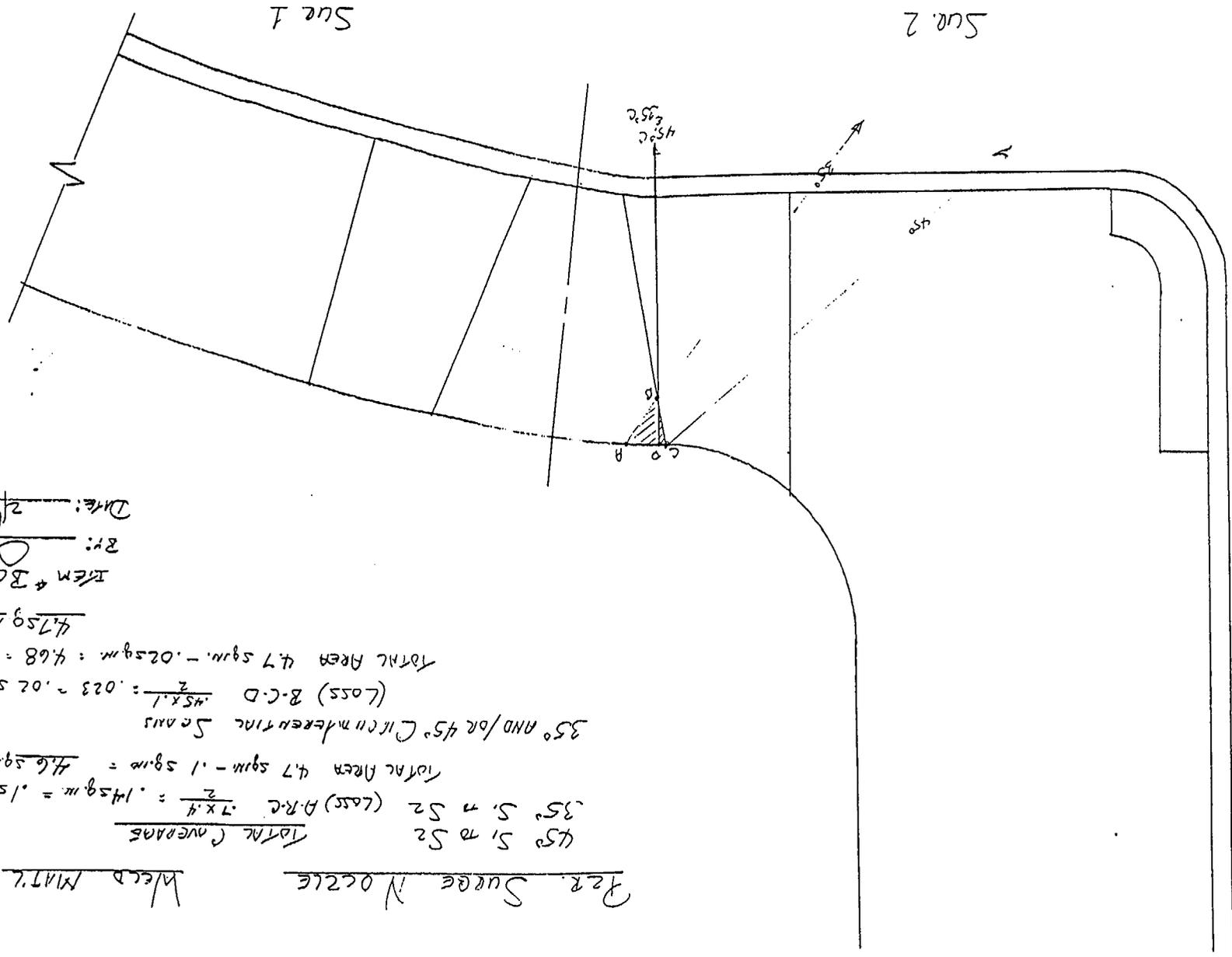
45° S₁ TO S₂ -

THIS AREA WAS PREVIOUSLY FIGURED.
DOES NOT NEED TO BE REFIGURED
FOR THIS AREA.

THIS AREA THAT WAS MISSED
WITH THESE SCANS, WAS SCANNED
FROM THE OTHER DIRECTION (S₂ TO S₁).

ITEM # B03.110.0.01
BY: AMS
DATE: 7/26/97



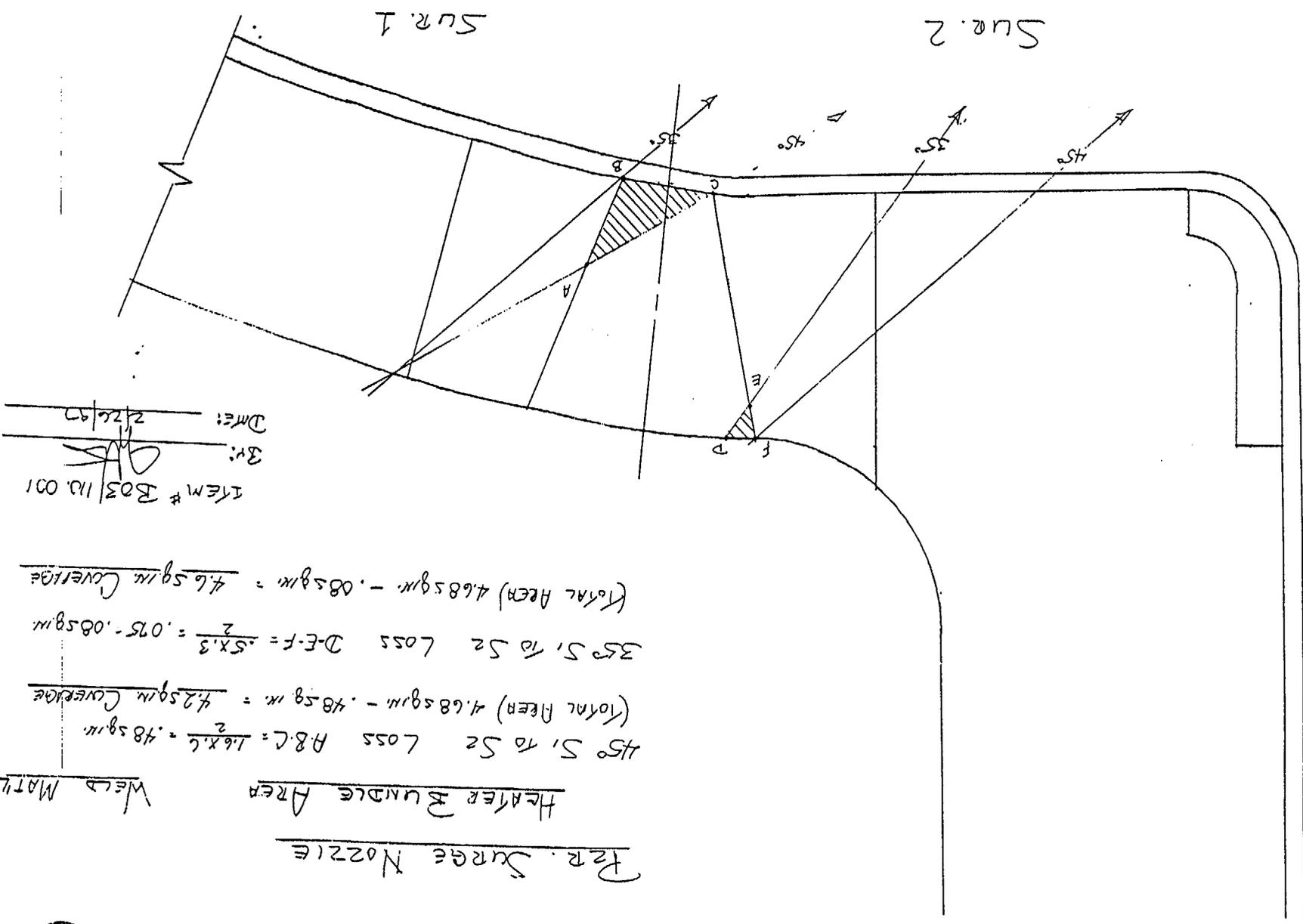


45° S1 to S2
 (Loss) A.R.C. $\frac{.7 \times .4}{2} = .14 \text{ sq. in.}$
 Total Area 4.7 sq.in. - .1 sq.in. = 4.6 sq.in. Coverage

35° AND/OR 45° CIRCUMFERENTIAL STAINS
 (Loss) B.C.D. $\frac{.45 \times .1}{2} = .023 = .02 \text{ sq. in.}$
 Total Area 4.7 sq.in. - .02 sq.in. = 4.68 = 4.7 sq.in. Coverage

Item # B03 W0001
 BY: [Signature]
 Date: 2/24/97

PER SURGE NOZZLE
 WELD MAT'L.



ITEM # B03/110.001
 3v: *[Signature]*
 Date: 2/26/97

Far Surge Nozzle
Heater Bundle Area
 Weld MATL

45° S₁ to S₂ Loss A.B.C = $\frac{1.6 \times .6}{2} = .48 \text{ sqm}$
 (Total Area) 4.68 sqm - .48 sqm = 4.2 sqm Coverage

35° S₁ to S₂ Loss D.E.F = $\frac{.5 \times .3}{2} = .075$
 (Total Area) 4.68 sqm - .08 sqm = 4.6 sqm Coverage

PER. SURGE NOZZLE

WELD MAT'L

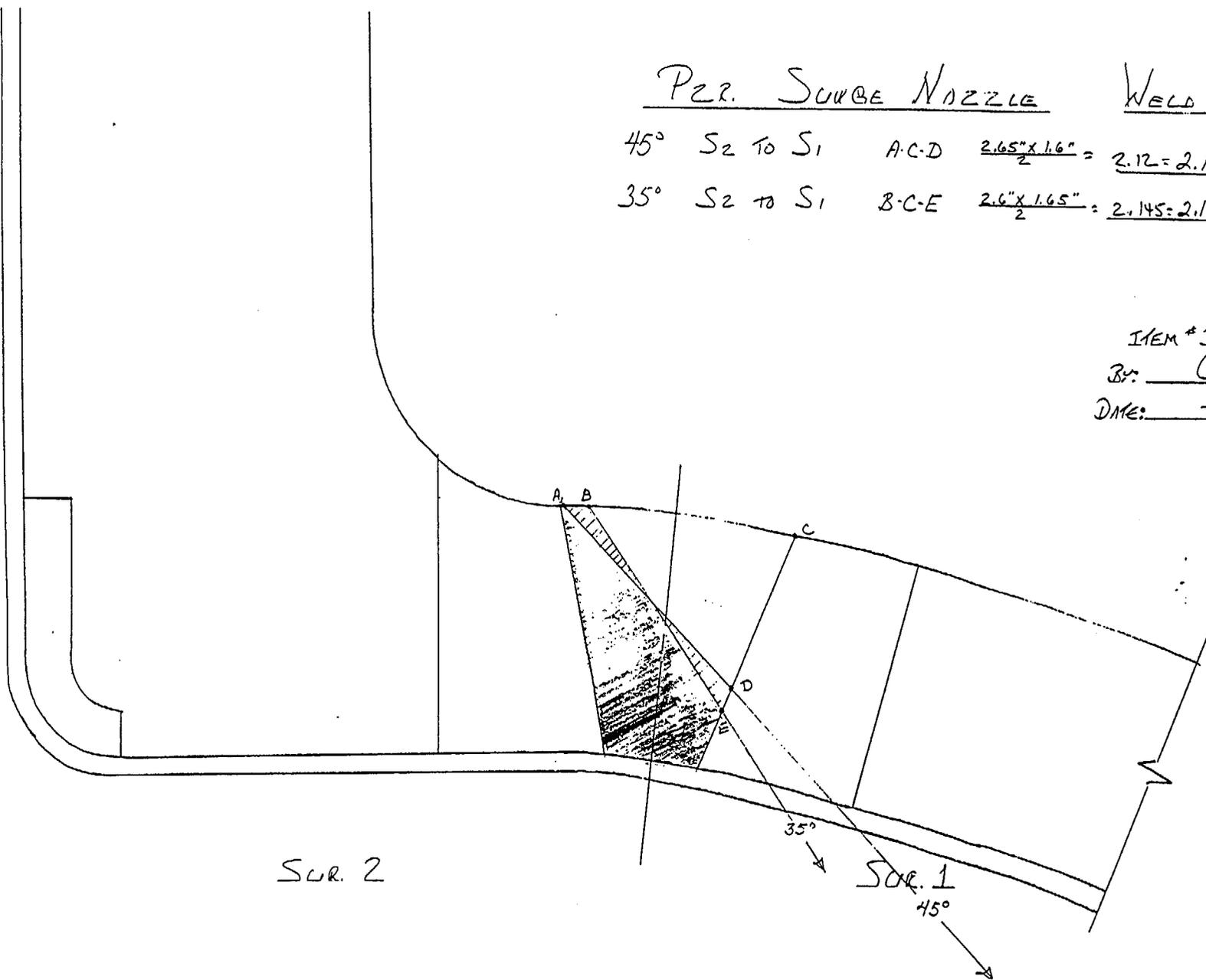
45° S₂ TO S₁ A-C-D $\frac{2.65" \times 1.6"}{2} = 2.12 = 2.1 \text{ SQ IN. COVERAGE}$

35° S₂ TO S₁ B-C-E $\frac{2.6" \times 1.65"}{2} = 2.145 = 2.1 \text{ SQ IN. COVERAGE}$

ITEM # 303.110.001

BY: [Signature]

DATE: 2/26/97



SUR. 2

SUR. 1

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 1/10/96 Sheet Number: 9501103

Procedure: NDE-680 Rev: 1 FC: 95-16 Couplant: ULTRAGEL II Batch Number: 94325

Examiner: Marion T. Weaver *Marion T. Weaver* Level: II Calibration Block ID: 50302 Pyrometer S/N: MCNDE 27021

Examiner: Gayle E. Houser *GE Houser* Level: II Calibration Block Temp: 76° Cal Due: 10/3/96

REFERENCE BLOCK

ID: 96-6518
 Type: ROMPAS Material: CS

SIMULATOR BLOCK

ID: 96-6518 Reflector Type: 2" RADIUS
 Gain: 38 Signal Ampl: 38% Metal Path: 4.7"

INSTRUMENT

Manufacturer: KRAUTKRAMER
 Serial No: 32810-797

TRANSDUCER

Type: Single Dual Size: 1.0 Freq: 2.25 Mhz Wedge: SWS
 Manufacturer: KBA Ser no: M18415 Meas. 60 °

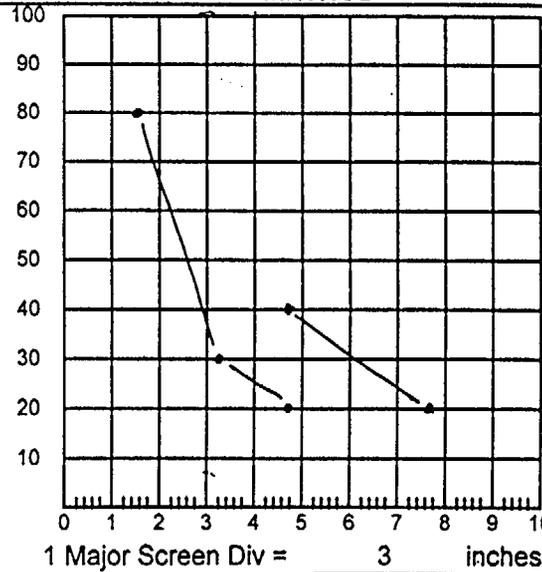
INSTRUMENT SETTINGS

Gain: 45/53
 Range: 30
 MTVEL: 128
 Delay: 10.1
 Pulser: HIGH
 Reject: OFF
 Freq: 1-5
 Zero: 17.22
 Display: FULL
 PRF: HIGH

CALIBRATION

Reflector Type	Amplitude %FSH	Metal Path inches
HOLE		
1 /8 node	80	4.6
2 /8 node	30	9.4
3 /8 node	20/40	14.12
5 /8 node	20	22.68
other		
Cal Direction: axial <input checked="" type="checkbox"/> circ. <input checked="" type="checkbox"/>		
Wave Mode: Long. <input type="checkbox"/> shear <input checked="" type="checkbox"/>		
surf. <input type="checkbox"/>		
Remarks: 8 dB DIFFERENCE FROM CLAD SIDE OF BLOCK		

METHOD



CABLES

RG58
 RG174
 Length: 10'

Initial Cal Time 0741

Cal Checks Time Initials

0845	<i>DEH</i>
1146	<i>DEH</i>
1210	<i>DEH</i>
1401	<i>DEH</i>
FINAL	

Item No: B03.140.001, B03.140.002

Jack: T R

Reviewer: *[Signature]* Level: II Date: 1/23/96 Authorized Inspector: *[Signature]* Date: 1/23/96

SERIAL NO. 98-004
 Attachment 3
 PAGE 1 of 34

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

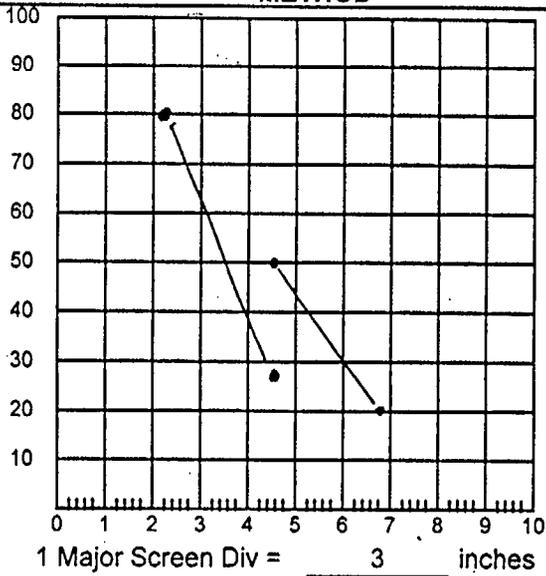
FORM NDE-UT-1E

REVISION 2

Station: McGuire	Unit: 1	Date: 1/10/96	Sheet Number: 9501100
Procedure: NDE-680	Rev: 1	FC: 95-16	Couplant: ULTRAGEL II
			Batch Number: 94325
Examiner: Marion T. Weaver <i>Marion T. Weaver</i>	Level: II	Calibration Block ID: 50302	Pyrometer S/N: MCNDE 27021
Examiner: Gayle E. Houser <i>GE Houser</i>	Level: II	Calibration Block Temp: 76°	Cal Due: 10/3/96

REFERENCE BLOCK		SIMULATOR BLOCK	
ID: 96-6518	Type: ROMPAS	Material: CS	
ID: 96-6518	Gain: 38	Reflector Type: 2" RADIUS	Signal Ampl: 60%
		Metal Path: 4.52	
INSTRUMENT		TRANSDUCER	
Manufacturer: KRAUTKRAMER	Serial No: 32810-797	Type: Single <input checked="" type="checkbox"/> Dual <input type="checkbox"/>	Size: 1.0
		Freq: 2.25 Mhz	Wedge: SWS
		Manufacturer: KBA	Ser no: M18423
		Meas: <input checked="" type="checkbox"/> 70°	

INSTRUMENT SETTINGS		CALIBRATION		METHOD		CABLES	
Gain	55/61	Reflector Type	HOLE	Amplitude %FSH	80	Metal Path inches	6.9
Range	30	1	/8 node	20	19.86		
MTVEL	128	2	/8 node	28/50	13.57		
Delay	16.1	3	/8 node				
Pulser	HIGH		/8 node				
Reject	OFF	other					
Freq	1-5	Cal Direction: axial <input checked="" type="checkbox"/>	circ. <input checked="" type="checkbox"/>				
Zero	20.17	Wave Mode: Long. <input type="checkbox"/>	shear <input checked="" type="checkbox"/>				
Display	FULL		surf. <input type="checkbox"/>				
PRF	HIGH	Remarks: 70° used in combination with 60° for additional coverage					
		Item No: B03.140.001, B03.140.002					



RG58 <input checked="" type="checkbox"/>
RG174 <input type="checkbox"/>
Length: 10'
Initial Cal Time: 0730
Cal Checks
Time Initials
0848 JEH
1210 JEH
1248 JEH
1400 JEH
FINAL

Jack: T <input type="checkbox"/> R <input checked="" type="checkbox"/>	Reviewer: <i>[Signature]</i>	Level: II	Date: 1/23/96	Authorized Inspector: <i>[Signature]</i>	Date: 1-23-96
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Attachment 3
PAGE 2 of 34

DUKE POWER COMPANY					Exam Start: 1147	Form NDE-UT-2A
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS					Exam Finish: 1248	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1SGA-INLET			Date: 1/10/96	
Weld Length (in.): N/A	Surface Condition: AS MFG		Lo: 9.2.3	Surface Temperature: <u>81</u> ° F		
Examiner: Marion T. Weaver <i>Marion T. Weaver</i>	Level: II	Scans: 45 <input type="checkbox"/> _____ dB 70 <input checked="" type="checkbox"/> <u>75</u> dB 45T <input type="checkbox"/> _____ dB 70T <input type="checkbox"/> _____ dB 60 <input checked="" type="checkbox"/> <u>67</u> dB 60T <input type="checkbox"/> _____ dB Other: _____ dB			Pyrometer S/N: <u>MCNDE 27021</u>	
Examiner: Gayle E. Houser <i>GE Houser</i>	Level: II				Cal Due: <u>10/3/96</u>	
Procedure: NDE-680 Rev: 1	FC: 95-16	Configuration: <u>VESSEL</u> <u>1</u> Flow <u>2</u> <u>VESSEL</u> to <u>NOZZLE</u> Scan Surface: OD			Applies to NDE-680 only	
Calibration Sheet No: 9501100, 9501103					Skew Angle: SEE NOTE	

IND #	<u>4</u>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac HMA			DO NOT WRITE IN THIS SPACE							
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
	60°	NRI														
	70°	NRI														

Remarks: *NOTE - 60° @ 22° 70° @ 10°					
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>					Sheet <u>1</u> of <u>4</u>
Reviewed By: <i>[Signature]</i>	Level: II	Date: 1/10/96	Authorized Inspector: <i>[Signature]</i>	Date: 1/10/96	Item No: B03.140.001

Attachment 3
Page 3 of 34

**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1SGA-INLET

Item No: B03.140.001

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L N/A to L N/A INCHES FROM WO N/A to N/A
 ANGLE: 0 45 60 Other 70° FROM 0 DEG to 360 DEG

DUE TO NOZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: *Martin J. Wenzel*

Level: II

Date: 1-10-96

Sketch(s) attached yes no

Sheet 2 of 4

Reviewed By: *[Signature]*

Date: II

1/15/96

Authorized Inspector: *[Signature]*

Date: 1-19-96

Attachment 3
PAGE 4 of 34

DUKE POWER COMPANY						NDE-91-1	
Limited Examination Coverage Worksheet						Revision 0	
Examination Volume/Area Defined							
<input type="checkbox"/> Base Metal		<input type="checkbox"/> Weld		<input type="checkbox"/> Near Surface		<input type="checkbox"/> Bolting	<input checked="" type="checkbox"/> Inner Radius
Area Calculation				Volume Calculation			
2.75" R ² X π = 23.758 + 4 = 5.94 2.25" R ² X π = 15.9 + 4 = -3.98 1.96 IN ² .5" X 2.6" = 1.3 IN ² .5" X 5.1" = 2.55 IN ² 5.81 IN ²				5.81 IN ² X 36.25" = 210.6 CU IN			
Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
	60°/70°	SKEW	4.41	36.25	159.9	210.6	75.93

SHEET 3 OF 4

Item No: B03, 140.001		
Prepared By: <i>Larry Maulder</i>	Level: <i>III</i>	Date: <i>1-10-96</i>
Reviewed By: <i>[Signature]</i>	Level: <i>II</i>	Date: <i>1/15/96</i>

STEAM GENERATOR NOZZLE

ITEM # 303.140.001
 BY: Lang Mathis Level I
 DATE: 1-10-96
 REVIEWED BY: [Signature] Level
 DATE: 1/15/96

$$2.75" R^2 \times \pi = 23.758 \div 4 = 5.9395 = 5.94$$

$$2.25" R^2 \times \pi = 15.9 \div 4 = 3.975 = 3.98$$

$$5" \times 2.6" = 13$$

$$3" \times 5.1" = 15.3$$

1.96 sq in.
1.3
2.55
5.81 sq in TOTAL EXAM AREA

AREA LOSS:

$$2.8" \times 5" = 14"$$

$$5.81 \text{ sq. in.}$$

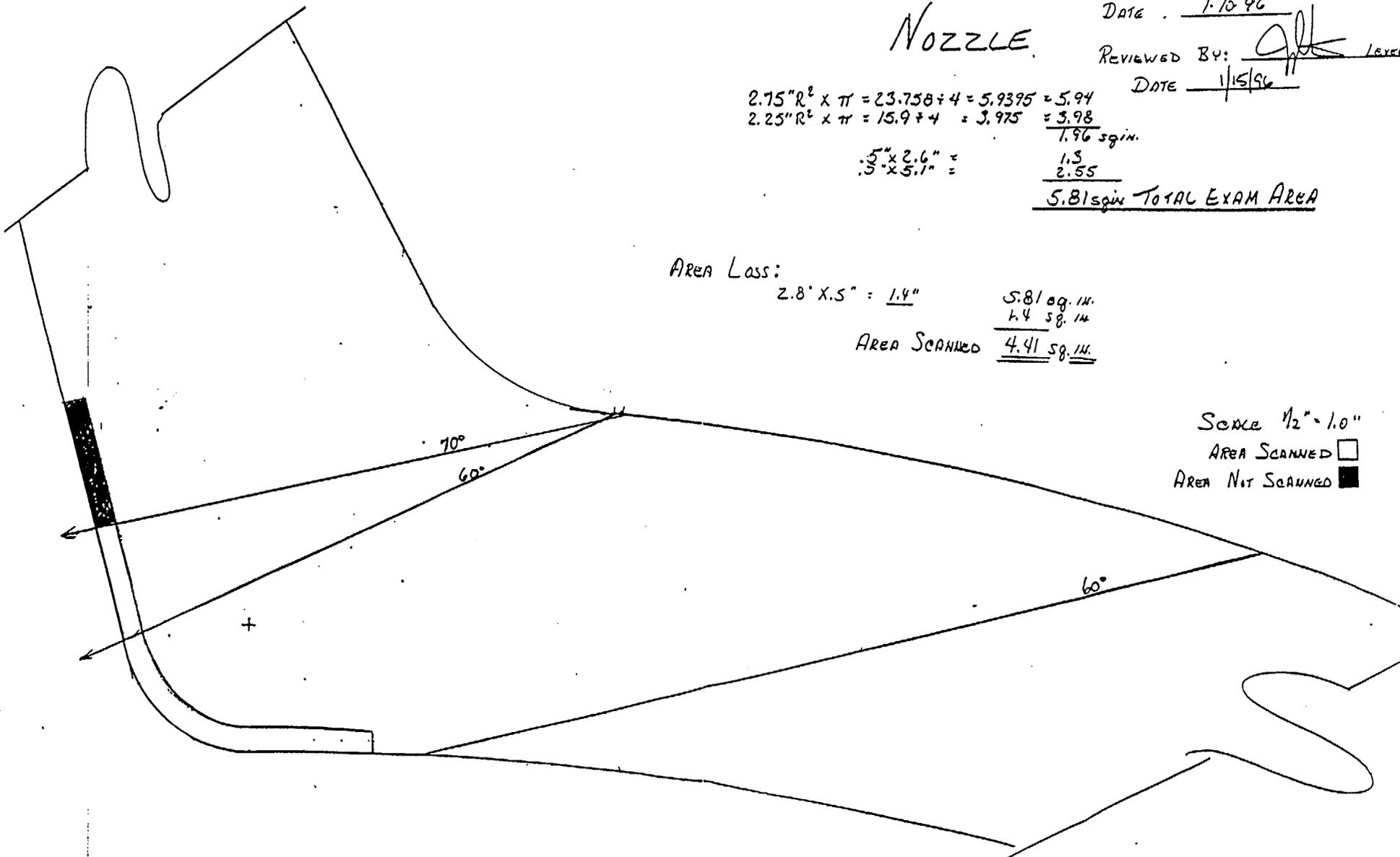
$$1.4 \text{ sq. in.}$$

AREA SCANNED 4.41 sq. in.

SCALE 1/2" = 1.0"

AREA SCANNED

AREA NOT SCANNED



DUKE POWER COMPANY					Exam Start: 1147	Form NDE-UT-2A
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS					Exam Finish: 1248	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1SGA-OUTLET			Date: 1/10/96	
Weld Length (in.): N/A	Surface Condition: AS MFG	Lo: 9.2.3	Surface Temperature: <u>81</u> ° F			
Examiner: Marion T. Weaver <i>Marion T. Weaver</i> Level: II	Scans:		Pyrometer S/N: <u>MCNDE 27021</u>			
Examiner: Gayle E. Houser <i>GE Houser</i> Level: II	45 <input type="checkbox"/> _____ dB	70 <input checked="" type="checkbox"/> <u>75</u> dB	Cal Due: <u>10/3/96</u>			
Procedure: NDE-680 Rev: 1	FC: 95-16	45T <input type="checkbox"/> _____ dB	70T <input type="checkbox"/> _____ dB	Configuration: <u>VESSEL</u>		
Calibration Sheet No: 9501103, 9501100		60 <input checked="" type="checkbox"/> <u>67</u> dB		<u>1</u> Flow <u>2</u>		
		60T <input type="checkbox"/> _____ dB		<u>VESSEL</u> to <u>NOZZLE</u>		
		Other: _____ dB		Scan Surface: <u>OD</u>		
				Applies to NDE-680 only		
				Skew Angle: <u>SEE NOTE</u>		

IND #	<u>4</u>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac HMA			DO NOT WRITE IN THIS SPACE							
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
	60°	NRI														
	70°	NRI														

Remarks: *NOTE = 60° @ 22° 70° @ 10°					
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>					Sheet <u>1</u> of <u>4</u>
Reviewed By: <i>[Signature]</i>	Level: <u>II</u>	Date: <u>1/16/96</u>	Authorized Inspector:	Date:	Item No: B03.140.002

Attachment 3
PAGE 7 of 34

DUKE POWER COMPANY

ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1SGA-OUTLET

Item No: B03.140.002

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L N/A to L N/A INCHES FROM WO N/A to N/A
 ANGLE: 0 45 60 Other 70° FROM 0 DEG to 360 DEG

DUE TO NOZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Martin J. Weaver Level: II Date: 1-10-96

Sketch(s) attached yes no Sheet 2 of 4

Reviewed By: [Signature] Date: II 1/15/96

Authorized Inspector: _____ Date: _____

PAGE 8 of 34

DUKE POWER COMPANY	NDE-91-1
Limited Examination Coverage Worksheet	Revision 0

Examination Volume/Area Defined

Base Metal
 Weld
 Near Surface
 Bolting
 Inner Radius

Area Calculation	Volume Calculation
$2.75" R^2 \times \pi = 23.758 + 4 = 5.94$ $2.25" R^2 \times \pi = 15.9 + 4 = -3.98$ 1.96 IN^2 $.5" \times 2.6" = 1.3 \text{ IN}^2$ $.5" \times 5.1" = 2.55 \text{ IN}^2$ 5.81 IN^2	$5.81 \text{ IN}^2 \times 36.25" = 210.6 \text{ CU IN}$

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
60°/70°		SKEW	4.41	36.25	159.9	210.6	75.93

SHEET 3 OF 4

Item No: BO3.140.002

Prepared By:	Level: <u>III</u>	Date: <u>1-10-96</u>
Reviewed By:	Level: <u>II</u>	Date: <u>1/15/96</u>

STEAM GENERATOR NOZZLE

ITEM # BOJ 140.002

BY: Randy Martin Level II

DATE 1-10-96

REVIEWED BY: [Signature] Level

DATE _____

$$2.75'' R^2 \times \pi = 23.758 + 4 = 5.9395 = 5.94$$

$$2.25'' R^2 \times \pi = 15.9 + 4 = 3.975 = 3.98$$

$$5'' \times 2.6'' =$$
$$3'' \times 5.1'' =$$

$$\frac{1.96 \text{ sq in.}}$$

$$\frac{1.3}{2.55}$$

5.81 sq in TOTAL EXAM AREA

Area Loss:

$$2.8'' \times 1.5'' = 1.4''$$

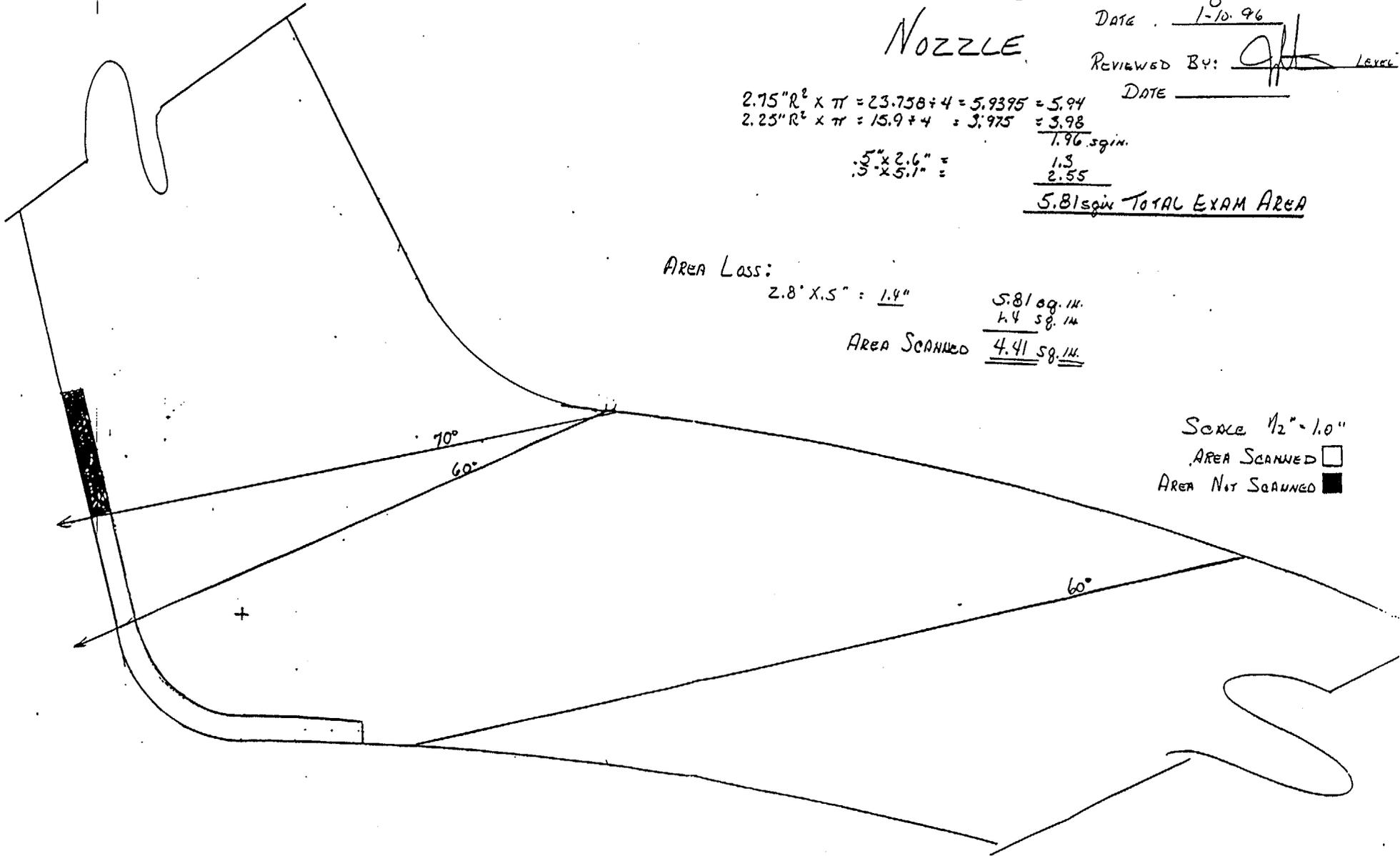
$$\frac{5.81 \text{ sq in.}}{1.4 \text{ sq in.}}$$

Area Scanned 4.41 sq in.

Scale 1/2" = 1.0"

Area Scanned

Area Not Scanned



DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire	Unit: 1	Date: 6/12/98	Sheet Number: 9801049
Procedure: NDE-680	Rev: 1 FC: 95-16	Couplant: ULTRAGEL II	Batch Number: 97425
Examiner: Jay A. Eaton	Level: II	Calibration Block ID: 5131617	Pyrometer S/N: MCNDE 27008
Examiner: David Zimmerman	Level: II	Calibration Block Temp: 73° F	Cal Due: 7/27/98

REFERENCE BLOCK

SIMULATOR BLOCK

ID: 789753	ID: 97-5586	Reflector Type: RADIUS
Type: IIW TYPE 1	Material: CS	Gain: 43.5
		Signal Ampl: 65%
		Metal Path: 4.6

INSTRUMENT

TRANSDUCER

Manufacturer: KRAUTKRAMER	Type: Single <input checked="" type="checkbox"/> Dual <input type="checkbox"/>	Size: 1.0	Freq: 2.25 Mhz	Wedge: AWS
Serial No: 32810-4021	Manufacturer: KBA	Ser no: 007PRO	Meas: <input checked="" type="checkbox"/> 60°	

INSTRUMENT SETTINGS

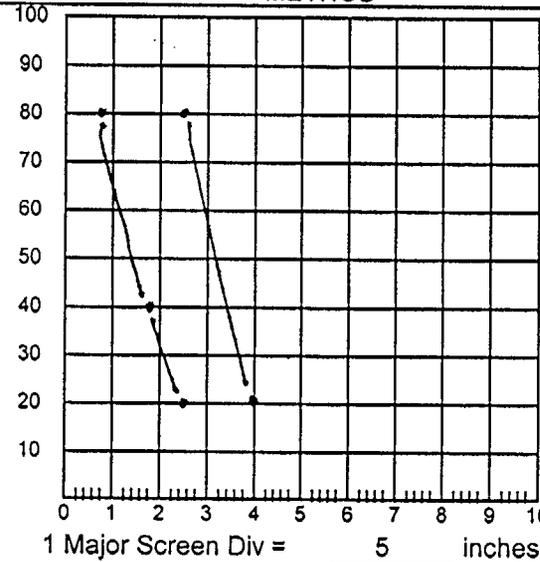
CALIBRATION

METHOD

CABLES

Gain	45/56
Range	50
MTVEL	126.8
Delay	16.4
Pulser	HIGH
Reject	OFF
Freq	1-5
Zero	18.7
Display	FULL
PRF	HIGH

Reflector Type	Amplitude %FSH	Metal Path inches
SDH		
1 /8 node	80%	4.0
2 /8 node	40%	8.3
3 /8 node	20/80%	12.04
5 /8 node	20%	20.1
other		
Cal Direction: axial <input type="checkbox"/> circ. <input type="checkbox"/>		
Wave Mode: Long. <input type="checkbox"/> shear <input checked="" type="checkbox"/>		
surf. <input type="checkbox"/>		
Remarks:		



RG58

RG174

Length: 10'

Initial Cal Time	0730
Cal Checks Time	Initials
0915	<i>OK</i>
1025	<i>OK</i>
1200	<i>OK</i>
FINAL	

Item No: B03.140.005, B03.140.006

Jack: T R

Reviewer: *Rod Sheffield* Level: *TT* Date: *6-23-98* Authorized Inspector: *Atkinson* Date: *6-24-98*

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DUKE POWER COMPANY						FORM NDE-UT-1E							
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS						REVISION 2							
Station:	McGuire	Unit:	1	Date:	6/23/98	Sheet Number:	9801050						
Procedure:	NDE-680	Rev:	1	FC:	95-16	Couplant:	ULTRAGEL II	Batch Number:	97425				
Examiner:	Jay A. Eaton	Level:	II	Calibration Block ID:	5131617	Pyrometer S/N:	MCNDE 27008						
Examiner:	James L. Panel	Level:	II	Calibration Block Temp:	72° F	Cal Due:	7/27/98						
REFERENCE BLOCK				SIMULATOR BLOCK									
ID:	789753	ID:	97-5586	Reflector Type:	RADIUS								
Type:	IIW TYPE 1	Material:	CS	Gain:	43.5	Signal Ampl:	65%	Metal Path:	4.6				
INSTRUMENT				TRANSDUCER									
Manufacturer:	KRAUTKRAMER			Type:	Single <input checked="" type="checkbox"/>	Dual <input type="checkbox"/>	Size:	1.0	Freq:	2.25	Mhz	Wedge:	AWS
Serial No:	32810-4021			Manufacturer:	KBA		Ser no:	007PRO	Meas.	<input checked="" type="checkbox"/>	60	°	
INSTRUMENT SETTINGS		CALIBRATION			METHOD			CABLES					
Gain	45/56	Reflector Type SDH	Amplitude %FSH	Metal Path inches				RG58 <input type="checkbox"/> RG174 <input checked="" type="checkbox"/> Length: 10'					
Range	50	1 /8 node	80%	4.0									
MTVEL	126.8	2 /8 node	40%	8.3									
Delay	16.4	3 /8 node	20/80%	12.04									
Pulser	HIGH	5 /8 node	20%	20.1									
Reject	OFF	other											
Freq	1-5	Cal Direction: axial <input type="checkbox"/>								Initial Cal Time 0750			
Zero	18.7	circ. <input type="checkbox"/>								Cal Checks Time Initials			
Display	FULL	Wave Mode: Long. <input type="checkbox"/>								0900 <i>[Signature]</i> 0915 <i>[Signature]</i> 1030 <i>[Signature]</i>			
PRF	HIGH	shear <input checked="" type="checkbox"/>								FINAL			
		surf. <input type="checkbox"/>											
		Remarks:											
		Item No:	B03.140.005, B03.140.006										
Jack:	T <input type="checkbox"/>	R <input checked="" type="checkbox"/>	Reviewer:	<i>Rod Sheffield</i>	Level:	II	Date:	6-23-98	Authorized Inspector:	<i>[Signature]</i>	Date:	6-24-98	

Attachment 3
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DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire	Unit: 1	Date: 6/12/98	Sheet Number: 9801051
Procedure: NDE-680	Rev: 1 FC: 95-16	Couplant: ULTRAGEL II	Batch Number: 97425
Examiner: Jay A. Eaton	Level: II	Calibration Block ID: 5131617	Pyrometer S/N: MCNDE 27008
Examiner: David Zimmerman	Level: II	Calibration Block Temp: 73° F	Cal Due: 7/27/98

REFERENCE BLOCK

SIMULATOR BLOCK

ID: 789753	ID: 97-5586	Reflector Type: RADIUS
Type: IIW TYPE 1	Material: CS	Gain: 59.5
		Signal Ampl: 30%
		Metal Path: 8.0

INSTRUMENT

TRANSDUCER

Manufacturer: KRAUTKRAMER	Type: Single <input checked="" type="checkbox"/> Dual <input type="checkbox"/>	Size: 1.0	Freq: 2.25 Mhz	Wedge: SWS
Serial No: 32810-4021	Manufacturer: KBA	Ser no: M20242	Meas: <input checked="" type="checkbox"/> 70°	

INSTRUMENT SETTINGS

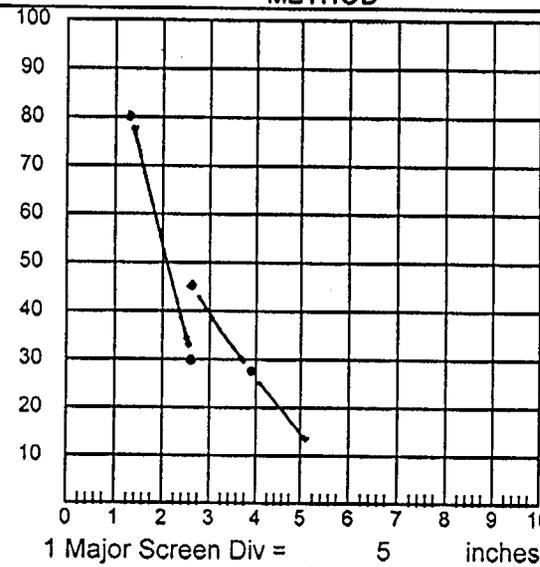
CALIBRATION

METHOD

CABLES

Gain	58/62
Range	50
MTVEL	126.8
Delay	22/40
Pulser	HIGH
Reject	OFF
Freq	1-5
Zero	22.60
Display	FULL
PRF	HIGH

Reflector Type	Amplitude %FSH	Metal Path inches
SDH		
1 /8 node	80%	6.2
2 /8 node	30/45%	13.0
3 /8 node	28%	19.4
/8 node		
other		
Cal Direction: axial <input type="checkbox"/> circ. <input type="checkbox"/>		
Wave Mode: Long. <input type="checkbox"/> shear <input checked="" type="checkbox"/>		
surf. <input type="checkbox"/>		
Remarks:		



RG58	<input type="checkbox"/>
RG174	<input checked="" type="checkbox"/>
Length:	10'

Initial Cal Time
0730

Cal Checks	
Time	Initials
1026	<i>AK</i>
1115	<i>AK</i>
1201	<i>AK</i>
FINAL	

Item No: B03.140.005, B03.140.006

Jack: T R

Reviewer: <i>Rod Sheffield</i>	Level: <i>T</i>	Date: <i>6-23-98</i>	Authorized Inspector: <i>AK</i>	Date: <i>6-24-98</i>
--------------------------------	-----------------	----------------------	---------------------------------	----------------------

R
6/27/98

DUKE POWER COMPANY						FORM NDE-UT-1E			
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS						REVISION 2			
Station:	McGuire	Unit:	1	Date:	6/23/98	Sheet Number:	9801052		
Procedure:	NDE-680	Rev:	1	FC:	95-16	Couplant:	ULTRAGEL II Batch Number: 97425		
Examiner:	Jay A. Eaton	Level:	II	Calibration Block ID:	5131617	Pyrometer S/N:	MCNDE 27008		
Examiner:	James L. Panel	Level:	II	Calibration Block Temp:	73° F	Cal Due:	7/27/98		
REFERENCE BLOCK				SIMULATOR BLOCK					
ID:	789753	ID:	97-5586	Reflector Type:	RADIUS				
Type:	IIW TYPE 1	Material:	CS	Gain:	59.5	Signal Ampl:	30% Metal Path: 8.0		
INSTRUMENT				TRANSDUCER					
Manufacturer:	KRAUTKRAMER			Type:	Single <input checked="" type="checkbox"/>	Dual <input type="checkbox"/>	Size: 1.0 Freq: 2.25 Mhz Wedge: SWS		
Serial No:	32810-4021			Manufacturer:	KBA	Ser no:	M20242 Meas. <input checked="" type="checkbox"/> 70°		
INSTRUMENT SETTINGS		CALIBRATION		METHOD			CABLES		
Gain	58/62	Reflector Type SDH	Amplitude %FSH	Metal Path inches				RG58 <input type="checkbox"/> RG174 <input checked="" type="checkbox"/> Length: 10'	
Range	50	1 /8 node	80%	6.2				Initial Cal Time	0753
MTVEL	126.8	2 /8 node	30/45%	13.0				Cal Checks	
Delay	22/40	3 /8 node	28%	19.4				Time	Initials
Pulser	HIGH	/8 node						0916	<i>[Signature]</i>
Reject	OFF	other						0931	<i>[Signature]</i>
Freq	1-5	Cal Direction: axial <input type="checkbox"/> circ. <input type="checkbox"/>			1032	<i>[Signature]</i>			
Zero	22.60	Wave Mode: Long. <input type="checkbox"/> shear <input checked="" type="checkbox"/>			FINAL				
Display	FULL	surf. <input type="checkbox"/>							
PRF	HIGH	Remarks:							
Item No: B03.140.005, B03.140.006									
Jack:	T <input type="checkbox"/> R <input checked="" type="checkbox"/>	Reviewer:	<i>[Signature]</i>	Level:	II	Date:	6-23-98		
Authorized Inspector:						<i>[Signature]</i>	Date:	6-24-98	

P. 5
7/7

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DUKE POWER COMPANY						Exam Start: 0915	Form NDE-UT-2A
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS						Exam Finish: 1115	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1SGC-INLET				Date: 6/12/98	
Weld Length (in.): N/A	Surface Condition: MACHINED		Lo: RT "0"		Surface Temperature: <u>75</u> ° <u>F</u>		
Examiner: Jay A. Eaton	Level: II		Scans:		Pyrometer S/N: <u>MCNDE 27008</u>		
Examiner: David Zimmerman	Level: II		45 <input type="checkbox"/> _____ dB 70 <input type="checkbox"/> _____ dB		Cal Due: <u>7/27/98</u>		
Procedure: NDE-680	Rev: <u>1</u>	FC: 95-16	45T <input type="checkbox"/> _____ dB 70T <input checked="" type="checkbox"/> <u>76</u> dB		Configuration: <u>INNER RADIUS</u>		
Calibration Sheet No: 9801049, 9801051			60 <input type="checkbox"/> _____ dB		<u>N/A</u> Flow <u>N/A</u>		
			60T <input checked="" type="checkbox"/> <u>70</u> dB		<u>N/A</u> to <u>N/A</u>		
			Other: _____ dB		Scan Surface: OD		
					Applies to NDE-680 only		
					Skew Angle: 23.5°.23°		

IND #	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
	DO NOT WRITE IN THIS SPACE				20%dac HMA		DO NOT WRITE IN THIS SPACE							
					50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
					100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI	60°													
NRI	70°													

Remarks: SCANNED FROM 230° TO 90° OF NOZZLE			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: <u>Rod Sheffield</u>	Level: <u>II</u>	Date: <u>6-23-98</u>	Authorized Inspector: <u>[Signature]</u> Date: <u>6/24/98</u>
			Item No: B03.140.005

R
G
7/12

Attachment 3
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DUKE POWER COMPANY						Exam Start: 0900	Form NDE-UT-2A
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS						Exam Finish: 0930	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1SGC-INLET				Date: 6/23/98	
Weld Length (in.): N/A	Surface Condition: MACHINED		Lo: RT "0"		Surface Temperature: 78 ° F		
Examiner: Jay A. Eaton	Level: II		Scans:		Pyrometer S/N: MCNDE 27008		
Examiner: James L. Panel	Level: II		45 <input type="checkbox"/> _____ dB 70 <input type="checkbox"/> _____ dB		Cal Due: 7/27/98		
Procedure: NDE-680	Rev: 1	FC: 95-16	45T <input type="checkbox"/> _____ dB 70T <input checked="" type="checkbox"/> 76 dB		Configuration: INNER RADIUS		
Calibration Sheet No: 9801050, 9801052			60 <input type="checkbox"/> _____ dB		N/A Flow N/A		
			60T <input checked="" type="checkbox"/> 70 dB		N/A to N/A		
			Other: _____ dB		Scan Surface: OD		
					Applies to NDE-680 only		
					Skew Angle: 23.5°.23°		

IND #	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
	DO NOT WRITE IN THIS SPACE				20%dac HMA		DO NOT WRITE IN THIS SPACE							
					50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
					100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI	60°													
NRI	70°													

Remarks: SCANNED FROM 90° TO 230° OF NOZZLE			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: <i>Rod Sheffield</i>	Level: II	Date: 6-23-98	Authorized Inspector: <i>[Signature]</i> Date: 6-24-98
		Item No: B03.140.005	

R
G
7/7/98

DUKE POWER COMPANY						Exam Start: 0915	Form NDE-UT-2A
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS						Exam Finish: 1115	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1SGC-OUTLET				Date: 6/12/98	
Weld Length (in.): N/A	Surface Condition: MACHINED		Lo: RT "0"		Surface Temperature: <u>75</u> ° F		
Examiner: Jay A. Eaton	Level: II	Scans:		Pyrometer S/N: <u>MCNDE 27008</u>			
Examiner: David Zimmerman	Level: II	45 <input type="checkbox"/> _____ dB	70 <input type="checkbox"/> _____ dB	Cal Due: <u>7/27/98</u>			
Procedure: NDE-680	Rev: <u>1</u>	45T <input type="checkbox"/> _____ dB	70T <input checked="" type="checkbox"/> <u>76</u> dB	Configuration: <u>INNER RADIUS</u>			
Calibration Sheet No: 9801049, 9801051	FC: 95-16	60 <input type="checkbox"/> _____ dB		N/A Flow N/A			
		60T <input checked="" type="checkbox"/> <u>70</u> dB		N/A to N/A			
		Other: _____ dB		Scan Surface: OD			
				Applies to NDE-680 only			
				Skew Angle: <u>23.5°.23°</u>			

IND #	<input checked="" type="checkbox"/>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA		DO NOT WRITE IN THIS SPACE							
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI		60°													
NRI		70°													

Remarks: SCANNED FROM 270° TO 130° OF NOZZLE			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: <i>Rod Sheffield</i>	Level: <i>II</i>	Date: <i>6-23-98</i>	Authorized Inspector: <i>[Signature]</i> <i>60498</i>
		Date: <i>6-23-98</i>	Item No: B03.140.006

R
7/7/98

DUKE POWER COMPANY						Exam Start: 0900	Form NDE-UT-2A
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS						Exam Finish: 0930	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1SGC-OUTLET				Date: 6/23/98	
Weld Length (in.): N/A	Surface Condition: MACHINED		Lo: RT "0"		Surface Temperature: 78 ° F		
Examiner: Jay A. Eaton	Level: II	Scans:		Pyrometer S/N: MCNDE 27008		Cal Due: 7/27/98	
Examiner: James L. Panel	Level: II	45 <input type="checkbox"/> _____ dB	70 <input type="checkbox"/> _____ dB	Configuration: INNER RADIUS			
Procedure: NDE-680	Rev: 1	45T <input type="checkbox"/> _____ dB	70T <input checked="" type="checkbox"/> 76 dB	N/A Flow N/A			
	FC: 95-16	60 <input type="checkbox"/> _____ dB		N/A to N/A		Scan Surface: OD	
Calibration Sheet No: 9801050, 9801052		60T <input checked="" type="checkbox"/> 70 dB		Applies to NDE-680 only		Skew Angle: 23.5°.23°	
		Other: _____ dB					

IND #	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
					20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA				
					50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
					100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI	60°													
NRI	70°													

Remarks: SCANNED FROM 130° TO 270° OF NOZZLE			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: <i>Rod Sheffield</i>	Level: II	Date: 6-23-98	Authorized Inspector: <i>[Signature]</i> 6-24-98
		Date: 6-24-98	Item No: B03.140.006

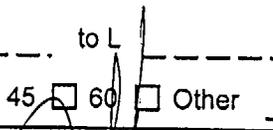
8
7/12

Attachment 3.
PAGE 19 of 34

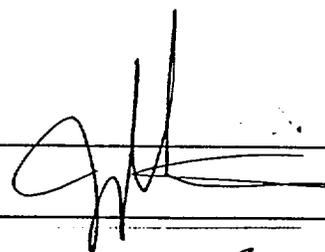
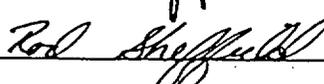
DUKE POWER COMPANY ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1SGC-INLET		Item No: B03.140.005		Remarks:
<input type="checkbox"/> NO SCAN <input checked="" type="checkbox"/> LIMITED SCAN FROM L <u>22.0"</u> to L <u>42.5"</u> INCHES FROM WO <u>N/A</u> to <u>N/A</u> ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input checked="" type="checkbox"/> 60 <input checked="" type="checkbox"/> Other <u>70°</u> FROM <u>N/A</u> DEG to <u>N/A</u> DEG		SURFACE <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 BEAM DIRECTION <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> cw <input checked="" type="checkbox"/> ccw		SUPPORT CORNER IS 1.0 FROM C/L OF NOZZLE OD RADIUS
<input type="checkbox"/> NO SCAN <input checked="" type="checkbox"/> LIMITED SCAN FROM L <u>85.8</u> to L <u>90.8</u> INCHES FROM WO <u>N/A</u> to <u>N/A</u> ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input checked="" type="checkbox"/> 60 <input checked="" type="checkbox"/> Other <u>70°</u> FROM <u>N/A</u> DEG to <u>N/A</u> DEG		SURFACE <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 BEAM DIRECTION <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> cw <input checked="" type="checkbox"/> ccw		SENSOR PLATE IS 4.5" TO 10.5" FROM C/L OF NOZZLE OD RADIUS
<input checked="" type="checkbox"/> NO SCAN <input type="checkbox"/> LIMITED SCAN FROM L <u>N/A</u> to L <u>N/A</u> INCHES FROM WO <u>C/L RADIUS</u> to <u>BEYOND</u> ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input checked="" type="checkbox"/> 60 <input checked="" type="checkbox"/> Other <u>70°</u> FROM <u>0</u> DEG to <u>360</u> DEG		SURFACE <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 BEAM DIRECTION <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input checked="" type="checkbox"/> cw <input checked="" type="checkbox"/> ccw		LIMITED ON NOZZLE C/L OF BLEND RADIUS
<input type="checkbox"/> NO SCAN <input type="checkbox"/> LIMITED SCAN FROM L _____ to L _____ INCHES FROM WO _____ to _____ ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____ FROM _____ DEG to _____ DEG		SURFACE <input type="checkbox"/> 1 <input type="checkbox"/> 2 BEAM DIRECTION <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw		
Prepared By: 	Level: <u>II</u>	Date: <u>6/23/93</u>	Sketch(s) attached <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Sheet _____ of _____
Reviewed By: 	Date: <u>6-23-98</u>	Authorized Inspector: 	Date: <u>6-24-98</u>	

DUKE POWER COMPANY						NDE-91-1	
Limited Examination Coverage Worksheet						Revision 0	
Examination Volume/Area Defined							
<input type="checkbox"/> Base Metal		<input type="checkbox"/> Weld		<input type="checkbox"/> Near Surface		<input type="checkbox"/> Bolting	<input checked="" type="checkbox"/> Inner Radius
Area Calculation				Volume Calculation			
TOTAL AREA= 5.98 SQ. IN.				5.98SQ. IN. X 30 IN DIA. TT = 563.6 IN CU.			
Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	60/70	23.5/23° SKEW	4.98	94.25	469.37	563.6	83.28

Prepared By: 		Level: II	Date: 6/23/98
Reviewed By: 		Level: II	Date: 6-23-98

6/23/98

Item No: B03.140.005

15 GC - J ET Nozzle

AREA CALCULATION

$$\frac{\sin^2 \theta_{RP} - 4.5 \sin^2 \theta_{\pi}}{4} = 3.73 \text{ in}^2$$

$$4.5 \sin \theta \times 0.5 \text{ in} = \underline{2.25 \text{ in}^2}$$

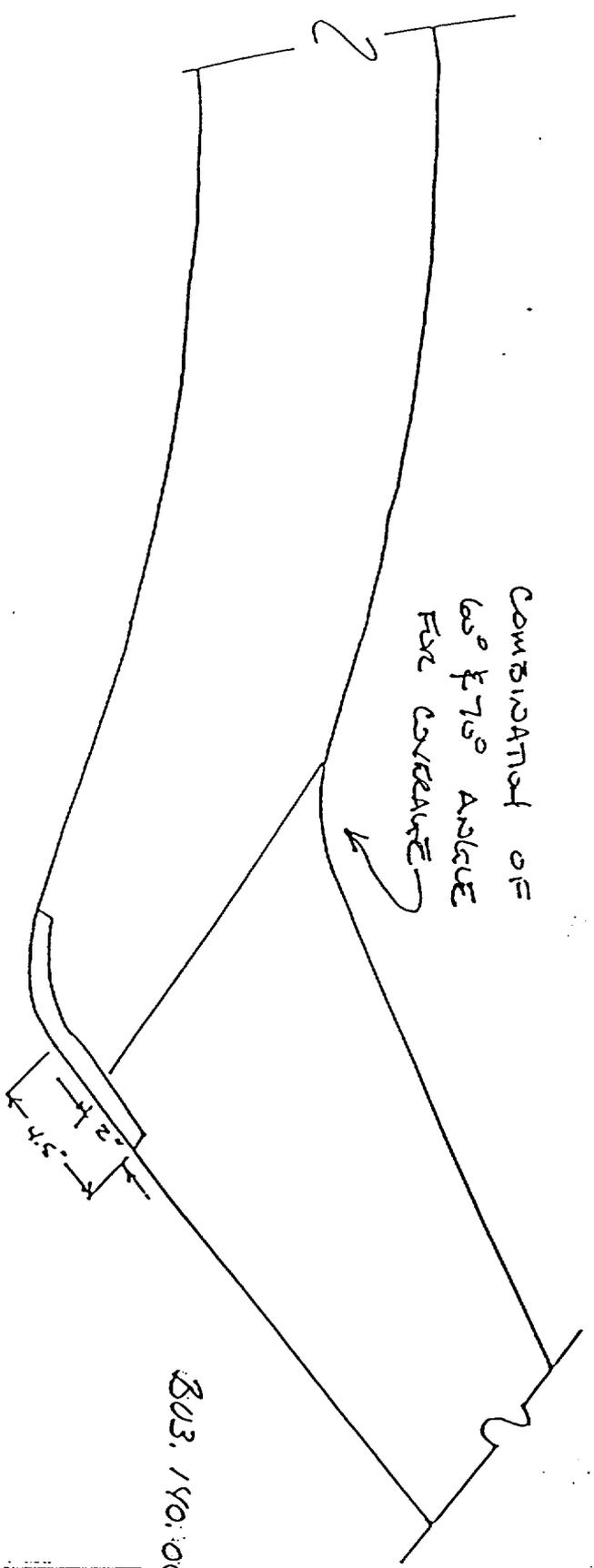
$$\text{TOTAL AREA} = 5.98 \text{ in}^2$$

AREA DEDUCTED

$$5.98 \text{ in}^2 - (2.0 \text{ in} \times 0.5 \text{ in}) = 4.98 \text{ in}^2$$

TOTAL % COVERAGE

$$\frac{4.98 \text{ in}^2}{5.98 \text{ in}^2} \times 100 = \underline{83.3\%}$$



803.140.0005

DUKE POWER COMPANY

ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1SGC-OUTLET

Item No: B03.140.006

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L 23.5 to L 43.8 INCHES FROM WO N/A to N/A
 ANGLE: 0 45 60 Other 70° FROM N/A DEG to N/A DEG

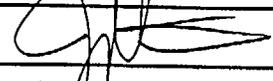
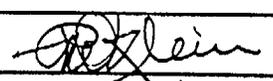
SUPPORT CORNER IS 1.0 FROM C/L OF NOZZLE OD RADIUS

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L N/A to L N/A INCHES FROM WO C/L RADIUS to BEYOND
 ANGLE: 0 45 60 Other 70° FROM 0 DEG to 360 DEG

LIMITED ON NOZZLE FROM C/L OF BLEND RADIUS

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

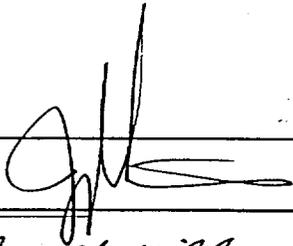
Prepared By:  Level: II Date: 6/23/98 Sketch(s) attached yes no Sheet _____ of _____
 Reviewed By: Rod Sheffield Date: 6-23-98 Authorized Inspector:  Date: 6-24-98

Attachment 3
PAGE 22 of 34

R
SW
2176

DUKE POWER COMPANY						NDE-91-1	
Limited Examination Coverage Worksheet						Revision 0	
Examination Volume/Area Defined							
<input type="checkbox"/> Base Metal		<input type="checkbox"/> Weld		<input type="checkbox"/> Near Surface		<input type="checkbox"/> Bolting	<input checked="" type="checkbox"/> Inner Radius
Area Calculation				Volume Calculation			
TOTAL AREA= 5.98 SQ. IN.				5.98SQ. IN. X 30 IN DIA. TT = 563.6 IN CU.			
Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
60/70		23.5/23°SKEW	4.98	94.25	469.37	563.6	83.28

7/1/98

		Item No:	B03.140.006
Prepared By:	Level: II	Date:	6/23/98
Reviewed By: Rod Sheffield	Level: II	Date:	6-23-98

ISGC-C LET NOZZLE

Attachment 3
PAGE 24 of 34

AREA CALCULATION

$$\frac{5 \text{ in}^2 \pi - 4.5 \text{ in}^2 \pi}{4} = 3.73 \text{ in}^2$$

$$4.5 \text{ in} \times 0.5 \text{ in} = \underline{2.25 \text{ in}^2}$$

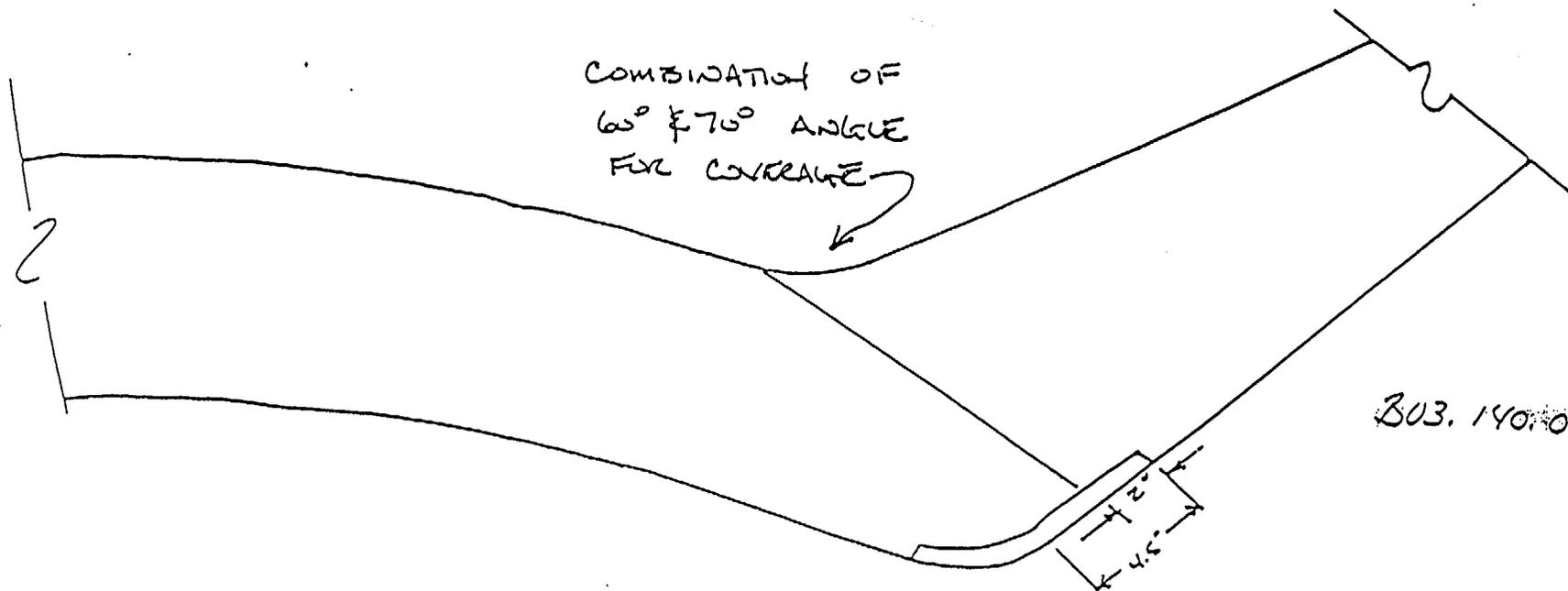
$$\text{TOTAL AREA} = 5.98 \text{ in}^2$$

TOTAL % COVERAGE

$$\frac{4.98 \text{ in}^2}{5.98 \text{ in}^2} = 83.3 \times 100 = \underline{83.3 \%}$$

AREA EXCLUDED

$$5.98 \text{ in}^2 - (2.0 \text{ in} \times 0.5 \text{ in}) = 4.98 \text{ in}^2$$



DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 1/10/96 Sheet Number: 9501099

Procedure: NDE-680 Rev: 1 FC: 95-16 Couplant: ULTRAGEL II Batch Number: 94325

Examiner: Larry Mauldin *Larry Mauldin* Level: III Calibration Block ID: 50302 Pyrometer S/N: MCNDE 27021

Examiner: James H. Resor *James H. Resor* Level: I Calibration Block Temp: 76° Cal Due: 10/3/96

REFERENCE BLOCK

ID: 96-6520
 Type: ROMPAS Material: CS

SIMULATOR BLOCK

ID: 96-6520 Reflector Type: 2" RADIUS
 Gain: 40 dB Signal Ampl: 40% Metal Path: 4.7

INSTRUMENT

Manufacturer: KRAUTKRAMER
 Serial No: 32810-921

TRANSDUCER

Type: Single Dual Size: 1.0 Freq: 2.25 Mhz Wedge: SWS
 Manufacturer: KBA Ser no: E30939 Meas. 60°

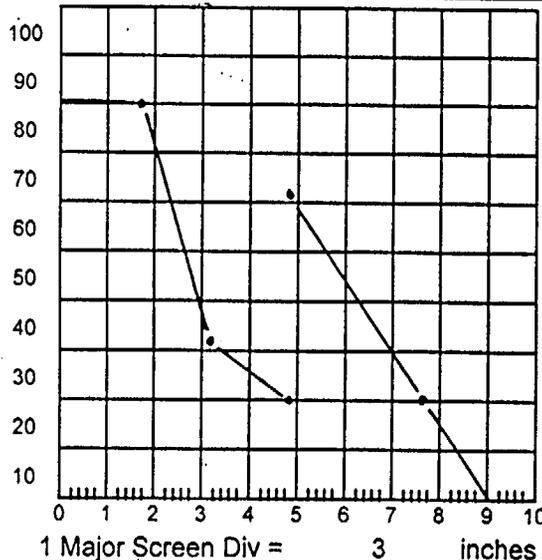
INSTRUMENT SETTINGS

Gain: 43/53
 Range: 30
 MTVEL: 128
 Delay: 10.1
 Pulser: HIGH
 Reject: OFF
 Freq: 1-5
 Zero: 17.22
 Display: FULL
 PRF: HIGH

CALIBRATION

Reflector Type	Amplitude %FSH	Metal Path inches
HOLE		
1 /8 node	80	4.63
2 /8 node	32	9.3
3 /8 node	20/62	14.12
5 /8 node	20	22.68
other		
Cal Direction: axial <input checked="" type="checkbox"/> circ. <input checked="" type="checkbox"/>		
Wave Mode: Long. <input type="checkbox"/> shear <input checked="" type="checkbox"/> surf. <input type="checkbox"/>		
Remarks: 10 dB DIFFERENCE FROM CLAD SIDE OF BLOCK		

METHOD



CABLES

RG58
 RG174
 Length: 10'

Initial Cal Time
 08:35

Cal Checks
 Time Initials

1034	<i>LR</i>
1045	<i>LR</i>
1056	<i>LR</i>
1108	<i>LR</i>
1150	<i>LR</i>

Item No: B03.140.007, B03.140.008

Jack: T R

Reviewer: *[Signature]* Level: 11 Date: 1/16/96 Authorized Inspector: *[Signature]* Date: 1/19/96

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 1/10/96 Sheet Number: 9501104

Procedure: NDE-680 Rev: 1 FC: 95-16 Couplant: ULTRAGEL II Batch Number: 94325

Examiner: Larry Mauldin *Larry Mauldin* Level: III Calibration Block ID: 50302 Pyrometer S/N: MCNDE 27021

Examiner: James H. Resor *James H. Resor* Level: I Calibration Block Temp: 76° Cal Due: 10/3/96

REFERENCE BLOCK

SIMULATOR BLOCK

ID: 96-6520
 Type: ROMPAS Material: CS

ID: 96-6520 Reflector Type: 2"RADIUS
 Gain: 38 dB Signal Ampl: 40% Metal Path: 4.5

INSTRUMENT

TRANSDUCER

Manufacturer: KRAUTKRAMER
 Serial No: 32810-921

Type: Single Dual Size: 1.0 Freq: 2.25 Mhz Wedge: SWS
 Manufacturer: KBA Ser no: E30938 Meas. 70 °

INSTRUMENT SETTINGS

CALIBRATION

METHOD

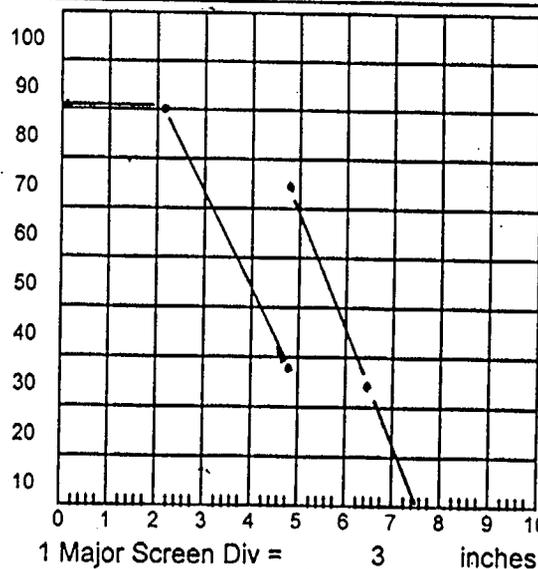
CABLES

Gain: 53/59
 Range: 30
 MTVEL: 128
 Delay: 16.1
 Pulser: HIGH
 Reject: OFF
 Freq: 1-5
 Zero: 20.17
 Display: FULL
 PRF: HIGH

Reflector Type	Amplitude %FSH	Metal Path inches
HOLE		
1 /8 node	80	6.9
2 /8 node	28/65	13.67
3 /8 node	25	19.9
/8 node		
other		

Cal Direction: axial circ.
 Wave Mode: Long. shear
 surf.

Remarks: 70° used in combination with 60° for additional coverage.



RG58
 RG174
 Length: 10'

Initial Cal Time
0840

Cal Checks	
Time	Initials
1045	<i>LR</i>
1055	<i>LR</i>
1109	<i>LR</i>
1121	<i>LR</i>
1151	<i>LR</i>

Item No: B03.140.007 | B03.140.008

Jack: T R

Reviewer: *[Signature]* Level: II Date: 1/10/96 Authorized Inspector: *[Signature]* Date: 1-10-96

Attachment 3
PAGE 26 of 34

3

DUKE POWER COMPANY ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1SGD-INLET

Item No: B03.140.007

Remarks:

NO SCAN SURFACE BEAM DIRECTION

LIMITED SCAN 1 2 1 2 cw ccw

FROM L N/A to L N/A INCHES FROM WO N/A to N/A

ANGLE: 0 45 60 Other 70° FROM 0 DEG to 360 DEG

DUE TO NOZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION

LIMITED SCAN 1 2 1 2 cw ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____

ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION

LIMITED SCAN 1 2 1 2 cw ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____

ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION

LIMITED SCAN 1 2 1 2 cw ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____

ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Randy Deulder Level: III Date: 1-10-96 Sketch(s) attached yes no Sheet 2 of 4

Reviewed By: [Signature] Date: 1/16/96 Authorized Inspector: [Signature] Date: 1-19-96

Attachment 3
PAGE 28 of 34

DUKE POWER COMPANY						NDE-91-1	
Limited Examination Coverage Worksheet						Revision 0	
Examination Volume/Area Defined							
<input type="checkbox"/> Base Metal		<input type="checkbox"/> Weld		<input type="checkbox"/> Near Surface		<input type="checkbox"/> Bolting	<input checked="" type="checkbox"/> Inner Radius
Area Calculation				Volume Calculation			
2.75" R ² X ¶ = 23.758 + 4 = 5.94 2.25" R ² X ¶ = 15.9 + 4 = -3.98 1.96 IN ² .5" X 2.6" = 1.3 IN ² .5" X 5.1" = 2.55 IN ² 5.81 IN ²				5.81 IN ² X 36.25" = 210.6 CU IN			
Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
	60°/70°	SKEW	4.41	36.25	159.9	210.6	75.93

SHEET 3 OF 4

Item No: B 03.140.007

Prepared By: <i>Larry M...</i>	Level: <i>III</i>	Date: <i>1-16-96</i>
Reviewed By: <i>[Signature]</i>	Level: <i>II</i>	Date: <i>1/16/96</i>

STEAM GENERATOR NOZZLE

ITEM # 31 '40.007
 BY: Paul Thacker Level II
 DATE: 1-10-96
 REVIEWED BY: [Signature] Level II
 DATE: 1/14/96

$$2.75" R^2 \times \pi = 23.758 \div 4 = 5.9395 = 5.94$$

$$2.25" R^2 \times \pi = 15.9 \div 4 = 3.975 = 3.98$$

$$.5" \times 2.6" = 1.3$$

$$.5" \times 5.1" = 2.55$$

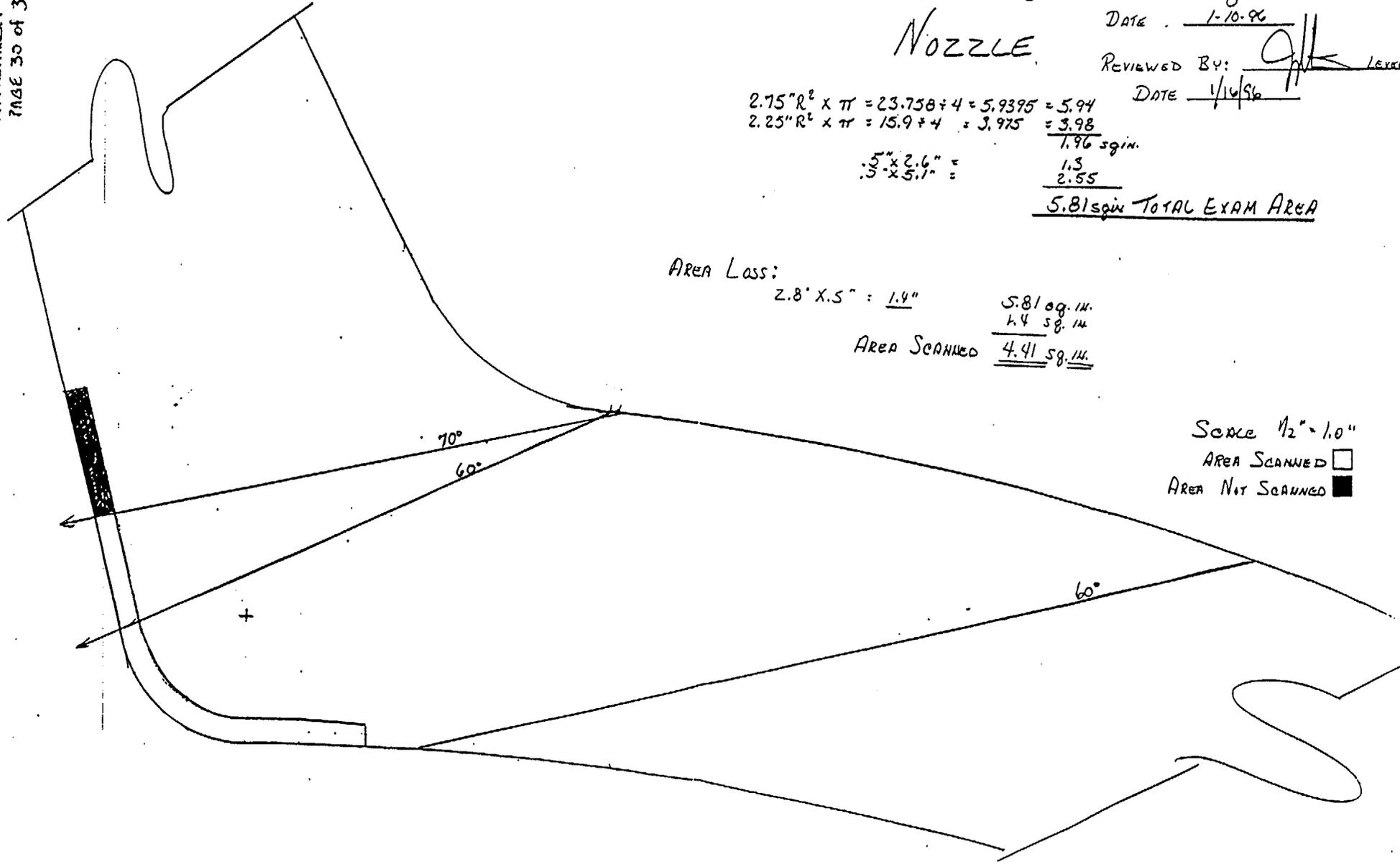
$$\frac{1.96 \text{ sq in.}}{2.55}$$

5.81 sq in. TOTAL EXAM AREA

AREA LOSS:
 $2.8" \times .5" = 1.4"$

Area Scanned $\frac{5.81 \text{ sq. in.}}{1.4 \text{ sq. in.}}$
4.41 sq. in.

Scale 1/2" = 1.0"
 AREA SCANNED
 AREA NOT SCANNED



DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1056

Form NDE-UT-2A

Exam Finish: 1120

Revision 4

Station: McGuire

Unit: 1

Component/Weld ID: 1SGD-OUTLET

Date: 1/10/96

Weld Length (in.): N/A

Surface Condition: AS MFG

Lo: 9.2.3

 Surface Temperature: 79 ° E

 Examiner: Larry Mauldin *Larry Mauldin* Level: III

Scans:

Pyrometer S/N: MCNDE 27025

 Examiner: James H. Resor *James H. Resor* Level: I

 45 _____ dB 70 73 dB

Cal Due: 10/3/96

Procedure: NDE-680

Rev: 1

FC:

95-16

 45T _____ dB 70T _____ dB

Configuration: INNER RADIUS

S1 _____ Flow _____ S2 _____

GEN _____ to NOZZLE _____

Scan Surface: OD

Calibration Sheet No:

9501099, 9501104

 60 67 dB

Applies to NDE-680 only

 60T _____ dB

Skew Angle: 22° & 10°

Other: _____ dB

IND #	<input checked="" type="checkbox"/>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac HMA			DO NOT WRITE IN THIS SPACE							
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
		60°	NRI													
		70°	NRI													

Remarks:

 Limitations: (see NDE-UT-4) 90% or greater coverage obtained: yes no

 Sheet 1 of 4

 Reviewed By: *[Signature]*

Level: II

Date: 1/16/95

 Authorized Inspector: *[Signature]*

Date: 1-19-96

Item No:

B03.140.008

**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1SGD-OUTLET

Item No: B03.140.008

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L N/A to L N/A INCHES FROM WO N/A to N/A
 ANGLE: 0 45 60 Other 70° FROM 0 DEG to 360 DEG

DUE TO NOZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Larry Maglier Level: III Date: 1-10-96

Sketch(s) attached yes no Sheet 2 of 4

Reviewed By: [Signature] Date: 1/16/95

Authorized Inspector: [Signature] Date: H9

Attachment 3
PAGE 22 of 34

DUKE POWER COMPANY						NDE-91-1			
Limited Examination Coverage Worksheet						Revision 0			
Examination Volume/Area Defined									
<input type="checkbox"/> Base Metal		<input type="checkbox"/> Weld		<input type="checkbox"/> Near Surface		<input type="checkbox"/> Bolting		<input checked="" type="checkbox"/> Inner Radius	
Area Calculation				Volume Calculation					
$2.75'' R^2 \times \pi = 23.758 + 4 = 5.94$ $2.25'' R^2 \times \pi = 15.9 + 4 = -3.98$ 1.96 IN^2 $.5'' \times 2.6'' = 1.3 \text{ IN}^2$ $.5'' \times 5.1'' = 2.55 \text{ IN}^2$ 5.81 IN^2				$5.81 \text{ IN}^2 \times 36.25'' = 210.6 \text{ CU. IN.}$					
Coverage Calculations									
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage		
	60°/70°	SKEW	4.41	36.25	159.9	210.6	75.93		

SHEET 3 OF 4

Item No: B03.140.008

Prepared By: <i>Larry Mauldin</i>	Level: <i>III</i>	Date: <i>1-16-96</i>
Reviewed By: <i>[Signature]</i>	Level: <i>II</i>	Date: <i>1/16/96</i>

STEAM GENERATOR NOZZLE

ITEM # 30 40.008
 BY: Long, Mullin Level F
 DATE 1-10-96
 REVIEWED BY: [Signature] Level F
 DATE 1/16/96

$$2.75'' R^2 \times \pi = 23.758 \div 4 = 5.9395 = 5.94$$

$$2.25'' R^2 \times \pi = 15.9 \div 4 = 3.975 = 3.98$$

$$\frac{5.94}{3.98} = 1.49$$

$$.5'' \times 2.6'' = 1.3$$

$$.3'' \times 5.1'' = 1.53$$

5.81 sq in TOTAL EXAM AREA

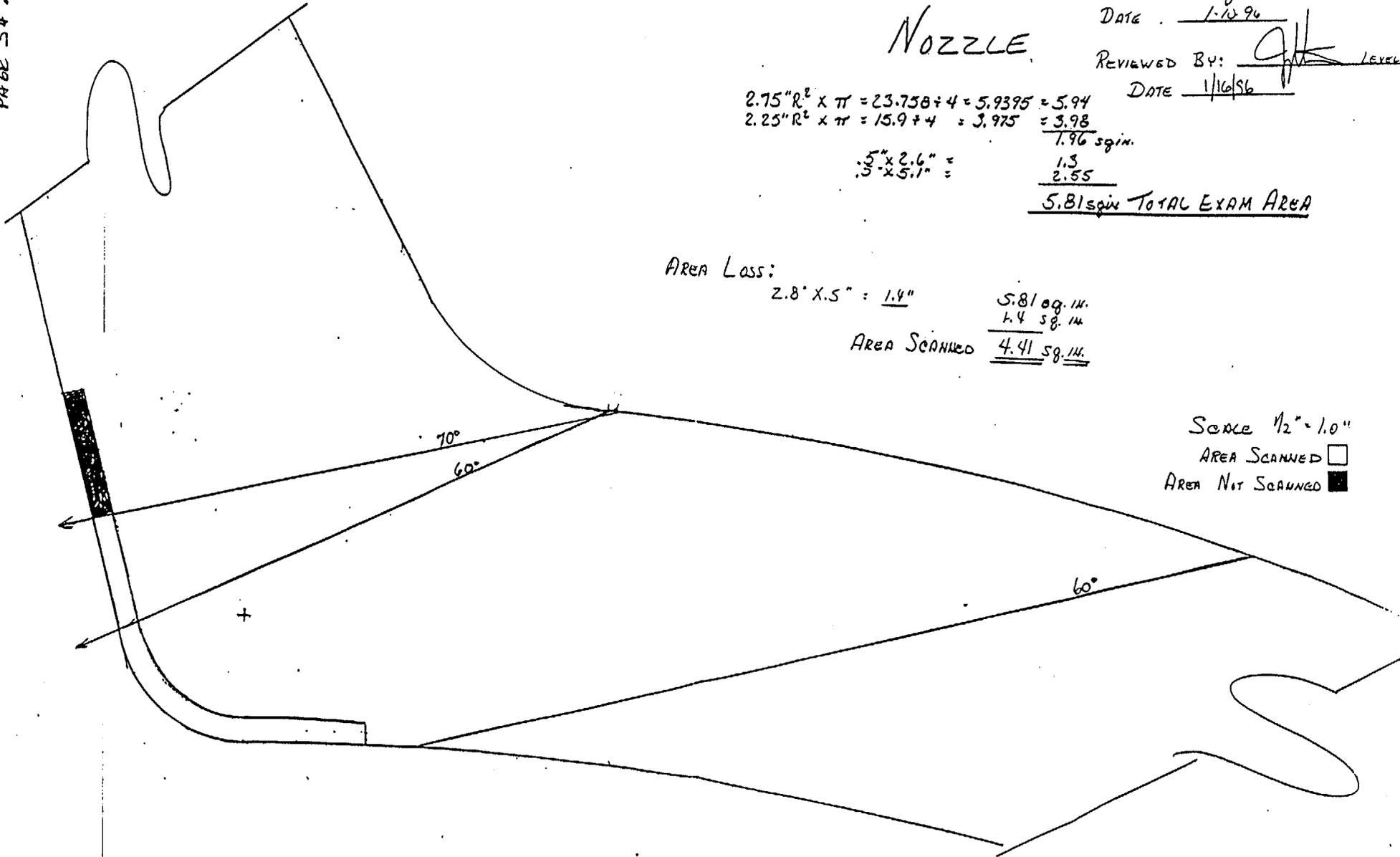
Area Loss:

$$2.8'' \times .5'' = 1.4''$$

$$\frac{5.81 \text{ sq. in.}}{1.4} = 4.15 \text{ sq. in.}$$

Area Scanned 4.41 sq. in.

Scale $1/2'' = 1.0''$
 AREA SCANNED
 AREA NOT SCANNED



DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 2/22/97 Sheet Number: 9701033

Procedure: NDE-610 Rev: 4 FC: N/A Couplant: ULTRAGEL II Batch Number: 95325

Examiner: James W. Setzer Level: III Calibration Block ID: 50374 Pyrometer S/N: MCNDE 27023
 Examiner: James H. Resor Level: II Calibration Block Temp: 66°F Cal Due: 9/18/97

REFERENCE BLOCK

ID: 91-5868
 Type: ROMPAS Material: SS

SIMULATOR BLOCK

ID: 91-5868 Reflector Type: RADIUS
 Gain: 34 Signal Ampl: 80% Metal Path: 1"

INSTRUMENT

Manufacturer: KRAUTKRAMER
 Serial No: 32810-4017

TRANSDUCER

Type: Single Dual Size: 8X12 Freq: 2.0 Mhz Wedge: INT
 Manufacturer: RTD Ser no: 93-392 Meas. 45 °

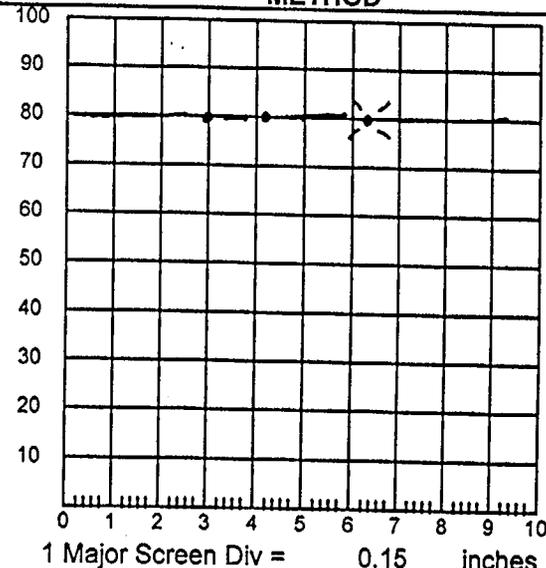
INSTRUMENT SETTINGS

Gain	65/69
Range	1.5
MTVEL	229.6
Delay	7.0
Pulser	DUAL
Reject	0%
Freq	1-5
Zero	7.23
Display	FULL
PRF	HIGH

CALIBRATION

Reflector Type	Amplitude %FSH	Metal Path inches
HOLE		
2 /8 node	80%	0.443
3 /8 node	80%	0.608
/8 node		
/8 node		
other NOTCH	80%	0.952
Cal Direction: axial <input checked="" type="checkbox"/> circ. <input type="checkbox"/>		
Wave Mode: Long. <input checked="" type="checkbox"/> shear <input type="checkbox"/>		
surf. <input type="checkbox"/>		
Remarks: NOTCH = DAC @ 69Db		

METHOD



CABLES

RG58
 RG174
 Length: 6 FT

Initial Cal Time 0505

Time	Initials
0555	JHR
0610	JHR
0626	JHR
FINAL	

Item No: B05.010.009, B05.010.010, B05.130.017, B05.130.018

Jack: T R

Reviewer: Rod Sheffield Level: II Date: 2-26-97 Authorized Inspector: Atkinson Date: 2-28-97

SERIAL NO. 98-004
 Attachment 4
 PAGE 1 of 19

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

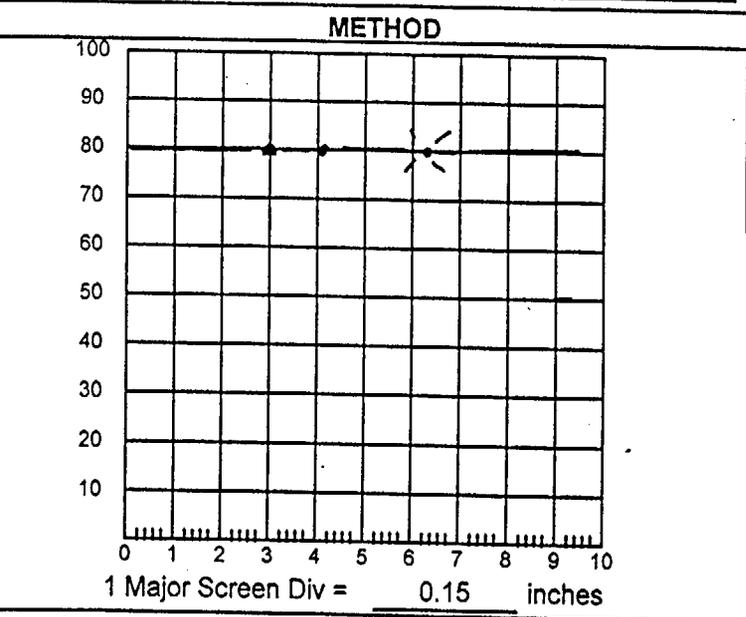
Station: McGuire	Unit: 1	Date: 2/22/97	Sheet Number: 9701032
Procedure: NDE-610	Rev: 4	FC: N/A	Couplant: ULTRAGEL II
Examiner: Jay A. Eaton	Level: II	Batch Number: 95325	Calibration Block ID: 50374
Examiner: Gary J. Moss	Level: II	Pyrometer S/N: MCNDE 27023	Calibration Block Temp: 66°F
		Cal Due: 9/18/97	

REFERENCE BLOCK	SIMULATOR BLOCK
ID: 91-5868	ID: 91-5868
Type: ROMPAS	Reflector Type: RADIUS
Material: SS	Gain: 34
	Signal Ampl: 80%
	Metal Path: 1"

INSTRUMENT	TRANSDUCER
Manufacturer: KRAUTKRAMER	Type: Single <input type="checkbox"/> Dual <input checked="" type="checkbox"/>
Serial No: 32810-4017	Size: 8X12
	Freq: 2.0 Mhz
	Wedge: INT
	Manufacturer: RTD
	Ser no: 93-393
	Meas. <input checked="" type="checkbox"/> 45°

INSTRUMENT SETTINGS
Gain: 65/69
Range: 1.5
MTVEL: 229.6
Delay: 7.0
Pulser: DUAL
Reject: 0%
Freq: 1-5
Zero: 7.23
Display: FULL
PRF: HIGH

CALIBRATION
Reflector Type: HOLE
Amplitude %FSH: 80%
Metal Path inches: 0.443
2 /8 node
3 /8 node
/8 node
/8 node
other NOTCH: 80%
0.952
Cal Direction: axial <input checked="" type="checkbox"/> circ. <input type="checkbox"/>
Wave Mode: Long. <input checked="" type="checkbox"/> shear <input type="checkbox"/>
surf. <input type="checkbox"/>
Remarks: NOTCH = DAC @ 69Db



CABLES
RG58 <input type="checkbox"/>
RG174 <input checked="" type="checkbox"/>
Length: 6 FT
Initial Cal Time: 0505
Cal Checks
Time: 0555 Initials: JK
Time: 0610 Initials: JK
Time: 0626 Initials: JK
Time: FINAL Initials:

Item No: B05.010.011, B05.010.012, B05.130.019, B05.130.020
Jack: T <input checked="" type="checkbox"/> R <input checked="" type="checkbox"/>
Reviewer: Rod Sheffield
Level: II
Date: 2-26-97
Authorized Inspector: [Signature]
Date: 2-28-97

Attachment 5
PAGE 2 of 19

3/17/97

DUKE POWER COMPANY					Exam Start: 0540	Form NDE-UT-2A
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS					Exam Finish: 0610	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1RPV 1-462C-SE			Date: 2/22/97	
Weld Length (in.): 20"	Surface Condition: AS GROUND	Lo: N/A	Surface Temperature: 66 ° F			
Examiner: Jay A. Eaton <i>J.A. Eaton</i>	Level: II	Scans:			Pyrometer S/N: MCNDE 27023	
Examiner: Gary J. Moss <i>Gary Moss</i>	Level: II	45 <input checked="" type="checkbox"/> 69* dB	70 <input type="checkbox"/> _____ dB	Cal Due: 9/18/97		
Procedure: NDE-610 Rev: 4	FC: N/A	45T <input checked="" type="checkbox"/> 45 dB	70T <input type="checkbox"/> _____ dB	Configuration: CIRC. WELD		
Calibration Sheet No: 9701031, 9701032		60 <input type="checkbox"/> _____ dB		S1 _____ Flow _____ S2 _____		
		60T <input type="checkbox"/> _____ dB		RPV HEAD to UHI TUBE		
		Other: _____ dB		Scan Surface: OD		
				Applies to NDE-680 only		
				Skew Angle: N/A		

IND #	4	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
						20%dac HMA									
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI	45°														

Remarks: * SCANNED @ REFERENCE Db DUE TO NOISE LEVEL			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: Rod Sheffield <i>Rod Sheffield</i>	Level: II	Date: 2-27-97	Authorized Inspector: <i>D. Klein</i> Date: 2-28-97
		Item No: B05.010.011	

Attachment 5
PAGE 3 of 18

R
3/17/97

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0540

Form NDE-UT-2A

Exam Finish: 0610

Revision 4

Station: McGuire

Unit: 1

Component/Weld ID: 1RPV 1-462D-SE

Date: 2/22/97

Weld Length (in.): 20"

Surface Condition: AS GROUND

Lo: N/A

Surface Temperature: 66 ° F

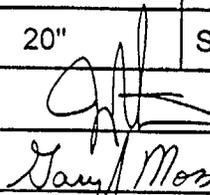
Examiner: Jay A. Eaton

Level: II

Scans:

Pyrometer S/N: MCNDE 27023

Examiner: Gary J. Moss



Level: II

 45 69* dB 70 _____ dB

Cal Due: 9/18/97

Procedure: NDE-610

Rev: 4

FC:

 45T 45 dB 70T _____ dB

Configuration: CIRC. WELD

Calibration Sheet No:

9701031, 9701032

N/A

 60 _____ dB

S1 Flow S2

RPV HEAD to UHI TUBE

Scan Surface: OD

 60T _____ dB

Applies to NDE-680 only

Other: _____ dB

Skew Angle: N/A

IND #	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
4														
DO NOT WRITE IN THIS SPACE					20%dac HMA	DO NOT WRITE IN THIS SPACE								
					50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
					100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI	45°													

Remarks: * SCANNED @ REFERENCE Db DUE TO NOISE LEVEL

 Limitations: (see NDE-UT-4) 90% or greater coverage obtained: yes no

Sheet _____ of _____

Reviewed By:

Level:

Date:

Authorized Inspector:

Date:

Item No:

 Rod Sheffield *Rod Sheffield*

II

2-27-97

R. Klein

2-28-97

B05.010.012

 Attachment 5
Page 4 of 12

2/28/97

DUKE POWER COMPANY						Exam Start: 0540	Form NDE-UT-2A	
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS						Exam Finish: 0610	Revision 4	
Station: McGuire	Unit: 1	Component/Weld ID: 1N11FW-38-1				Date: 2/22/97		
Weld Length (in.): 20"	Surface Condition: AS GROUND		Lo: N/A		Surface Temperature: 66 ° F			
Examiner: Jay A. Eaton	Level: II		Scans:			Pyrometer S/N: MCNDE 27023		
Examiner: Gary J. Moss	Level: II		45 <input checked="" type="checkbox"/> 69* dB	70 <input type="checkbox"/> _____ dB	Cal Due: 9/18/97			
Procedure: NDE-610	Rev: 4	FC: N/A	45T <input checked="" type="checkbox"/> 45 dB	70T <input type="checkbox"/> _____ dB	Configuration: CIRC. WELD			
			60 <input type="checkbox"/> _____ dB	S2 Flow S1				
Calibration Sheet No: 9701031, 9701032			60T <input type="checkbox"/> _____ dB	UHI CAP to UHI TUBE				
			Other: _____ dB	Scan Surface: OD				
				Applies to NDE-680 only				
				Skew Angle: N/A				

IND #	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
	DO NOT WRITE IN THIS SPACE				20%dac HMA		DO NOT WRITE IN THIS SPACE								
					50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
					100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
NRI	45°														

Remarks: * SCANNED @ REFERENCE Db DUE TO NOISE LEVEL			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: Rod Sheffield	Level: II	Date: 2-27-97	Authorized Inspector: [Signature] Date: 2-28-97
			Item No: B05.130.019

Attachment 5
PAGE 5 of 18

3/17/97

DUKE POWER COMPANY				Exam Start: 0540	Form NDE-UT-2A
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS				Exam Finish: 0610	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1N11FW-38-4			Date: 2/22/97
Weld Length (in.): 20"	Surface Condition: AS GROUND	Lo: N/A	Surface Temperature: <u>66</u> ° F		
Examiner: Jay A. Eaton <i>[Signature]</i>	Level: II	Scans:		Pyrometer S/N: <u>MCNDE 27023</u>	
Examiner: Gary J. Moss <i>[Signature]</i>	Level: II	45 <input checked="" type="checkbox"/> <u>69*</u> dB	70 <input type="checkbox"/> _____ dB	Cal Due: <u>9/18/97</u>	
Procedure: NDE-610	Rev: 4	45T <input checked="" type="checkbox"/> <u>45</u> dB	70T <input type="checkbox"/> _____ dB	Configuration: <u>CIRC. WELD</u>	
FC: N/A		60 <input type="checkbox"/> _____ dB	S2 _____ Flow _____ S1 _____		
Calibration Sheet No: 9701031, 9701032		60T <input type="checkbox"/> _____ dB	UHI CAP to UHI TUBE		
		Other: _____ dB	Scan Surface: OD		
			Applies to NDE-680 only		
			Skew Angle: N/A		

IND #	<input checked="" type="checkbox"/>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA	DO NOT WRITE IN THIS SPACE								
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI	45°														

Remarks: * SCANNED @ REFERENCE Db DUE TO NOISE LEVEL			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: Rod Sheffield <i>[Signature]</i>	Level: II	Date: 2-27-97	Authorized Inspector: <i>[Signature]</i> Date: 2-28-97
			Item No: B05.130.020

Attachment 5
PAGE 6 of 12
FEB 28 1997

**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1RPV 1-462C-SE

Item No: B05.010.011

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L 0+0" to L 0+20" INCHES FROM WO C/L+.75" to BEYOND
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

RPV HEAD CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Jay Eaton *[Signature]* Level: II Date: 2/22/97

Sketch(s) attached yes no

Sheet _____ of _____

Reviewed By: Rod Sheffield *[Signature]* Date: 2-27-97

Authorized Inspector: *[Signature]*

Date: 2-28-97

Attachment 5
 Page 1 of 2
 R. G. 3/1/97

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

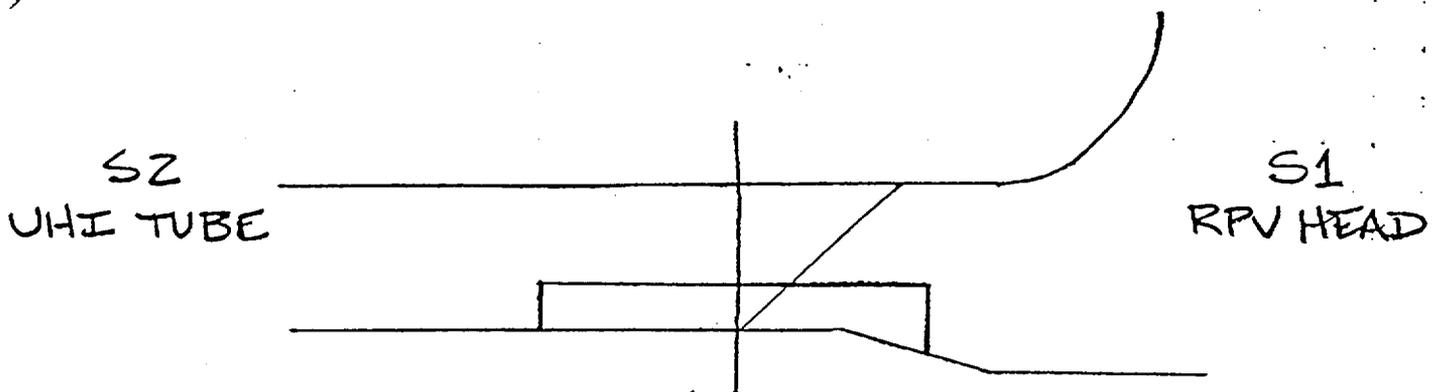
Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
AREA = 0.23" X 2.0" = 0.46 SQ. IN.	VOLUME = 0.46 X 20" = 9.2 CUBIC IN.

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	CW	.46	20	9.2	9.2	100.00
2	45	CCW	.46	20	9.2	9.2	100.00
3	45	S1	.46	20	9.2	9.2	100.00
4	45	S2	.26	20	5.2	9.2	56.52
				TOTAL	32.8	36.8	89.13

	Item No: B05.010.011
Prepared By: Jay Eaton	Level: II Date: 2/22/97
Reviewed By: Larry Mauldin	Level: III Date: 2/25/97

R
G
3/1/97



$$\text{AREA} = .23'' \times 2'' = .46 \text{ IN}^2$$

$$\text{VOLUME} = .46 \text{ IN}^2 \times 20'' = 9.2 \text{ IN}^3$$

BEAM DIR. AREA SCANNED

CW = NO LIMITATIONS

CCW = NO LIMITATIONS

S1 = NO LIMITATIONS

$$\text{SZ} = .23'' \times 1'' = .23 \text{ IN}^2$$

$$\frac{.23'' \times .25''}{2} = .03 \text{ IN}^2$$

$$.26 \text{ IN}^2 \times 20'' = \boxed{5.2 \text{ IN}^3}$$

**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1RPV 1-462D-SE

Item No: B05.010.012

Remarks:

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION
<input checked="" type="checkbox"/> LIMITED SCAN	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw
FROM L <u> 0+0" </u> to L <u> 0+20" </u>	INCHES FROM WO <u> C/L+.75" </u> to <u> BEYOND </u>	
ANGLE: <input type="checkbox"/> 0 <input checked="" type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____ DEG to _____ DEG	

RPV HEAD CONFIGURATION

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw
FROM L _____ to L _____	INCHES FROM WO _____ to _____	
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____ DEG to _____ DEG	

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw
FROM L _____ to L _____	INCHES FROM WO _____ to _____	
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____ DEG to _____ DEG	

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw
FROM L _____ to L _____	INCHES FROM WO _____ to _____	
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____ DEG to _____ DEG	

Prepared By: Jay Eaton

[Signature] Level: II

Date: 2/22/97

Sketch(s) attached yes no

Sheet _____ of _____

Reviewed By: Rod Sheffield

[Signature] Date: 2-27-97

Authorized Inspector:

[Signature]

Date: 2-28-97

Attachment 5
PAGE 10 of 18

3/17/97

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1 Revision 0
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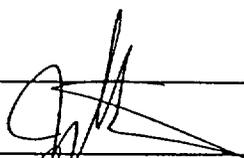
Examination Volume/Area Defined

Base Metal
 Weld
 Near Surface
 Bolting
 Inner Radius

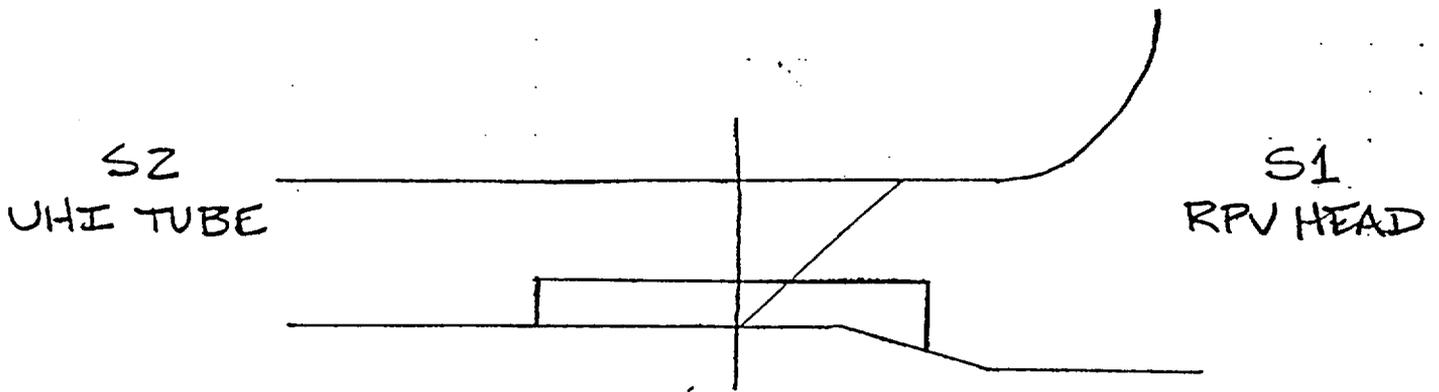
Area Calculation	Volume Calculation
AREA = 0.23" X 2.0" = 0.46 SQ. IN.	VOLUME = 0.46 X 20" = 9.2 CUBIC IN.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	CW	.46	20	9.2	9.2	100.00
2	45	CCW	.46	20	9.2	9.2	100.00
3	45	S1	.46	20	9.2	9.2	100.00
4	45	S2	.26	20	5.2	9.2	56.52
				TOTAL	32.8	36.8	89.13

Prepared By: Jay Eaton		Level: II	Item No: B05.010.012
Reviewed By: Larry Mauldin		Level: III	Date: 2/22/97

R. G. 2/1/97



$$\text{AREA} = .23'' \times 2'' = .46 \text{ IN}^2$$

$$\text{VOLUME} = .46 \text{ IN}^2 \times 20'' = 9.2 \text{ IN}^3$$

BEAM DIR. AREA SCANNED

CW = NO LIMITATIONS

CCW = NO LIMITATIONS

S1 = NO LIMITATIONS

$$\text{SZ} = .23'' \times 1'' = .23 \text{ IN}^2$$

$$\frac{.23'' \times 25''}{2} = .03 \text{ IN}^2$$

$$.26 \text{ IN}^2 \times 20'' = \boxed{5.2 \text{ IN}^3}$$

**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1N11FW-38-1

Item No: B05.130.019

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L 0+0" to L 0+20" INCHES FROM WO C/L+.3" to BEYOND
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

UHI CAP CONRIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Jay Eaton

[Signature]

Level: II

Date: 2/22/97

Sketch(s) attached yes no

Sheet _____ of _____

Reviewed By: Rod Sheffield

[Signature]

Date: 2-27-97

Authorized Inspector:

[Signature]

Date: 2-28-97

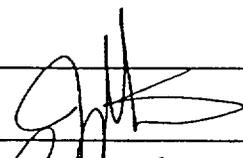
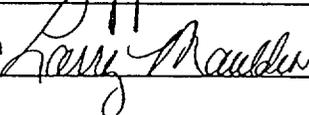
Attachment 5
 PA6E 12 of 18
 R 3/18/97

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
AREA = 0.23" X 1.7" = 0.39 SQ. IN.	VOLUME = 0.39 X 20" = 7.82 CUBIC IN.

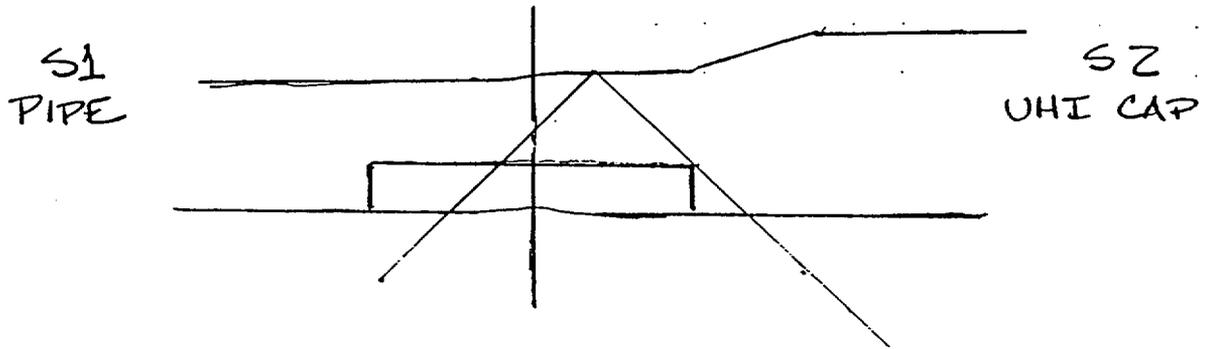
Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	CW	.39	20	7.82	7.82	100.00
2	45	CCW	.39	20	7.82	7.82	100.00
3	45	S2	.39	20	7.82	7.82	100.00
4	45	S1	.12	20	2.4	7.82	30.69
				TOTAL	25.86	31.28	82.67

		Item No: B05.130.019
Prepared By: Jay Eaton		Level: II Date: 2/22/97
Reviewed By: Larry Mauldin		Level: III Date: 2/25/97

GJ
 2/25/97

McGUIRE UNIT 1

BOS.130.019
INIIFW-38-1



$$\text{AREA} = .23'' \times 1.7'' = .39 \text{ in}^2$$

$$\text{VOLUME} = .39 \text{ in}^2 \times 20'' = 7.82 \text{ in}^3$$

BEAM DIR

AREA SCANNED

CW 100%

CCW 100%

SZ 100%

S1 $.4'' \times .23'' = .09 \text{ in}^2$

$$\frac{.23'' \times .25''}{2} = .03 \text{ in}^2$$

$$.12 \text{ in}^2 \times 20'' = 2.4 \text{ in}^3$$

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 2/22/97 Sheet Number: 9701030

Procedure: NDE-610 Rev: 4 FC: N/A Couplant: ULTRAGEL II Batch Number: 95325

Examiner: James W. Setzer *James W. Setzer* Level: III Calibration Block ID: 50374 Pyrometer S/N: MCNDE 27023

Examiner: James H. Resor *James H. Resor* Level: II Calibration Block Temp: 66°F Cal Due: 9/18/97

REFERENCE BLOCK

ID: 91-5868
 Type: ROMPAS Material: SS

SIMULATOR BLOCK

ID: 91-5868 Reflector Type: RADIUS
 Gain: 16.5 Signal Ampl: 80% Metal Path: 1.0"

INSTRUMENT

Manufacturer: KRAUTKRAMER
 Serial No: 32810-4021

TRANSDUCER

Type: Single Dual Size: .375 Freq: 2.25 Mhz Wedge: MSW-QC
 Manufacturer: KBA Ser no: 32359 Meas. 45 °

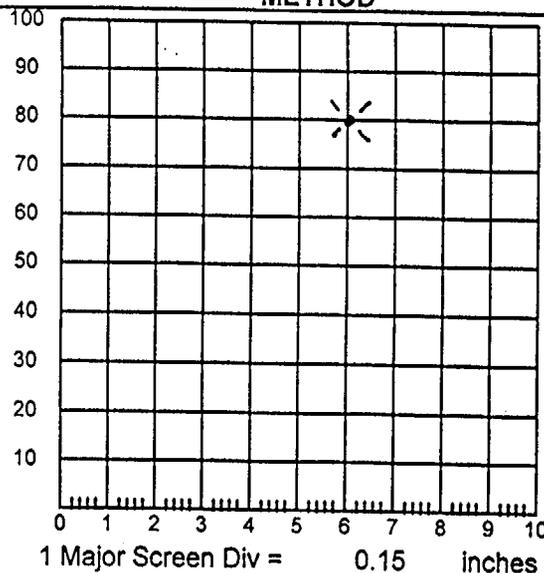
INSTRUMENT SETTINGS

Gain	<u>31</u>
Range	<u>1.5</u>
MTVEL	<u>122.0</u>
Delay	<u>5.1</u>
Pulser	<u>HIGH</u>
Reject	<u>0%</u>
Freq	<u>1-5</u>
Zero	<u>5.17</u>
Display	<u>FULL</u>
PRF	<u>HIGH</u>

CALIBRATION

Reflector Type	Amplitude %FSH	Metal Path inches
NOTCH		
<u>/8 node</u>		
other NOTCH	<u>80%</u>	<u>0.902</u>
Cal Direction: axial <input type="checkbox"/>	circ. <input checked="" type="checkbox"/>	
Wave Mode: Long. <input type="checkbox"/>	shear <input checked="" type="checkbox"/>	
	surf. <input type="checkbox"/>	
Remarks:		

METHOD



CABLES

RG58
 RG174
 Length: 6 FT

Initial Cal Time
0501

Cal Checks

Time	Initials
<u>0540</u>	<u>JHR</u>
<u>0555</u>	<u>JHR</u>
<u>0625</u>	<u>JHR</u>
FINAL	

Item No: B05.010.009, B05.010.010, B05.130.017, B05.130.018

Jack: T R

Reviewer: Rod Sheffield

Level: II

Date: 2-26-97

Authorized Inspector: AD Klein

Date: 2/28/97

Attachment 4
 PAGE 2 of 13
 2/28/97

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0540

Form NDE-UT-2A

Exam Finish: 0610

Revision 4

Station: McGuire

Unit: 1

Component/Weld ID: 1RPV 1-462A-SE

Date: 2/22/97

Weld Length (in.): 20"

Surface Condition: AS GROUND

Lo: N/A

Surface Temperature: 66 ° F

 Examiner: James W. Setzer *James W. Setzer* Level: III

Scans:

Pyrometer S/N: MCNDE 27023

 Examiner: James H. Resor *James H. Resor* Level: II

 45 69* dB 70 _____ dB

Cal Due: 9/18/97

Procedure: NDE-610 Rev: 4

FC:

 45T 45 dB 70T _____ dB

Configuration: CIRC. WELD

N/A

 60 _____ dB

S1 _____ Flow _____ S2 _____

Calibration Sheet No:

 60T _____ dB

RPV HEAD to UHI TUBE

9701030, 9701033

Other: _____ dB

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: N/A

IND #	4	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
						20%dac HMA 50%dac 100%dac		DO NOT WRITE IN THIS SPACE	DO NOT WRITE IN THIS SPACE						
NRI	45°														

Remarks: * SCANNED @ REFERENCE Db DUE TO NOISE LEVEL

 Limitations: (see NDE-UT-4) 90% or greater coverage obtained: yes no

Sheet _____ of _____

Reviewed By:

Level:

Date:

Authorized Inspector:

Date:

Item No:

 Rod Sheffield *Rod Sheffield*

II

2-27-97

[Signature]

2-28-97

B05.010.009

 Attachment 4
PAGE 3 of 18

 R
3/17/97

DUKE POWER COMPANY				Exam Start: 0540		Form NDE-UT-2A			
				ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS				Exam Finish: 0610	
Station: McGuire		Unit: 1	Component/Weld ID: 1RPV 1-462B-SE				Date: 2/22/97		
Weld Length (in.): 20"		Surface Condition: AS GROUND		Lo: N/A		Surface Temperature: 66 ° F			
Examiner: James W. Setzer <i>James W. Setzer</i>		Level: III	Scans: 45 <input checked="" type="checkbox"/> 69* dB 70 <input type="checkbox"/> _____ dB 45T <input checked="" type="checkbox"/> 45 dB 70T <input type="checkbox"/> _____ dB 60 <input type="checkbox"/> _____ dB 60T <input type="checkbox"/> _____ dB Other: _____ dB				Pyrometer S/N: MCNDE 27023		
Examiner: James H. Resor <i>James H. Resor</i>		Level: II					Cal Due: 9/18/97		
Procedure: NDE-610		Rev: 4	FC: N/A	Configuration: CIRC. WELD				S1 Flow S2	
Calibration Sheet No: 9701030, 9701033				RPV HEAD to UHI TUBE				Scan Surface: OD	
				Applies to NDE-680 only				Skew Angle: N/A	

IND #	<input checked="" type="checkbox"/>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
		DO NOT WRITE IN THIS SPACE				20%dac HMA		DO NOT WRITE IN THIS SPACE							
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI	NONE														

Remarks: * SCANNED @ REFERENCE Db DUE TO NOISE LEVEL			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: Rod Sheffield <i>Rod Sheffield</i>	Level: II	Date: 2-27-97	Authorized Inspector: <i>[Signature]</i> 228-97
Item No: B05.010.010			

Attachment 4
 PAGE 4 of 12
 3/17/97

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0540

Form NDE-UT-2A

Exam Finish: 0610

Revision 4

Station: McGuire

Unit: 1

Component/Weld ID: 1N11FW-38-3

Date: 2/22/97

Weld Length (in.): 20"

Surface Condition: AS GROUND

Lo: N/A

Surface Temperature: 66 ° F

 Examiner: James W. Setzer *James W. Setzer* Level: III

Scans:

Pyrometer S/N: MCNDE 27023

 Examiner: James H. Resor *James H. Resor* Level: II

 45 69* dB 70 dB

Cal Due: 9/18/97

Procedure: NDE-610 Rev: 4

FC:

 45T 45 dB 70T dB

Configuration: CIRC. WELD

N/A

 60 dB

S2 Flow S1

Calibration Sheet No:

9701030, 9701033

 60T dB

UHI CAP to UHI TUBE

Scan Surface: OD

Applies to NDE-680 only

Other: _____ dB

Skew Angle: N/A

IND #	<input checked="" type="checkbox"/>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac HMA			DO NOT WRITE IN THIS SPACE							
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
NRI	45°															

Remarks: * SCANNED @ REFERENCE Db DUE TO NOISE LEVEL

 Limitations: (see NDE-UT-4) 90% or greater coverage obtained: yes no

Sheet _____ of _____

Reviewed By:

Level:

Date:

Authorized Inspector:

Date:

Item No:

 Rod Sheffield *Rod Sheffield*

II

2-27-97

Dylein

2-28-97

B05.130.017

 Attachment 4
PAGE 5 of 12

 R
2/23/97

DUKE POWER COMPANY ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS						Exam Start: 0540	Form NDE-UT-2A
						Exam Finish: 0610	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1N11FW-38-2				Date: 2/22/97	
Weld Length (in.): 20"	Surface Condition: AS GROUND		Lo: N/A		Surface Temperature: 66 ° F		
Examiner: James W. Setzer <i>James W. Setzer</i>	Level: III	Scans:		Pyrometer S/N: MCNDE 27023	Cal Due: 9/18/97		
Examiner: James H. Resor <i>James H. Resor</i>	Level: II	45 <input checked="" type="checkbox"/> 69* dB	70 <input type="checkbox"/> _____ dB	Configuration: CIRC. WELD			
Procedure: NDE-610 Rev: 4	FC: N/A	45T <input checked="" type="checkbox"/> 45 dB	70T <input type="checkbox"/> _____ dB	S2 _____ Flow _____ S1 _____			
Calibration Sheet No: 9701030, 9701033		60 <input type="checkbox"/> _____ dB		UHI CAP to UHI TUBE			
		60T <input type="checkbox"/> _____ dB		Scan Surface: OD			
		Other: _____ dB		Applies to NDE-680 only			
				Skew Angle: N/A			

IND #	4	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac HMA			DO NOT WRITE IN THIS SPACE							
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
NRI	45°															

Remarks: * SCANNED @ REFERENCE Db DUE TO NOISE LEVEL			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: Rod Sheffield <i>Rod Sheffield</i>	Level: <i>II</i>	Date: 2-27-97	Authorized Inspector: <i>Bob Klein</i> Date: 2-28-97
Item No: B05.130.018			

Attachment 4
PAGE 6 of 12

R
3/12/97

**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1RPV 1-462A-SE

Item No: B05.010.009

Remarks:

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION
<input checked="" type="checkbox"/> LIMITED SCAN	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw
FROM L <u> 0+0" </u> to L <u> 0+20" </u>	INCHES FROM WO <u> C/L+.75" </u>	to <u> BEYOND </u>
ANGLE: <input type="checkbox"/> 0 <input checked="" type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____	DEG to _____ DEG

RPV HEAD CONFIGURATION

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw
FROM L _____ to L _____	INCHES FROM WO _____	to _____
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____	DEG to _____ DEG

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw
FROM L _____ to L _____	INCHES FROM WO _____	to _____
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____	DEG to _____ DEG

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw
FROM L _____ to L _____	INCHES FROM WO _____	to _____
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____	DEG to _____ DEG

Prepared By: Jay Eaton

Level: II

Date: 2/22/97

Sketch(s) attached yes no

Sheet _____ of _____

Reviewed By: Rod Sheffield

Rod Sheffield Date: 2-27-97

Authorized Inspector:

AD Klein

Date: 2-28-97

Attachment 4
PAGE 7 of 18

236
3/17/97

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

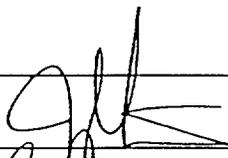
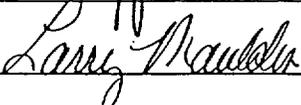
Examination Volume/Area Defined

Base Metal
 Weld
 Near Surface
 Bolting
 Inner Radius

Area Calculation	Volume Calculation
AREA = 0.23" X 2.0" = 0.46 SQ. IN.	VOLUME = 0.46 X 20" = 9.2 CUBIC IN.

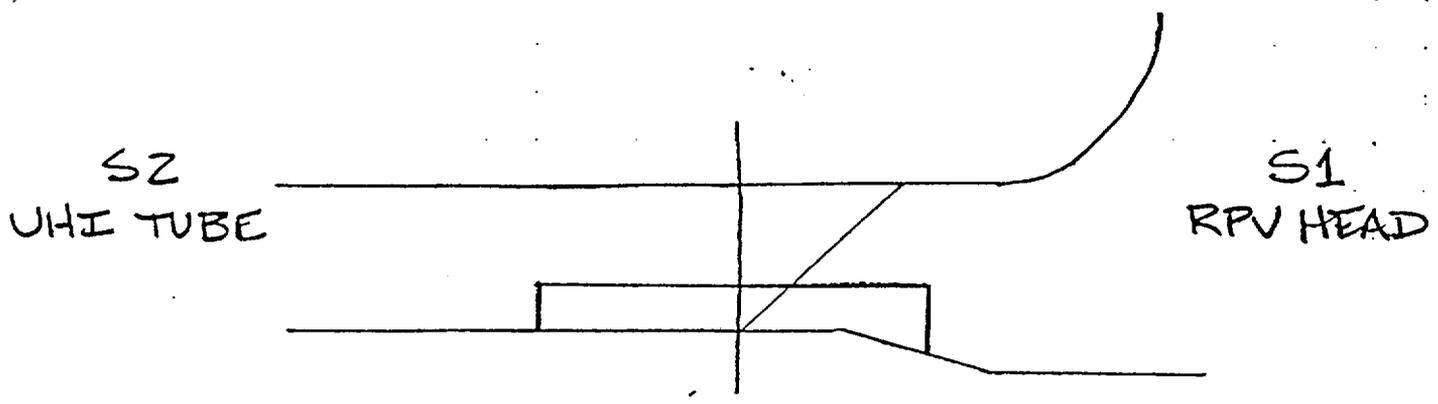
Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	CW	.46	20	9.2	9.2	100.00
2	45	CCW	.46	20	9.2	9.2	100.00
3	45	S1	.46	20	9.2	9.2	100.00
4	45	S2	.26	20	5.2	9.2	56.52
TOTAL					32.8	36.8	89.13

Prepared By: Jay Eaton		Level: II	Date: 2/22/97
Reviewed By: Larry Mauldin		Level: III	Date: 2/25/97

Item No: B05.010.009

RE
GW
3/1/97



$$AREA = .23'' \times 2'' = 46 \text{ IN}^2$$

$$VOLUME = .46 \text{ IN}^2 \times 20'' = 9.2 \text{ IN}^3$$

BEAM DIR. AREA SCANNED

CW = NO LIMITATIONS

CCW = NO LIMITATIONS

S1 = NO LIMITATIONS

$$SZ = .23'' \times 1'' = .23 \text{ IN}^2$$

$$\frac{.23'' \times 25''}{2} = .03 \text{ IN}^2$$

$$.26 \text{ IN}^2 \times 20'' = \boxed{5.2 \text{ IN}^3}$$

**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1RPV 1-462B-SE

Item No: B05.010.010

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L 0+0" to L 0+20" INCHES FROM WO C/L+.75" to BEYOND
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

RPV HEAD CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Jay Eaton

J. Eaton

Level: II

Date: 2/22/97

Sketch(s) attached yes no

Sheet _____ of _____

Reviewed By: Rod Sheffield

Rod Sheffield

Date: 2-27-97

Authorized Inspector:

AD Klein

Date: 2-28-97

Attachment 4
PAGE 10 of 12

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
AREA = 0.23" X 2.0" = 0.46 SQ. IN.	VOLUME = 0.46 X 20" = 9.2 CUBIC IN.

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	CW	.46	20	9.2	9.2	100.00
2	45	CCW	.46	20	9.2	9.2	100.00
3	45	S1	.46	20	9.2	9.2	100.00
4	45	S2	.26	20	5.2	9.2	56.52
				TOTAL	32.8	36.8	89.13

Prepared By: Jay Eaton	Level: II	Item No: B05.010.010 Date: 2/22/97
Reviewed By: Larry Mauldin	Level: III	Date: 2/25/97

3 S.I.M. = 20" x 20" = 400 in²

$$\frac{20 \times 20}{2} = \frac{400}{2} = 200 \text{ in}^2$$

$$200 \text{ in}^2 = 20" \times 10" = 200 \text{ in}^2$$

NO LIMITATIONS = S1

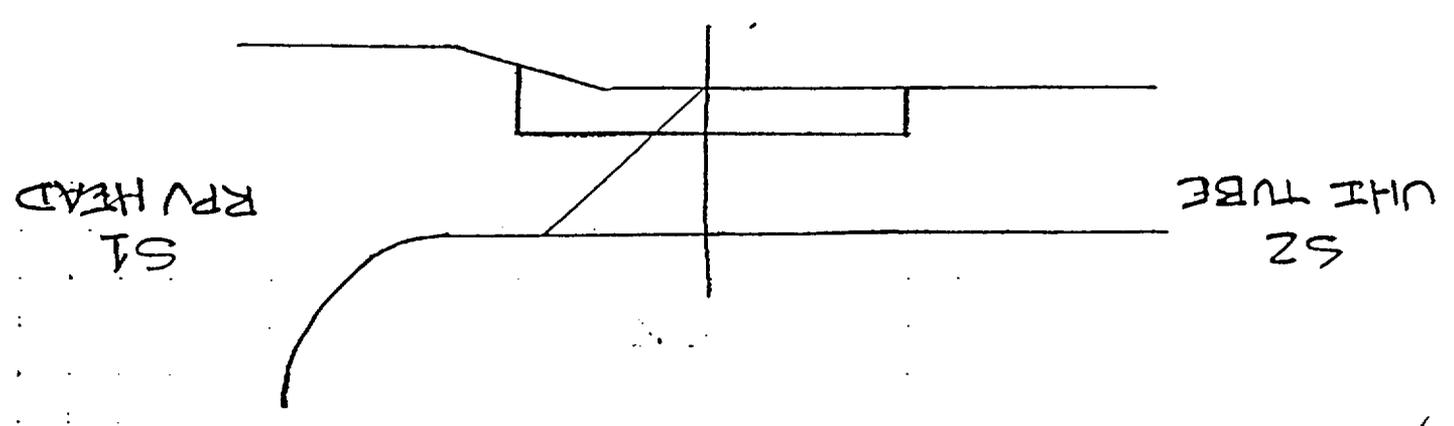
NO LIMITATIONS = C.W.

NO LIMITATIONS = C.W.

BEAM DIR. AREA SCANNED

$$\text{VOLUME} = 46 \text{ in}^2 \times 20" = 920 \text{ in}^3$$

$$\text{AREA} = 23" \times 2" = 46 \text{ in}^2$$



**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1N11FW-38-3

Item No: B05.130.017

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L 0+0" to L 0+20" INCHES FROM WO C/L+.3" to BEYOND
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

UHI CAP CONRIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Jay Eaton

[Signature]

Level: II

Date: 2/22/97

Sketch(s) attached yes no

Sheet _____ of _____

Reviewed By: Rod Sheffield

[Signature]

Date: 2-27-97

Authorized Inspector:

[Signature]

Date: 2-28-97

Attachment 4
Page 13 of 12

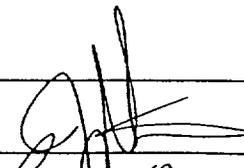
R
GC
3/18/97

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
AREA = 0.23" X 1.7" = 0.39 SQ. IN.	VOLUME = 0.39 X 20" = 7.82 CUBIC IN.

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	CW	.39	20	7.82	7.82	100.00
2	45	CCW	.39	20	7.82	7.82	100.00
3	45	S2	.39	20	7.82	7.82	100.00
4	45	S1	.12	20	2.4	7.82	30.69
				TOTAL	25.86	31.28	82.67

		Item No: B05.130.017
Prepared By: Jay Eaton		Level: II Date: 2/22/97
Reviewed By: Larry Mauldin		Level: III Date: 2/25/97

4/8/97

2.4103

$= .20'' \times 2.4103$

$\frac{.112102}{.03102} = \frac{2}{.23'' \times .25''}$

$.109102 = .4'' \times .23''$

AREA SCADED

BEAM PIR

100%

100%

100%

SI

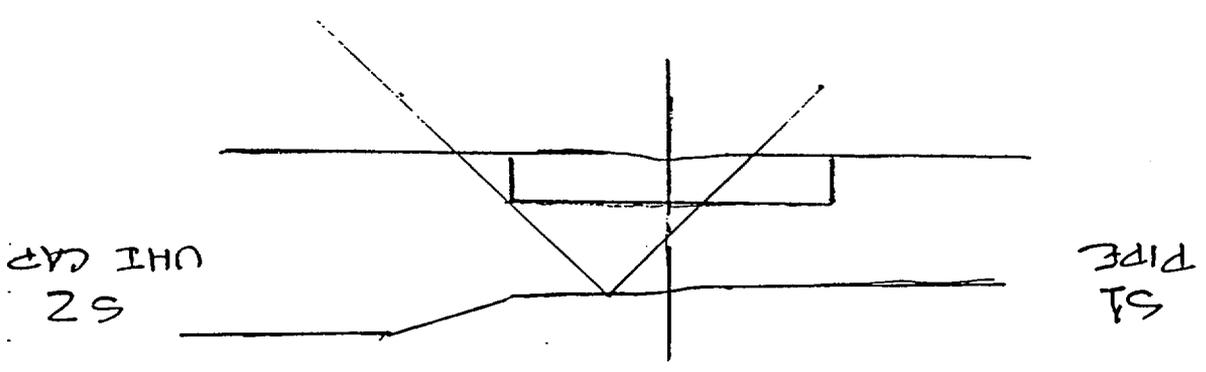
SZ

CCW

CW

VOLUME = .39102 x 20'' = 7.82104

AREA = .23'' x 1.7'' = .39102



**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1N11FW-38-2

Item No: B05.130.018

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L 0+0" to L 0+20" INCHES FROM WO C/L+.3" to BEYOND
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

UHI CAP CONRIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Jay Eaton *[Signature]* Level: II Date: 2/22/97 Sketch(s) attached yes no Sheet _____ of _____

Reviewed By: Rod Sheffield *[Signature]* Date: 2-27-97 Authorized Inspector: *[Signature]* Date: 2-28-97

Attachment 4
PAGE 18 of 18

RCS
3/18/97

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

Examination Volume/Area Defined	
<input checked="" type="checkbox"/> Base Metal <input checked="" type="checkbox"/> Weld <input type="checkbox"/> Near Surface <input type="checkbox"/> Bolting <input type="checkbox"/> Inner Radius	
Area Calculation	Volume Calculation
AREA = 0.23" X 1.7" = 0.39 SQ. IN.	VOLUME = 0.39 X 20" = 7.82 CUBIC IN.

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	CW	.39	20	7.82	7.82	100.00
2	45	CCW	.39	20	7.82	7.82	100.00
3	45	S2	.39	20	7.82	7.82	100.00
4	45	S1	.12	20	2.4	7.82	30.69
				TOTAL	25.86	31.28	82.67

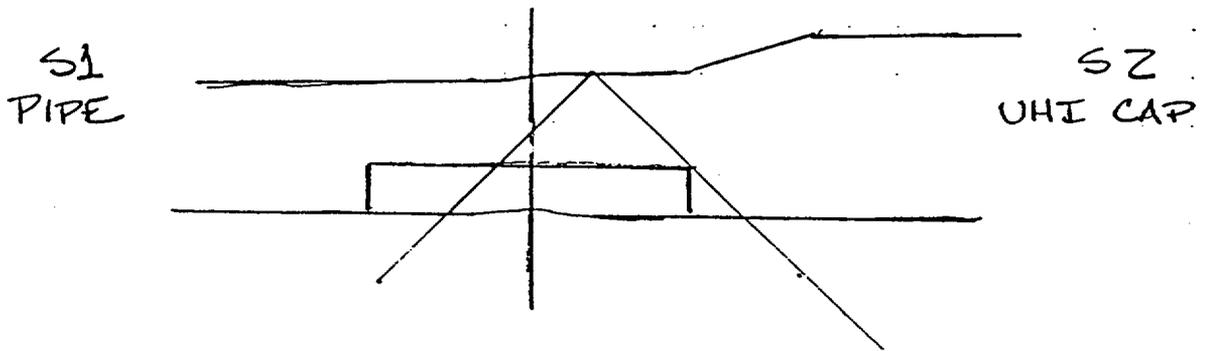
	Item No:	B05.130.018
Prepared By: Jay Eaton	Level: II	Date: 2/22/97
Reviewed By: Larry Mauldin <i>Larry Mauldin</i>	Level: III	Date: 2/25/97

M. G. 2/19/97

MC GUIRE UNIT 1

Attachment 4
PAGE 18 of 18

BOS.130.018
INIIFW-38-2



$$\text{AREA} = .23'' \times 1.7'' = .39 \text{ in}^2$$

$$\text{VOLUME} = .39 \text{ in}^2 \times 20'' = 7.82 \text{ in}^3$$

BEAM DIR

AREA SCANNED

CW

100%

CCW

100%

SZ

100%

S1

$$.4'' \times .23'' = .09 \text{ in}^2$$

$$\frac{.23'' \times .25''}{2} = .03 \text{ in}^2$$

$$.12 \text{ in}^2 \times 20'' = 2.4 \text{ in}^3$$

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire	Unit: 1	Date: 2/22/97	Sheet Number: 9701031
Procedure: NDE-610	Rev: 4	FC: N/A	Couplant: ULTRAGEL II
		Batch Number: 95325	
Examiner: Jay A. Eaton	Level: II	Calibration Block ID: 50374	Pyrometer S/N: MCNDE 27023
Examiner: Gary J. Moss	Level: II	Calibration Block Temp: 66°F	Cal Due: 9/18/97

REFERENCE BLOCK		SIMULATOR BLOCK	
ID: 91-5868	Material: SS	ID: 91-5868	Reflector Type: RADIUS
Type: ROMPAS		Gain: 16.5	Signal Ampl: 80%
		Metal Path: 1.0"	
INSTRUMENT		TRANSDUCER	
Manufacturer: KRAUTKRAMER	Serial No: 32810-4017	Type: Single <input checked="" type="checkbox"/> Dual <input type="checkbox"/>	Size: .375
		Freq: 2.25	Mhz Wedge: MSW-QC
		Manufacturer: KBA	Ser no: 33261
		Meas: <input checked="" type="checkbox"/> 45	°

INSTRUMENT SETTINGS		CALIBRATION		METHOD		CABLES	
Gain	31	Reflector Type	Amplitude			RG58	<input type="checkbox"/>
Range	1.5	NOTCH	%FSH			RG174	<input checked="" type="checkbox"/>
MTVEL	122.0	/8 node				Length: 6 FT	
Delay	5.1	/8 node				Initial Cal Time	
Pulser	HIGH	/8 node				0500	
Reject	0%	other NOTCH	80%			Cal Checks	
Freq	1-5	Cal Direction: axial <input type="checkbox"/> circ. <input checked="" type="checkbox"/>	0.902			Time	Initials
Zero	5.17	Wave Mode: Long. <input type="checkbox"/> shear <input checked="" type="checkbox"/>				0540	GE
Display	FULL	surf. <input type="checkbox"/>				0555	GE
PRF	HIGH	Remarks:				0625	GE
				FINAL			

Item No: B05.010.011, B05.010.012, B05.130.019, B05.130.020

Jack: T <input type="checkbox"/> R <input checked="" type="checkbox"/>	Reviewer: Rod Sheffield	Level: II	Date: 2-26-97	Authorized Inspector: [Signature]	Date: 2/28/97
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SERIAL NO. 98-004
 Attachment 5
 PAGE 1 of 18

**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1N11FW-38-4

Item No: B05.130.020

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L 0+0" to L 0+20" INCHES FROM WO C/L+.3" to BEYOND
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

UHI CAP CONRIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Jay Eaton

[Signature]

Level: II

Date: 2/22/97

Sketch(s) attached yes no

Sheet _____ of _____

Reviewed By: Rod Sheffield

[Signature]

Date: 2-27-97

Authorized Inspector:

[Signature]

Date: 2-28-97

Attachment 5
 Page 16 of 18
 R
 3/18/97

DUKE POWER COMPANY	NDE-91-1
Limited Examination Coverage Worksheet	Revision 0

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
AREA = 0.23" X 1.7" = 0.39 SQ. IN.	VOLUME = 0.39 X 20" = 7.82 CUBIC IN.

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	CW	.39	20	7.82	7.82	100.00
2	45	CCW	.39	20	7.82	7.82	100.00
3	45	S2	.39	20	7.82	7.82	100.00
4	45	S1	.12	20	2.4	7.82	30.69
				TOTAL	25.86	31.28	82.67

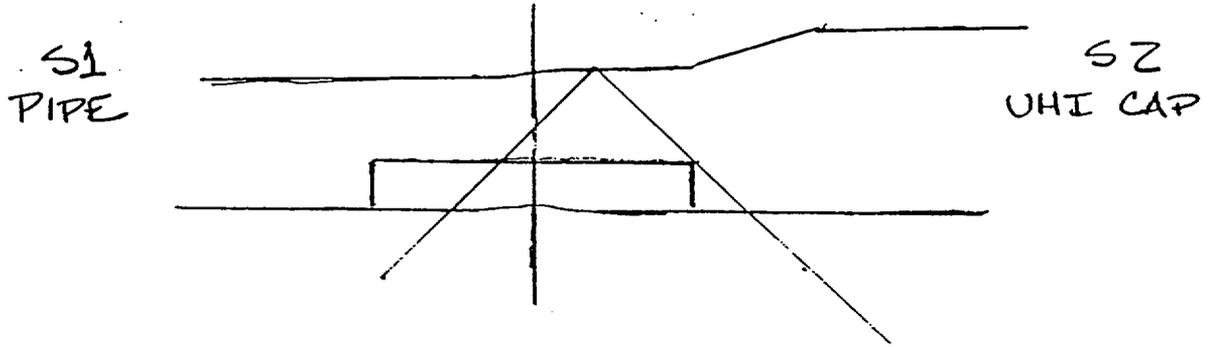
Prepared By: Jay Eaton	Level: II	Date: 2/22/97
Reviewed By: Larry Mauldin	Level: III	Date: 2/25/97

Item No: B05.130.020

R
GU
3/19/97

MCGUIRE UNIT 1

BOS.130.020
INIIFW-38-4



$$\text{AREA} = .23'' \times 1.7'' = .39 \text{ in}^2$$

$$\text{VOLUME} = .39 \text{ in}^2 \times 20'' = 7.82 \text{ in}^3$$

BEAM DIR

AREA SCANNED

CW

100%

CCW

100%

SZ

100%

S1

$$.4'' \times .23'' = .09 \text{ in}^2$$

$$\frac{.23'' \times .25''}{2} = .03 \text{ in}^2$$

$$.12 \text{ in}^2 \times 20'' = 2.4 \text{ in}^3$$

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire	Unit: 1	Date: 1/10/96	Sheet Number: 9501102
Procedure: NDE-610	Rev: 2	FC: 96-01	Couplant: ULTRAGEL II
Batch Number: 94325			
Examiner: Gary J. Moss <i>Gary J. Moss</i>	Level: II	Calibration Block ID: 50214	Pyrometer S/N: MCNDE 27021
Examiner: Guy G. Bibb <i>Guy G. Bibb</i>	Level: III	Calibration Block Temp: 68°	Cal Due: 10/3/96

REFERENCE BLOCK		SIMULATOR BLOCK	
ID: 610-A	Material: SS	ID: <i>N/A</i>	Reflector Type: _____
Type: MOD IIW		Gain: _____	Signal Ampl: _____
			Metal Path: _____

INSTRUMENT		TRANSDUCER	
Manufacturer: KRAUTKRAMER	Serial No: 32810-1392	Type: Single <input type="checkbox"/> Dual <input checked="" type="checkbox"/>	Size: 1.0 Freq: 1.0 Mhz Wedge: INT
		Manufacturer: Harisonics	Ser no: H7132 Meas. <input checked="" type="checkbox"/> 45L °

INSTRUMENT SETTINGS	CALIBRATION	METHOD	CABLES
Gain: 52/53.5	Reflector Type: HOLE		RG58 <input type="checkbox"/>
Range: 5.0	Amplitude %FSH: 45		RG174 <input checked="" type="checkbox"/>
MTVEL: 220.2	Metal Path inches: .844		Length: 6'
Delay: 9.1	1 /8 node		Initial Cal Time: 1000
Pulser: DUAL	2 /8 node		Cal Checks
Reject: OFF	3 /8 node	Time Initials	
Freq: 1-5	other NOTCH: 30	1205 <i>GM</i>	
Zero: 9.37	Cal Direction: axial <input checked="" type="checkbox"/> circ. <input type="checkbox"/>		
Display: FULL	Wave Mode: Long. <input checked="" type="checkbox"/> shear <input type="checkbox"/>		
PRF: HIGH	surf. <input type="checkbox"/>		
	Remarks: NOTCH = DAC 53.5		

Item No: B05.070.001, B05.070.002, B05.130.003, B05.130.002

Jack: T <input checked="" type="checkbox"/> R <input checked="" type="checkbox"/>	Reviewer: <i>GM</i>	Level: II	Date: 1/16/96	Authorized Inspector: <i>Problem</i>	Date: <i>1-2-96</i>
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SERIAL NO: 92-004
 Attachment 6
 PAGE 1 of 18

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 1/10/96 Sheet Number: 9501101

Procedure: NDE-610 Rev: 2 FC: 96-01 Couplant: ULTRAGEL II Batch Number: 94325

Examiner: Gary J. Moss *Gary J. Moss* Level: II Calibration Block ID: 50214 Pyrometer S/N: MCNDE 27021

Examiner: Guy G. Bibb *Guy G. Bibb* Level: III Calibration Block Temp: 68° Cal Due: 10/3/96

REFERENCE BLOCK

SIMULATOR BLOCK

ID: 610-C
 Type: MOD 11W Material: SS

ID: *N/A* Reflector Type: _____
 Gain: _____ Signal Ampl: _____ Metal Path: _____

INSTRUMENT

TRANSDUCER

Manufacturer: KRAUTKRAMER
 Serial No: 32810-950

Type: Single Dual Size: 1.0 Freq: 1.0 Mhz Wedge: INT
 Manufacturer: Harisonics Ser no: H7131 Meas. 45L °

INSTRUMENT SETTINGS

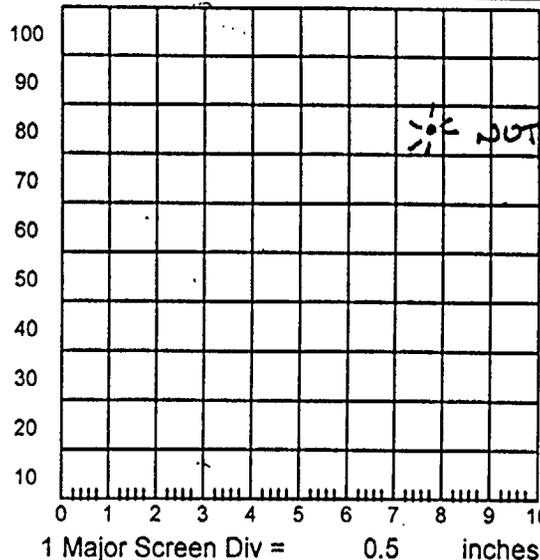
CALIBRATION

METHOD

CABLES

Gain	62
Range	5.0
MTVEL	220.2
Delay	8.0
Pulser	DUAL
Reject	0%
Freq	1-5
Zero	8.54
Display	FULL
PRF	HIGH

Reflector Type	Amplitude %FSH	Metal Path Inches
1 /8 node		
2 /8 node		
3 /8 node		
/8 node		
other NOTCH	75%	3.9
Cal Direction: axial <input type="checkbox"/> circ. <input checked="" type="checkbox"/>		
Wave Mode: Long <input checked="" type="checkbox"/> shear <input type="checkbox"/> surf. <input type="checkbox"/>		
Remarks: 10:50 START 11:40 STOP		



RG58
 RG174
 Length: 6'

Initial Cal Time
 1010

Cal Checks	
Time	Initials
1202	<i>GJM</i>

Item No: B05.070.001, B05.070.002, B05.130.002, B05.130.003

Jack: T R

Reviewer: *[Signature]* Level: *IT* Date: *1/10/96* Authorized Inspector: *[Signature]* Date: *1/10/96*

Attachment C
 Page 2 of 18

DUKE POWER COMPANY				Exam Start: 1050	Form NDE-UT-2A
				ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS	
Station: McGuire	Unit: 1	Component/Weld ID: 1SGA-INLET-SE			Date: 1/10/96
Weld Length (in.): 99"	Surface Condition: AS GROUND	Lo: 9.1.1.1	Surface Temperature: 81 ° F		
Examiner: Guy G. Bibb <i>Guy G. Bibb</i>	Level: III	Scans:		Pyrometer S/N: MCNDE 27021	
Examiner: Gary J. Moss <i>Gary J. Moss</i>	Level: II	45 <input checked="" type="checkbox"/> 55.5 dB	70 <input type="checkbox"/> _____ dB	Cal Due: 10/3/96	
Procedure: NDE-610	Rev: 2	45T <input checked="" type="checkbox"/> 62 dB	70T <input type="checkbox"/> _____ dB	Configuration: CICR	
	FC: 96-01	60 <input type="checkbox"/> _____ dB		2 Flow 1	
Calibration Sheet No: 9501101, 9501102		60T <input type="checkbox"/> _____ dB		ELBOW to NOZZLE	
		Other: _____ dB		Scan Surface: OD	
				Applies to NDE-680 only	
				Skew Angle: _____	

IND #	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
					20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA	20%dac HMA				
					50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
					100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
45°	NRI													

Remarks: SCANNING DB REDUCED TO OBTAIN 3 : 1 SIGNAL TO NOISE RATIO.			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet 1 of 4
Reviewed By: <i>[Signature]</i>	Level: II	Date: 1/22/96	Authorized Inspector: <i>[Signature]</i> Date: 1-23-96
			Item No: B05.070.001

Attachment 4
PAGE 3 of 12

**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1SGA-INLET-SE

Item No: B05.070.001

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ CL _____ to _____ BEYOND _____
 ANGLE: 0 45 60 Other _____ FROM _____ 0 _____ DEG to _____ 360 _____ DEG

NOZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ CL _____ to _____ BEYOND _____
 ANGLE: 0 45 60 Other _____ FROM _____ 0 _____ DEG to _____ 360 _____ DEG

NOZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ CL _____ to _____ BEYOND _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ CL _____ to _____ BEYOND _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Hamp/Moore Level: B Date: 1-10-96 Sketch(s) attached yes no Sheet 2 of 4

Reviewed By: [Signature] Date: 1/14/96 Authorized Inspector: [Signature] Date: 1-19-96

Attachment 6
PAGE 4 of 18

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
SEE ATTACHED SHEET	SEE ATTACHED SHEET

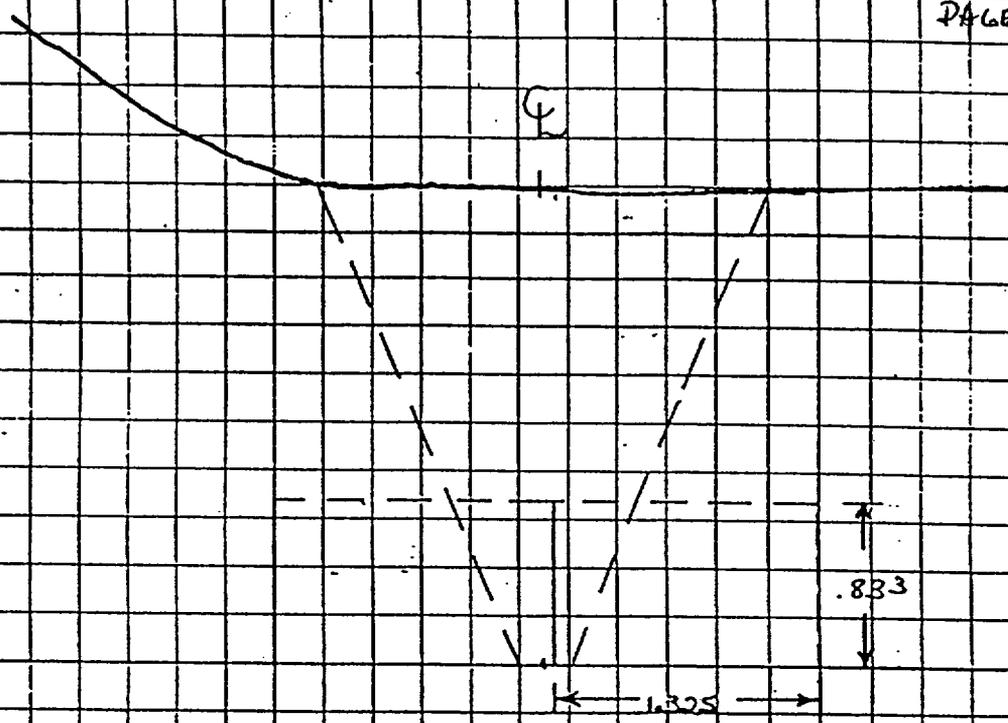
Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	S2	0.0	99.0	0	230.67	0.00
2	45	S1	2.33	99.0	230.67	230.67	100.00
3	45	CW	1.1	99.0	108.9	230.67	47.21
4	45	CCW	1.1	99.0	108.9	230.67	47.21
				TOTAL	448.47	922.68	<u>48.61</u>

SHEET 3 OF 4

Prepared By:	Level: II	Date: 1/16/96
Reviewed By: <i>Larry S. Bill</i>	Level: III	Date: 1-16-96

Item No: 805.070.001

Attachment 6
 PAGE 6 of 18



CIRC SCAN COVERAGE = $1.325 \text{ in} \times 0.833 \text{ in} = 1.1 \text{ in}^2$

AREA OF INTEREST = $2.80 \text{ in} \times 0.833 \text{ in} = 2.33 \text{ in}^2$

AREA OF INTEREST @ $2.33 \text{ in}^2 \times 4 \text{ SCANS} = 9.32 \text{ in}^2$

AREA OF COVERAGE = $1.1 \text{ in}^2 + 1.1 \text{ in}^2 + 2.33 \text{ in}^2 + 0 \text{ in}^2 = 4.53 \text{ in}^2$

PERCENT OF COVERAGE = $\frac{4.53 \text{ in}^2}{9.32 \text{ in}^2} = 486 = 48.6\%$

**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1SGA-OUTLET-SE

Item No: B05.070.002

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ CIL _____ to _____ BEYOND _____
 ANGLE: 0 45 60 Other _____ FROM _____ 0 _____ DEG to _____ 360 _____ DEG

DUE TO NOZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ CIL _____ to _____ BEYOND _____
 ANGLE: 0 45 60 Other _____ FROM _____ 0 _____ DEG to _____ 360 _____ DEG

DUE TO NOZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Bay/ross Level: D Date: 1-10-96 Sketch(s) attached yes no Sheet 2 of 4

Reviewed By: [Signature] Date: 1/16/96 Authorized Inspector: [Signature] Date: 1-19-96

Attachment C
PAGE 2 of 18

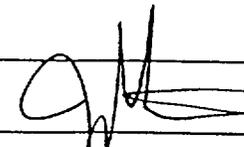
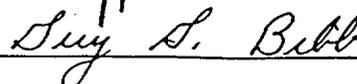
DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
	Revision 0

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

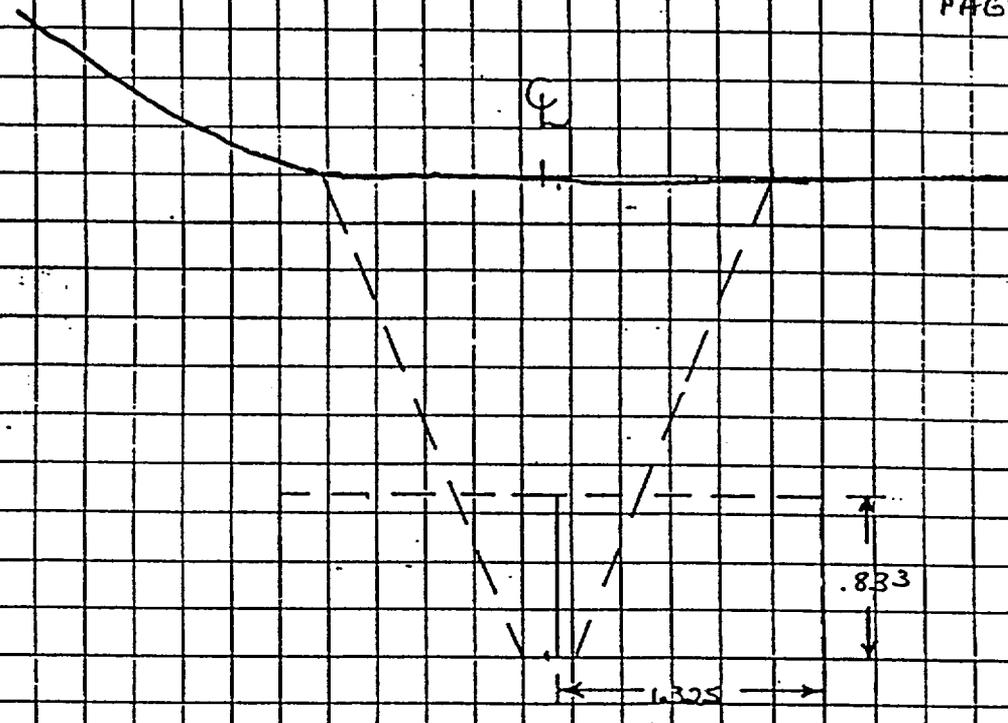
Area Calculation	Volume Calculation
SEE ATTACHED SHEET	SEE ATTACHED SHEET

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	S2	0.0	99.0	0	230.67	0.00
2	45	S1	2.33	99.0	230.67	230.67	100.00
3	45	CW	1.1	99.0	108.9	230.67	47.21
4	45	CCW	1.1	99.0	108.9	230.67	47.21
				TOTAL	448.47	922.68	<u>48.61</u>

SHEET 3 OF 4

		Item No: BOS 070.002
Prepared By: 	Level: II	Date: 1/16/96
Reviewed By: 	Level: III	Date: 1-16-96

Attachment 6
 PAGE 16 of 18



CIRC SCAN COVERAGE = $1.325 \text{ in} \times 0.833 \text{ in} = 1.1 \text{ in}^2$

AREA OF INTEREST = $2.80 \text{ in} \times 0.833 \text{ in} = 2.33 \text{ in}^2$

AREA OF INTEREST @ $2.33 \text{ in}^2 \times 4 \text{ SCANS} = 9.32 \text{ in}^2$

AREA OF COVERAGE = $1.1 \text{ in}^2 + 1.1 \text{ in}^2 + 2.33 \text{ in}^2 + 0 \text{ in}^2 = 4.53 \text{ in}^2$

PERCENT OF COVERAGE = $\frac{4.53 \text{ in}^2}{9.32 \text{ in}^2} = .486 = 48.6\%$

DUKE POWER COMPANY					Exam Start: 2050	Form NDE-UT-2A
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS					Exam Finish: 1115	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1NC1F-1-2			Date: 1/10/96	
Weld Length (in.): 99"	Surface Condition: AS GROUND		Lo: 9.1.1.1		Surface Temperature: 81 °	
Examiner: Guy G. Bibb <i>Guy G. Bibb</i>	Level: III		Scans:		Pyrometer S/N: MCNDE 27021	
Examiner: Gary J. Moss <i>Gary J. Moss</i>	Level: II		45 <input checked="" type="checkbox"/> 55.5 dB 70 <input type="checkbox"/> dB		Cal Due: 10/3/96	
Procedure: NDE-610	Rev: 2	FC: 96-01	45T <input checked="" type="checkbox"/> 62 dB 70T <input type="checkbox"/> dB		Configuration: CIRC	
Calibration Sheet No: 9501101, 9501102			60 <input type="checkbox"/> dB		2 Flow 1	
			60T <input type="checkbox"/> dB		ELBOW to NOZZLE	
			Other: _____ dB		Scan Surface: OD	
					Applies to NDE-680 only	
					Skew Angle:	

IND #	<input checked="" type="checkbox"/>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac HMA			DO NOT WRITE IN THIS SPACE							
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
		45°	NRI													

Remarks: SCANNING DB REDUCED TO OBTAIN 3 : 1 SIGNAL TO NOISE RATIO					
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>					Sheet <u>1</u> of <u>4</u>
Reviewed By: <i>[Signature]</i>	Level: II	Date: 1/22/96	Authorized Inspector: <i>[Signature]</i>	Date: 1-23-96	Item No: B05.130.002

Attachment 6
PAGE 11 of 11

DUKE POWER COMPANY ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1NC1F-1-2

Item No: B05.130.002

Remarks:

<input checked="" type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input type="checkbox"/> LIMITED SCAN	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> cw <input type="checkbox"/> ccw	
FROM L _____ to L _____	INCHES FROM WO _____ CL _____ to _____ BEYOND _____		
ANGLE: <input type="checkbox"/> 0 <input checked="" type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____ 0 _____ DEG to _____ 360 _____ DEG		

NOZZLE CONFIGURATION

<input checked="" type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input type="checkbox"/> LIMITED SCAN	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> cw <input checked="" type="checkbox"/> ccw	
FROM L _____ to L _____	INCHES FROM WO _____ CL _____ to _____ BEYOND _____		
ANGLE: <input type="checkbox"/> 0 <input checked="" type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____ 0 _____ DEG to _____ 360 _____ DEG		

NOZZLE CONFIGURATION

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw	
FROM L _____ to L _____	INCHES FROM WO _____ to _____		
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____ DEG to _____ DEG		

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw	
FROM L _____ to L _____	INCHES FROM WO _____ to _____		
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____ DEG to _____ DEG		

Prepared By: *Sam Moss*

Level: *II*

Date: *1-10-96*

Sketch(s) attached yes no

Sheet *2* of *4*

Reviewed By: *[Signature]*

II

Date: *1/16/96*

Authorized Inspector: *[Signature]*

Date: *1-19-96*

Attachment to
PAGE 12 of 12

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

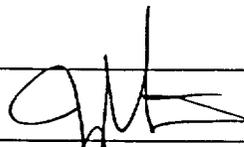
Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
SEE ATTACHED SHEET	SEE ATTACHED SHEET

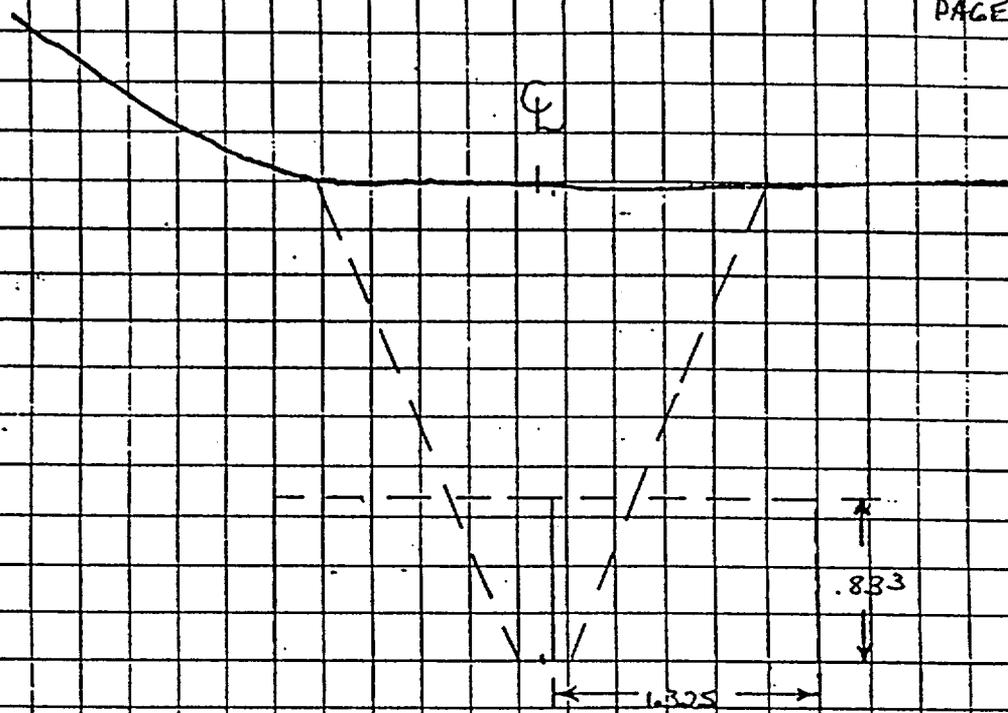
Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	S2	0.0	99.0	0	230.67	0.00
2	45	S1	2.33	99.0	230.67	230.67	100.00
3	45	CW	1.1	99.0	108.9	230.67	47.21
4	45	CCW	1.1	99.0	108.9	230.67	47.21
				TOTAL	448.47	922.68	<u>48.61</u>

SHEET 3 OF 4

Item No: BOS. 130.002

Prepared By:		Level: II	Date: 1/14/96
Reviewed By:		Level: III	Date: 1-16-96

Attachment 6
 PAGE 14 of 18



CIRCULAR COVERAGE = $1.325 \text{ in} \times 0.833 \text{ in} = 1.1 \text{ in}^2$

AREA OF INTEREST = $2.80 \text{ in} \times 0.833 \text{ in} = 2.33 \text{ in}^2$

AREA OF INTEREST @ $2.33 \text{ in}^2 \times 4 \text{ SCANS} = 9.32 \text{ in}^2$

AREA OF COVERAGE = $1.1 \text{ in}^2 + 1.1 \text{ in}^2 + 2.33 \text{ in}^2 + 0 \text{ in}^2 = 4.53 \text{ in}^2$

PERCENT OF COVERAGE = $\frac{4.53 \text{ in}^2}{9.32 \text{ in}^2} = .486 = 48.6\%$

DUKE POWER COMPANY				Exam Start: 1116	Form NDE-UT-2A
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS				Exam Finish: 1140	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1NC1F-1-3			Date: 1/10/96
Weld Length (in.): 99"	Surface Condition: AS GROUND	Lo: 9.1.1.1	Surface Temperature: 81 ° F		
Examiner: Guy G. Bibb <i>Guy G. Bibb</i> Level: III	Scans:		Pyrometer S/N: MCNDE 27021		
Examiner: Gary J. Moss <i>Gary J. Moss</i> Level: II	45 <input checked="" type="checkbox"/> 55.5 dB 70 <input type="checkbox"/> _____ dB		Cal Due: 10/3/96		
Procedure: NDE-610 Rev: 2	FC: 96-01	45T <input checked="" type="checkbox"/> 62 dB 70T <input type="checkbox"/> _____ dB	Configuration: CIRC		
Calibration Sheet No: 9501101, 9501102		60 <input type="checkbox"/> _____ dB	2 Flow 1		
		60T <input type="checkbox"/> _____ dB	NOZZLE to ELBOW		
		Other: _____ dB	Scan Surface: OD		
			Applies to NDE-680 only		
			Skew Angle:		

IND #	4	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac HMA					DO NOT WRITE IN THIS SPACE					
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
	45°	NRI														

Remarks: SCANNING DB REDUCED TO OBTAIN 3 : 1 SIGNAL TO NOISE RATIO					
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>					Sheet <u>1</u> of <u>4</u>
Reviewed By: <i>[Signature]</i>	Level: II	Date: 1/22/96	Authorized Inspector: <i>[Signature]</i>	Date: 1-23-96	Item No: B05.130.003

Attachment to PAGE 15 of 18

DUKE POWER COMPANY ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1NC1F-1-3

Item No: B05.130.003

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ CIL _____ to _____ BEYOND _____
 ANGLE: 0 45 60 Other _____ FROM _____ 0 _____ DEG to _____ 360 _____ DEG

DUE TO NOZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ CIL _____ to _____ BEYOND _____
 ANGLE: 0 45 60 Other _____ FROM _____ 0 _____ DEG to _____ 360 _____ DEG

DUE TO NOZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Nancy Allen Level: B Date: 1-10-96 Sketch(s) attached yes no Sheet 2 of 4

Reviewed By: [Signature] Date: 1/16/96 Authorized Inspector: [Signature] Date: 1-19-96

ATTENTION
PAGE 11 OF 18

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

Examination Volume/Area Defined

Base Metal
 Weld
 Near Surface
 Bolting
 Inner Radius

Area Calculation	Volume Calculation
SEE ATTACHED SHEET	SEE ATTACHED SHEET

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	S2	0.0	99.0	0	230.67	0.00
2	45	S1	2.33	99.0	230.67	230.67	100.00
3	45	CW	1.1	99.0	108.9	230.67	47.21
4	45	CCW	1.1	99.0	108.9	230.67	47.21
				TOTAL	448.47	922.68	<u>48.61</u>

SHEET 3 OF 4

Item No: BOS.130.003	
Prepared By: 	Level: II Date: 1/16/96
Reviewed By: 	Level: III Date: 1-16-96

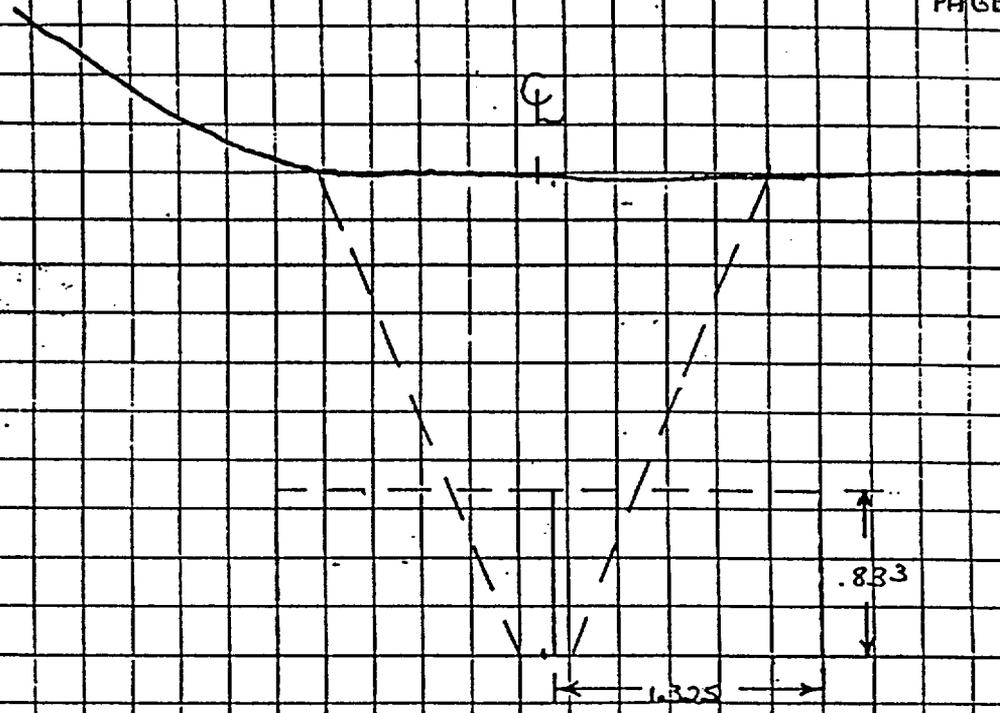
Station MCGUIRE Unit 1 Rev. _____ File No. _____ Sheet 4 of 4

Subject LIMITED EXAM

BOS.130.03 / INCF-1-3 By [Signature] # _____ Date 1/16/92

Prob No. _____ Checked By _____ Date _____

Attachment 6
PAGE 18 of 18



$$\text{CIRC SCAN COVERAGE} = 1.325 \text{ in} \times 0.833 \text{ in} = 1.1 \text{ in}^2$$

$$\text{AREA OF INTEREST} = 2.80 \text{ in} \times 0.833 \text{ in} = 2.33 \text{ in}^2$$

$$\text{AREA OF INTEREST @ } 2.33 \text{ in}^2 \times 4 \text{ SCANS} = 9.32 \text{ in}^2$$

$$\text{AREA OF COVERAGE} = 1.1 \text{ in}^2 + 1.1 \text{ in}^2 + 2.33 \text{ in}^2 + 0 \text{ in}^2 = 4.53 \text{ in}^2$$

$$\text{PERCENT OF COVERAGE} = \frac{4.53 \text{ in}^2}{9.32 \text{ in}^2} = .486 = 48.6\%$$

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

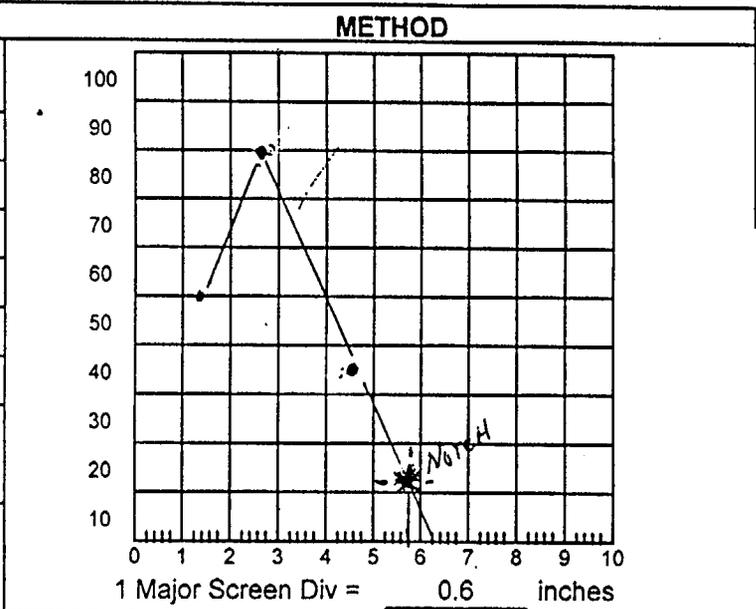
Station: McGuire	Unit: 1	Date: 12/20/95	Sheet Number: 9501033
Procedure: NDE-610	Rev: 2	FC: N/A	Couplant: ULTRAGEL II
Examiner: Larry Mauldin <i>Larry Mauldin</i>	Level: III	Batch Number: 94325	Pyrometer S/N: MCNDE 27025
Examiner: James L. Panel <i>J.L. Panel</i>	Level: I	Calibration Block ID: 50214	Cal Due: 10/3/96
Calibration Block Temp: 68°			

REFERENCE BLOCK		SIMULATOR BLOCK	
ID: 610-A	Material: SS	ID: <u>N/A</u>	Reflector Type: _____
Type: MODIFIED IIW		Gain: _____	Signal Ampl: _____
			Metal Path: _____

INSTRUMENT		TRANSDUCER	
Manufacturer: KRAUTKRAMER	Serial No: 32810-921	Type: Single <input type="checkbox"/> Dual <input checked="" type="checkbox"/>	Size: .75x1.0
		Manufacturer: Megasonics	Ser no: 90145
		Meas. <input checked="" type="checkbox"/> 45°	Wedge: INT
			Freq: 1.0 Mhz

INSTRUMENT SETTINGS	
Gain	45.5
Range	6.0
MTVEL	221.2
Delay	9.4
Pulser	DUAL
Reject	0%
Freq	1-5
Zero	8.7
Display	FULL
PRF	HIGH

CALIBRATION			
Reflector Type	Amplitude	Metal Path	
HOLE	%FSH	inches	
1 /8 node	50	.858	
2 /8 node	80	1.73	
3 /8 node	44	2.64	
/8 node			
other NOTCH	15	3.5	
Cal Direction:	axial <input checked="" type="checkbox"/>	circ. <input type="checkbox"/>	
Wave Mode:	Long. <input checked="" type="checkbox"/>	shear <input type="checkbox"/>	
	surf. <input type="checkbox"/>		
Remarks: NOTCH EQUALS DAC @ REF. dB			



CABLES	
RG58	<input type="checkbox"/>
RG174	<input checked="" type="checkbox"/>
Length:	6'
Initial Cal Time 1030	
Cal Checks	
Time	Initials
1215	<i>LR</i>
FINAL	

Item No: B09.031.004	Jack: T <input type="checkbox"/> R <input type="checkbox"/>	Reviewer: <i>[Signature]</i>	Level: II	Date: 12/27/95	Authorized Inspector: <i>[Signature]</i>	Date: 12-96
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SERIAL NO. 48004
 Attachment 7
 PAGE 1 of 10

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire	Unit: 1	Date: 12/20/95	Sheet Number: 9501034
Procedure: NDE-610	Rev: 2	FC: N/A	Couplant: ULTRAGEL II
Examiner: Larry Mauldin <i>Larry Mauldin</i>	Level: III	Batch Number: 94325	Pyrometer S/N: MCNDE 27025
Examiner: James L. Panel <i>J. L. Panel</i>	Level: I	Calibration Block ID: 50214	Cal Due: 10/3/96
Examiner: James L. Panel <i>J. L. Panel</i>	Level: I	Calibration Block Temp: 68°F	

REFERENCE BLOCK

SIMULATOR BLOCK

ID: 610-C	ID: <u>N/A</u>	Reflector Type: _____
Type: MODIFIED IIW	Material: SS	Gain: _____
		Signal Ampl: _____
		Metal Path: _____

INSTRUMENT

TRANSDUCER

Manufacturer: KRAUTKRAMER	Type: Single <input type="checkbox"/> Dual <input checked="" type="checkbox"/>	Size: .75x1.0	Freq: 1.0 Mhz	Wedge: INT
Serial No: 32810-921	Manufacturer: Megasonics	Ser no: 90145	Meas. <input checked="" type="checkbox"/> 45°	

INSTRUMENT SETTINGS

CALIBRATION

METHOD

CABLES

Gain: 56.5	Reflector Type: NOTCH	Amplitude: %FSH	Metal Path: inches		RG58 <input type="checkbox"/>
Range: 6.0	/8 node				RG174 <input checked="" type="checkbox"/>
MTVEL: 221.2	/8 node				Length: 6'
Delay: 9.4	/8 node				Initial Cal Time: 1032
Pulser: DUAL	/8 node				Cal Checks
Reject: 0%	other NOTCH	80	3.85		Time Initials
Freq: 1-5	Cal Direction: axial <input type="checkbox"/> circ. <input checked="" type="checkbox"/>				1216 <i>JLP</i>
Zero: 8.7	Wave Mode: Long. <input checked="" type="checkbox"/> shear <input type="checkbox"/>				FINAL
Display: FULL	surf. <input type="checkbox"/>				
PRF: HIGH	Remarks:				

Item No: B09.031.004

Jack: T <input type="checkbox"/> R <input type="checkbox"/>	Reviewer: <i>AKS</i>	Level: II	Date: 12/21/95	Authorized Inspector: <i>APL</i>	Date: 12/21/95
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Attachment 7
PAGE 2 of 10

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1050 Form NDE-UT-2A

Exam Finish: 1110 Revision 4

Station: McGuire	Unit: 1	Component/Weld ID: 1NC47-WN8	Date: 12/20/95
Weld Length (in.): 48	Surface Condition: GROUND	Lo: 9.1.1.6	Surface Temperature: 81 ° F
Examiner: Larry Mauldin <i>Larry Mauldin</i> Level: III	Scans:		Pyrometer S/N: MCNDE 27025
Examiner: James L. Panel <i>J.L. Panel</i> Level: I	45 <input checked="" type="checkbox"/> 56.5 dB	70 <input type="checkbox"/> _____ dB	Cal Due: 10/3/96
Procedure: NDE-610 Rev: 2	45T <input checked="" type="checkbox"/> 56.5 dB	70T <input type="checkbox"/> _____ dB	Configuration: BRANCH CONNECTION
FC: N/A	60 <input type="checkbox"/> _____ dB		S1 _____ Flow _____ S2 _____
Calibration Sheet No: 9501033, 9501034	60T <input type="checkbox"/> _____ dB		PIPE to NOZZLE
	Other: _____ dB		Scan Surface: OD
			Applies to NDE-680 only
			Skew Angle: N/A

IND #	<input checked="" type="checkbox"/>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac HMA	DO NOT WRITE IN THIS SPACE									
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
NRI	45RL															

Remarks: SCANNING dB WAS REDUCED TO 56.5 BECAUSE OF EXCESS NOISE ON PIPING

Limitations: (see NDE-UT-4) 90% or greater coverage obtained: yes no

Reviewed By: *[Signature]* Level: II Date: 12/27/95

Authorized Inspector: *[Signature]* Date: 1-4-96

Sheet 1 of 8

Item No: B09.031.004

Attachment 7
PAGE 2 of 10

DUKE POWER COMPANY

ISI LIMITATION REPORT

FORM NDE- UT-4

Revision 1

Component/Weld ID: INC 47-WN8 Item No: BO9.031.004

remarks:

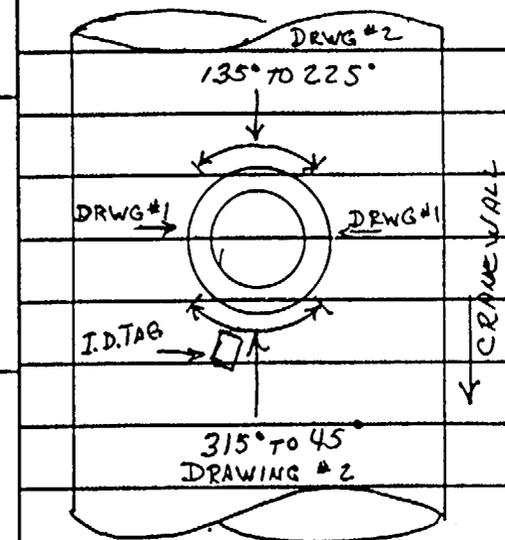
NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO € to Beyond
 ANGLE: 0 45 60 other 45°L FROM 0 DEG to 360 DEG

DUE TO NOZZLE WELD CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L 3.0" to L 5.0" INCHES FROM WO 2.2" to 5.2"
 ANGLE: 0 45 60 other 45°L FROM _____ DEG to _____ DEG

DUE TO I.D. TAB

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO € to .5"
 ANGLE: 0 45 60 other 45°L FROM 45 DEG to 315 DEG



NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO € to .5"
 ANGLE: 0 45 60 other FROM 135 DEG to 225 DEG

Sketch(s) attached
 yes no

Prepared By: Larry Moulder

Level: III Date: 12-20-95

Sheet 2 of 3

Reviewed By: [Signature]

Date: _____ Authorized Inspector: [Signature]

Date: 1-4-96

Attachment 7
PAGE 4 of 10

DUKE POWER COMPANY	NDE-91-1
Limited Examination Coverage Worksheet	Revision 0

Examination Volume/Area Defined				
Base Metal <input checked="" type="checkbox"/>	Weld <input checked="" type="checkbox"/>	Near Surface <input type="checkbox"/>	Bolting <input type="checkbox"/>	Inner Radius <input type="checkbox"/>

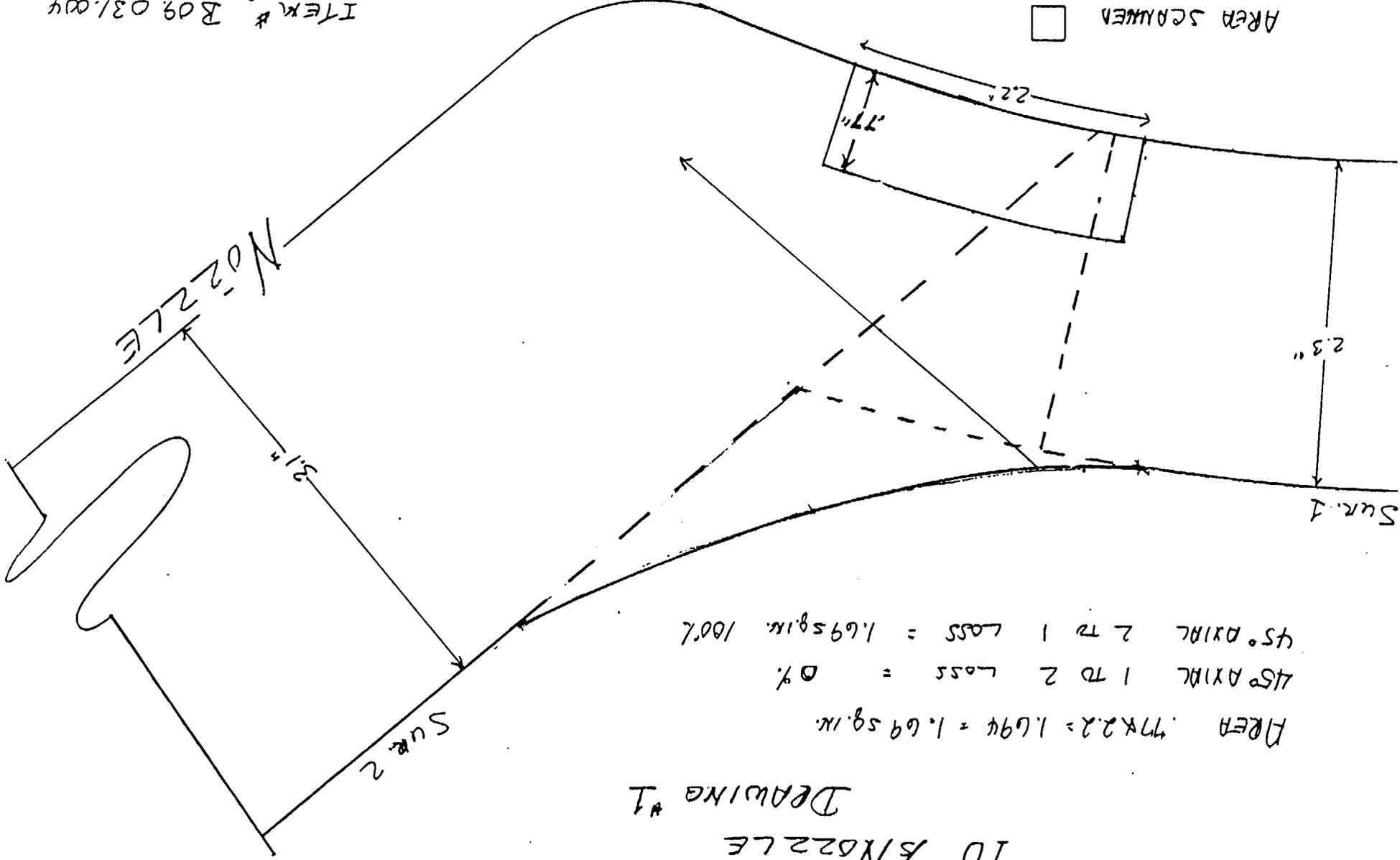
Area Calculation	Volume Calculation
	DRWG. #1 $.77 \times 2.2" \times 24" = 40.66 \text{ cu. in.}$
	DRWG. #2 $.77" \times 2.2" \times 24" = 40.66 \text{ cu. in.}$
	TOTAL WELD LENGTH = 48"

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
DRWG. #1	45°	1 to 2	1.69	24	40.66	40.66	
	45°	2 to 1	0	24	0	40.66	
	45°	CW	1.69	24	40.66	40.66	
	45°	CCW	1.69	24	40.66	40.66	
DRWG. #2	45°	1 to 2	1.61	24	38.64	40.66	
	45°	2 to 1	0	24	0	40.66	
	45°	CW	0	24	0	40.66	
	45°	CCW	0	24	0	40.66	
					<u>160.62</u>	<u>325.28</u>	<u>49.38</u>
<p>2" WELD LENGTH LOSS, DUE TO I.D. TAC.</p> <p>$2" \div 48" \text{ WELD LGTH.} = .04$</p> <p>$49.38 \times .04 = 1.98\% \text{ LOSS}$</p>							
						<u>1.98</u>	
<p>COVERAGE = 47.4%</p>							
<p>SHEET 3 OF 8</p>							
<p>Item No: 809.031.004</p>							

Prepared BY: <i>Randy Anderson</i>	Level: <i>III</i>	Date: <i>12-20-95</i>
Reviewed By: <i>[Signature]</i>	Level: <i>II</i>	Date: <i>12/27/95</i>

ITEM # B09.031.004
BY: ~~John Thacker III~~

AREA NOT SCANNED
AREA SCANNED



AREA $77 \times 2.2 = 1.694 = 1.69 \text{ sq. in.}$
 45° AXIAL 1 TO 2 LOSS = 0%
 45° AXIAL 2 TO 1 LOSS = $1.69 \text{ sq. in.} / 100\%$

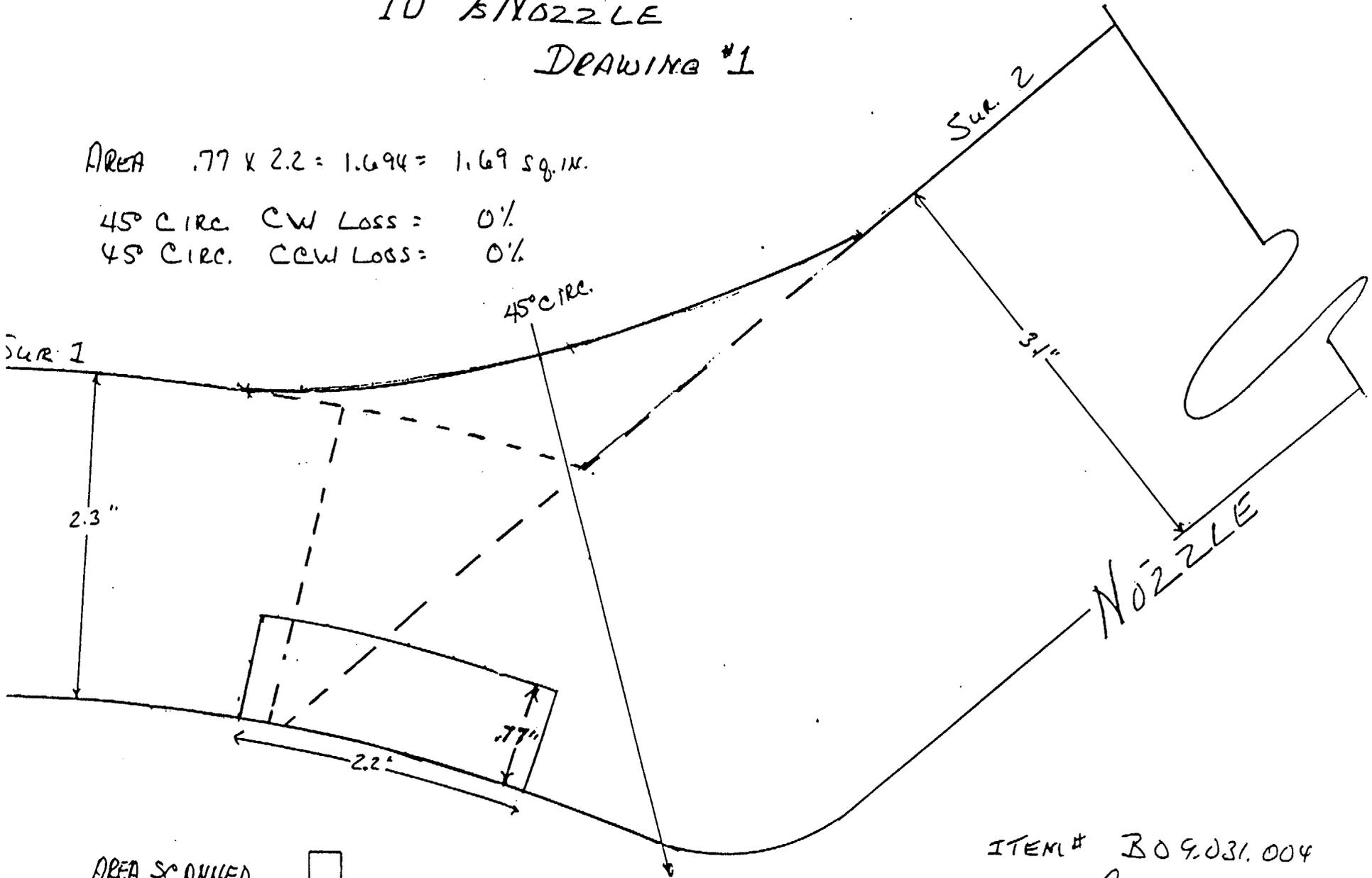
10 1/8" NOZZLE
 DRAWING #1

10" NOZZLE DRAWING #1

AREA .77 x 2.2 = 1.694 = 1.69 sq. in.

45° CIRC. CW LOSS = 0%

45° CIRC. CCW LOSS = 0%



AREA SCANNED
 AREA NOT SCANNED

ITEM# B09.031.004

By: Remy Traudler TD

SHEET COVER

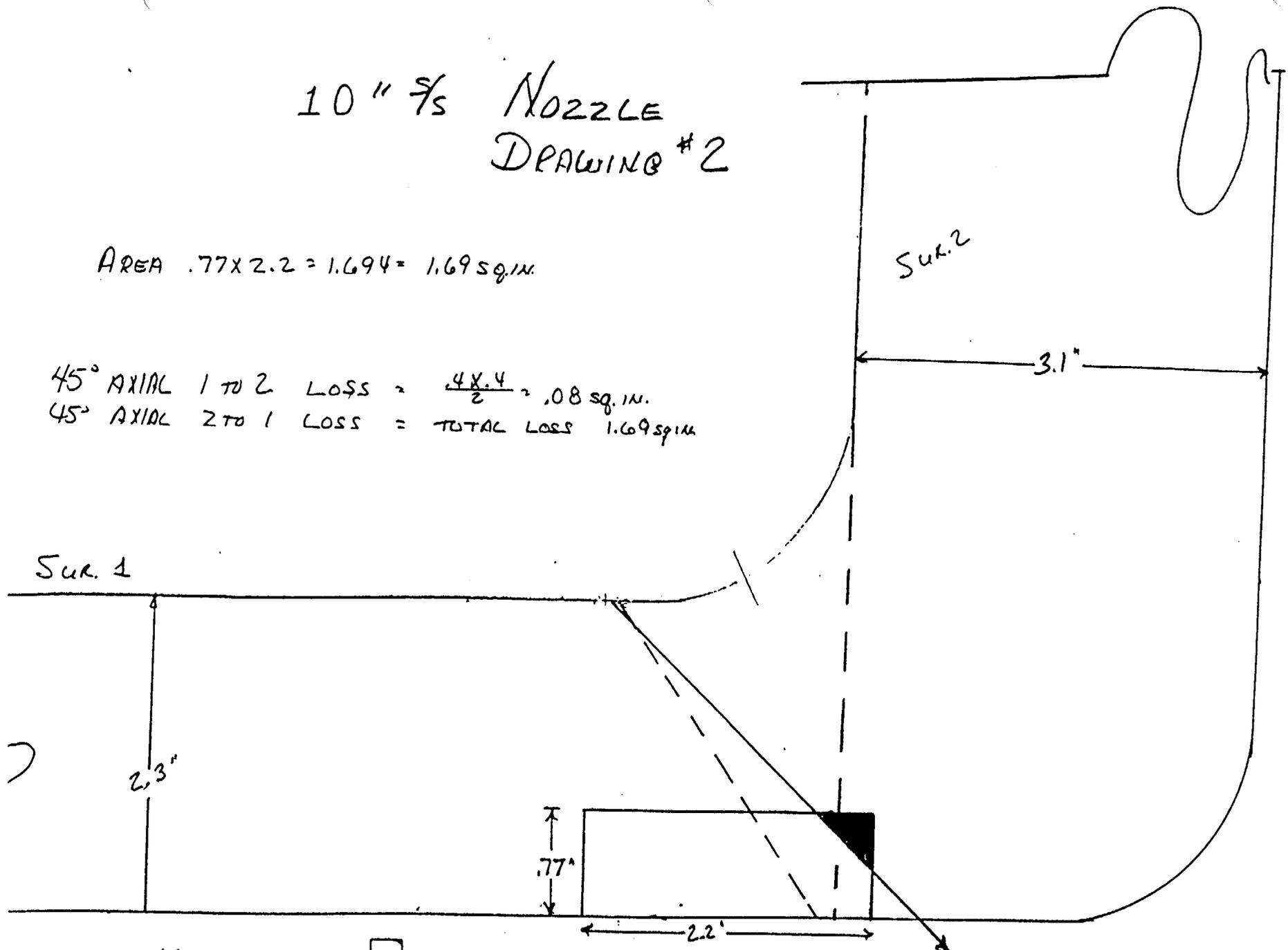
Attachment 7
 PAGE 7 of 10

10" $\frac{1}{8}$ NOZZLE DRAWING #2

AREA $.77 \times 2.2 = 1.694 = 1.69 \text{ sq. in.}$

45° AXIAL 1 TO 2 LOSS = $\frac{4 \times 4}{2} = .08 \text{ sq. in.}$

45° AXIAL 2 TO 1 LOSS = TOTAL LOSS 1.69 sq. in.



SUR. 1

2.3"

.77"

2.2"

SUR. 2

3.1"

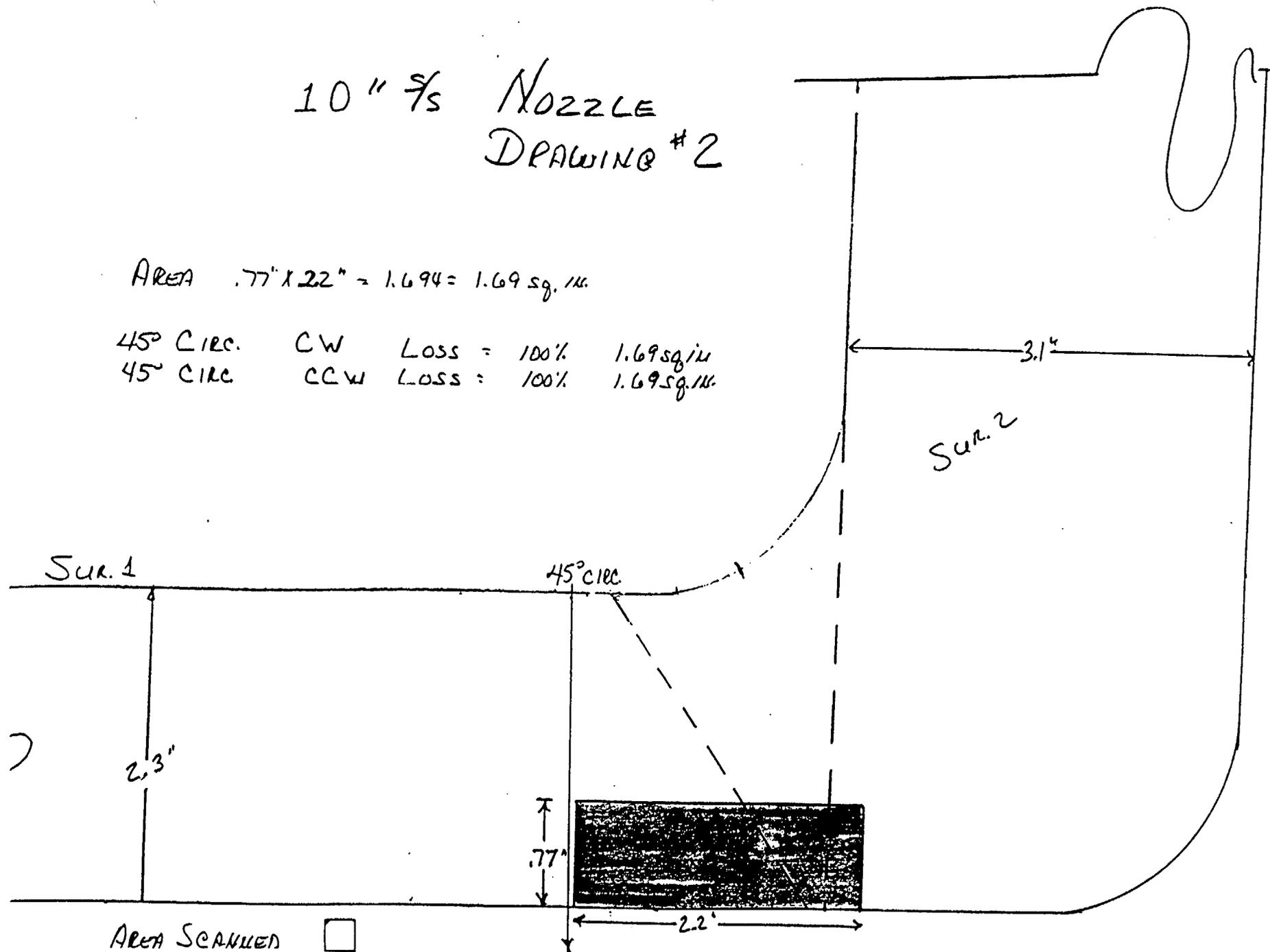
AREA SCANNED
AREA NOT SCANNED

ITEM # B09.031.004
By: Lam Maubli III

10" $\frac{S}{S}$ NOZZLE DRAWING #2

AREA .77" x 2.2" = 1.694 = 1.69 sq. in.

45° CIRC.	CW	LOSS = 100%	1.69 sq. in.
45° CIRC.	CCW	LOSS = 100%	1.69 sq. in.



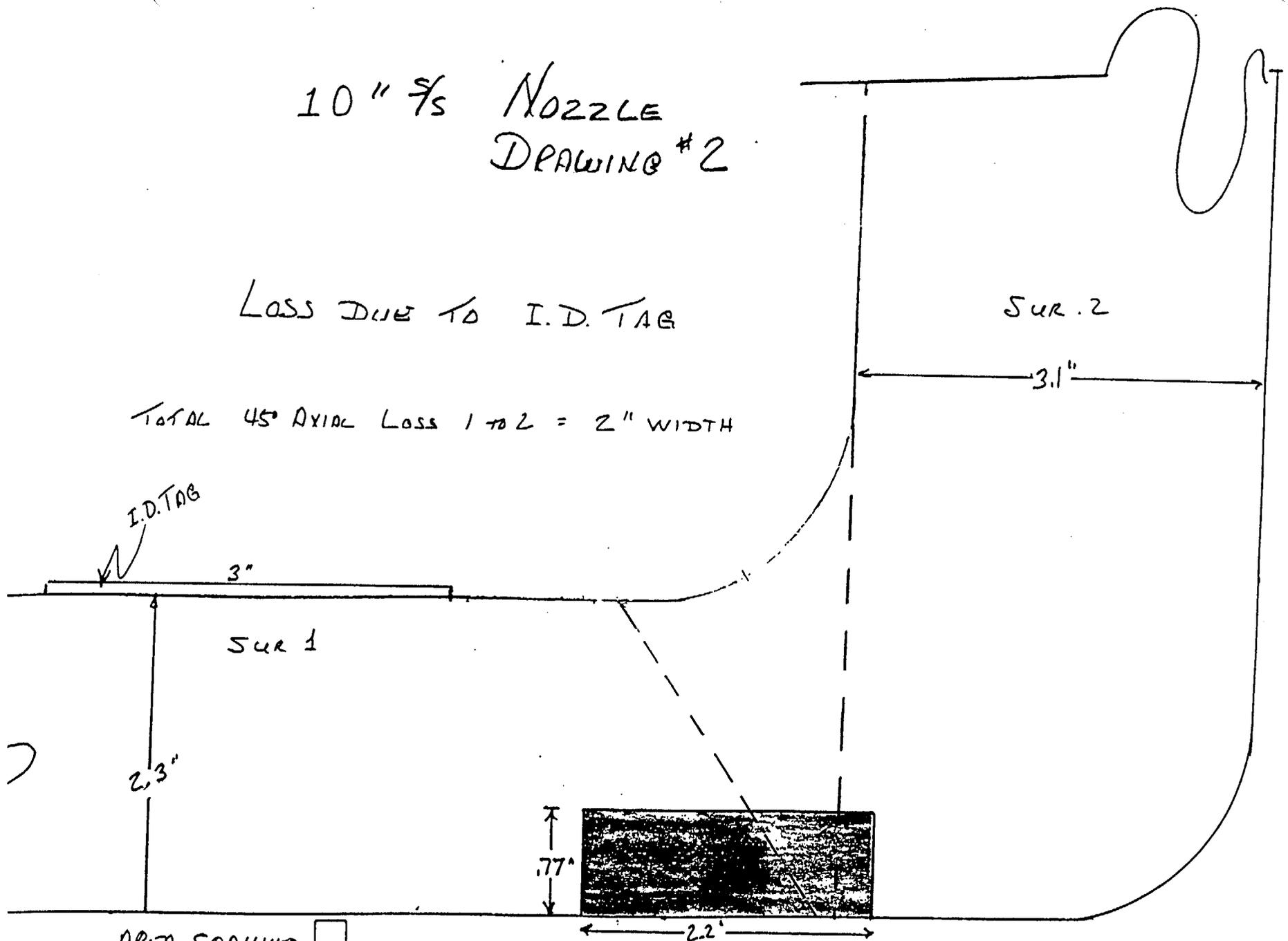
AREA SPANNED
 AREA NOT SPANNED

ITEM # B09.031.004
 BY: Lam Mendler III

10" $\frac{1}{8}$ NOZZLE
DRAWING #2

LOSS DUE TO I.D. TAG

TOTAL 45° AXIAL LOSS 1 TO 2 = 2" WIDTH



AREA SCANNED
AREA NOT SCANNED

ITEM # B09.031.004
RV: Linn. M... III

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 2/24/97 Sheet Number: 9701028

Procedure: NDE-610 Rev: 4 FC: N/A Couplant: ULTRAGEL II Batch Number: 95325

Examiner: Gary J. Moss *Gary J. Moss* Level: II Calibration Block ID: 50214 Pyrometer S/N: MCNDE 27022

Examiner: James W. Setzer *James W. Setzer* Level: III Calibration Block Temp: 85°F Cal Due: 9/18/97

REFERENCE BLOCK

ID: 610-C
 Type: IIW BLOCK Material: SS

SIMULATOR BLOCK

ID: A09324 Reflector Type: RADIUS
 Gain: 34.5 Signal Ampl: 80% Metal Path: 2.0

INSTRUMENT

Manufacturer: KRAUTKRAMER
 Serial No: 32810-4017

TRANSDUCER

Type: Single Dual Size: .75x.75 Freq: 1.0 Mhz Wedge: INT
 Manufacturer: Harisonics Ser no: L2135 Meas. 45°

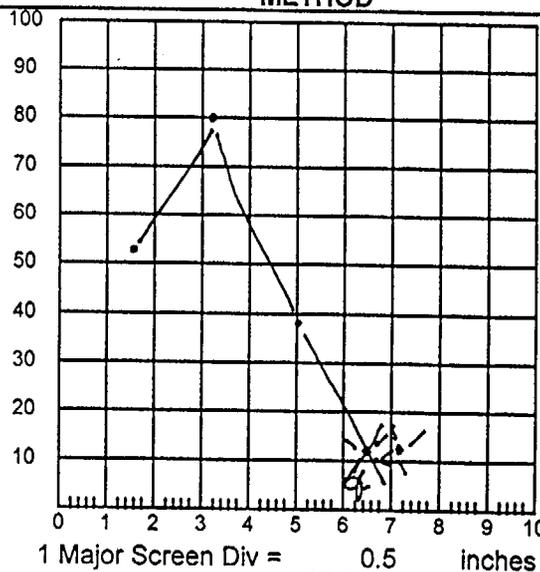
INSTRUMENT SETTINGS

Gain	51.5
Range	5.0
MTVEL	229.6
Delay	6.9
Pulser	DUAL
Reject	0%
Freq	1-5
Zero	7.03
Display	FULL
PRF	HIGH

CALIBRATION

Reflector Type	Amplitude %FSH	Metal Path inches
HOLE		
/8 node	52%	0.75
/8 node	80%	1.62
/8 node	38%	2.5
/8 node		
other NOTCH	12%	3.6
Cal Direction: axial <input checked="" type="checkbox"/> circ. <input type="checkbox"/>		
Wave Mode: Long. <input checked="" type="checkbox"/> shear <input type="checkbox"/>		
surf. <input type="checkbox"/>		

METHOD



CABLES

RG58
 RG174
 Length: 6 FT

Initial Cal Time
 1030

Cal Checks
 Time Initials

1140	<i>DTM</i>
1145	<i>DTM</i>
1215	<i>DTM</i>
FINAL	

Item No: B09.031.005

Jack: T R

Reviewer: Rod Sheffield *Rod Sheffield* Level: II Date: 2-26-97 Authorized Inspector: *R. Klein* Date: 2-27-97

SERIAL No. 98-004
 Attachment 8
 PAGE 1 of 6
 02/27/97

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 2/24/97 Sheet Number: 9701029

Procedure: NDE-610 Rev: 4 FC: N/A Couplant: ULTRAGEL II Batch Number: 95325

Examiner: Gary J. Moss *Gary J. Moss* Level: II Calibration Block ID: 50214 Pyrometer S/N: MCNDE 27022

Examiner: James W. Setzer *James W. Setzer* Level: III Calibration Block Temp: 86°F Cal Due: 9/18/97

REFERENCE BLOCK

ID: 610-C
 Type: IIW BLOCK Material: SS

SIMULATOR BLOCK

ID: A09324 Reflector Type: RADIUS
 Gain: 34.5 Signal Ampl: 80% Metal Path: 2.0

INSTRUMENT

Manufacturer: KRAUTKRAMER
 Serial No: 32810-4017

TRANSDUCER

Type: Single Dual Size: .75x.75 Freq: 1.0 Mhz Wedge: INT
 Manufacturer: Harisonics Ser no: L2135 Meas. 45 °

INSTRUMENT SETTINGS

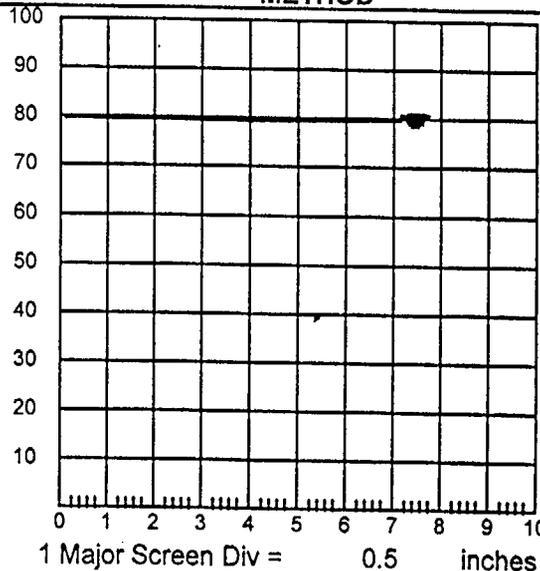
Gain: 61.5
 Range: 5.0
 MTVEL: 229.6
 Delay: 6.9
 Pulser: DUAL
 Reject: 0%
 Freq: 1-5
 Zero: 7.03
 Display: FULL
 PRF: HIGH

CALIBRATION

Reflector Type: NOTCH
 Amplitude %FSH: 80%
 Metal Path inches: 3.67
 Cal Direction: axial circ.
 Wave Mode: Long shear
 surf.

Remarks: SCANNED @ +6 Db DUE TO NOISE LEVEL

METHOD



CABLES

RG58
 RG174
 Length: 6 FT

Initial Cal Time: 1033

Cal Checks

Time	Initials
1146	<i>DJM</i>
1152	<i>DJM</i>
1212	<i>DJM</i>
FINAL	

Item No: B09.031.005

Jack: T R

Reviewer: *Rod Sheffield*
 Rod Sheffield

Level: II

Date: 2-26-97

Authorized Inspector: *Reylein*

Date: 2-27-97

Attachment 8
 PAGE 2 of 6

11/21

DUKE POWER COMPANY					Exam Start: 1141	Form NDE-UT-2A	
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS					Exam Finish: 1151	Revision 4	
Station: McGuire	Unit: 1	Component/Weld ID: 1NC48-WN4A			Date: 2/24/97		
Weld Length (in.): 16"	Surface Condition: AS GROUND		Lo: 9.1.1.6		Surface Temperature: 78 ° F		
Examiner: Gary J. Moss <i>Gary J. Moss</i> Level: II	FC: N/A		Scans:		Pyrometer S/N: MCNDE 27022		
Examiner: James W. Setzer <i>James W. Setzer</i> Level: III			45 <input checked="" type="checkbox"/> 65.5 dB	70 <input type="checkbox"/> _____ dB	Cal Due: 9/18/97		
Procedure: NDE-610 Rev: 4			45T <input checked="" type="checkbox"/> 67.5 dB	70T <input type="checkbox"/> _____ dB	Configuration: NOZZLE TO PIPE		
Calibration Sheet No: 9701029, 9701028			60 <input type="checkbox"/> _____ dB		S2 Flow S1		
			60T <input type="checkbox"/> _____ dB		NOZZLE to PIPE		
			Other: _____ dB		Scan Surface: OD		
					Applies to NDE-680 only		
					Skew Angle: N/A		

IND #	4	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps
						20%dac HMA									
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac				
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac				
NRI	45°C														
NRI	45°A														

Remarks:			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: Rod Sheffield <i>Rod Sheffield</i>	Level: II	Date: 2-26-97	Authorized Inspector: <i>R. Klein</i> Date: 2-27-97
		Item No: B09.031.005	

Attachment B
Page 3 of 6

R
GC
3/18/97

DUKE POWER COMPANY ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1NC48-WN4A

Item No: B09.031.005

Remarks:

<input checked="" type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2	<input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input checked="" type="checkbox"/> cw <input checked="" type="checkbox"/> ccw	
FROM L _____ to L _____	INCHES FROM WO <u>C/L + 0"</u> to <u>BEYOND</u>		
ANGLE: <input type="checkbox"/> 0 <input checked="" type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM <u>0</u> DEG to <u>360</u> DEG		

NOZZLE CONFIGURATION

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw	
FROM L _____ to L _____	INCHES FROM WO _____ to _____		
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____ DEG to _____ DEG		

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw	
FROM L _____ to L _____	INCHES FROM WO _____ to _____		
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____ DEG to _____ DEG		

<input type="checkbox"/> NO SCAN	SURFACE	BEAM DIRECTION	
<input type="checkbox"/> LIMITED SCAN	<input type="checkbox"/> 1 <input type="checkbox"/> 2	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> cw <input type="checkbox"/> ccw	
FROM L _____ to L _____	INCHES FROM WO _____ to _____		
ANGLE: <input type="checkbox"/> 0 <input type="checkbox"/> 45 <input type="checkbox"/> 60 <input type="checkbox"/> Other _____	FROM _____ DEG to _____ DEG		

Prepared By: Jim Setzer <i>Jim Setzer</i>	Level: III	Date: 2/24/97	Sketch(s) attached <input checked="" type="checkbox"/> yes <input type="checkbox"/> no	Sheet _____ of _____
Reviewed By: Rod Sheffield <i>Rod Sheffield</i>	Date: 2/24/97	Authorized Inspector: <i>Bob Klein</i>	Date: 2-27-97	

Attachment 8
PAGE 4 of 6

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

Examination Volume/Area Defined	
<input checked="" type="checkbox"/> Base Metal <input checked="" type="checkbox"/> Weld <input type="checkbox"/> Near Surface <input type="checkbox"/> Bolting <input type="checkbox"/> Inner Radius	
Area Calculation	Volume Calculation
A,B,C, AND D = .66 X 3.0 = 1.98	1.98 IN SQ. X 16" = 31.68 IN CUBED

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	2	1.98	16	31.68	31.68	100.00
2	45	1	.23	16	3.68	31.68	11.62
3	45	CW	1.98	16	31.68	31.68	100.00
4	45	CCW	1.98	16	31.68	31.68	100.00
TOTAL					98.72	126.72	77.90

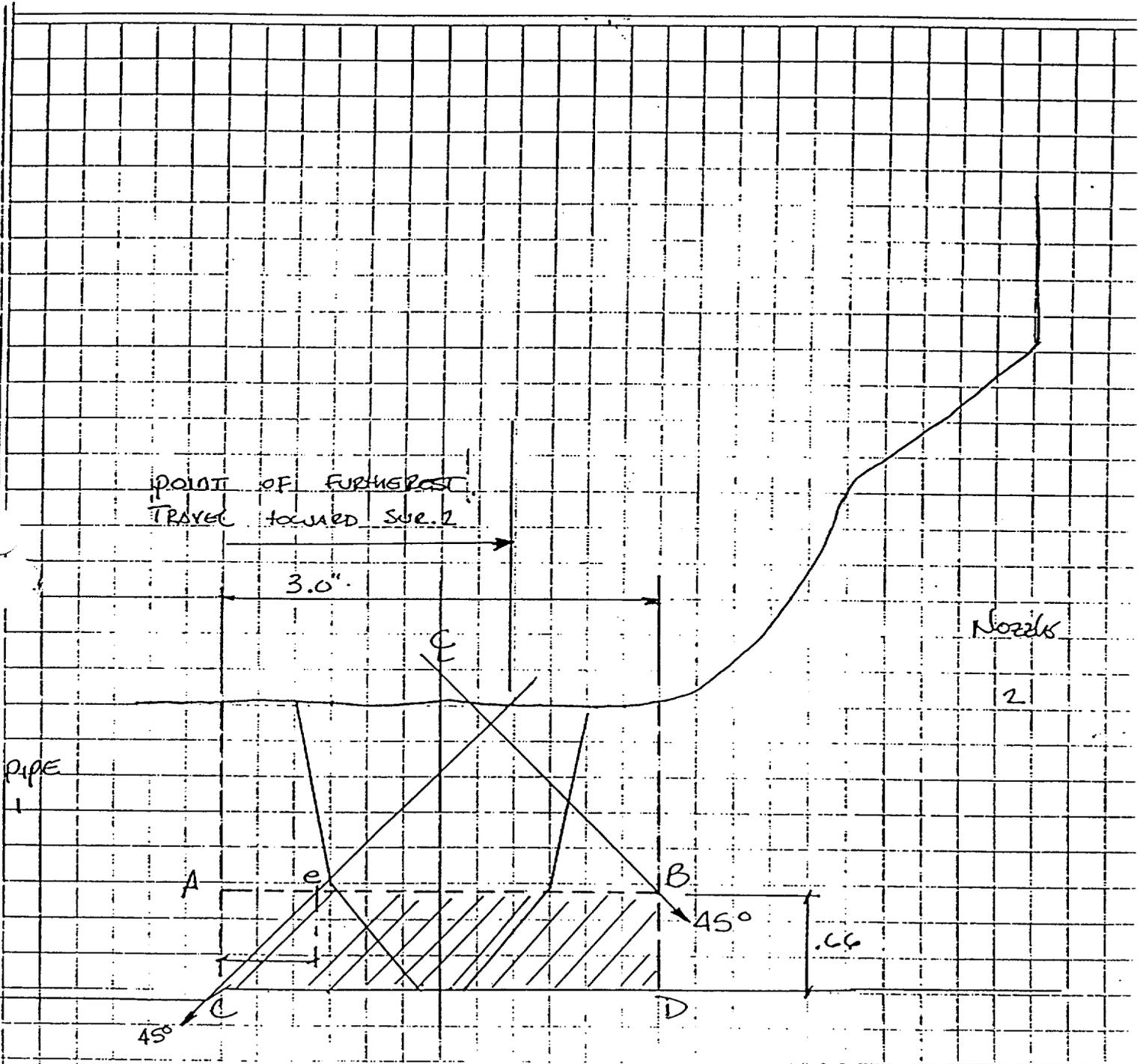
		Item No: B09.031.005
Prepared By: Jim Setzer	<i>Jim Setzer</i>	Level: III Date: 2-26-97
Reviewed By: Rod Sheffield	<i>Rod Sheffield</i>	Level: II Date: 2-26-97

Station McGUIRE Ecch Unit 1 Rev. _____ File No. _____ Sheet _____ Of _____
Subject LIMITATIONS.

Job No. BO9.031-005

By James W. Sipe III DATE 2-24-91

Checked By _____ Date _____



$$ABCD \text{ AREA} = .66 \times 3.0'' = 1.98 \text{ sq in.}$$

$$ACE \text{ AREA} = \frac{.66 \times .66}{2} = .23 \text{ sq in.}$$

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire	Unit: 1	Date: 2/18/97	Sheet Number: 9701020
Procedure: NDE-610	Rev: 4	FC: N/A	Couplant: ULTRAGEL II
Examiner: Gary J. Moss <i>Gary J. Moss</i>	Level: II	Batch Number: 95325	Calibration Block ID: 50214
Examiner: James W. Setzer <i>James W. Setzer</i>	Level: III	Pyrometer S/N: MCNDE 27023	Cal Due: 9/18/97

REFERENCE BLOCK	SIMULATOR BLOCK
ID: 610-C	ID: A09323
Type: IIW BLOCK	Reflector Type: RADIUS
Material: SS	Gain: 34.5
	Signal Ampl: 80%
	Metal Path: 2.0

INSTRUMENT	TRANSDUCER
Manufacturer: KRAUTKRAMER	Type: Single <input type="checkbox"/> Dual <input checked="" type="checkbox"/> Size: .75x.75
Serial No: 32810-4017	Freq: 1.0 Mhz Wedge: INT
	Manufacturer: Harisonics Ser no: L2135
	Meas. <input checked="" type="checkbox"/> 45 °

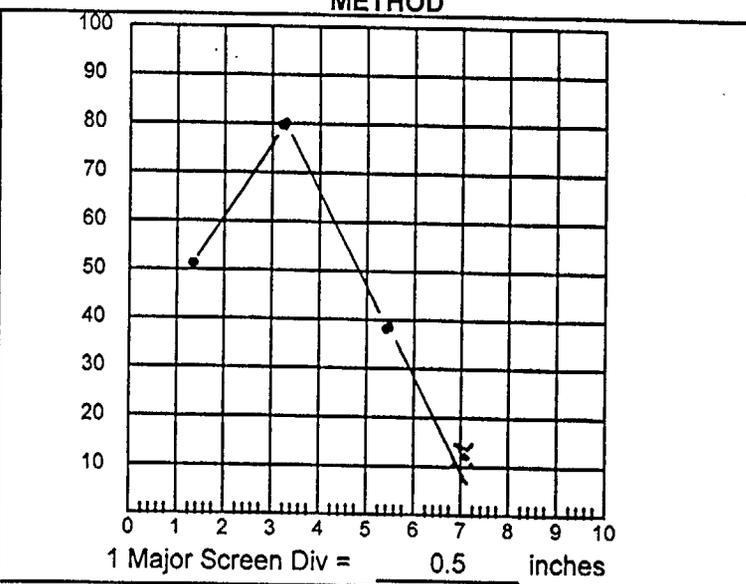
INSTRUMENT SETTINGS

Gain	51.0
Range	5.0
MTVEL	229.6
Delay	6.9
Pulser	DUAL
Reject	0%
Freq	1-5
Zero	7.03
Display	FULL
PRF	HIGH

CALIBRATION

Reflector Type	Amplitude %FSH	Metal Path inches
HOLE		
1 /8 node	52%	0.75
2 /8 node	80%	1.62
3 /8 node	38%	2.5
/8 node		
other NOTCH	12%	3.6
Cal Direction: axial <input checked="" type="checkbox"/> circ. <input type="checkbox"/>		
Wave Mode: Long. <input checked="" type="checkbox"/> shear <input type="checkbox"/>		
surf. <input type="checkbox"/>		
Remarks:		

METHOD



CABLES

RG58

RG174

Length: 6 FT

Initial Cal Time 0840

Cal Checks Time	Initials
1000	<i>ASW</i>
1008	<i>ASW</i>
1110	<i>ASW</i>
FINAL	

Item No: B09.031.006

Jack: T R

Reviewer: Rod Sheffield *Rod Sheffield* Level: II Date: 2-26-97

Authorized Inspector: *ASW* Date: 2-27-97

SERIAL NO 78-004
 Attachment 9
 Page 1 of 6
 2/27/97

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 2/18/97 Sheet Number: 9701021

Procedure: NDE-610 Rev: 4 FC: N/A Couplant: ULTRAGEL II Batch Number: 95325

Examiner: Gary J. Moss *Gary Moss* Level: II Calibration Block ID: 50214 Pyrometer S/N: MCNDE 27023

Examiner: James W. Setzer *James W Setzer* Level: III Calibration Block Temp: 86°F Cal Due: 9/18/97

REFERENCE BLOCK

SIMULATOR BLOCK

ID: 610-C ID: A09323 Reflector Type: RADIUS
 Type: IIW BLOCK Material: SS Gain: 34.5 Signal Ampl: 80% Metal Path: 2.0

INSTRUMENT

TRANSDUCER

Manufacturer: KRAUTKRAMER Type: Single Dual Size: .75x.75 Freq: 1.0 Mhz Wedge: INT
 Serial No: 32810-4017 Manufacturer: Harisonics Ser no: L2135 Meas. 45 °

INSTRUMENT SETTINGS

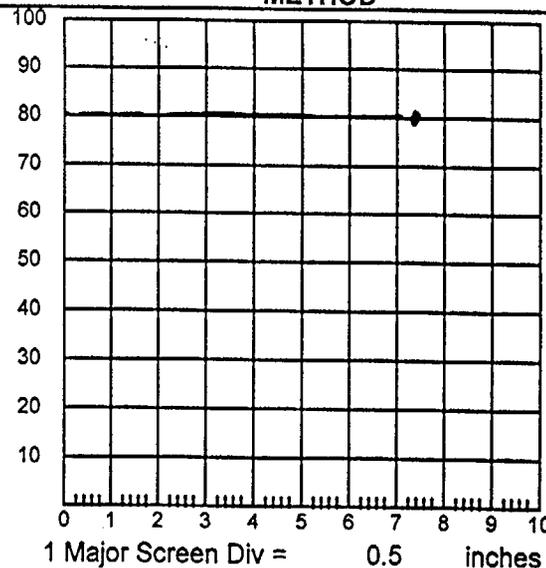
CALIBRATION

METHOD

CABLES

Gain	<u>61.5</u>
Range	<u>5.0</u>
MTVEL	<u>229.6</u>
Delay	<u>6.9</u>
Pulser	<u>DUAL</u>
Reject	<u>0%</u>
Freq	<u>1-5</u>
Zero	<u>7.03</u>
Display	<u>FULL</u>
PRF	<u>HIGH</u>

Reflector Type	Amplitude	Metal Path
<u>NOTCH</u>	<u>%FSH</u>	<u>inches</u>
<u>/8 node</u>		
<u>other NOTCH</u>	<u>80%</u>	<u>3.67</u>
Cal Direction: axial <input type="checkbox"/>	circ. <input checked="" type="checkbox"/>	
Wave Mode: Long. <input checked="" type="checkbox"/>	shear <input type="checkbox"/>	
	surf. <input type="checkbox"/>	



RG58
 RG174
 Length: 6 FT

Initial Cal Time 0850

Cal Checks

Time	Initials
<u>1009</u>	<u>DM</u>
<u>1018</u>	<u>DM</u>
<u>1105</u>	<u>DM</u>
<u>FINAL</u>	

Remarks: SCANNED @ +6 Db DUE TO NOISE LEVEL

Item No: B09.031.006

Jack: T R

Reviewer: Rod Sheffield *Rod Sheffield* Level: II Date: 2-26-97 Authorized Inspector: [Signature] Date: 2-27-97

Attachment 4
PAGE 2 of 6

DUKE POWER COMPANY				Exam Start: 1001	Form NDE-UT-2A
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS				Exam Finish: 1017	Revision 4
Station: McGuire	Unit: 1	Component/Weld ID: 1NC48-WN4B			Date: 2/18/97
Weld Length (in.): 16"	Surface Condition: AS GROUND		Lo: 9.1.1.6	Surface Temperature: <u>81</u> ° <u>F</u>	
Examiner: Gary J. Moss <i>Gary Moss</i> Level: II	Scans:			Pyrometer S/N: <u>MCNDE 27023</u>	
Examiner: James W. Setzer <i>James Setzer</i> Level: III	45 <input checked="" type="checkbox"/> <u>65</u> dB 70 <input type="checkbox"/> _____ dB			Cal Due: <u>9/18/97</u>	
Procedure: NDE-610 Rev: 4 FC: N/A	45T <input checked="" type="checkbox"/> <u>67.5</u> dB 70T <input type="checkbox"/> _____ dB			Configuration: <u>NOZZLE TO PIPE</u>	
Calibration Sheet No: 9701020, 9701021	60 <input type="checkbox"/> _____ dB			<u>S2</u> Flow <u>S1</u>	
	60T <input type="checkbox"/> _____ dB			<u>NOZZLE</u> to <u>PIPE</u>	
Other: _____ dB			Scan Surface: <u>OD</u>		
			Applies to NDE-680 only		
			Skew Angle: N/A		

IND #	<input checked="" type="checkbox"/>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac HMA		DO NOT WRITE IN THIS SPACE	DO NOT WRITE IN THIS SPACE							
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
NRI		45°C														
NRI		45°A														

Remarks:			
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>			Sheet _____ of _____
Reviewed By: Rod Sheffield <i>Rod Sheffield</i>	Level: II	Date: 2-26-97	Authorized Inspector: <i>Reylin</i> Date: 2-27-97
			Item No: B09.031.006

Attachment 9
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 2/17/97

DUKE POWER COMPANY

ISI LIMITATION REPORT

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1NC48-WN4B

Item No: B09.031.006

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO C/L + 0" to BEYOND
 ANGLE: 0 45 60 Other _____ FROM 0 DEG to 360 DEG

NOZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: Jim Setzer *Jim Setzer* Level: III Date: 2/18/97 Sketch(s) attached yes no Sheet _____ of _____

Reviewed By: Rod Sheffield *Rod Sheffield* Date: 2-26-97 Authorized Inspector: *Al Klein* Date: 2-27-97

Attachment 9
PAGE 4 of 6

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
	Revision 0

Examination Volume/Area Defined	
<input checked="" type="checkbox"/> Base Metal <input checked="" type="checkbox"/> Weld <input type="checkbox"/> Near Surface <input type="checkbox"/> Bolting <input type="checkbox"/> Inner Radius	
Area Calculation	Volume Calculation
A, B, C, AND D = .66 X 3.0 = 1.98	1.98 IN SQ. X 16" = 31.68 IN CUBED

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	45	2	1.98	16	31.68	31.68	100.00
2	45	1	.23	16	3.68	31.68	11.62
3	45	CW	1.98	16	31.68	31.68	100.00
4	45	CCW	1.98	16	31.68	31.68	100.00
TOTAL					98.72	126.72	77.90

Item No: B09.031.006	
Prepared By: Jim Setzer <i>Jim Setzer</i>	Level: III Date: 2-26-97
Reviewed By: Rod Sheffield <i>Rod Sheffield</i>	Level: II Date: 2-26-97

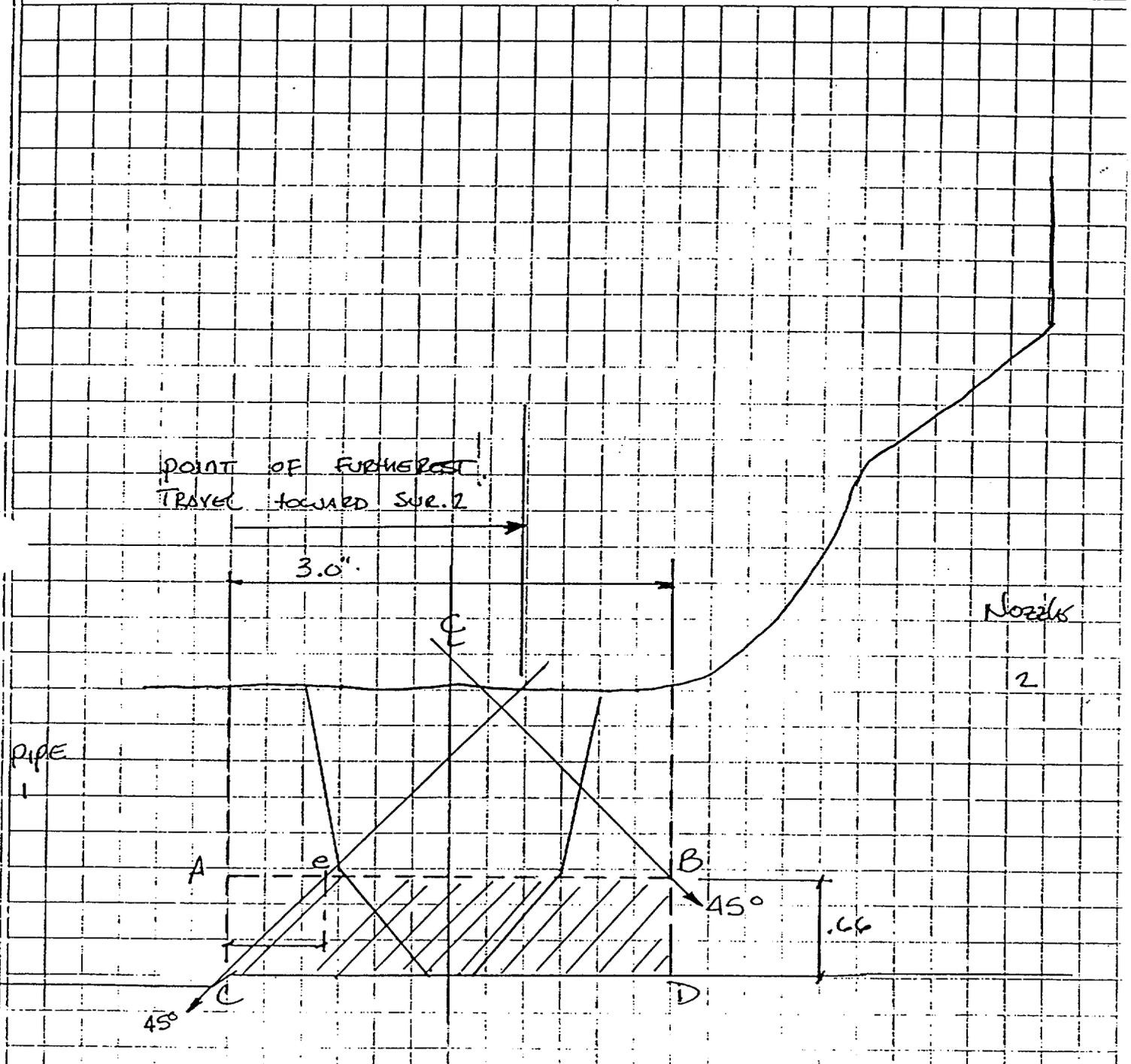
Station McGUIRE EOCII Unit 1 Rev. _____ File No. _____ Sheet _____ Of _____

Subject LIMITATIONS.

By James W. Sitzer III Date 2/24/97

Prob No. BO9.031.006

Checked By _____ Date _____



$$ABC \& D \text{ AREA} = .66 \times 3.0'' = 1.98 \text{ sq in.}$$

$$ACE \text{ AREA} = \frac{.66 \times .66}{2} = .23 \text{ sq in.}$$

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 6/8/98 Sheet Number: 9801039

Procedure: NDE-610 Rev: 4 FC: 97-01 Couplant: ULTRAGEL II Batch Number: 95325

Examiner: David Zimmerman *David K. Zimmerman* Level: II Calibration Block ID: 50214 Pyrometer S/N: MCNDE 27008
 Examiner: Larry Mauldin *Larry Mauldin* Level: III Calibration Block Temp: 75° F Cal Due: 7/27/98

REFERENCE BLOCK		SIMULATOR BLOCK	
ID: 610-A		ID: N/A	Reflector Type: N/A
Type: SPECIAL IIW	Material: SS	Gain: N/A	Signal Ampl: N/A Metal Path: N/A

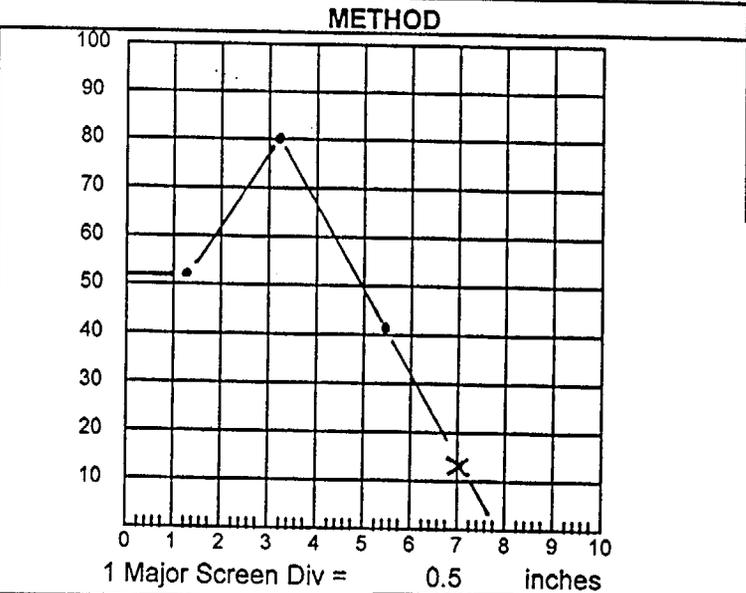
INSTRUMENT		TRANSDUCER	
Manufacturer: KRAUTKRAMER		Type: Single <input type="checkbox"/> Dual <input checked="" type="checkbox"/>	Size: .75x.75 Freq: 1.0 Mhz Wedge: INT
Serial No: 32810-4018		Manufacturer: Harisonics Ser no: L2136	Meas. <input checked="" type="checkbox"/> 45°

INSTRUMENT SETTINGS

Gain	50
Range	5.0
MTVEL	229.6
Delay	6.6
Pulser	DUAL
Reject	OFF
Freq	1-5
Zero	6.76
Display	FULL
PRF	HIGH

CALIBRATION

Reflector Type	Amplitude %FSH	Metal Path inches
SDH		
1 /8 node	52%	0.790
2 /8 node	80%	1.670
3 /8 node	41%	2.530
/8 node		
other NOTCH	12%	3.6
Cal Direction: axial <input checked="" type="checkbox"/> circ. <input type="checkbox"/>		
Wave Mode: Long. <input checked="" type="checkbox"/> shear <input type="checkbox"/>		
surf. <input type="checkbox"/>		
Remarks:		



CABLES

RG58
 RG174
 Length: 6'

Initial Cal Time: 1125

Cal Checks Time	Initials
1310	LN
FINAL	

Item No: B09.031.007

Jack: T R

Reviewer: *Rod Sheffield* Level: II Date: 6-17-98 Authorized Inspector: *Neil* Date: 6-23-98

SERIAL No. 98.004
 Attachment ID 8517198
 PAGE 1 of 8

DUKE POWER COMPANY
ULTRASONIC CALIBRATION SHEET FOR USK-7D INSTRUMENTS

FORM NDE-UT-1E

REVISION 2

Station: McGuire Unit: 1 Date: 6/8/98 Sheet Number: 9801040

Procedure: NDE-610 Rev: 4 FC: 97-01 Couplant: ULTRAGEL II Batch Number: 95325

Examiner: David Zimmerman *David K. Z* Level: II Calibration Block ID: 50214 Pyrometer S/N: MCNDE 27008

Examiner: Larry Mauldin *Larry Mauldin* Level: III Calibration Block Temp: 75° F Cal Due: 7/27/98

REFERENCE BLOCK

ID: 610-C
 Type: SPECIAL IIW Material: SS

SIMULATOR BLOCK

ID: N/A Reflector Type: N/A
 Gain: N/A Signal Ampl: N/A Metal Path: N/A

INSTRUMENT

Manufacturer: KRAUTKRAMER
 Serial No: 32810-4018

TRANSDUCER

Type: Single Dual Size: .75x.75 Freq: 1.0 Mhz Wedge: INT
 Manufacturer: Harisonics Ser no: L2136 Meas. 45 °

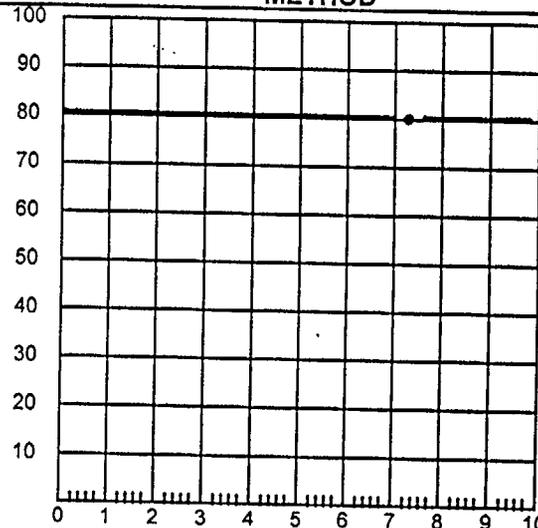
INSTRUMENT SETTINGS

Gain	<u>60</u>
Range	<u>5.0</u>
MTVEL	<u>229.6</u>
Delay	<u>6.6</u>
Pulser	<u>DUAL</u>
Reject	<u>OFF</u>
Freq	<u>1-5</u>
Zero	<u>6.76</u>
Display	<u>FULL</u>
PRF	<u>HIGH</u>

CALIBRATION

Reflector Type	Amplitude %FSH	Metal Path inches
<u>NOTCH</u>		
<u>/8 node</u>		
<u>other NOTCH</u>	<u>80%</u>	<u>3.67</u>
Cal Direction: axial <input type="checkbox"/> circ. <input checked="" type="checkbox"/>		
Wave Mode: Long. <input checked="" type="checkbox"/> shear <input type="checkbox"/>		
surf. <input type="checkbox"/>		

METHOD



CABLES

RG58
 RG174
 Length: 6'

Initial Cal Time

1130

Cal Checks

Time	Initials
<u>1312</u>	<u>LR</u>
<u>FINAL</u>	

Item No: B09.031.007

Jack: T R

Reviewer: Rod Sheffield Level: II Date: 6-17-98 Authorized Inspector: [Signature] Date: 6-23-98

Attachment 10
Page 2 of 2
8/27/98

3

DUKE POWER COMPANY						Exam Start: 1236		Form NDE-UT-2A		
ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS						Exam Finish: 1248		Revision 4		
Station: McGuire		Unit: 1	Component/Weld ID: 1NC52-WN6				Date: 6/8/98			
Weld Length (in.): 63.0"		Surface Condition: AS GROUND		Lo: 9.2.3		Surface Temperature: 74 ° F				
Examiner: Larry Mauldin <i>Larry Mauldin</i>		Level: III		Scans:		Pyrometer S/N: MCNDE 27008				
Examiner: David Zimmerman <i>David Zimmerman</i>		Level: II		45 <input checked="" type="checkbox"/> 64 dB 70 <input type="checkbox"/> _____ dB		Cal Due: 7/27/98				
Procedure: NDE-610 Rev: 4		FC: 97-01		45T <input checked="" type="checkbox"/> 68 dB 70T <input type="checkbox"/> _____ dB		Configuration: OP 3 PC.B to LOOP 3 PC.1 (
Calibration Sheet No: 9801039, 9801040				60 <input type="checkbox"/> _____ dB		LOOP Flow NOZZLE				
				60T <input type="checkbox"/> _____ dB		S1 to S2				
				Other: _____ dB		Scan Surface: OD				
						Applies to NDE-680 only				
						Skew Angle: N/A				

IND #	<input checked="" type="checkbox"/>	Max % Ref	Mp Max	W Max	L Max	L1	L2	W1	Mp1	W2	Mp2	Beam Dir.	Exam Surf.	Scan	Damps	
		DO NOT WRITE IN THIS SPACE				20%dac HMA		DO NOT WRITE IN THIS SPACE								
						50%dac	50%dac	50%dac	50%dac	50%dac	50%dac					
						100%dac	100%dac	100%dac	100%dac	100%dac	100%dac					
NRI		45°														
NRI		45°T														

Remarks:					
Limitations: (see NDE-UT-4) <input checked="" type="checkbox"/> 90% or greater coverage obtained: yes <input type="checkbox"/> no <input checked="" type="checkbox"/>					Sheet _____ of _____
Reviewed By: <i>Rod Sheffield</i>		Level: <i>II</i>	Date: <i>6-17-98</i>	Authorized Inspector: <i>[Signature]</i>	
				Date: <i>6-23-98</i>	Item No: B09.031.007

Attachment 10
 PAGE 3 of 8
 8/23/98

**DUKE POWER COMPANY
ISI LIMITATION REPORT**

FORM NDE-UT-4

Revision 1

Component/Weld ID: 1NC52-WN6

Item No: B09.031.007

Remarks:

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L 14.0" to L 26.0" INCHES FROM WO 0.0" to BEYOND
 ANGLE: 0 45 60 Other _____ FROM N/A DEG to N/A DEG

DUE TO PERMANENT PIPE SUPPORT
(THIS LIMITATION WAS ON PROFILE
1)

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L 0.0" to L 63.0" INCHES FROM WO C/L to BEYOND
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

DUE TO NIZZLE CONFIGURATION

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

NO SCAN SURFACE BEAM DIRECTION
 LIMITED SCAN 1 2 1 2 cw ccw
 FROM L _____ to L _____ INCHES FROM WO _____ to _____
 ANGLE: 0 45 60 Other _____ FROM _____ DEG to _____ DEG

Prepared By: *Larry Maubler*

Level: *III*

Date: *6.8.98*

Sketch(s) attached yes no

Sheet _____ of _____

Reviewed By: *Rod Sheffield*

Date: *6.17.98*

Authorized Inspector: *[Signature]*

Date: *6.23.98*

Attachment 10
 PAGE 4 of 8
 8/5/98

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
	Revision 0

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
PROFILE 1- 0.783" X 2.0"= 1.57 SQ. IN. PROFILE 2- 0.783" X 2.4"= 1.88 SQ. IN.	63.0" CIRC. / 2= 31.5" PROFILE 1- 1.57 SQ. IN. X 31.5" = 49.46 CU. IN. PROFILE 2- 1.88 SQ. IN. X 31.5"= 59.22 CU. IN.

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
PROFILE 1							
1	45°	2	1.55	19.5	30.23	30.62	98.73
1	45°	2	0	12	0	18.84	0.00
2	45°	1	0	31.5	0	49.46	0.00
3	45°	CW	0.27	19.5	5.27	30.62	17.21
3	45°	CW	0	12	0	18.84	0.00
4	45°	CCW	0.27	19.5	5.27	30.62	17.21
4	45°	CCW	0	12	0	18.84	0.00
PROFILE 2							
5	45°	2	1.88	31.5	59.22	59.22	100.00

Item No:	B09.031.007
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Prepared By: <i>Randy Mauldin</i>	Level: <i>III</i>	Date: <i>6-8-98</i>
Reviewed By: <i>Paul Sheffield</i>	Level: <i>II</i>	Date: <i>6-17-98</i>

6/17/98

DUKE POWER COMPANY Limited Examination Coverage Worksheet	NDE-91-1
Revision 0	

Examination Volume/Area Defined				
<input checked="" type="checkbox"/> Base Metal	<input checked="" type="checkbox"/> Weld	<input type="checkbox"/> Near Surface	<input type="checkbox"/> Bolting	<input type="checkbox"/> Inner Radius

Area Calculation	Volume Calculation
PROFILE 1- 0.783" X 2.0" = 1.57 SQ. IN. PROFILE 2- 0.783" X 2.4" = 1.88 SQ. IN.	63.0" CIRC. / 2 = 31.5" PROFILE 1- 1.57 SQ. IN. X 31.5" = 49.46 CU. IN. PROFILE 2- 1.88 SQ. IN. X 31.5" = 59.22 CU. IN.

Coverage Calculations							
Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
6	45°	1	0	31.5	0	59.22	0.00
7	45°	CW	0.47	31.5	14.8	59.22	24.99
8	45°	CCW	0.47	31.5	14.8	59.22	24.99
					129.59	434.72	29.81

		Item No:	B09.031.007
Prepared By: <i>Larry Mauder</i>	Level: <i>III</i>	Date: <i>6-8-98</i>	
Reviewed By: <i>Rod Sheffield</i>	Level: <i>II</i>	Date: <i>6-17-98</i>	

11/15/98

14" NOZZLE

PROFILE #2

INC 52-WN 6

309.031.007

AREA OF INTEREST

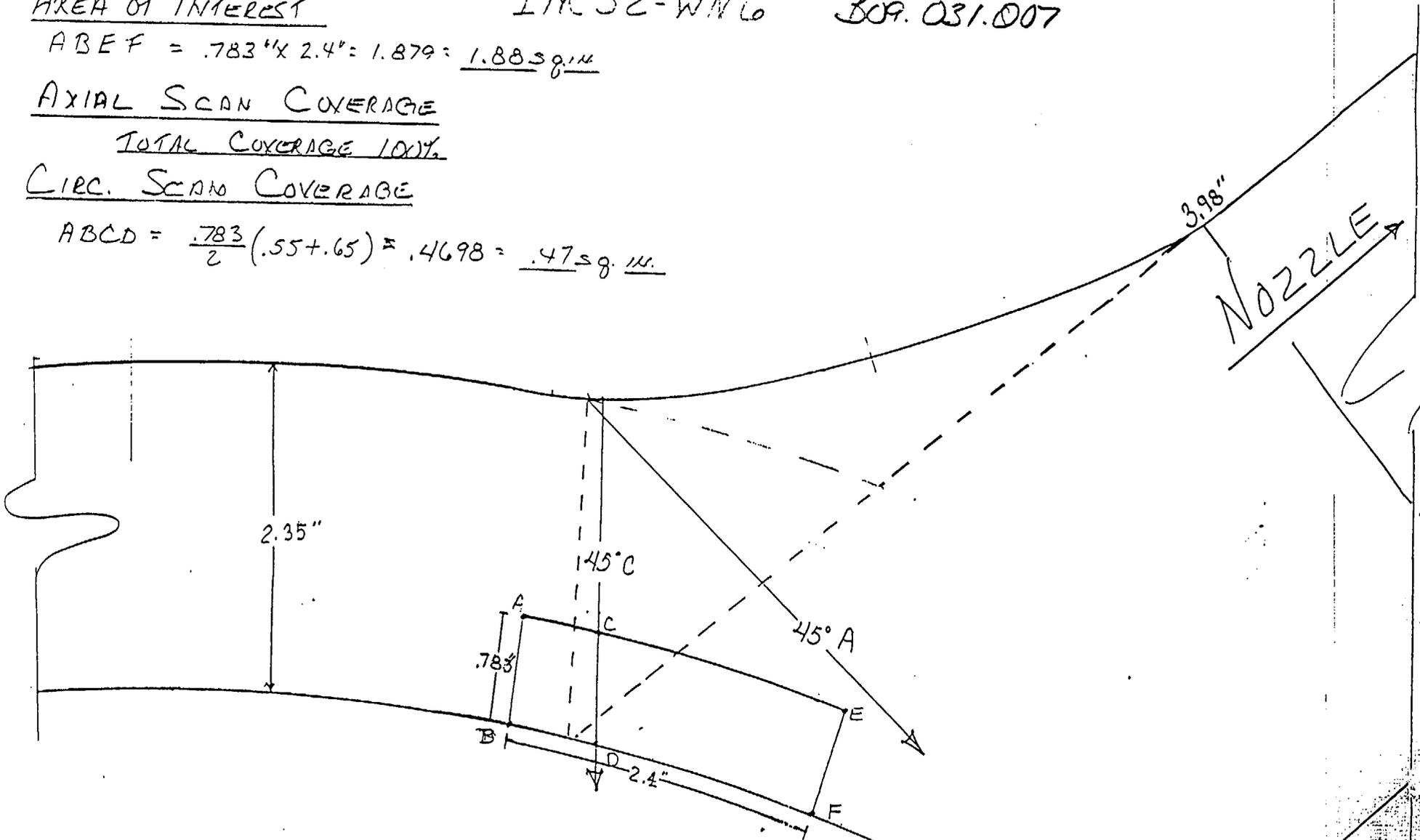
$ABEF = .783' \times 2.4" = 1.879 = \underline{1.88 \text{ sq. in.}}$

AXIAL SCAN COVERAGE

TOTAL COVERAGE 100%

CIRC. SCAN COVERAGE

$ABCD = \frac{.783}{2} (.55 + .65) = .4698 = \underline{.47 \text{ sq. in.}}$



- FULL COVERAGE
- NO COVERAGE
- AREA NOT COVERED BY CIRC. SCAN

By: Karun Maudhji

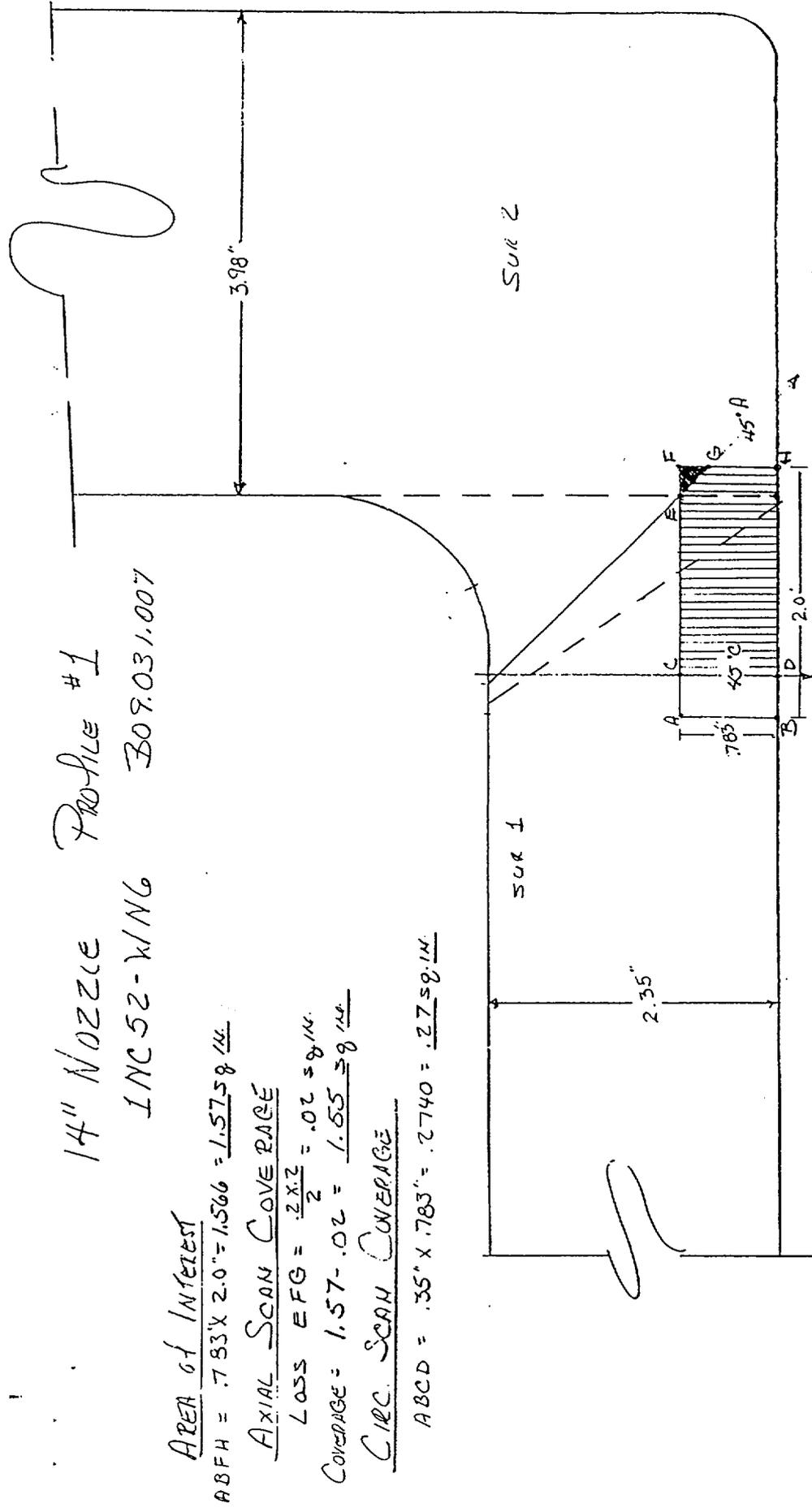
DATE: 6-8-98

14" NOZZLE PROFILE #1
INC 52-WING B09.031.007

AREA of INTEREST
 $ABFH = .783 \times 2.0 = 1.566 = \underline{1.5758 \text{ IN.}}$

AXIAL SCAN COVERAGE
 $LOSS \ EFG = \frac{.2 \times .2}{2} = .02 \text{ IN.}$
 $COVERAGE = 1.57 - .02 = \underline{1.55 \text{ IN.}}$

CIRC. SCAN COVERAGE
 $ABCD = .35 \times .783 = .2740 = \underline{.2758 \text{ IN.}}$



- FULL COVERAGE
- NO COVERAGE
- AREA NOT COVERED BY CIRC. SCAN

BY: Larry A. ...
 DATE: 6.8.98