Duke Energy.

W. R. McCollum, Jr.
Vice President

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July 29, 2002

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: Duke Energy
Oconee Nuclear Station, Unit 1
Docket Nos. 50-269
Third Ten Year Inservice Inspection Interval
Request for Relief No. 02-005

Pursuant to 10 CFR 50.55a(g)(5)(iii), attached is a Request for Relief from the requirement to examine 100% of the volume specified by the ASME Boiler and Pressure Vessel Code, Section XI, 1989 Edition with no Addenda (as modified by Code Case N-460). This request is to allow Duke Energy to take credit for seventeen (17) limited ultrasonic examinations on welds described in the attached request. During examination of the subject Unit 1 welds, the ultrasonic examination coverage did not meet the 90% examination requirements of Code Case N-460. The obtainable volume coverage for each weld examination is indicated on the attached request. Achievement of greater examination coverage for these welds is impractical due to piping/valve geometry, interferences, and existing examination technology. Therefore, Duke Energy requests that the NRC grant relief as authorized under 10 CFR 50.55a(g)(6)(i).

If there are any questions or further information is needed you may contact R. P. Todd at (864) 885-3418.

Very truly yours,

W. R. McCollum, Jr.
Site Vice President

Attachment

A047

xc w/att: L. A. Reyes, Regional Administrator
U.S. Nuclear Regulatory Commission, Region II
Atlanta Federal Center
61 Forsyth St., SWW, Suite 23T85
Atlanta, GA 30303

L. N. Olshan, Project Manager, Section 1
Project Directorate II
Division of Licensing Project Management
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001

xc(w/o attch):

M. C. Shannon
Senior NRC Resident Inspector
Oconee Nuclear Station

Mr. Virgil Autrey
Division of Radioactive Waste Management
Bureau of Land and Waste Management
SC Dept. of Health & Environmental Control
2600 Bull St.
Columbia, SC 29201

Proposed Relief in Accordance with 10 CFR 50.55a(g)(5)(iii)
Inservice Inspection Impracticality

Duke Energy Corporation
Oconee Nuclear – Unit 1 (EOC-20)
Third 10-Year Interval – Inservice Inspection Plan
ASME Section XI Code – 1989 Edition with No Addenda

	I.	II. & III.	IV.	V.	VI.	VII.
Limitation I.D. Number	**System / Component for Which Relief is Requested:** Area or Weld to be Examined	**Code Requirement from Which Relief is Requested:** 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	**Basis for Relief**	**Alternate Examinations or Testing**	**Justification for Granting Relief**	**Implementation Schedule**
1-SGA-WG25	RC System Steam Generator 1A Nozzle-to-Vessel Weld	Exam Category B-D Item No. B03.130.005 Fig. IWB-2500-7(a) 57.98% Volume Coverage	See Paragraph "A"	See Paragraph "G"	See Paragraph "H"	See Paragraph "L"
1-SGB-WG25	RC System Steam Generator 1B Nozzle-to-Vessel Weld	Exam Category B-D Item No. B03.130.006 Fig. IWB-2500-7(a) 57.98% Volume Coverage	See Paragraph "A"	See Paragraph "G"	See Paragraph "H"	See Paragraph "L"
1-SGA-WG25	RC System Steam Generator 1A Nozzle Inside Radius Section	Exam Category B-D Item No. B03.140.005 Fig. IWB-2500-7) (a) 70.21% Volume Coverage	See Paragraph "A"	See Paragraph "G"	See Paragraph "I"	See Paragraph "L"
1-SGB-WG25	RC System Steam Generator 1B Nozzle Inside Radius Section	Exam Category B-D Item No. B03.140.006 Fig. IWB-2500-7(a) 70.21% Volume Coverage	See Paragraph "A"	See Paragraph "G"	See Paragraph "I"	See Paragraph "L"
1-LDCB-IN-V1	HPI System Let Down Cooler 1B Inlet Nozzle-to-Channel Body Weld	Exam Category B-D Item No. B03.150.003 Fig. IWB-2500-7(a) 27.48% Volume Coverage	See Paragraph "B"	See Paragraph "G"	See Paragraph "I"	See Paragraph "L"

	I.	II. & III.	IV.	V.	VI.	VII.
Limitation I.D. Number	**System / Component for Which Relief is Requested:** Area or Weld to be Examined	**Code Requirement from Which Relief is Requested:** 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	**Basis for Relief**	**Alternate Examinations or Testing**	**Justification for Granting Relief**	**Implementation Schedule**
1-LDCB-OUT-V2	HPI System Let Down Cooler 1B Outlet Nozzle-to-Channel Body Weld	Exam Category B-D Item No. B03.150.004 Fig. IWB-2500-7(a) 27.48% Volume Coverage	See Paragraph "B"	See Paragraph "G"	See Paragraph "I"	See Paragraph "L"
1-RPV-LIGAMENTS	RC System Reactor Vessel Threads in Flange 180° to 360°	Exam Category B-G-1 Item No. B06.040.001A Fig. IWB-2500-12 (a-b-c-d-e-f-g-h) 84.52% Volume Coverage	See Paragraph "C"	See Paragraph "G"	See Paragraph "I"	See Paragraph "L"
1LP-128-80	LP System Reducer to Valve 1LP-18 Weld	Exam Category C-F-1 Item No. C05.011.007 Fig. IWC-2500-7(a) 59.74% Volume Coverage	See Paragraph "D"	See Paragraph "G"	See Paragraph "K"	See Paragraph "L"
1HP-192-15	HPI System Pipe to Flange Orifice Weld	Exam Category C-F-1 Item No. C05.021.006 Fig. IWC-2500-7(a) 60.99% Volume Coverage	See Paragraph "E"	See Paragraph "G"	See Paragraph "K"	See Paragraph "L"
1-51A-01-91A	HPI System Pipe to Valve 1HP-128 Weld	Exam Category C-F-1 Item No. C05.021.043 Fig. IWC-2500-7(a) 60.84% Volume Coverage	See Paragraph "D"	See Paragraph "G"	See Paragraph "K"	See Paragraph "L"
1HP-324-118B	HPI System Tee to Valve 1HP-119 Weld	Exam Category C-F-1 Item No. C05.021.065 Fig. IWC-2500-7(a) 61.54% Volume Coverage	See Paragraph "D"	See Paragraph "G"	See Paragraph "K"	See Paragraph "L"
1-51A-01-32AA	HPI System Pipe to Valve 1HP-23 Weld	Exam Category C-F-1 Item No. C05.021.078 Fig. IWC-2500-7(a) 60.39% Volume Coverage	See Paragraph "D"	See Paragraph "G"	See Paragraph "K"	See Paragraph "L"
1HP-393-127A	HPI System Pipe to Valve 1HP-105 Weld	Exam Category C-F-1 Item No. C05.021.084 Fig. IWC-2500-7(a) 59.31% Volume Coverage	See Paragraph "D"	See Paragraph "G"	See Paragraph "K"	See Paragraph "L"

	I.	II. & III.	IV.	V.	VI.	VII.
Limitation I.D. Number	**System / Component for Which Relief is Requested:** Area or Weld to be Examined	**Code Requirement from Which Relief is Requested:** 100% Exam Volume Coverage Exam Category Item No. Fig. No. Limitation Percentage	**Basis for Relief**	**Alternate Examinations or Testing**	**Justification for Granting Relief**	**Implementation Schedule**
1-51A-02-34B	HPI System Elbow to Valve 1HP-134 Weld	Exam Category C-F-1 Item No. C05.021.090 Fig. IWC-2500-7(a) 61.3% Volume Coverage	See Paragraph "D"	See Paragraph "G"	See Paragraph "K"	See Paragraph "L"
1HP-193-12	HPI System Tee to Valve 1HP-26 Weld	Exam Category C-F-1 Item No. C05.021.096 Fig. IWC-2500-7(a) 59.37% Volume Coverage	See Paragraph "D"	See Paragraph "G"	See Paragraph "K"	See Paragraph "L"
1HP-70-11	HPI System Expansion Joint M-0891 to Elbow Weld	Exam Category C-F-1 Item No. C05.021.102 Fig. IWC-2500-7(a) 56.22% Volume Coverage	See Paragraph "F"	See Paragraph "G"	See Paragraph "K"	See Paragraph "L"
1-51A-01-103A	HPI System Pipe to Valve 1HP-109 Weld	Exam Category C-F-1 Item No. C05.021.110 Fig. IWC-2500-7(a) 60.71% Volume Coverage	See Paragraph "D"	See Paragraph "G"	See Paragraph "K"	See Paragraph "L"

Note: See Attachment A for a drawing on the Steam Generator welds listed above.

See Attachment B for a drawing on the Let Down Cooler welds listed above.

See Attachment C for examination data for all items listed above.

IV. Basis for Relief

Paragraph A:
During the ultrasonic examination of welds 1-SGA-WG25 & 1-SGB-WG25 and the Inside Radius Sections for both nozzles, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 57.98% and 70.21%, respectively. Limitations are caused by the nozzle configuration. The percentage of coverage reported represents the aggregate coverage. In order to achieve more coverage the nozzle would have to be re-designed to allow scanning from both sides of the weld, which is impractical.

Paragraph B:
During the ultrasonic examination of welds 1-LDCB-IN-V1 and 1-LDCB-OUT-V2, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 27.48%. Limitations are caused by the branch-weld configuration. The percentage of coverage reported represents the aggregate coverage. In order to achieve more coverage the nozzle would have to be re-designed to allow scanning from both sides of the weld, which is impractical.

Paragraph C:
During the ultrasonic examination of 1-RPV-LIGAMENTS, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 84.52%. Limitations are caused by the clad area at each stud hole that causes the search unit to lift off the scanning surface. The percentage of coverage reported represents the aggregate coverage. In order to achieve more coverage the flange would have to be re-designed to allow for scanning, which is impractical.

Paragraph D:
During the ultrasonic examination of welds 1LP-128-80, 1-51A-01-91A, 1HP-324-118B, 1-51A-01-32AA, 1HP-393-127A, 1-51A-02-34B, 1HP-193-12, and 1-51A-01-103A, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 59.74%, 60.84%, 61.54%, 60.39%, 59.31%, 61.3%, 59.37%, and 60.71%, respectively. Limitations are caused by the single sided access due to the valve configuration. The percentage of coverage reported represents the aggregate coverage. In order to achieve more coverage the valve configuration would have to be re-designed to allow scanning from both sides of the weld, which is impractical.

Paragraph E:
During the ultrasonic examination of weld 1HP-192-15, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 60.99%. Limitations are caused by the flange configuration. In order to achieve more coverage the flange configuration would have to be re-designed to allow scanning from both sides of the weld, which is impractical.

Paragraph F:
During the ultrasonic examination of weld 1HP-70-11, 100% coverage of the required examination volume could not be obtained. The examination coverage was limited to 56.22%. Limitations are caused by the expansion joint configuration, which prevents access to both sides of the weld. In order to achieve more coverage the expansion joint configuration would have to be re-designed, which is impractical.

V. Alternate Examinations or Testing

Paragraph G:
The scheduled 10-year code examination was performed on the referenced area/weld and it resulted in the noted limited coverage of the required ultrasonic volume. No additional examinations are planned for the area/weld during the current inspection interval.

VI. Justification for Relief

Paragraph H:
Ultrasonic examination of welds for item number B03.130 were conducted using personnel, equipment and procedures qualified in accordance with ASME Section XI, Appendix VIII, Supplements 4 and 6 of the 1995 Edition with the 1996 Addenda as administered through the Performance Demonstration Initiative (PDI) Program. Although 100% coverage of the examination volume could not be achieved, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. (See Paragraph J for additional justification.)

Paragraph I:
Ultrasonic examination of welds for item numbers B03.140, B03.150 and B06.040 were conducted in accordance with ASME Section XI, Appendix I, 1989 Edition with no Addenda. Although 100% coverage of the examination volume could not be achieved, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. (See Paragraph J for additional justification.)

Paragraph J:
Duke Energy will use pressure testing and VT-2 visual examination to compliment the limited examination coverage. The Code requires (reference Table IWB-2500-1, item numbers B15.050 , B15.030 and item number B15.040) that a system leakage test be performed after each refueling outage for Class 1. Additionally a system hydrostatic test (reference Table IWB-2500-1, item numbers B15.051, B15.031 and item number B15.041) is required once during each 10-year inspection interval. These tests require a VT-2 visual examination for evidence of leakage. This testing will provide adequate assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), there are other activities which provide a high level of confidence that, in the unlikely case that leakage did occur through these areas/welds, it would be detected and isolated. Specifically, leakage from these areas/welds would be detected by monitoring of the Reactor Coolant System (RCS), which is performed once each shift under procedure PT/1,2,3/A/0600/10, "RCS Leakage". This RCS leakage monitoring is a requirement of the Technical Specification 3.4.13, "Reactor Coolant System Leakage". Leakage is also evaluated in accordance with this Technical Specification. The leakage could be detected through several methods. One is the RCS mass balance calculation. A second is the Reactor Building air particulate monitor. This monitor is sensitive to low leak rates; the iodine monitor, gaseous monitor and area monitor are capable of detecting any fission products in the coolant and will make these monitors sensitive to coolant leakage. A third is the level indicator in the Reactor Building normal sump. A fourth is a loss of level in the Letdown Storage Tank. This will provide reasonable assurance of weld/component integrity.

Duke Energy has examined the welds/components referenced in this request to the maximum extent possible utilizing the latest in examination techniques and equipment. The welds/components identified in Section I of this request were rigorously inspected by volumetric NDE methods during construction and verified to be free from unacceptable fabrication defects. Based on the coverage and results of the required volumetric exams this outage, the additional pressure testing (VT-2) exams, and the various methods for leakage detection, it's our opinion that this combination of examinations provides a reasonable assurance of component integrity. Thus, an acceptable level of quality and safety will have been achieved and allowing relief from the aforementioned Code requirements will not endanger public health and safety.

Paragraph K:
Although the examination volume for C05.011 and C05.021 items as defined in ASME Section XI 1989 Edition with no addenda, Figure IWC-2500-7(a) could not be covered, the amount of coverage obtained for this examination provides an acceptable level of quality and integrity. This weld was examined using procedures, personnel and equipment qualified through the Performance Demonstration Initiative (PDI). In addition, this weld was examined during installation using volumetric and surface NDE methods.

Current ultrasonic technology is not capable of consistently detecting and sizing flaws on the far side of an austenitic weld for configurations common to U.S. nuclear applications. To demonstrate that the best available technology was applied, PDI provides a best effort qualification instead of a complete single side demonstration. PDI Performance Demonstration Qualification Summary (PDQS) for austenitic piping shows that single sided examination is performed as a best effort. Therefore, the far side of the austenitic weld, which can only be accessed from one side, will be listed as an area of no coverage.

Duke Energy will use pressure testing and VT-2 visual examination to compliment the limited examination coverage. The Code requires (reference IWC-2500-1, Item Numbers C07.030) that a functional/system inservice test once each period for Class 2 items. Additionally a system hydrostatic test (reference Table IWC-2500-1, Item Number C07.40) is required once during each 10-year inspection interval. These tests require a VT-2 visual examination for evidence of leakage. This testing will provide adequate assurance of pressure boundary integrity.

In addition to the above Code required examinations (volumetric and pressure test), there are other activities which provide a high level of confidence that, in the unlikely case that leakage did occur through these welds, it would be detected and isolated. One is that leakage from these welds would be detected by Operations personnel during their regular rounds (reference OP/1/A/1102/020. The Nuclear Equipment Operator has been trained to look for any unusual conditions, such as leaks. In addition the procedure addresses leaks as being an item to consider during rounds. All C05.011 and C05.021 items in this request are located in an area where operations personnel will be walking through as part of their rounds, with the exception of item number C05.021.078; therefore, any leak would be identified by visual observation. A second is that air monitors in the exhaust stacks. A third is that if a specific sump has to be pumped frequently would indicate leakage. All of these together will provide reasonable assurance of weld/component integrity.

Duke Energy has examined the welds/components referenced in this request to the maximum extent possible utilizing the latest in examination techniques and equipment. The welds/components identified in Section I of this request were rigorously inspected by volumetric NDE methods during construction and verified to be free from unacceptable fabrication defects. Based on the coverage and results of the required volumetric exams this outage and the additional pressure testing (VT-2) exams, it's our opinion that this combination of examinations provides a reasonable assurance of component integrity. Thus, an acceptable level of quality and safety will have been achieved and allowing relief from the aforementioned Code requirements will not endanger public health and safety.

VII. Implementation Schedule

Paragraph L
The scheduled third 10-year interval plan code examination was performed on the referenced area/weld resulting in limited volumetric coverage. No additional examinations are planned for the area/weld during the current inspection interval. The same area/weld may be examined again as part of the next (fourth) 10-year interval plan, depending on the applicable code year edition and addenda requirements adopted in the future.

VIII. Other Information

The following individuals contributed to the development of this relief request:

Jim McArdle (NDE Level III Inspector) provided Sections II through V and part of Section VI.

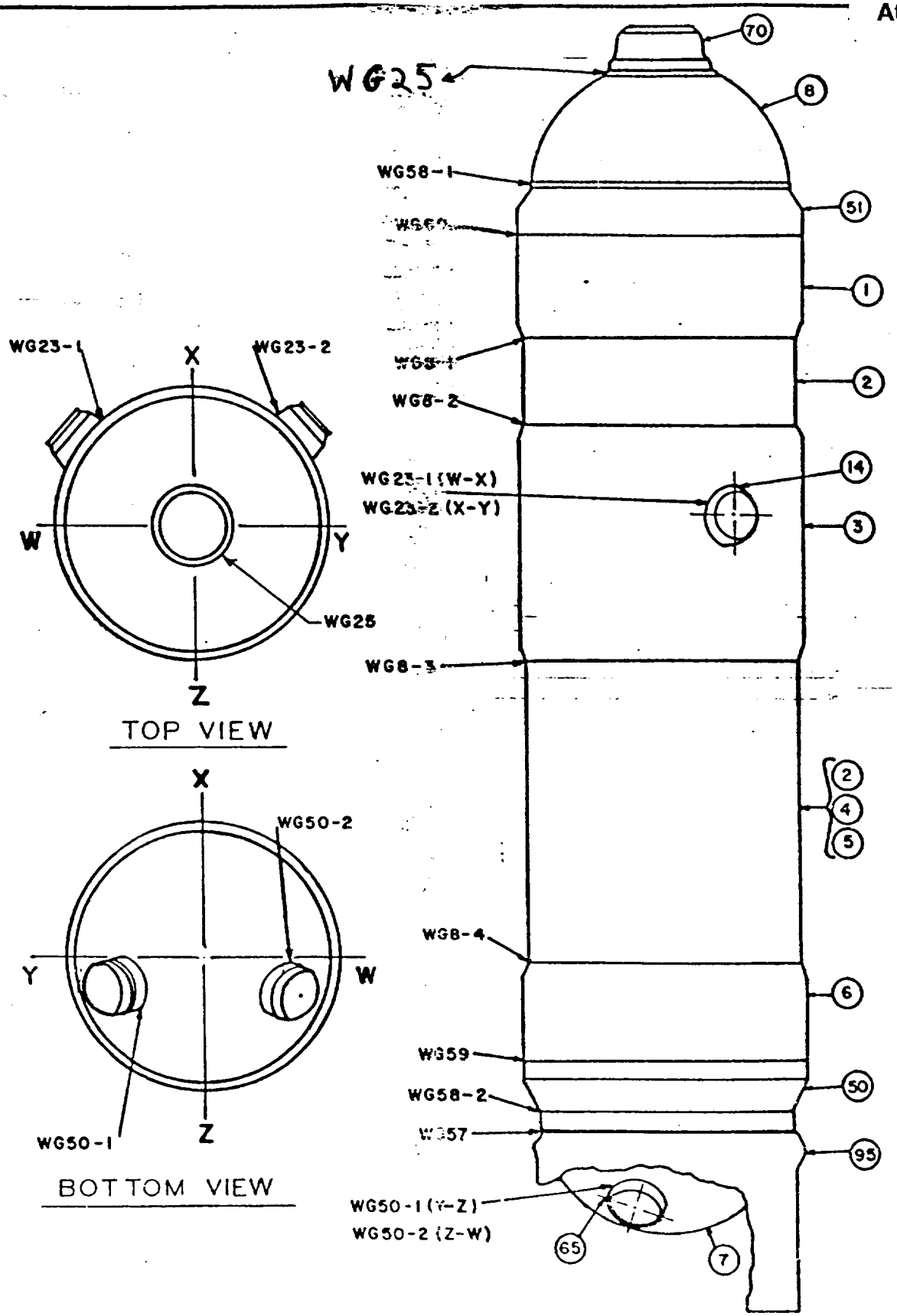
B. W. Carney, Jr. (Oconee Engineering) provided part of Section VI.

Larry C. Keith, (Oconee ISI Plan Manager) compiled the remaining sections.

Sponsored By: Larry C. Keith **Date** 7-23-02

Approved By: R. Kevin Rhyne **Date** 7/23/02

Attachment A	Drawing on Steam Generator
Attachment B	Drawing on Let Down Cooler
Attachment C	Copies of Examination Data



BE PRECEDED BY "ISGB-".	1	Add Top-Bottom Views & Ref. Drawings		AJH	108	TITLE
				7-21-81	7-23-81	STEAM GENERATOR
N IN CIRCLES.	0	ORIGINAL	AWS			WELD OUTLINE
	NO.	REVISION	DRWN	RVWD	APPD	DWG NO. ISI-OCNI-004 REV. 1
			DATE	DATE	DATE	

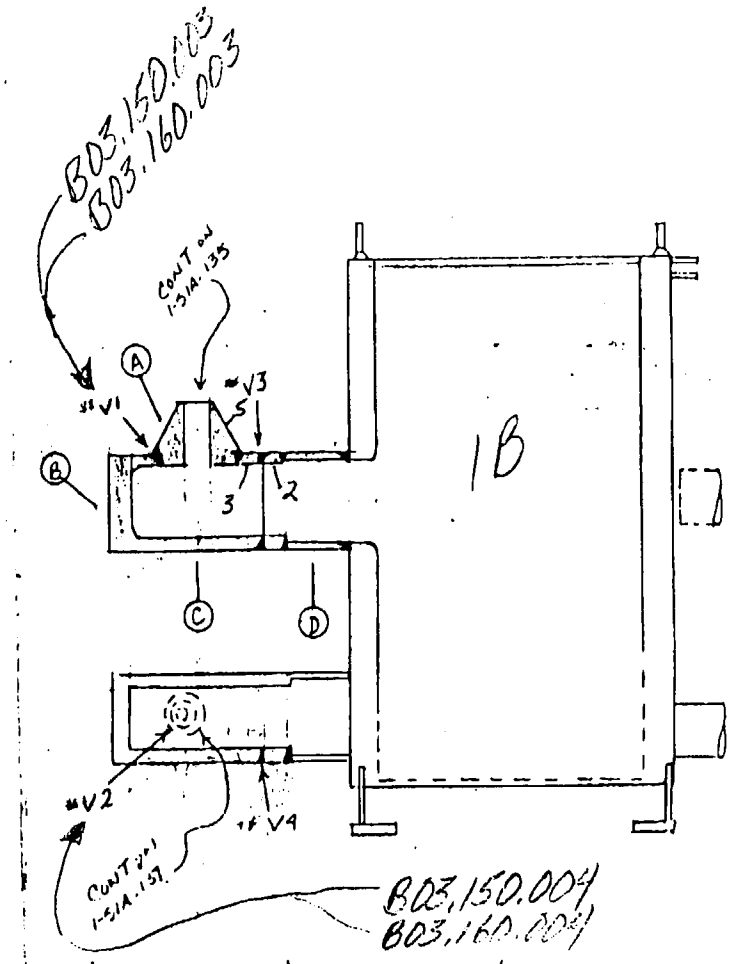
Apr 24 02 03:59p WTS QA 885 3375 p.1

31028

BILL OF MATERIAL

ATEM NO.	QUANTITY	MATERIAL CLASS	MATERIAL TYPE	SPECIFICATION ASME OR ASTM	SPECIFICATION GRADE	DESCRIPTION	CONST.	SIZE	SCH.	LOT NO.
A)	0	P	S	SA182	F316L	Bar	For	–	–	
B)	0	P	S	SA182	F316L	Bar	For	–	–	
C)	0	P	S	SA182	F316L	Bar	For	–	–	
D)	0	P	S	SA312	TP316L	PIPE	SMLS	8"	40	

9840381 7



* SEE Note B △ See Note 9 ** SEE Note 5

NOTES:

1. ALL WELD NUMBERS SHALL BE PRECEDED BY 1-53755A
2. LAST WELD NO. 4
3. REF. LAYOUT DWG. CM-1501-1919.001
4. REF. FLOW DWG. OFD 101A-11
5. VENDOR WELDS
6. WORK REQUEST NO.
7. Design Temp. Design Press.
8. COOLER CONSTRUCTED PER ASME SECTION III CLASS 3
9. PLEASE FIG IN UNIT 1 SYS SIA THIS LETDOWN COOLER IS CURRENTLY "1B" (all tubes are designated 1-)

The cooler serial numbers the tag number.

NO.	REVISION	DRAWN DATE	CHK'D DATE	MECH DATE
1	Renumber welds 1-4 may are vendor welds & will be standardized per DN Dwg for ISI program. ADD CONT.	TJC 6-7-93	RF 6-8-93	TJC 6-8-93
0	Rel. For ISI	TJC 1/30/92	TJC 11/23/92	TJC 11/23/92

QA CONDITION → ☒ 1 ☐ 2 ☐ 3 ☐ 4

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT

TITLE: LETDOWN COOLER Serial No. 53755

SYS. SIA LINE NO. 4 DUKE CLASS CA
CODE CLASS SECTIII XI CLASS A
PIPING SPEC. 1501.2
LOCATION Reactor BLD
DWG. NO. 1-53755A REV NO. 1

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0915	Exam Finish: 0959	Form NDE-UT-2A Revision 4

Station: Oconee	Unit: 1	Component/Weld ID: 1-SGA-WG25	Date: 4/9/2002
Weld Length (in.): 152.7	Surface Condition: GROUND	Lo: 9.2.1	Surface Temperature: 84 ° F

Examiner: James H. Resor Level: II

Examiner: Gayle E. Houser Level: III

Procedure: NDE-970 Rev: 0

FC: 00-08

Calibration Sheet No: 0201109, 0201110

Scans:

45 ☒ 57 dB 70 ☐ ____ dB

45T ☒ 57 dB 70T ☐ ____ dB

60 ☐ ____ dB

60T ☐ ____ dB

Other: 0° @ 20 dB

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Configuration: HEAD TO NOZZLE

S1 Flow S2

HEAD to NOZZLE

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 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks:

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

Sheet 1 of 14

Reviewed By: Gary Moss Level: II Date: 4-10-02

Authorized Inspector: Date: 4-10-02

Item No: B03.130.005

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0916	Form NDE-UT-2A	
Exam Finish: 1014	Revision 4	

Station: Oconee	Unit: 1	Component/Weld ID: 1-SGA-WG25	Date: 4/9/2002
Weld Length (in.): 152.7	Surface Condition: GROUND	Lo: 9.2.1	Surface Temperature: 84 ° F

Examiner: Jay A. Eaton Level: III

Examiner: Winfred C. Leeper Level: II

Procedure: NDE-970 Rev: 0

FC: 00-08

Calibration Sheet No: 0201112

Scans:

45 ☐ _____ dB 70 ☐ _____ dB

45T ☐ _____ dB 70T ☐ _____ dB

60 ☒ 78 dB

60T ☒ 78 dB

Other: _____ dB

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Configuration: HEAD TO NOZZLE

S1 Flow S2

HEAD to NOZZLE

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 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks:

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

Sheet 2 of 14

Reviewed By: Gary A Moss	Level: II	Date: 4-10-02	Authorized Inspector:	Date: 4-10-02

Item No: B03.130.005

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0917	Form NDE-UT-2A	
Exam Finish: 1014	Revision 4	

Station: Oconee	Unit: 1	Component/Weld ID: 1-SGA-WG25	Date: 4/9/2002
Weld Length (in.): 152.7	Surface Condition: GROUND	Lo: 9.2.1	Surface Temperature: 84 ° F

Examiner: David Zimmerman Level: III

Examiner: Marion T. Weaver Level: II

Procedure: NDE-970 Rev: 0

FC: 00-08

Calibration Sheet No: 0201109, 0201110, 0201112

Scans:

45 ☒	57 dB	70 ☐	dB
45T ☒	57 dB	70T ☐	dB
60 ☒	78 dB		
60T ☒	78 dB		

Other: 0° @ 20 dB

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Configuration: HEAD TO NOZZLE

S1 Flow S2

HEAD to NOZZLE

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
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks:

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

Sheet 3 of 14

Reviewed By:	Level:	Date:	Authorized Inspector:	Date:	Item No:
Gary Moss	II	4-10-02		4/10/02	B03.130.005

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1-SGA-WG25 | Item No: B03.130.005 | Remarks:

NOZZLE CONFIGURATION

☐ NO SCAN
☒ LIMITED SCAN

SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☒ 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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM _____ DEG to _____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM _____ DEG to _____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM _____ DEG to _____

Prepared By: JAY A. EATON Level: III Date: 4/9/2002 | **Sketch(s) attached** ☒ yes ☐ no | Sheet 4 of 14

Reviewed By: David K [illegible] III Date: 4/09/02 | Authorized Inspector: [illegible] Date: 4-10-02

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

5 of 14

Examination Volume/Area Defined

☐ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
BASE					33753.6	56307	59.95
WELD					13247.7	24753.6	53.52
		TOTAL	AGGREGATE	COVERAGE	47001.3	81060.6	57.98

Item No: B03.130.005

Prepared By: JAY A. EATON Level: III Date: 4/9/2002

Reviewed By: David K Level: III Date: 4/09/02

William Ellis 4/10/02

6 of 14

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 EXAM AREA DRWG. 18 SQ. IN.	18 SQ. IN. X 152.8 IN = 2750 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	NA	15.7	152.8	2399	2750.4	87.22
2	45	2	16.1	152.8	2460.1	24750.4	9.94
3	45	1	3.4	152.8	519.5	2750.4	18.89
4	60	2	16.9	152.8	2582.3	2750.4	93.89
5	60	1	1.0	152.8	15.3	2750.4	0.56
6	45	CW	8.4	152.8	1283.5	2750.4	46.67
7	45	CCW	8.4	152.8	1283.5	2750.4	46.67
8	60	CW	8.4	152.8	1283.5	2750.4	46.67
9	60	CCW	8.4	152.8	1283.5	2750.4	46.67
					13247.7	24753.6	53.52

Item No: B03.130.005

Prepared By: JAY A. EATON Level: III Date: 4/9/2002

Reviewed By: Level: III Date: 4/09/02

4/10/02

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

7 of 14

Examination Volume/Area Defined

☒ Base Metal ☐ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
SEE EXAM AREA DRWG 73.3 SQ. IN.	73.7 SQ. IN. X 152.8 IN. = 11261 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	NA	40.6	152.8	6203.7	11261.4	55.09
2	45°	1/2	48.9	152.8	7471.9	11261.4	66.35
3	60°	1/2	53	152.8	8098.4	11261.4	71.91
4	45/60	CW	39.2	152.8	5989.8	11261.4	53.19
5	45/60	CCW	39.2	152.8	5989.8	11261.4	53.19
					33756.6	56307	59.95

Item No: B03.130.005

Prepared By: JAY A. EATON Level: III Date: 4/9/2002

Reviewed By: Level: III Date: 4/09/02

Level: Anst Date: 4/10/02

OCONEE NOZZLE TO UPPER HD (GENERATOR)

EXAM AREAS:

BASE MATERIAL:

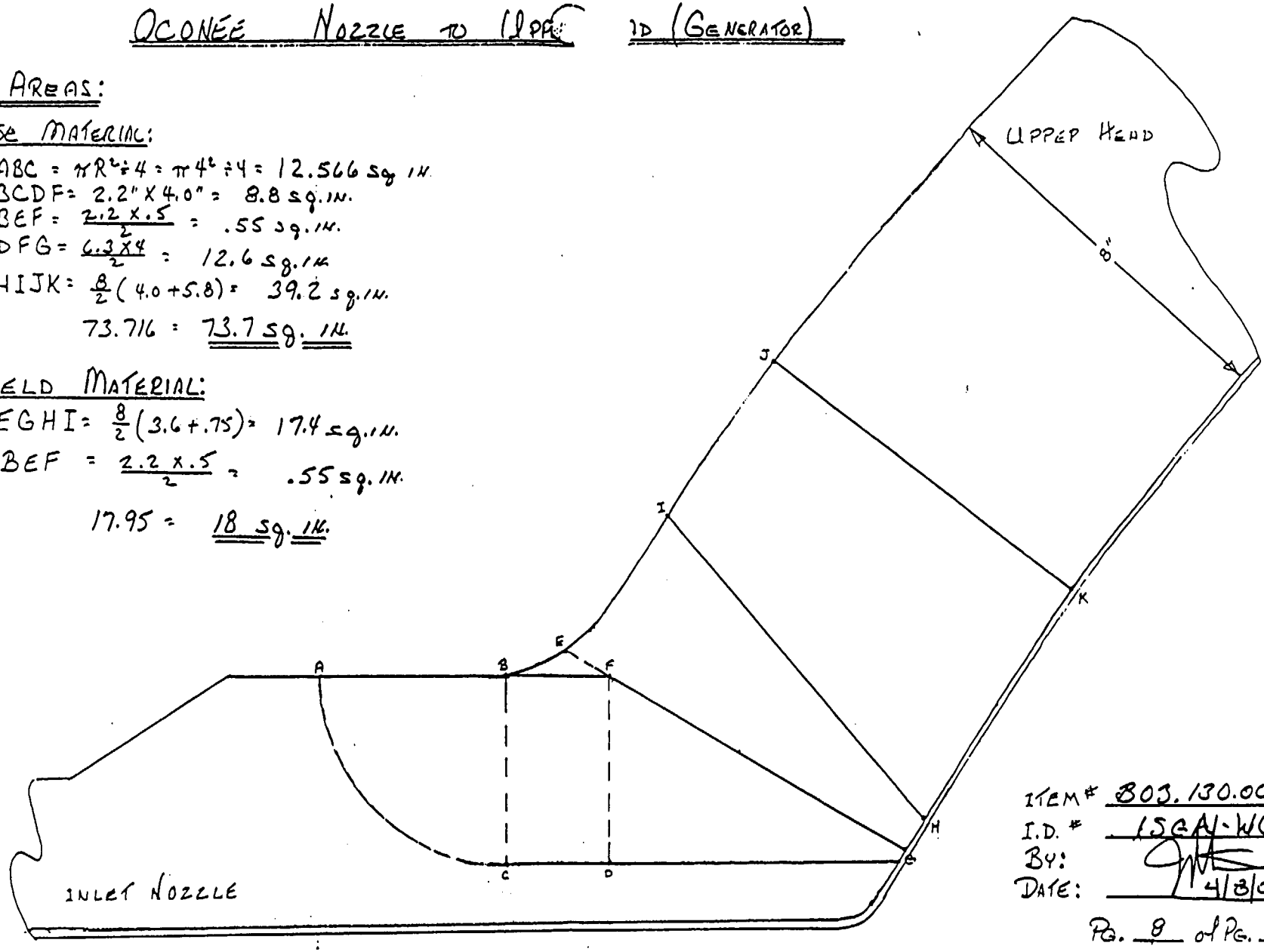
ABC = $\pi R^2 \div 4 = \pi 4^2 \div 4 = 12.566$ sq in.
BCDF = 2.2" X 4.0" = 8.8 sq. in.
BEF = $\frac{2.2 \times .5}{2}$ = .55 sq. in.
DFG = $\frac{6.3 \times 4}{2}$ = 12.6 sq. in.
HIJK = $\frac{8}{2}(4.0 + 5.8)$ = 39.2 sq. in.

73.716 = **73.7 sq. in.**

WELD MATERIAL:

EGHI = $\frac{8}{2}(3.6 + .75)$ = 17.4 sq. in.
BEF = $\frac{2.2 \times .5}{2}$ = .55 sq. in.

17.95 = **18 sq. in.**



ITEM # 803.130.005
I.D. # 15GAI-WG25
BY:
DATE: 4/8/02

PG. 8 of PG. 14

WEH ANDT
4-10-02

OCONEE NOZZLE TO UPPER HEAD (GENERATOR)

0° SCAN COVERAGE

BASE MATERIAL:

ABCE = $\frac{8}{2}(4.0+5.8)$ 39.2 sq. in.

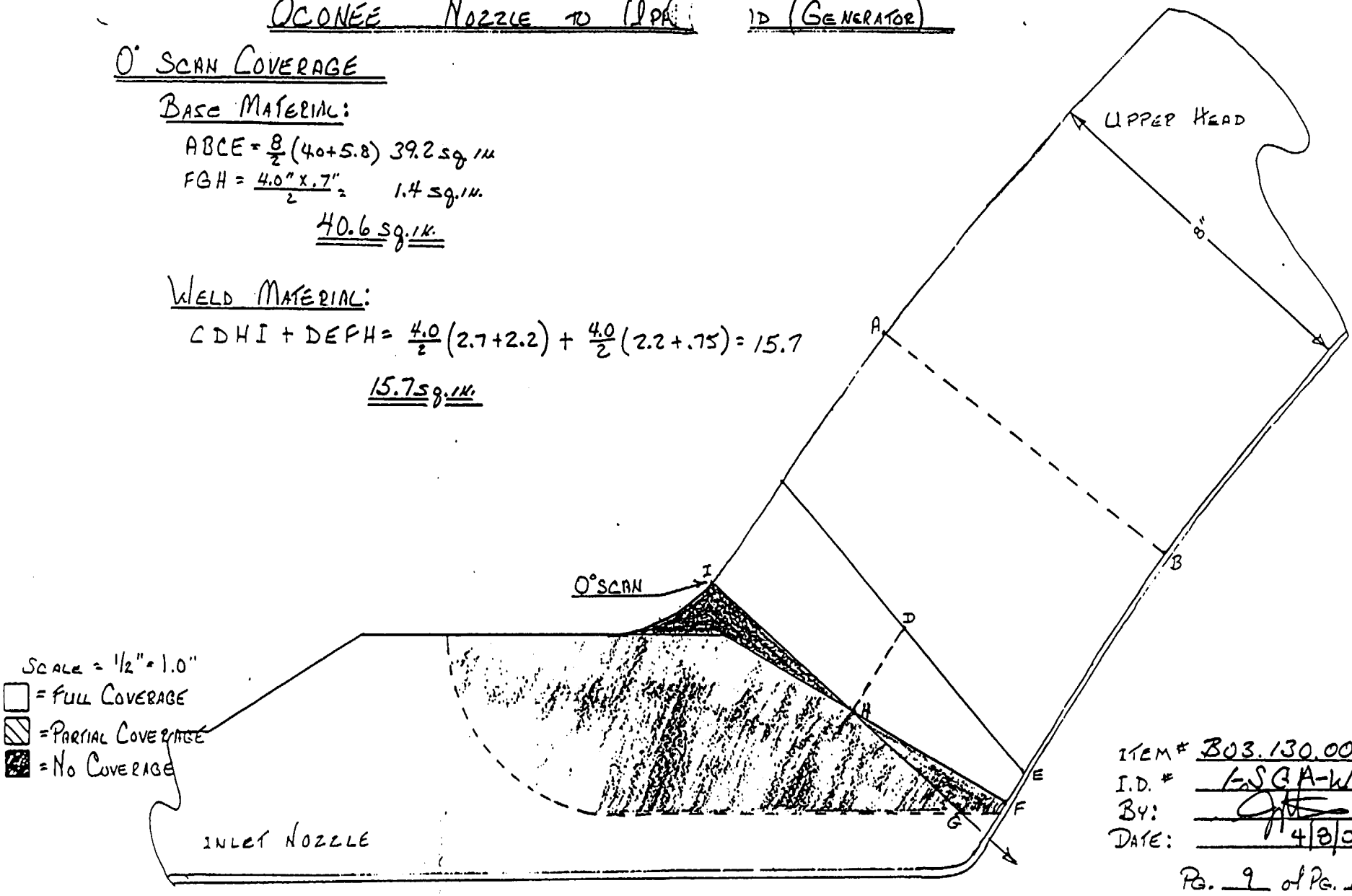
FGH = $\frac{4.0'' \times .7''}{2}$ = 1.4 sq. in.

40.6 sq. in.

WELD MATERIAL:

CDHI + DEFH = $\frac{4.0}{2}(2.7+2.2) + \frac{4.0}{2}(2.2+.75) = 15.7$

15.7 sq. in.



ITEM # B03.130.005
I.D. # L-SGA-WG25
BY: [signature]
DATE: 4/8/02

PG. 9 of PG. 14

[signature]
4-10-02

OCONEE NOZZLE TO UPPER HEAD (GENERATOR)

45° SCANS (AXIAL)

BASE MATERIAL

S1 TO S2

ACDF = $\frac{8}{2}(4.0+5.8) = 39.2$ sq. IN.

GHI = $\frac{6.7 \times 2.9}{2} = 9.715$ sq. IN.

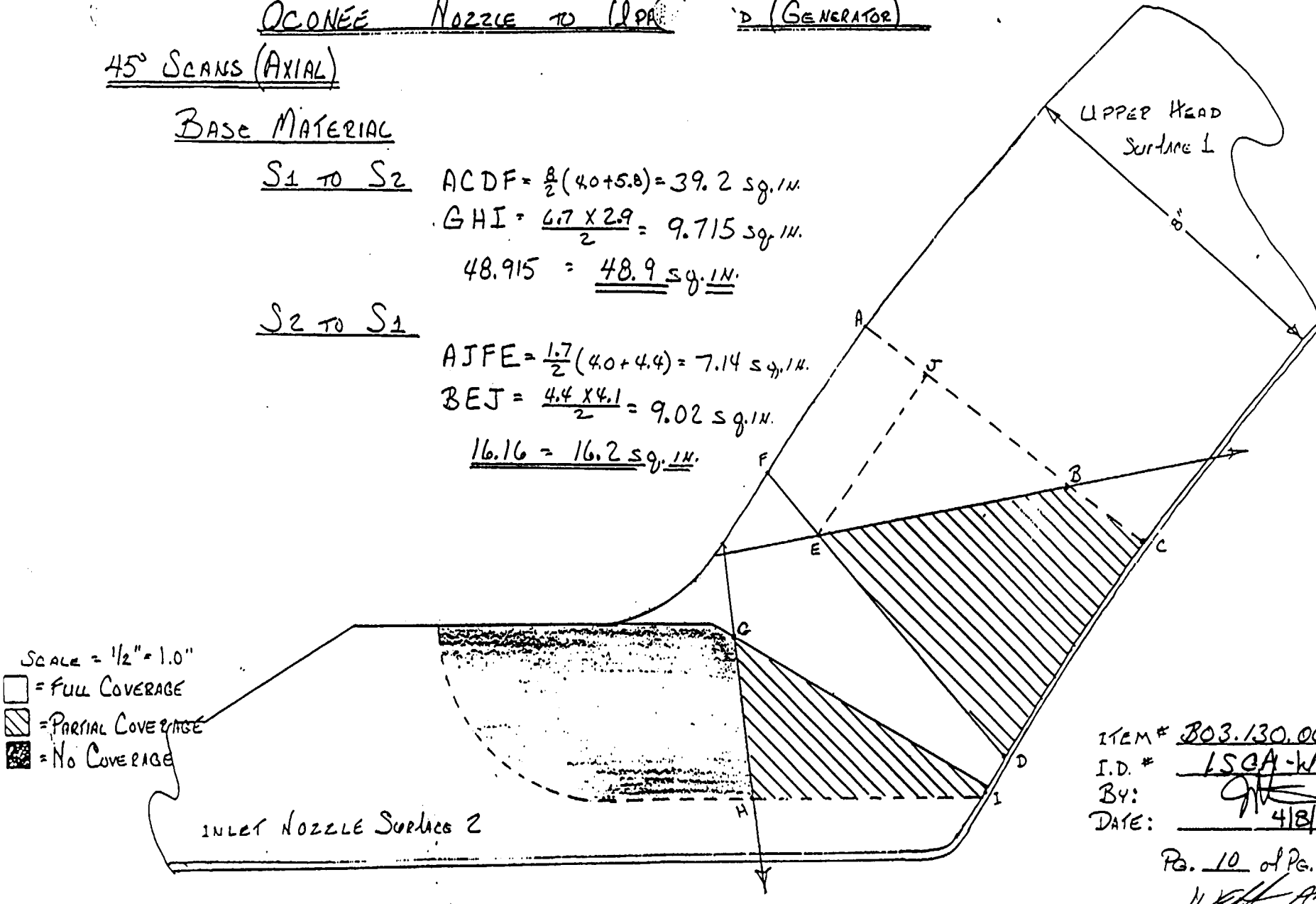
48.915 = **48.9 sq. IN.**

S2 TO S1

AJFE = $\frac{1.7}{2}(4.0+4.4) = 7.14$ sq. IN.

BEJ = $\frac{4.4 \times 4.1}{2} = 9.02$ sq. IN.

16.16 = 16.2 sq. IN.



ITEM # B03.130.005
I.D. # LSGA-WG25
BY:
DATE: 4/8/02

PG. 10 of PG. 14

4-10-02

OCONEE NOZZLE TO UH 2D (GENERATOR)

45° SCANS (AXIAL)

WELD MATERIAL:

S1 TO S2:

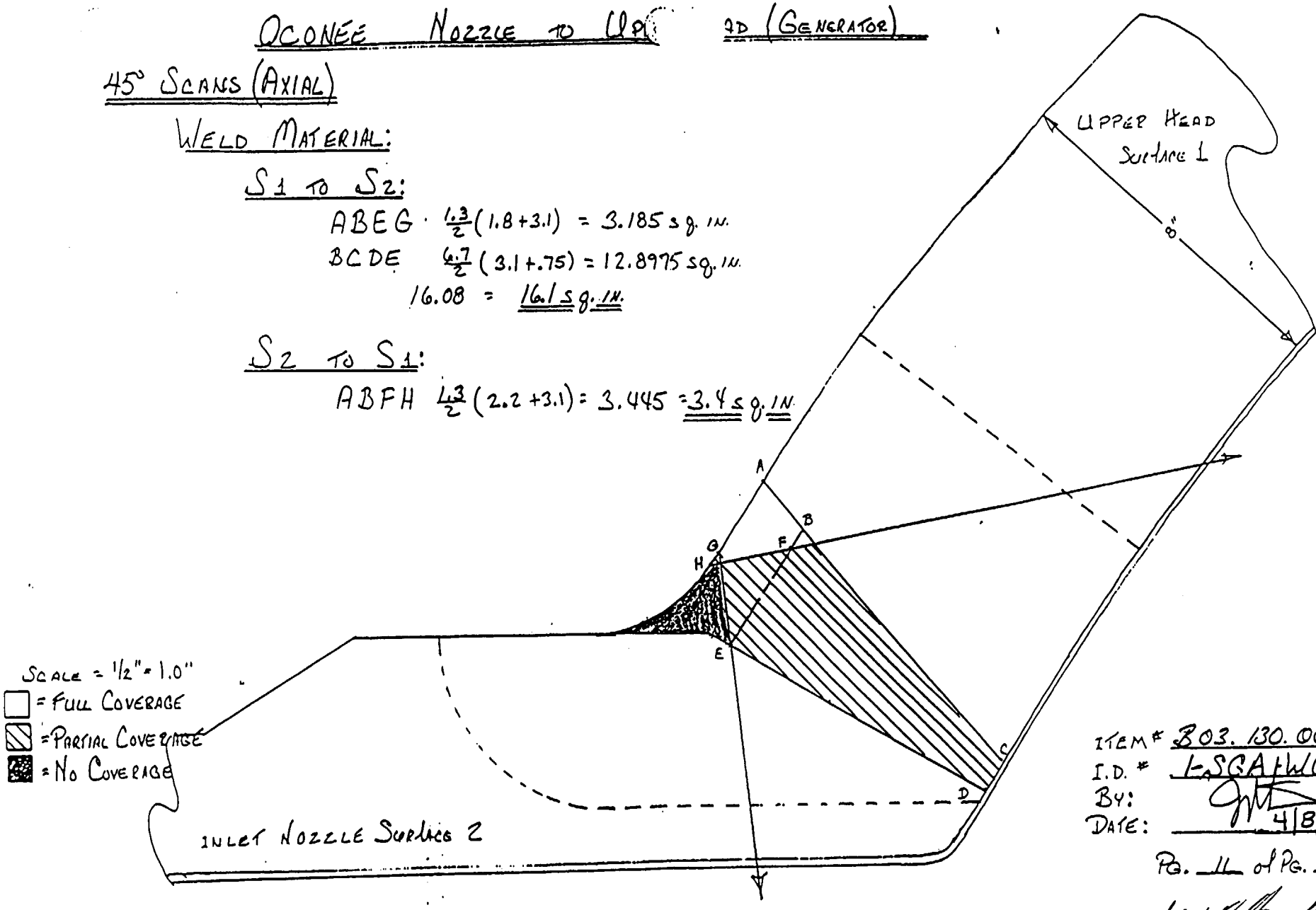
ABEG $\frac{1.3}{2}(1.8+3.1) = 3.185$ sq. in.

BCDE $\frac{6.7}{2}(3.1+.75) = 12.8975$ sq. in.

16.08 = **16.1 sq. in.**

S2 TO S1:

ABFH $\frac{1.3}{2}(2.2+3.1) = 3.445$ = **3.4 sq. in.**



ITEM # B03.130.005
I.D. # L-SGA+WCB25
BY:
DATE: 4/8/02

PG. 11 of PG. 14

4/10/02

OCONEE NOZZLE TO UPPER HEAD (GENERATOR)

60° SCANS (AXIAL)

BASE MATERIAL:

S1 TO S2:

ADEG = $\frac{8}{2}(4.0 + 5.8) = 39.2$ sq. in.

HIJ = $\frac{7.1 \times 3.9}{2} = 13.845$ sq. in.

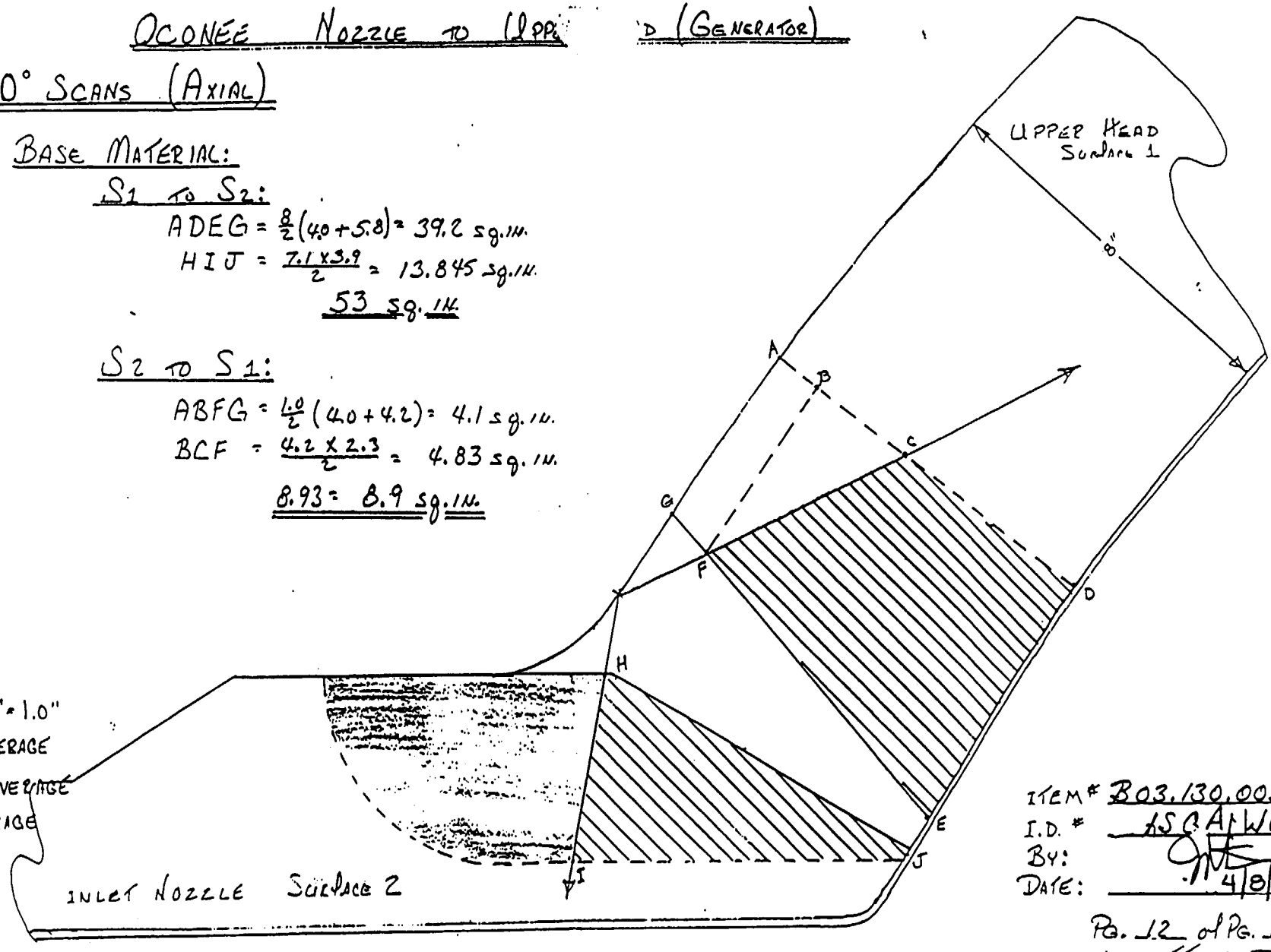
53 sq. in.

S2 TO S1:

ABFG = $\frac{4.0}{2}(4.0 + 4.2) = 4.1$ sq. in.

BCF = $\frac{4.2 \times 2.3}{2} = 4.83$ sq. in.

8.93 = 8.9 sq. in.



SCALE = 1/2" = 1.0"

☐ = FULL COVERAGE

▨ = PARTIAL COVERAGE

■ = NO COVERAGE

ITEM # B03.130.005

I.D. # ISCAPW025

BY: [illegible]

DATE: 4/8/02

PG. 12 of PG. 14

[illegible] 4/8/02

OCONEE NOZZLE TO HEAD (GENERATOR)

60° SCANS (AXIAL)

WELD MATERIAL:

S1 TO S2:

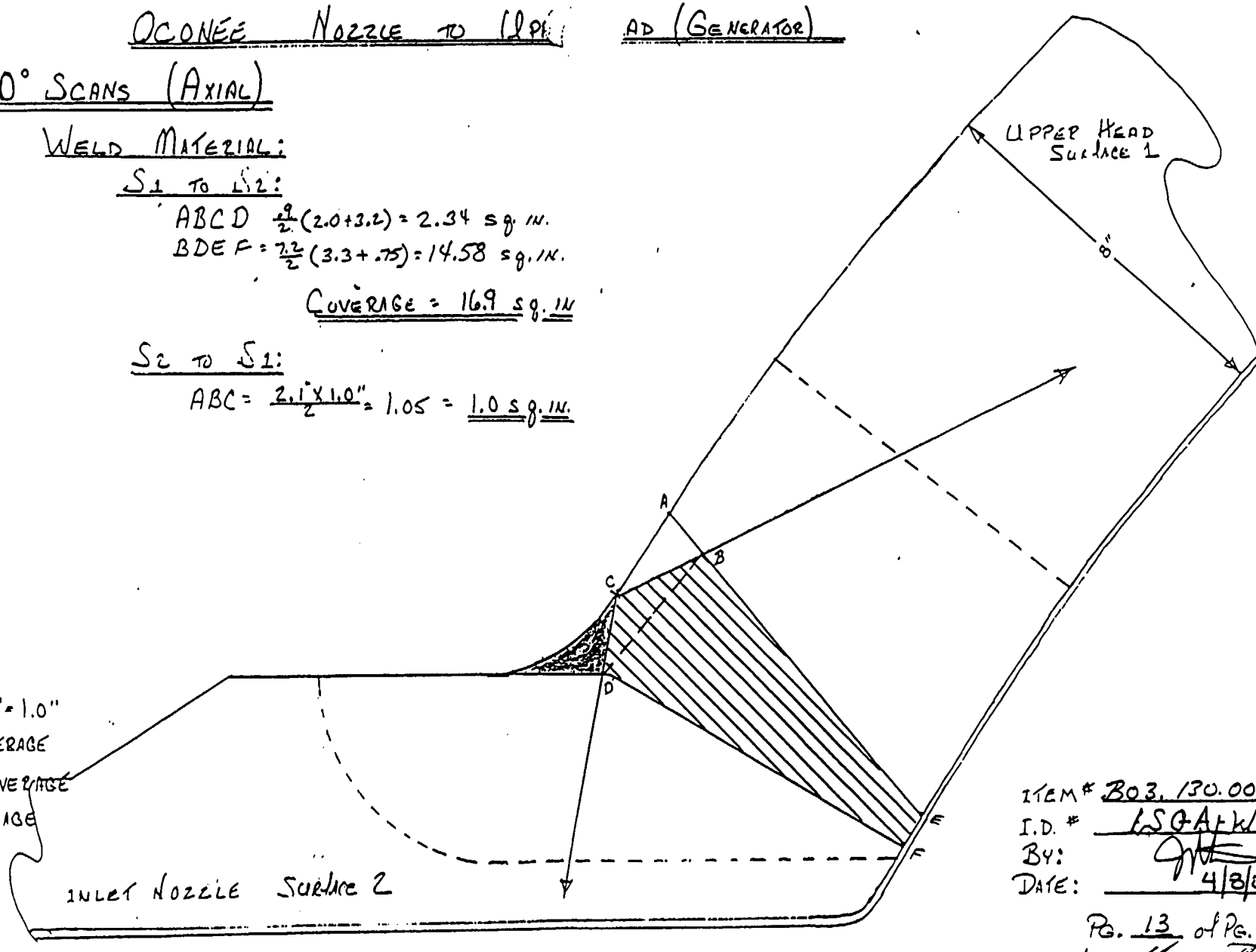
ABCD $\frac{.9}{2}(2.0+3.2) = 2.34$ sq. in.

BDEF $= \frac{7.2}{2}(3.3+.75) = 14.58$ sq. in.

COVERAGE = 16.9 sq. in

S2 TO S1:

ABC $= \frac{2.1" \times 1.0"}{2} = 1.05 =$ 1.0 sq. in.



SCALE = 1/2" = 1.0"

☐ = FULL COVERAGE

▨ = PARTIAL COVERAGE

■ = NO COVERAGE

ITEM # B03.130.005

I.D. # 1SG4A+W/G25

BY:

DATE: 4/8/02

PG. 13 of PG. 14

4/10/02

OCONEE NOZZLE TO UPPER HEAD (GENERATOR)

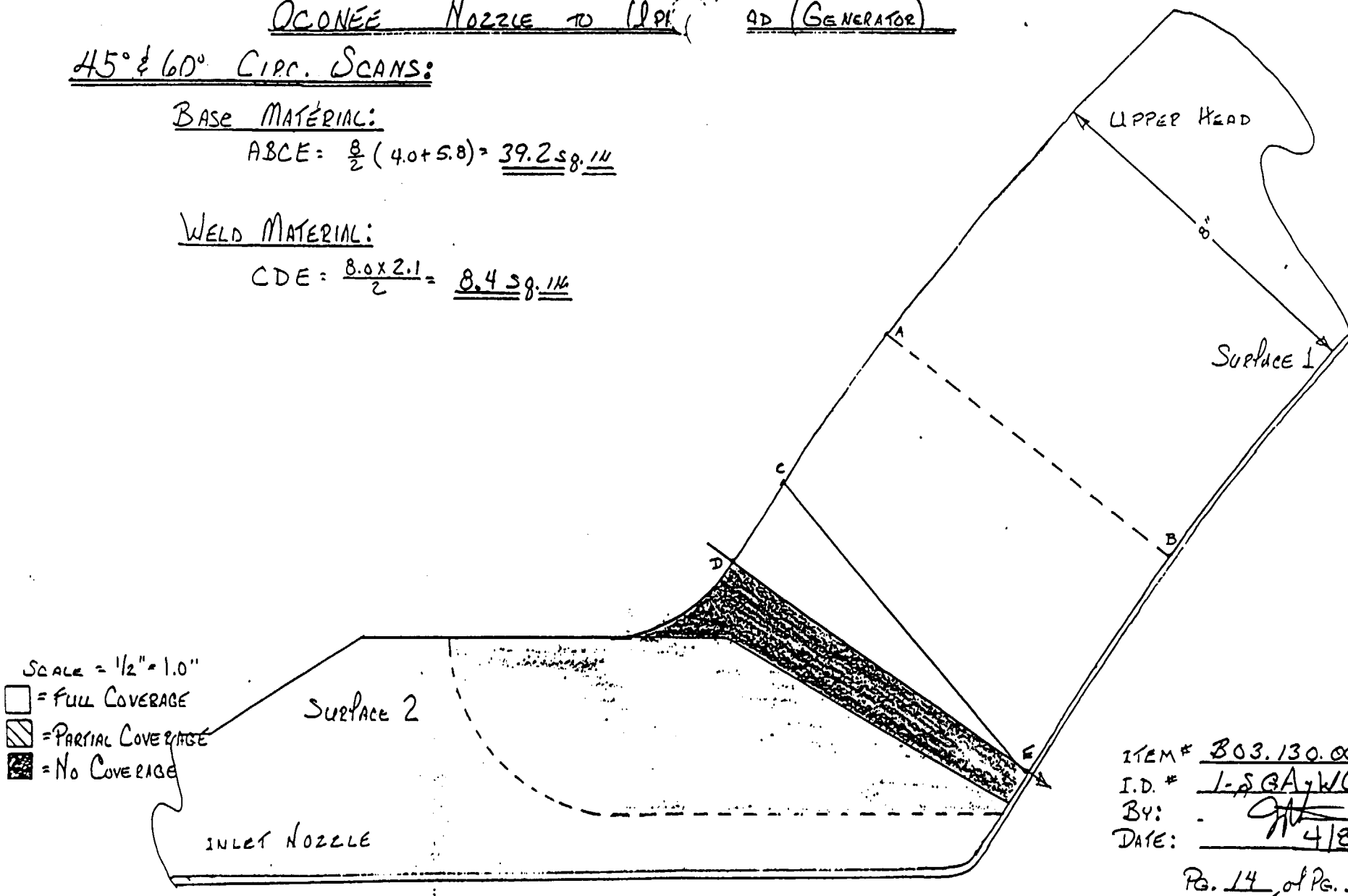
45° & 60° CIRC. SCANS:

BASE MATERIAL:

ABCE: $\frac{8}{2}(4.0+5.8) = 39.2$ sq. in

WELD MATERIAL:

CDE: $\frac{8.0 \times 2.1}{2} = 8.4$ sq. in



ITEM # B03.130.005
I.D. # 1-SGA-WC25
BY:
DATE: 4/8/02

PG. 14 of PG. 14

4-10-02

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0921	Form NDE-UT-2A	
Exam Finish: 1022	Revision 4	

Station: Oconee	Unit: 1	Component/Weld ID: 1-SGB-WG25	Date: 4/8/2002
Weld Length (in.): 152.7	Surface Condition: GROUND	Lo: 9.2.1	Surface Temperature: 84 ° F

Examiner: David Zimmerman Level: III

Examiner: James L. Panel Level: II

Procedure: NDE-970 Rev: 0

FC: 00-008

Calibration Sheet No: 0201104, 0201103, 0201105

Scans:

45 ☒ 57 dB 70 ☐ ____ dB

45T ☒ 57 dB 70T ☐ ____ dB

60 ☒ 78 dB

60T ☐ 78 dB

Other: 0° @ 20 dB

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Configuration: HEAD TO NOZZLE

S1 Flow S2

HEAD to NOZZLE

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
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks:

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

Sheet 1 of 16

Reviewed By: Gary Moss	Level: II	Date: 4-9-02	Authorized Inspector:	Date: 4/9/02	Item No: B03.130.006

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0921	Exam Finish: 1009	Form NDE-UT-2A Revision 4

Station: Oconee	Unit: 1	Component/Weld ID: 1-SGB-WG25	Date: 4/8/2002
Weld Length (in.): 152.7	Surface Condition: GROUND	Lo: 9.2.1	Surface Temperature: 84 ° F

Examiner: James H. Resor Level: II

Examiner: Gayle E. Houser Level: III

Procedure: NDE-970 Rev: 0

FC: NA 00-008

Calibration Sheet No: 0201104, 0201103

Scans:

45 ☒ 57 dB 70 ☐ ____ dB

45T ☒ 57 dB 70T ☐ ____ dB

60 ☐ ____ dB

60T ☐ ____ dB

Other: 0° @ 20 dB

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Configuration: HEAD TO NOZZLE

S1 Flow S2

HEAD to NOZZLE

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
		DO NOT WRITE IN THIS SPACE				20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks:

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

Sheet 2 of 16

Reviewed By: Gary Moss	Level: II	Date: 4-9-02	Authorized Inspector:	Date: 4/9/02

Item No: B03.130.006

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0920	Form NDE-UT-2A	
Exam Finish: 1022	Revision 4	

Station: Oconee	Unit: 1	Component/Weld ID: 1-SGB-WG25	Date: 4/8/2002
Weld Length (in.): 152.7	Surface Condition: GROUND	Lo: 9.2.1	Surface Temperature: 84 ° F
Examiner: Jay A. Eaton	Level: III		Pyrometer S/N: MCNDE 27228
Examiner: Winfred C. Leeper	Level: II		Cal Due: 7/3/2002
Procedure: NDE-970 Rev: 0	FC: 00-008		Configuration: HEAD TO NOZZLE
Calibration Sheet No: 0201105			S1 Flow S2
			HEAD to NOZZLE
			Scan Surface: OD
			Applies to NDE-680 only
			Skew Angle: N/A

Scans:

45 ☐	____ dB	70 ☐	____ dB
45T ☐	____ dB	70T ☐	____ dB
60 ☒	78 dB		
60T ☒	78 dB		
Other:	____ dB		

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 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks:

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

Sheet 3 of 16

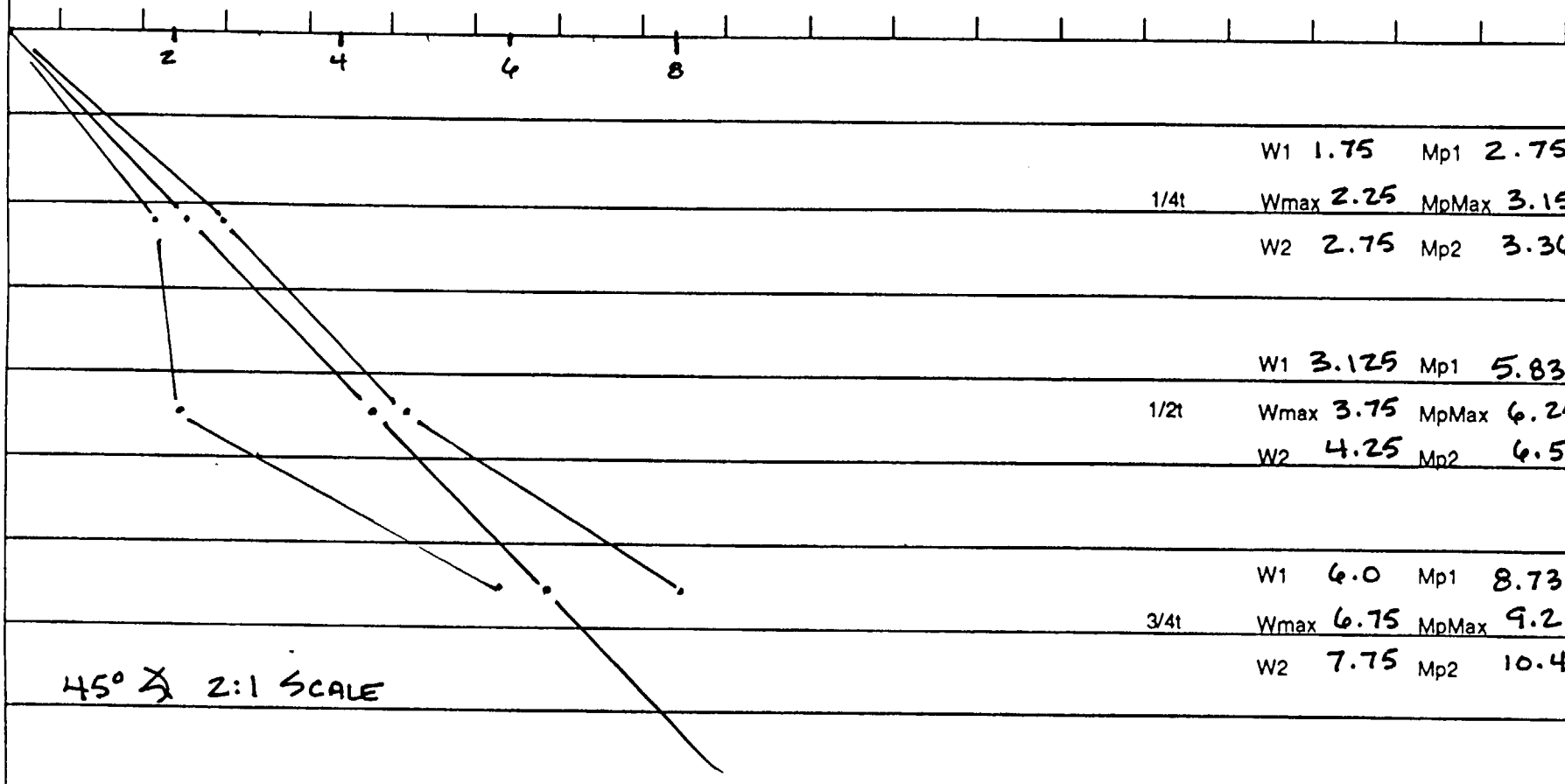
Reviewed By: Gary A Moss	Level: II	Date: 4-9-02	Authorized Inspector:	Date: 4/9/02	Item No: B03.130.006

DUKE POWER COMPANY

Ultrasonic Beam Spread Measurement Sheet

NDE-UT-6

Revision 1



	W1	1.75	Mp1	2.75
1/4t	Wmax	2.25	MpMax	3.15
	W2	2.75	Mp2	3.36
	W1	3.125	Mp1	5.83
1/2t	Wmax	3.75	MpMax	6.25
	W2	4.25	Mp2	6.53
	W1	6.0	Mp1	8.73
3/4t	Wmax	6.75	MpMax	9.2
	W2	7.75	Mp2	10.49

Calibration Sheet No: 0201104 CAL. BLOCK 40393

Examiner:	Level:	Date:	Reviewed By:	Level:	Date:	Authorized Inspector:	Date:
[illegible]	II	4-8-02	Gary Moss	II	4-9-02	[illegible]	4/9/02

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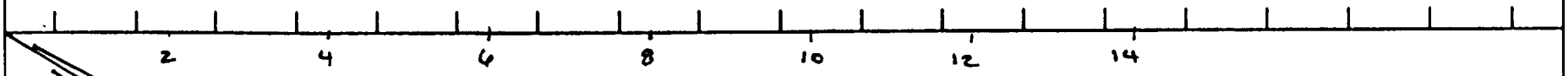
DUKE POWER COMPANY

Ultrasonic Beam Spread Measurement Sheet

NDE-UT-6

Revision 1



	W1	3.85	Mp1	4.06
1/4t	Wmax	4.5	MpMax	4.5
	W2	5.2	Mp2	5.26
	W1	8.0	Mp1	8.67
1/2t	Wmax	9.0	MpMax	9.5
	W2	10.25	Mp2	10.96
	W1	12.0	Mp1	13.07
3/4t	Wmax	13.5	MpMax	14.34
	W2	14.75	Mp2	15.30

60° ∡ 2:1 SCALE

Calibration Sheet No: 0201105 CAL. BLOCK 40393

Examiner:	Level:	Date:	Reviewed By:	Level:	Date:	Authorized Inspector:	Date:
Winfred C. Pegen	II	4-8-02	Gary J Moss	II	4-9-02	[illegible]	4/9/02

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DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1-SGB-WG25 | Item No: B03.130.006 | Remarks:

☐ NO SCAN
☒ LIMITED SCAN

SURFACE: ☐ 1 ☒ 2

BEAM DIRECTION: ☒ 1 ☒ 2 ☒ cw ☒ ccw

FROM L _____ to L _____ INCHES FROM WO ℄ to BEYOND

ANGLE: ☒ 0 ☒ 45 ☒ 60 ☐ Other _____ FROM 0 DEG to 360 DEG

Remarks: NOZZLE CONFIGURATION

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2

BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2

BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2

BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

Prepared By: [signature] Level: III Date: 4/9/02 **Sketch(s) attached** ☒ yes ☐ no Sheet 6 of 16

Reviewed By: David K. [signature] Date: 4/9/02 Authorized Inspector: [signature] Date: 4/9/02

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

7 of 16

Examination Volume/Area Defined

☐ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
SEE EXAM AREA DRWG. 18 SQ. IN.	18 SQ. IN. X 152.8 IN = 2750 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	NA	15.7	152.8	2399	2750.4	87.22
2	45	2	16.1	152.8	2460.1	24750.4	9.94
3	45	1	3.4	152.8	519.5	2750.4	18.89
4	60	2	16.9	152.8	2582.3	2750.4	93.89
5	60	1	1.0	152.8	15.3	2750.4	0.56
6	45	CW	8.4	152.8	1283.5	2750.4	46.67
7	45	CCW	8.4	152.8	1283.5	2750.4	46.67
8	60	CW	8.4	152.8	1283.5	2750.4	46.67
9	60	CCW	8.4	152.8	1283.5	2750.4	46.67
					13247.7	24753.6	53.52

Item No: B03.130.006

Prepared By: JAY A. EATON Level: III Date: 4/9/2002

Reviewed By: David K. [illegible] Level: III Date: 4/9/02

[illegible] ANI 4/9/02

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

8-05-16

Examination Volume/Area Defined

☒ Base Metal ☐ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
SEE EXAM AREA DRWG 73.3 SQ. IN.	73.7 SQ. IN. X 152.8 IN. = 11261 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	NA	40.6	152.8	6203.7	11261.4	55.09
2	45°	1/2	48.9	152.8	7471.9	11261.4	66.35
3	60°	1/2	53	152.8	8098.4	11261.4	71.91
4	45/60	CW	39.2	152.8	5989.8	11261.4	53.19
5	45/60	CCW	39.2	152.8	5989.8	11261.4	53.19
					33756.6	56307	59.95

Item No: B03.130.006

Prepared By: JAY A. EATON Level: III Date: 4/9/2002

Reviewed By: David K. [illegible] Level: III Date: 4/9/02

Walter [illegible] AWR 4/9/02

9-of-16

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

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
BASE					33753.6	56307	59.95
WELD					13247.7	24753.6	53.52
		TOTAL	AGGREGATE	COVERAGE	47001.3	81060.6	57.98

Item No: B03.130.006

Prepared By: JAY A. EATON Level: III Date: 4/9/2002

Reviewed By: David K. [illegible] Level: III Date: 4/9/02

[illegible] Level: [illegible] Date: 4/9/02

OCONEE NOZZLE TO UPPER HD (GENERATOR)

EXAM AREAS:

BASE MATERIAL:

ABC = $\pi R^2 \div 4 = \pi 4^2 \div 4 = 12.566$ sq IN

BCDF = 2.2" X 4.0" = 8.8 sq. IN.

BEF = $\frac{2.2 \times .5}{2}$ = .55 sq. IN.

DFG = $\frac{6.3 \times 4}{2}$ = 12.6 sq. IN.

HIJK = $\frac{8}{2}(4.0 + 5.8)$ = 39.2 sq. IN.

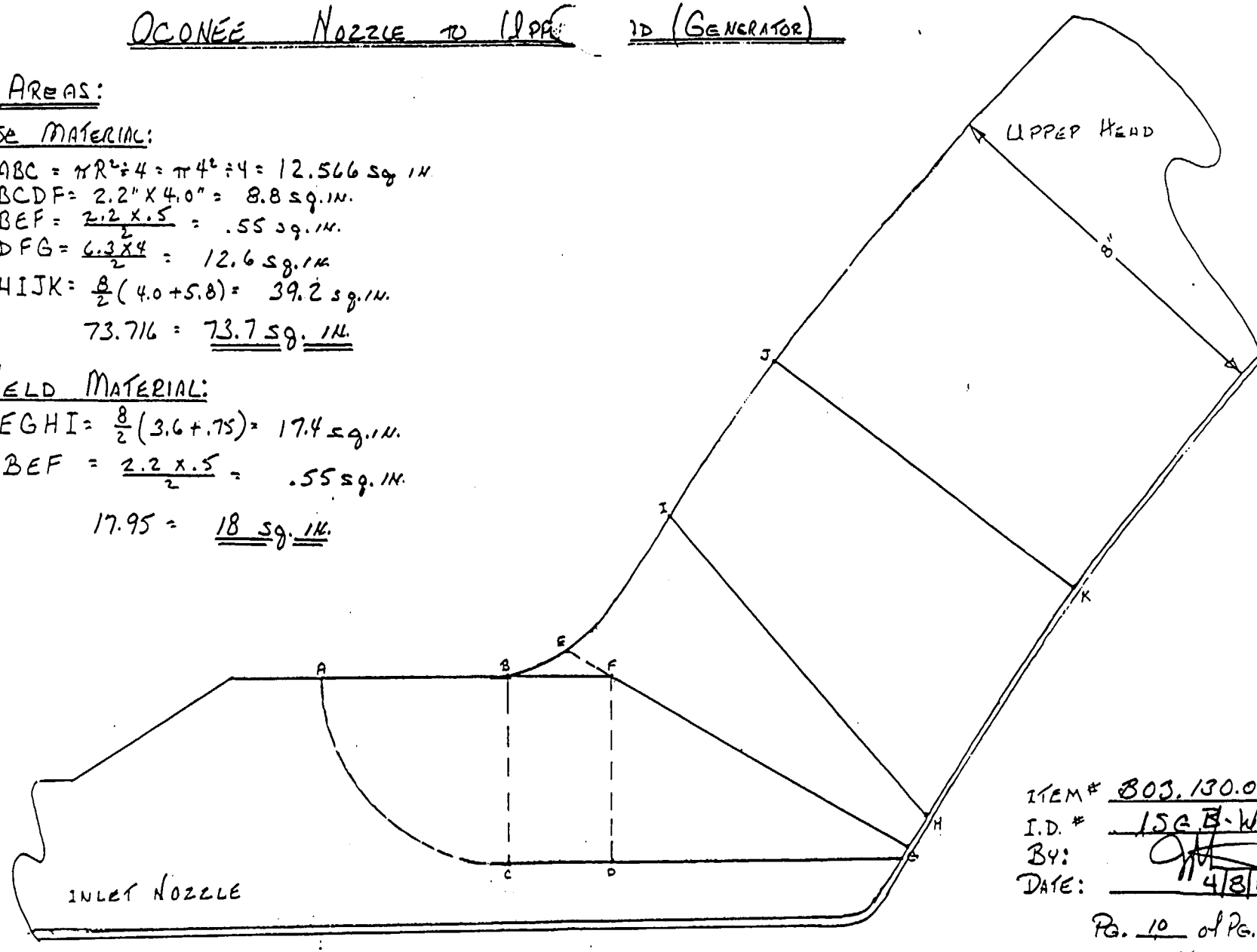
73.716 = 73.7 sq. IN.

WELD MATERIAL:

EGHI = $\frac{8}{2}(3.6 + .75)$ = 17.4 sq. IN.

BEF = $\frac{2.2 \times .5}{2}$ = .55 sq. IN.

17.95 = 18 sq. IN.



ITEM # 803.130.006

I.D. # 15GB-WG25

BY: [illegible]

DATE: 4/8/02

PG. 10 of PG. 16

[illegible] 4/9/02

OCONEE NOZZLE TO UPPER ID (GENERATOR)

0° SCAN COVERAGE

BASE MATERIAL:

ABCE = $\frac{8}{2}(40+5.8)$ 39.2 sq. in.

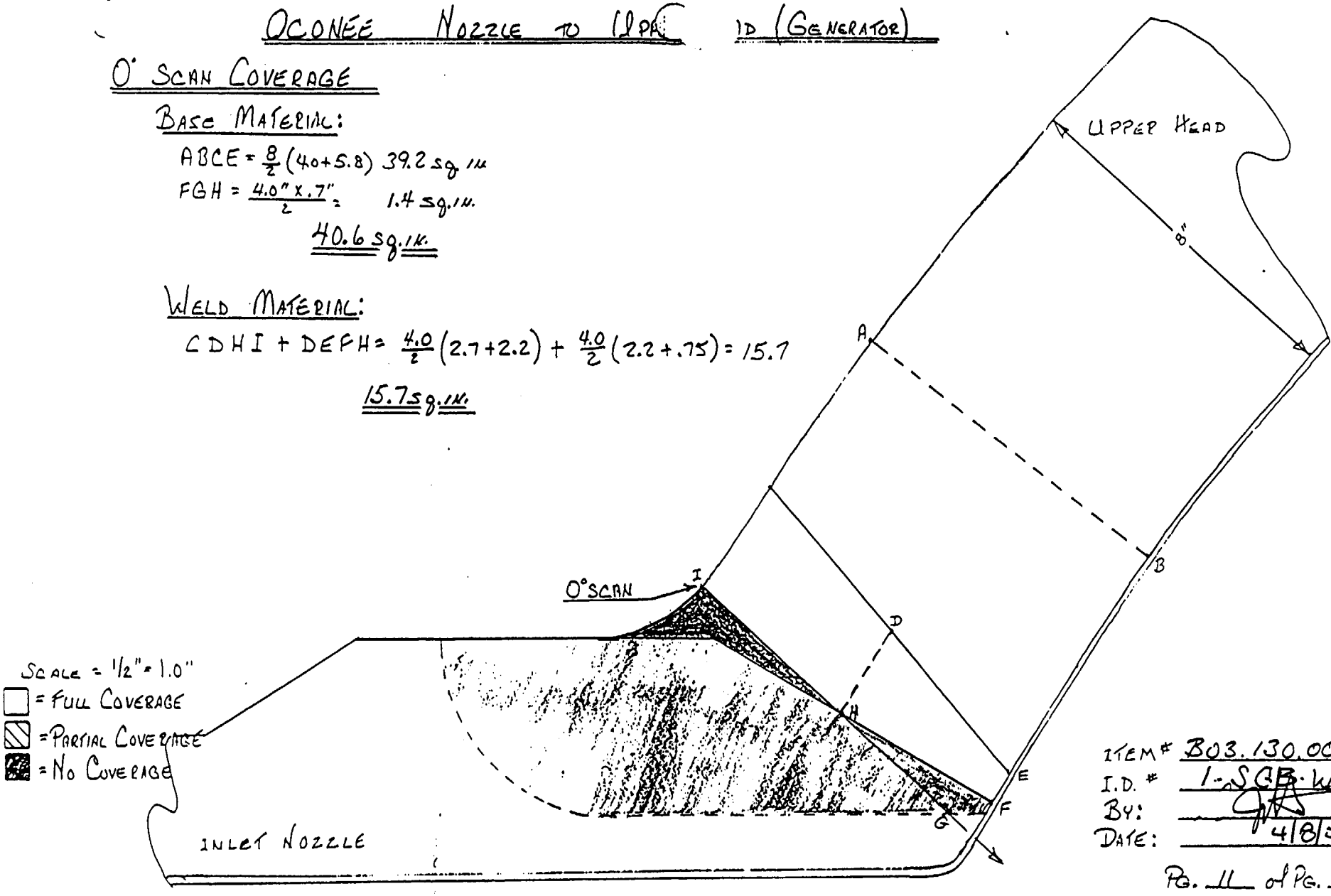
FGH = $\frac{4.0'' \times .7''}{2}$ = 1.4 sq. in.

40.6 sq. in.

WELD MATERIAL:

CDHI + DEFH = $\frac{4.0}{2}(2.7+2.2) + \frac{4.0}{2}(2.2+.75) = 15.7$

15.7 sq. in.



ITEM # B03.130.006
I.D. # 1-SGB-WG25
BY: [signature]
DATE: 4/8/02

PG. 11 of PG. 16

WELD ANET 4/9/02

OCONEE NOZZLE TO UPPER HEAD (GENERATOR)

45° SCANS (AXIAL)

BASE MATERIAL

S1 TO S2

ACDF = $\frac{8}{2}(4.0+5.8) = 39.2$ sq. IN.

GHI = $\frac{6.7 \times 2.9}{2} = 9.715$ sq. IN.

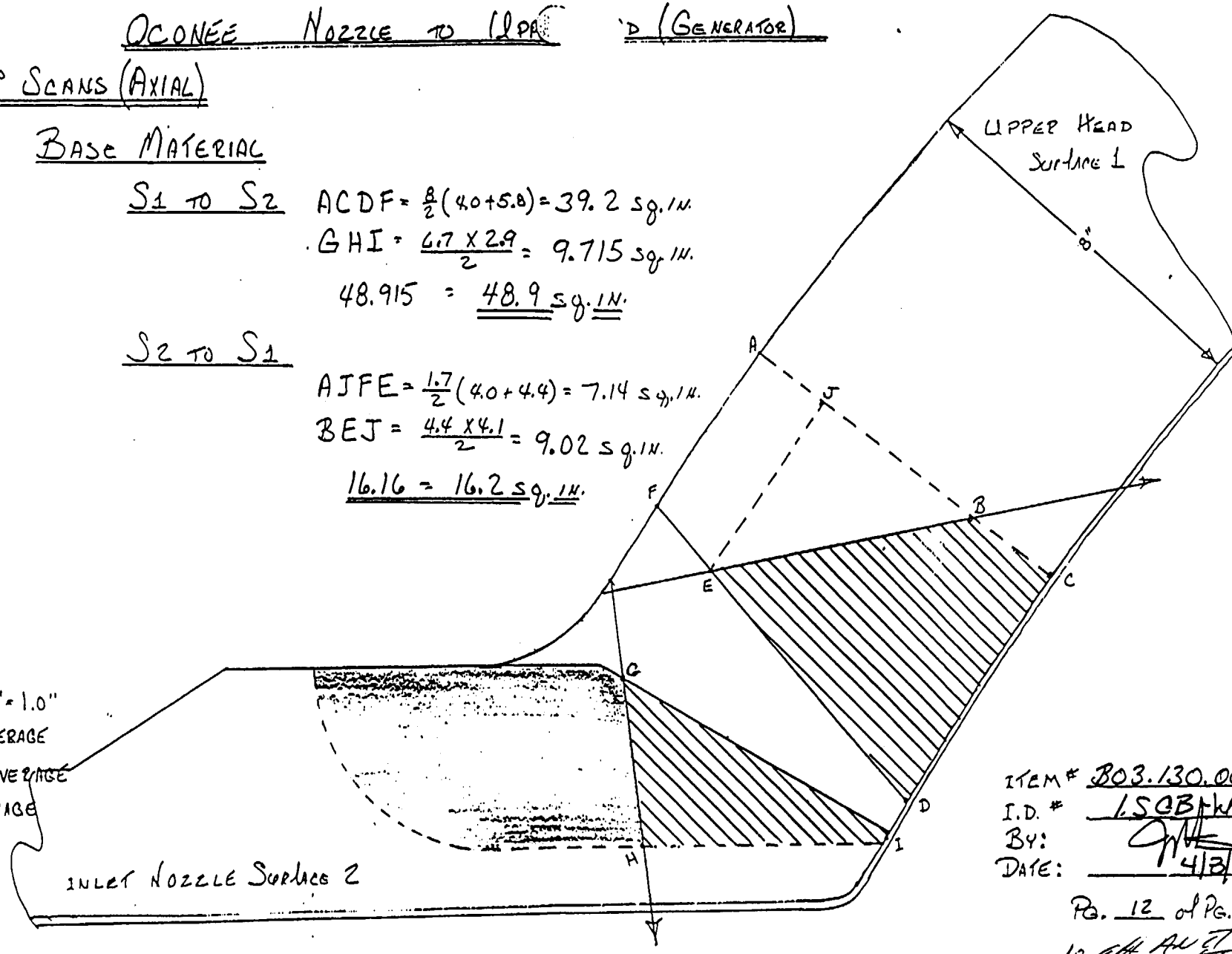
48.915 = **48.9 sq. IN.**

S2 TO S1

AJFE = $\frac{1.7}{2}(4.0+4.4) = 7.14$ sq. IN.

BEJ = $\frac{4.4 \times 4.1}{2} = 9.02$ sq. IN.

16.16 = 16.2 sq. IN.



SCALE = 1/2" = 1.0"

☐ = FULL COVERAGE

▨ = PARTIAL COVERAGE

■ = NO COVERAGE

ITEM # B03.130.00.6

I.D. # 1SGBHWG25

BY: [illegible]

DATE: 4/3/02

PG. 12 of PG. 16

[illegible] 4/9/02

OCONEE NOZZLE TO UPPER HEAD (GENERATOR)

45° SCANS (AXIAL)

WELD MATERIAL:

S1 TO S2:

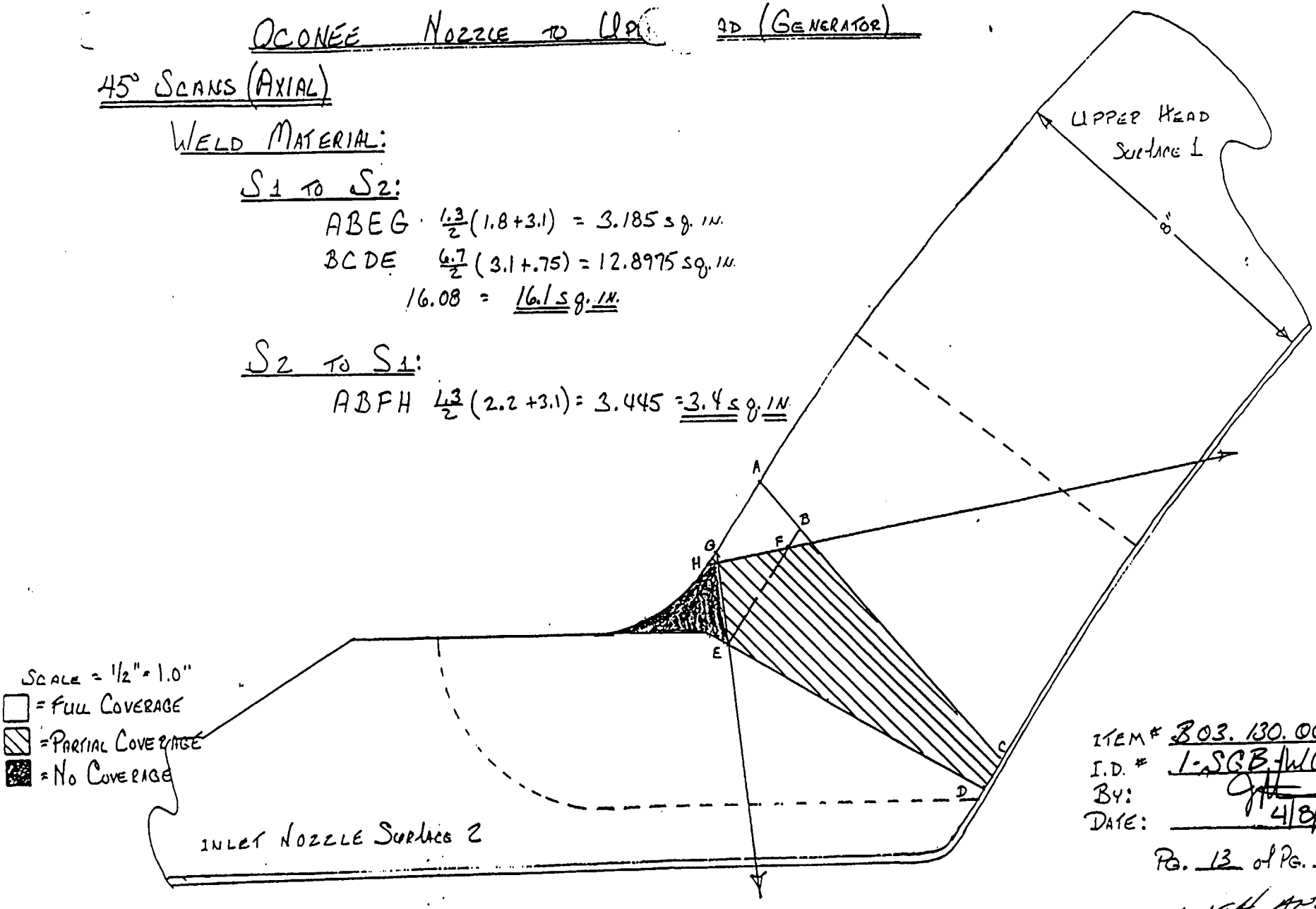
ABEG $\frac{1.3}{2}(1.8+3.1) = 3.185$ sq. in.

BCDE $\frac{6.7}{2}(3.1+.75) = 12.8975$ sq. in.

16.08 = **16.1 sq. in.**

S2 TO S1:

ABFH $\frac{1.3}{2}(2.2+3.1) = 3.445$ = **3.4 sq. in.**



ITEM # B03.130.006
I.D. # 1-SGB-WC25
BY: JTT
DATE: 4/8/02

PG. 13 of PG. 16

WEH 4/9/02

OCONEE NOZZLE TO UPPER HEAD (GENERATOR)

60° SCANS (AXIAL)

BASE MATERIAL:

S1 TO S2:

ADEG = $\frac{8}{2}(4.0 + 5.8) = 39.2$ sq. in.

HIJ = $\frac{7.1 \times 3.9}{2} = 13.845$ sq. in.

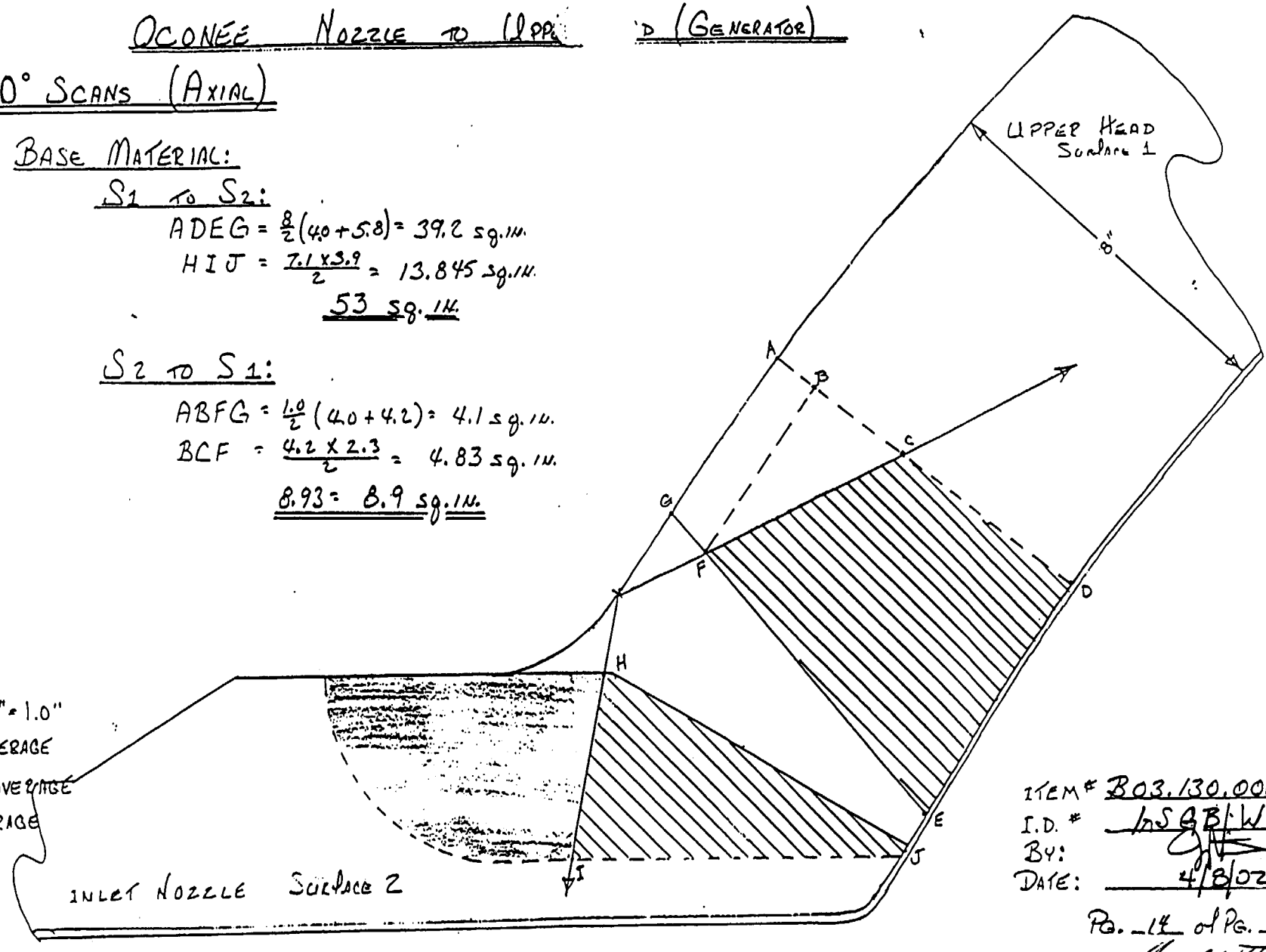
53 sq. in.

S2 TO S1:

ABFG = $\frac{1.0}{2}(4.0 + 4.2) = 4.1$ sq. in.

BCF = $\frac{4.2 \times 2.3}{2} = 4.83$ sq. in.

8.93 = 8.9 sq. in.



SCALE = 1/2" = 1.0"

☐ = FULL COVERAGE

▨ = PARTIAL COVERAGE

▩ = NO COVERAGE

ITEM # B03.130.006

I.D. # 1-SGB-WQ25

BY:

DATE: 4/8/02

PG. 14 of PG. 16

WEA 4/9/02

OCONEE NOZZLE TO UPPER HEAD (GENERATOR)

60° SCANS (AXIAL)

WELD MATERIAL:

S1 TO S2:

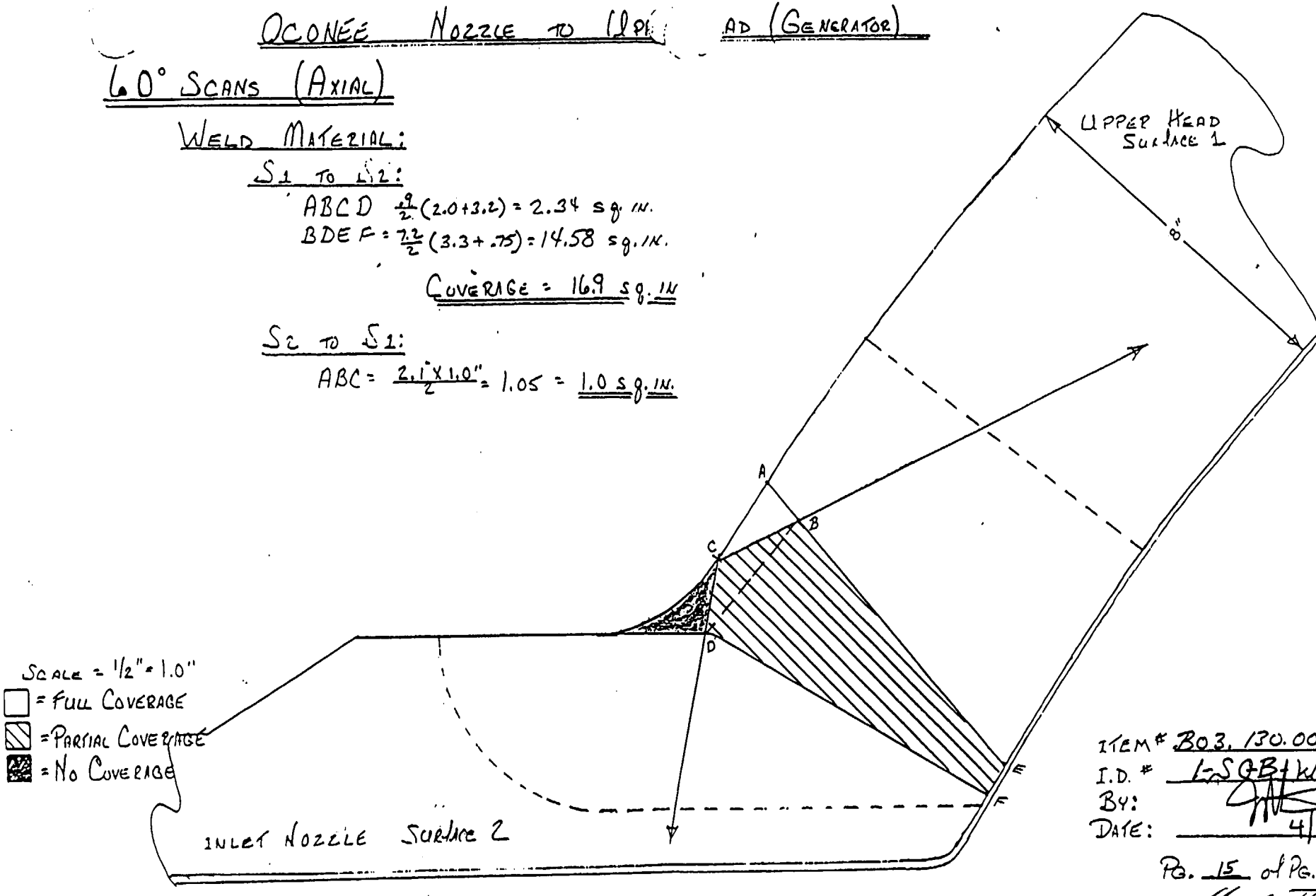
ABCD $\frac{.9}{2}(2.0+3.2) = 2.34$ sq. in.

BDEF $= \frac{7.2}{2}(3.3+.75) = 14.58$ sq. in.

COVERAGE = 16.9 sq. in

S2 TO S1:

ABC $= \frac{2.1 \times 1.0''}{2} = 1.05 =$ 1.0 sq. in.



ITEM # B03.130.006

I.D. # 1-SGB-W/G25

BY:

DATE: 4/8/02

PG. 15 of PG. 16

WELD MAT 4/8/02

OCONEE NOZZLE TO LOWER HEAD (GENERATOR)

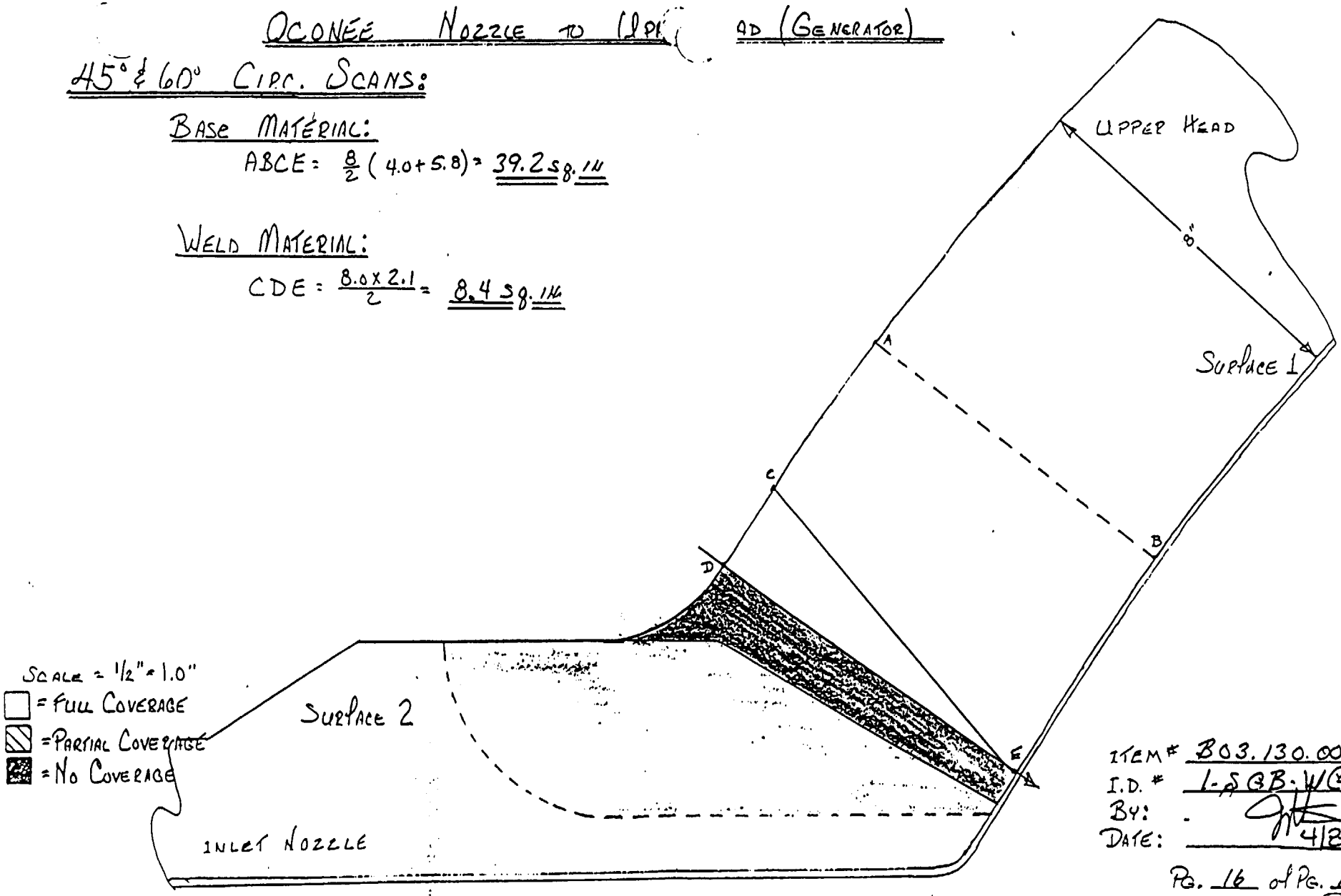
45° & 60° CIRC. SCANS:

BASE MATERIAL:

ABCE: $\frac{8}{2}(4.0+5.8) = 39.2$ sq. in

WELD MATERIAL:

CDE: $\frac{8.0 \times 2.1}{2} = 8.4$ sq. in



ITEM # B03.130.006
I.D. # 1-SGB-WC25
BY: [illegible]
DATE: 4/8/02

PG. 16 of PG. 16

[illegible] ANT
4/9/02

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0930	Form NDE-UT-2A	
Exam Finish: 0946	Revision 4	

Station: Oconee	Unit: 1	Component/Weld ID: 1-SGA-WG25	Date: 4/9/2002
Weld Length (in.): 152.7	Surface Condition: GROUND	Lo: 9.2.1	Surface Temperature: 84 ° F

Examiner: Jay A. Eaton Level: III

Examiner: Winfred C. Leeper Level: II

Procedure: NDE-680 Rev: 2

FC: *

Calibration Sheet No: 0201111, 0201113

Scans:

45 ☐ ____ dB 70 ☒ 70.5 dB

45T ☐ ____ dB 70T ☐ ____ dB

60 ☒ 78 dB

60T ☐ ____ dB

Other: ____ dB

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Configuration: NOZ INNER RADIUS

S1 Flow S2

HEAD to NOZZLE

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: 22.5

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 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks: *FC 02-03, 02-08

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

Sheet 1 of 7

Reviewed By:	Level:	Date:	Authorized Inspector:	Date:	Item No:
Gary A Moss	II	4-10-02		4-10-02	B03.140.005

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0930	Form NDE-UT-2A	
Exam Finish: 0946	Revision 4	

Station: Oconee	Unit: 1	Component/Weld ID: 1-SGA-WG25	Date: 4/9/2002
Weld Length (in.): 152.7	Surface Condition: GROUND	Lo: 9.2.1	Surface Temperature: 84 ° F

Examiner: David Zimmerman Level: III

Examiner: Marion T. Weaver Level: II

Procedure: NDE-680 Rev: 2

FC: *

Calibration Sheet No: 0201111, 0201113

Scans:

45 ☐ ____ dB 70 ☒ 70.5 dB

45T ☐ ____ dB 70T ☐ ____ dB

60 ☒ 78 dB

60T ☐ ____ dB

Other: ____ dB

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Configuration: INNER RADIUS

S1 Flow S2

HEAD to NOZZLE

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: 22.5

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 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks: *FC 02-03, 02-08

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

Sheet 2 of 7

Reviewed By:	Level:	Date:	Authorized Inspector:	Date:	Item No:
Gary Moss	II	4-10-02	[illegible]	4-10-02	B03.140.005

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1-SGA-WG25 | Item No: B03.140.005 | Remarks:

☐ NO SCAN
☒ LIMITED SCAN

SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☐ 1 ☒ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO CL to BEYOND

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

NOZZLE CONFIGURATION

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

Prepared By: JAY A. EATON Level: III Date: 4/9/2002 | **Sketch(s) attached** ☒ yes ☐ no | Sheet 3 of 7

Reviewed By: Gary Moss Date: 4-10-02 | Authorized Inspector: Date: 4-10-02

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

4 of 7

Examination Volume/Area Defined

☐ Base Metal ☐ Weld ☐ Near Surface ☐ Bolting ☒ Inner Radius

Area Calculation	Volume Calculation
SEE DRWG FOR CALCULATOINS 4.7 SQ. IN.	4.7 SQ. IN. X 152.8 IN. = 718.16 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	60/70	CW	3.3	152.8	504.24	718.16	70.21
2	60/70	CCW	3.3	152.8	504.24	718.16	70.21
		TOTAL	AGGREGATE	COVERAGE	1008.48	1436.32	70.21

Item No: B03.140.005

Prepared By:		Level:	III	Date:	4/9/02
Reviewed By:	Gary Moss	Level:	II	Date:	4-10-02
					4-10-02

INLET NOZZLE TO SHELL PER HEAD

INNER RADIUS INSPECTION AREA

I.D# 1SGA-WG2D
ITEM# 303.140 005
BY:
DATE: 4/8/02

A·B·CD + CDGH ABCD $(\pi \times 1.0^2) - (\pi \times .5^2) \times .18 = .424$ sq.in
(65° = 18% of a circle)

CDGH $\frac{.5}{2}(8.4+8.6) = 4.25$ sq.in.

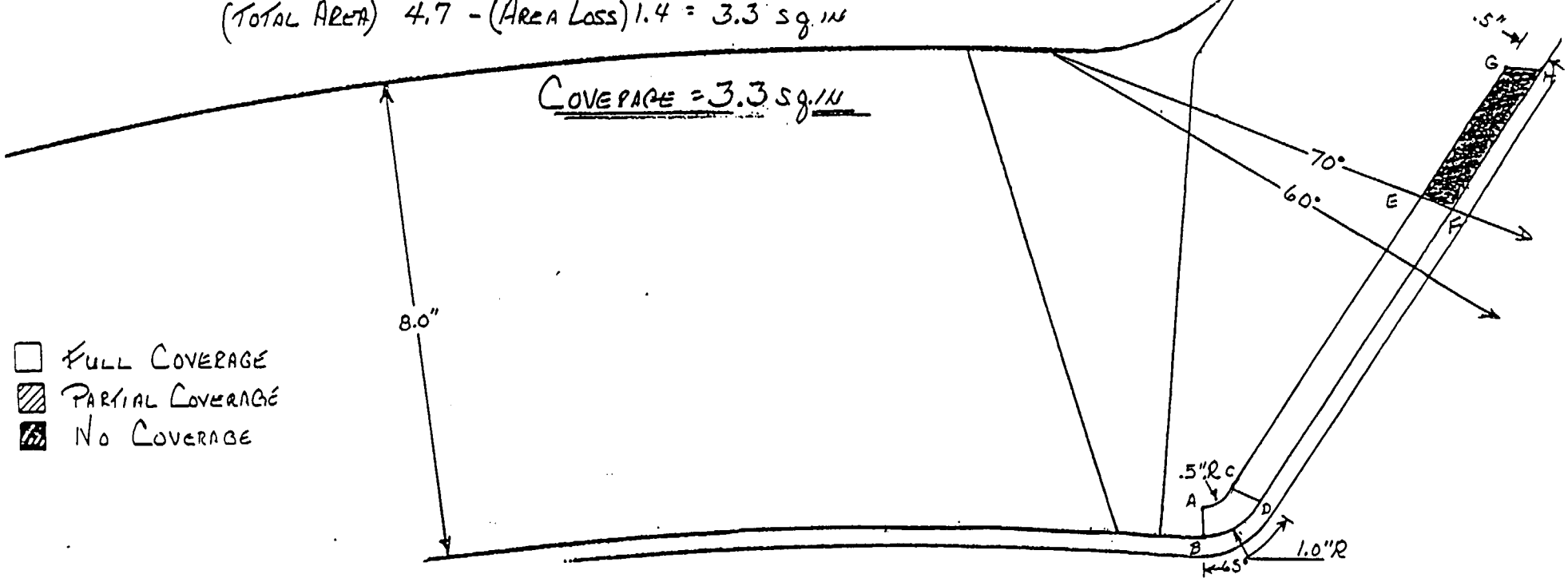
TOTAL AREA = 4.674 = 4.7 sq.in.

INSPECTED AREA

(AREA of LOSS) EFGH $\frac{.5}{2}(2.6+2.8) = 1.35 = 1.4$ sq. in.

(TOTAL AREA) 4.7 − (AREA LOSS) 1.4 = 3.3 sq.in

COVERAGE = 3.3 sq.in



- FULL COVERAGE
- PARTIAL COVERAGE
- NO COVERAGE

MINIMUM METAL PATH DISTANCE

$$a^2 = R_2^2 + R_1^2 - 2R_2R_1 \cos\left[\sin^{-1}(R_2/R_1 \times \sin B) - B\right]$$

$$a^2 = 67.5^2 + 59.5^2 - 2(67.5)(59.5) \cos\left[\sin^{-1}\left(\tfrac{67.5}{59.5} \times \sin 60\right) - 60\right]$$

$$a^2 = 4556.25 + 3540.25 - 8032.5\ (0.944061797)$$

$$a^2 = 4556.25 + 3540.25 - 7583.18$$

$$a^2 = 513.32$$

$$a = \sqrt{513.32}$$

$a = 22.66''$ = SOUND PATH TO THE COMPONENT ID CALIBRATION BLOCK 40393 60° ANGLE

OCONEE NUCLEAR STATION
STEAM GENERATOR INLET NOZZLE
PC.0B TO PC.70

ITEM # B03.140.005
WELD # 1-SGA-WG25

III 4/9/02

a = SOUND PATH DIST.
R_2 = OUTSIDE RADIUS = 67.5"
$R_1 = R_2 - t$ = 59.5"
t = COMPONENT THICKNESS = 8"
B = REFRACTED ANGLE = 60°

SHEET 1 OF 2

4-10-0

MIN. METAL PATH DISTANCE

$$a^2 = R_2^2 + R_1^2 - 2 R_2 R_1 \cos\left[\sin^{-1}\left(R_2/R_1 \times \sin B\right) - B\right]$$

$$a^2 = 67.5^2 + 59.5^2 - 2(67.5)(59.5) \cos\left[\sin^{-1}\left(67.5/59.5 \times \sin 70^\circ\right) - 70\right]$$

$$a^2 = 4556.25 + 3540.25 - 8032.5 \text{ (ERROR)}$$

70° WILL NOT WORK IN THIS FORMULA
SO 70° WILL NOT STRIKE THE ID
@ THIS RADIUS. USE FOR UPPER
HALF OF INSPECTION AREA NOT
COVERED BY THE 60° ANKLE ONLY!

CALIBRATION BLOCK 40393

SHEET 2 OF 2

WAB 4/10/02

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0938	Form NDE-UT-2A	
Exam Finish: 0959	Revision 4	

Station: Oconee	Unit: 1	Component/Weld ID: 1-SGB-WG25	Date: 4/8/2002
Weld Length (in.): 152.7	Surface Condition: GROUND	Lo: 9.2.1	Surface Temperature: 84 ° F

Examiner: David Zimmerman Level: III

Examiner: James L. Panel Level: II

Procedure: NDE-680 Rev: 2

FC: 02-03, 02-08

Calibration Sheet No: 0201106, 0201107

Scans:

45 ☐ ____ dB 70 ☒ 70.5 dB

45T ☐ ____ dB 70T ☐ ____ dB

60 ☒ 78 dB

60T ☐ ____ dB

Other: ____ dB

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Configuration: INNER RADIUS

S1 Flow S2

HEAD to NOZZLE

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: 22.5

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 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks:

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

Sheet 1 of 7

Reviewed By:	Level:	Date:	Authorized Inspector:	Date:	Item No:
James J. McAdler	III	4-9-02		4-9-02	B03.140.006

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 0938	Exam Finish: 0959	Form NDE-UT-2A Revision 4

Station: Oconee	Unit: 1	Component/Weld ID: 1-SGB-WG25	Date: 4/8/2002
Weld Length (in.): 152.7	Surface Condition: GROUND	Lo: 9.2.1	Surface Temperature: 84 ° F

Examiner: Jay A. Eaton Level: III

Examiner: Winfred C. Leeper Level: II

Procedure: NDE-680 Rev: 2

FC: 02-03, 02-08

Calibration Sheet No: 0201106, 0201107

Scans:

45 ☐ ____ dB 70 ☒ 70.5 dB

45T ☐ ____ dB 70T ☐ ____ dB

60 ☒ 78 dB

60T ☐ ____ dB

Other: ____ dB

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Configuration: NOZ INNER RADIUS

S1 Flow S2

HEAD to NOZZLE

Scan Surface: OD

Applies to NDE-680 only

Skew Angle: 22.5

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 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks:

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

Sheet 2 of 7

Reviewed By: James J. McArdle Level: III Date: 4-9-02	Authorized Inspector: Date: 4-9-02	Item No: B03.140.006	

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1-SGB-WG25 | Item No: B03.140.006 | Remarks:

NOZZLE CONFIGURATION

☐ NO SCAN
☒ LIMITED SCAN

SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☐ 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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

Prepared By: [signature] Level: III Date: 4/8/02 | **Sketch(s) attached** ☒ yes ☐ no | Sheet 3 of 7

Reviewed By: [signature] III Date: 4/8/02 | Authorized Inspector: [signature] Date: 4-9-02

INLET NOZZLE TO UPPER HEAD

INNER RADIUS INSPECTION AREA

A·B·CD + CDGH

ABCD $(\pi \times 1.0^2) - (\pi \times .5^2) \times .18 = .424$ sq.in
(65° = 18% of a circle)

CDGH $\frac{.5}{2}(8.4+8.6) = 4.25$ sq.in.

TOTAL AREA = 4.674 = 4.7 sq.in.

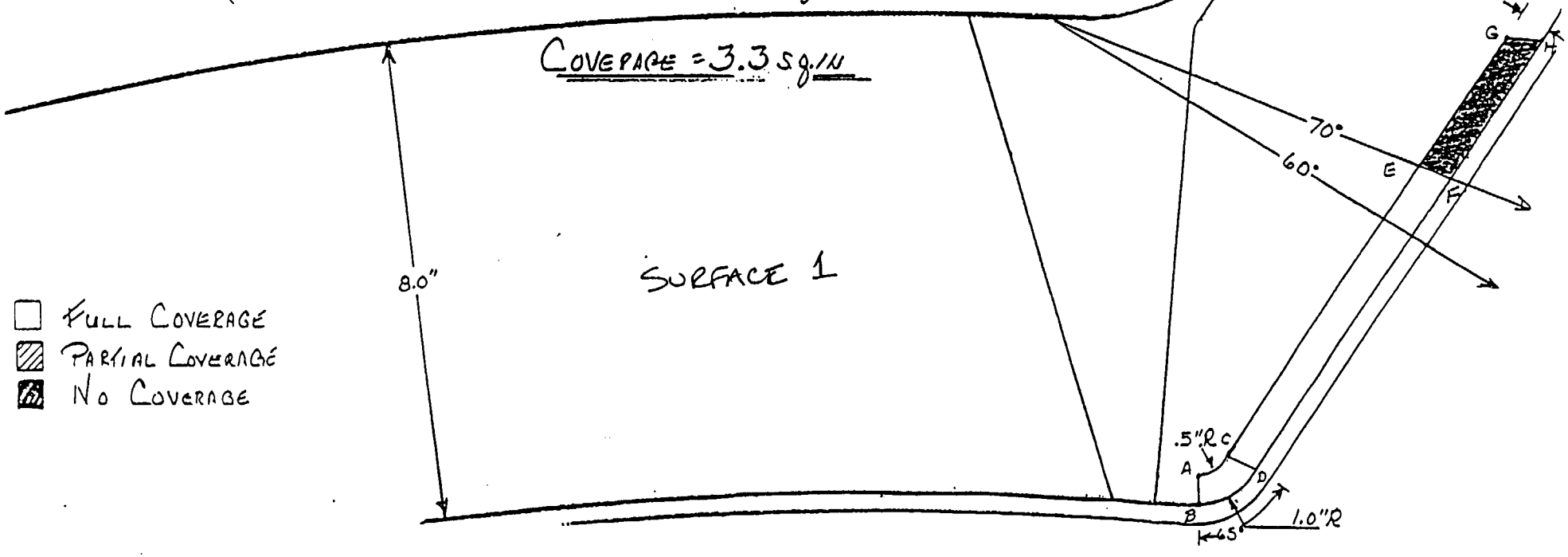
I.D# 1SGB-WG25
ITEM# 803.140.006
BY: [illegible]
DATE: 4/8/02
[illegible] 4-9-02

INSPECTED AREA

(AREA of LOSS) EFGH $\frac{.5}{2}(2.6+2.8) = 1.35 = 1.4$ sq. in.

(TOTAL AREA) 4.7 − (AREA LOSS) 1.4 = 3.3 sq in

COVERAGE = 3.3 sq.in



- ☐ FULL COVERAGE
- ▨ PARTIAL COVERAGE
- ■ NO COVERAGE

5 of 7

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 DRWG FOR CALCULATOINS 4.7 SQ. IN.	4.7 SQ. IN. X 152.8 IN. = 718.16 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	60/70	CW	3.3	152.8	504.24	718.16	70.21
2	60/70	CCW	3.3	152.8	504.24	718.16	70.21
		TOTAL	AGGREGATE	COVERAGE	1008.48	1436.32	70.21

Item No: B03.140.006

Prepared By: Level: III Date: 4/9/02

Reviewed By: James J. McAllister Level: III Date: 4-9-02

4-9-02

MINIMUM METAL PATH DISTANCE

$$a^2 = R_2^2 + R_1^2 - 2R_2R_1 \cos\left[\sin^{-1}(R_2/R_1 \times \sin B) - B\right]$$

$$a^2 = 67.5^2 + 59.5^2 - 2(67.5)(59.5) \cos\left[\sin^{-1}(67.5/59.5 \times \sin 60) - 60\right]$$

$$a^2 = 4556.25 + 3540.25 - 8032.5\ (0.944061797)$$

$$a^2 = 4556.25 + 3540.25 - 7583.18$$

$$a^2 = 513.32$$

$$a = \sqrt{513.32}$$

$a = 22.66''$ = SOUND PATH TO THE COMPONENT ID CALIBRATION BLOCK 40393 60° ANGLE

OCONEE NUCLEAR STATION
STEAM GENERATOR INLET NOZZLE

PC.08 TO PC.70

ITEM # B03.140.006
WELD # 1-SGB-WG25

III 4/9/02

a = SOUND PATH DIST.
R_2 = OUTSIDE RADIUS = 67.5"
$R_1 = R_2 - t$ = 59.5"
t = COMPONENT THICKNESS = 8"
B = REFRACTED ANGLE = 60°

SHEET 1 OF 2

MIN. METAL PATH DISTANCE

$$a^2 = R_2^2 + R_1^2 - 2 R_2 R_1 \cos\left[\sin^{-1}\left(R_2/R_1 \times \sin B\right) - B\right]$$

$$a^2 = 67.5^2 + 59.5^2 - 2(67.5)(59.5) \cos\left[\sin^{-1}\left(67.5/59.5 \times \sin 70^\circ\right) - 70\right]$$

$$a^2 = 4556.25 + 3540.25 - 8032.5 \text{ (ERROR)}$$

70° WILL NOT WORK IN THIS FORMULA
SO 70° WILL NOT STRIKE THE ID
@ THIS RADIUS. USE FOR UPPER
HALF OF INSPECTION AREA NOT
COVERED BY THE 60° ANGLE ONLY!

CALIBRATION BLOCK 40393

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1217	Exam Finish: 1233	Form NDE-UT-2A Revision 4

Station: Oconee	Unit: 1	Component/Weld ID: 1-LDCB-IN-V1	Date: 4/7/2002
Weld Length (in.): 12.75	Surface Condition: GROUND	Lo: 9.2.3	Surface Temperature: 72 ° F

Examiner: Gayle E. Housen — Level: III

Examiner: Jay A. Eaton — Level: III

Procedure: NDE-630 Rev: 2

FC: 99-02

Calibration Sheet No:
0201093, 0201094, 0201095, 0201096

Scans:

45 ☒	32 dB	70 ☐	____ dB
45T ☒	34 dB	70T ☐	____ dB
60L ☒	61 dB		
60T ☐	____ dB		

Other: 45L @ 62 dB

Pyrometer S/N: MCNDE 27228
Cal Due: 7/3/2002

Configuration: Nozzle to Vessel
S2 Flow S1
NOZZLE to VESSEL
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 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks: ALL ANGLES SCANNED @ REF. dB DUE TO SIGNAL/NOISE RATIO

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

Sheet 1 of 11

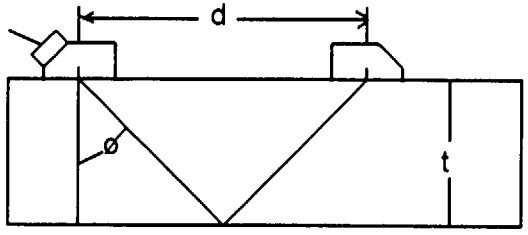
Reviewed By: Gary Moss	Level: II	Date: 4-8-02	Authorized Inspector:	Date: 4/8/02	Item No: B03.150.003

DUKE POWER COMPANY

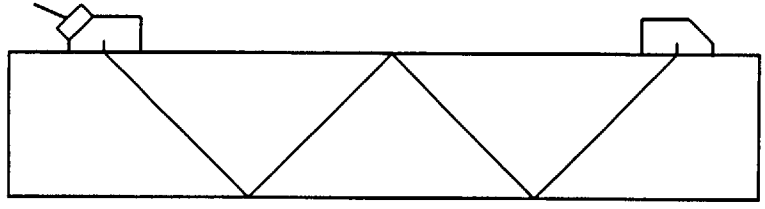
ULTRASONIC BEAM ANGLE MEASUREMENT RECORD

Form NDE-UT-9

Revision 3



$$\tan ø = \frac{(d/2)}{t}$$



For thin wall pipe use 2nd Vee path

$$\tan ø = \frac{(d/2)}{2t}$$

1. Take thickness measurements between . wedge locations.
2. Place search unit on straight turn of pipe, and peak the signal.
3. Measure distance (d) between exit points.
4. Calculate beam angle with formula as shown using measured wall thickness.
5. Use the measured beam angle to determine coverage and when plotting any indications.

Pipe Size: _ _ _ _ Vessel<2"t _ _ _.

Pipe Schedule: _ _ _ N/A _ _ _.

Nominal 45 deg: d= _ 1.7 _ ; t= _ 0.875 _; measured angle= _ 44.17 _ deg

Nominal 60 deg: d= _ 0 _ ; t= _ 0 _ _; measured angle= _ 0.00 _ deg

Nominal 70 deg: d= _ 0 _ ; t= _ 0 _ _; measured angle= _ 0.00 _ deg

Item No.
B03.150.003

Examiner	Level	Date	Examiner	Level	Date
Jay A. Eaton	III	4/7/2002	Gayle E. Houser	III	4/7/2002
Reviewed By	Level	Date	Authorized Inspector		Date
Gary Moss	II	4-8-02			4/8/02

2 OF 11

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1-LDCB-IN-V1 | Item No: B03.150.003 | Remarks:

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☒ 1 ☐ 2 ☒ cw ☒ ccw

FROM L _____ to L _____ INCHES FROM WO CL + .5 to BEYOND
ANGLE: ☐ 0 ☒ 45 ☒ 60 ☐ Other _____ FROM 0 DEG to 360 DEG

Remarks: DUE TO BRANCH CONNECTION

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☒ 1 ☐ 2
BEAM DIRECTION: ☒ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO CL to 0.5
ANGLE: ☐ 0 ☒ 45 ☒ 60 ☐ Other _____ FROM 0 DEG to 360 DEG

Remarks: DUE TO BRANCH CONNECTION WELD

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM _____ DEG to _____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM _____ DEG to _____

Prepared By: [signature] Level: III Date: 4/7/02 **Sketch(s) attached** ☒ yes ☐ no Sheet 3 of 11

Reviewed By: [signature] Date: 4-8-02 Authorized Inspector: [signature] Date: 4/8/02

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

4 of 11

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
See seperate base metal and weld calculation sheets.	See seperate base metal and weld calculation sheets.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
		Total	Aggregate	Coverage	59.62	216.96	27.48

		Item No:	B03.150.003
Prepared By: Jay A. Eaton	Level: III		Date: 4/8/2002
Reviewed By: Gary J Moss	Level: II		Date: 4-8-02

4/8/02

5 of 11

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
Inspection Area = 1.87sq. in. (see attached calculations).	1.87 sq. in. x 14.5" = 27.12 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	45	CW	.35	14.5	5.08	27.12	18.73
2	45/60	S2	1.65	14.5	23.93	27.12	88.24
3	45/60	S1	0	0	0	27.12	0.00
4	45	CCW	.35	14.5	5.08	27.12	18.73
		Base Metal	Aggregate	Coverage	34.09	108.48	31.43

Item No: B03.150.003

Prepared By: Jay A. Eaton Level: III Date: 4/8/2002

Reviewed By: Gary J Moss Level: II Date: 4-8-02

William C Ph 4/8/02

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

6 of 11

Examination Volume/Area Defined

☐ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
Inspection Area = 0.95 sq. in. (see attached calculations).	0.95 sq. in. x 14.5" = 13.78 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	45	CW	.59	14.5	8.56	27.12	31.56
2	45/60	S2	.58	14.5	8.41	27.12	31.01
3	45/60	S1	0	0	0	27.12	0.00
4	45	CCW	.59	14.5	8.56	27.12	31.56
		Weld Metal	Aggregate	Coverage	25.53	108.48	23.53

Item No: B03.150.003

Prepared By: Jay A. Eaton Level: III Date: 4/8/2002

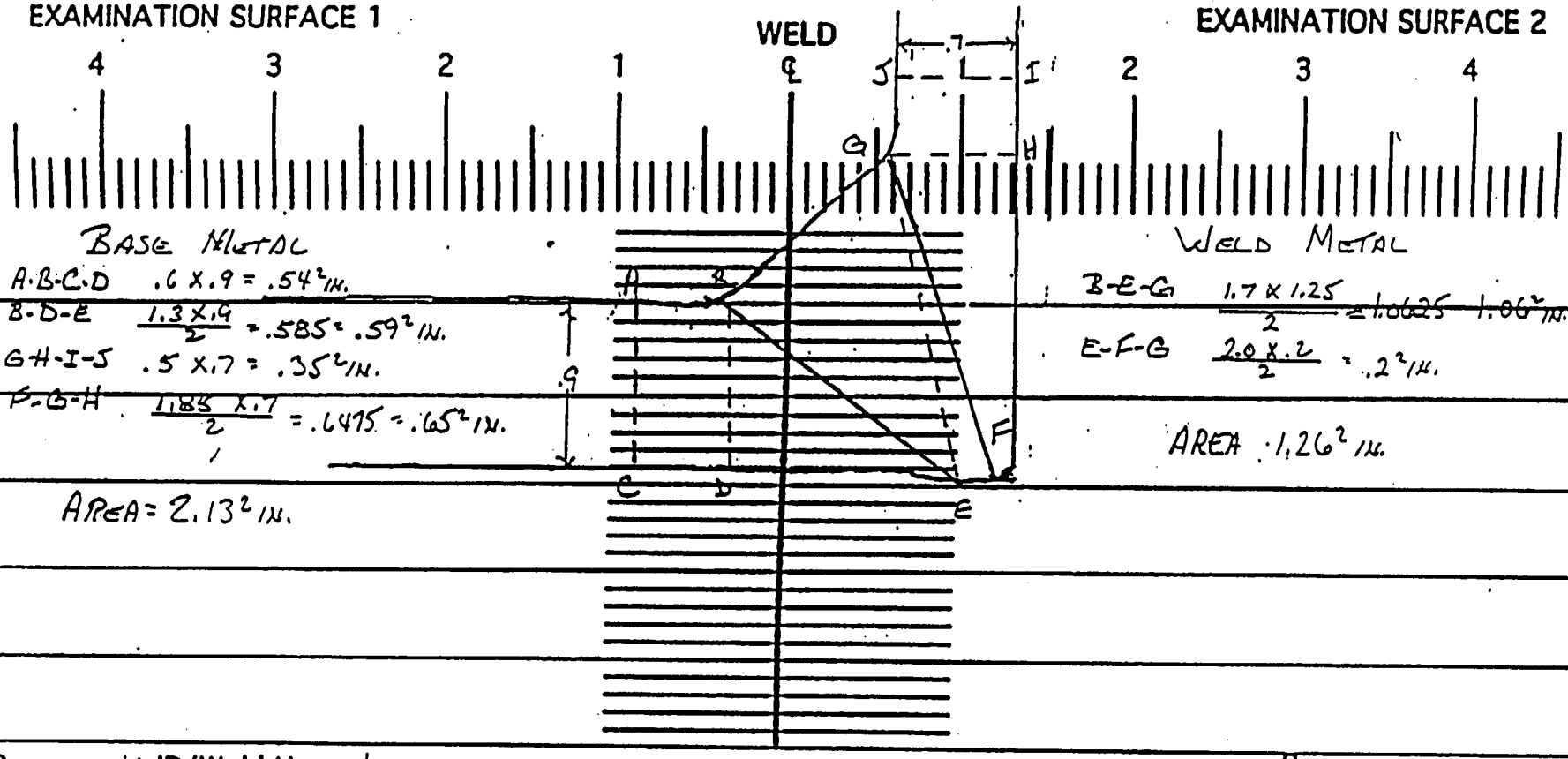
Reviewed By: Gary Moss Level: II Date: 4-8-02

DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1

EXAMINATION SURFACE 1 | WELD | EXAMINATION SURFACE 2



BASE METAL

A-B-C-D .6 X .9 = .54² IN.

B-D-E $\frac{1.3 \times .9}{2}$ = .585 = .59² IN.

G-H-I-J .5 X .7 = .35² IN.

F-G-H $\frac{1.85 \times .7}{2}$ = .6475 = .65² IN.

AREA = 2.13² IN.

WELD METAL

B-E-G $\frac{1.7 \times 1.25}{2}$ = 1.0625 1.06² IN.

E-F-G $\frac{2.0 \times .2}{2}$ = .2² IN.

AREA 1.26² IN.

Component ID/Weld No. 1-LDCB-IN-V1

Remarks:

Item No: B03.150.003

Examiner: DE Hoover | Level: III | Date: 4-7-02

Reviewed By: Gary Moore | Level: II | Date: 4-8-02

Authorized Inspector: [signature] | Date: 4-8-02

Profile taken at: 0°

0 / 90 / 180 / 270

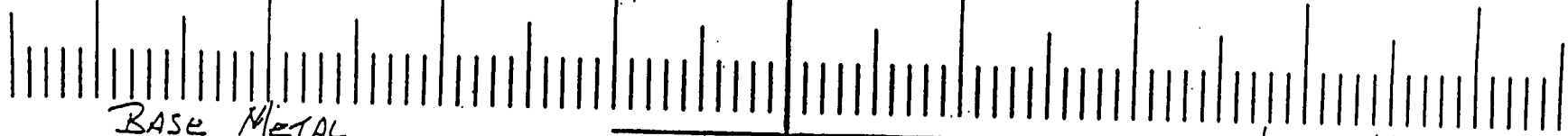
Sheet 2 of 11

DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-UT-5
Revision 1

EXAMINATION SURFACE 1 | WELD | EXAMINATION SURFACE 2

4 3 2 1 ℄ 1 2 3 4



BASE METAL

A-B-CD .5X.9 = .54² IN.

C-D-E $\frac{1.4 \times .35}{2}$ = .2975 = .3² IN.

G-H-I-J .5X.7 = .35² IN.

G-H-F $\frac{1.2 \times .7}{2}$ = .42² IN.

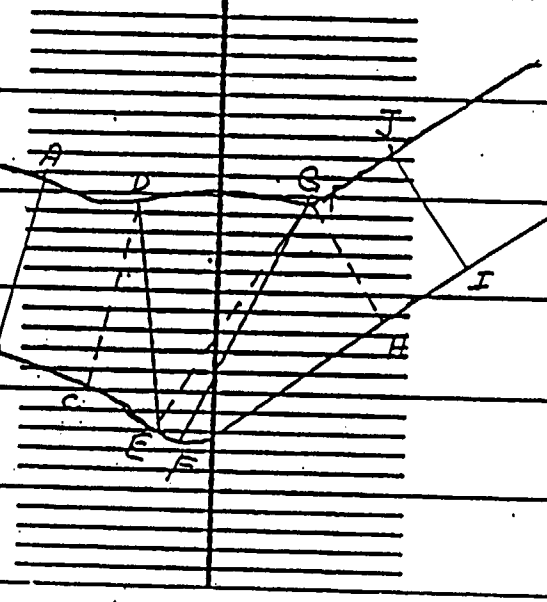
AREA = 1.61² IN.

WELD METAL

D-E-G $\frac{1.4 \times .75}{2}$ = .525 = .53² IN.

E-F-G $\frac{1.4 \times .15}{2}$ = .105 = .1² IN.

AREA = .64² IN.



Component ID/Weld No. 1-LDCB-IN-V1

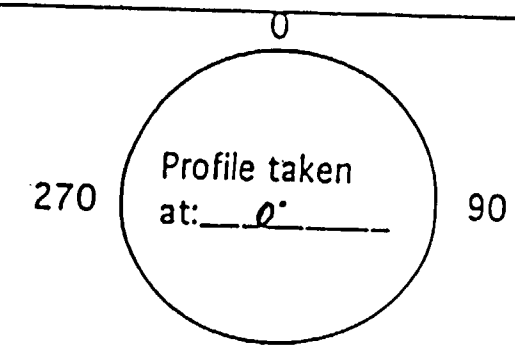
Remarks:

Item No: B03.150.003

Examiner: M E Houser — Level: III — Date: 4-7-02

Reviewed By: Gary Moore — Level: II — Date: 4-8-02

Authorized Inspector: [signature] — Date: 4/8/02



Profile taken at: 0°

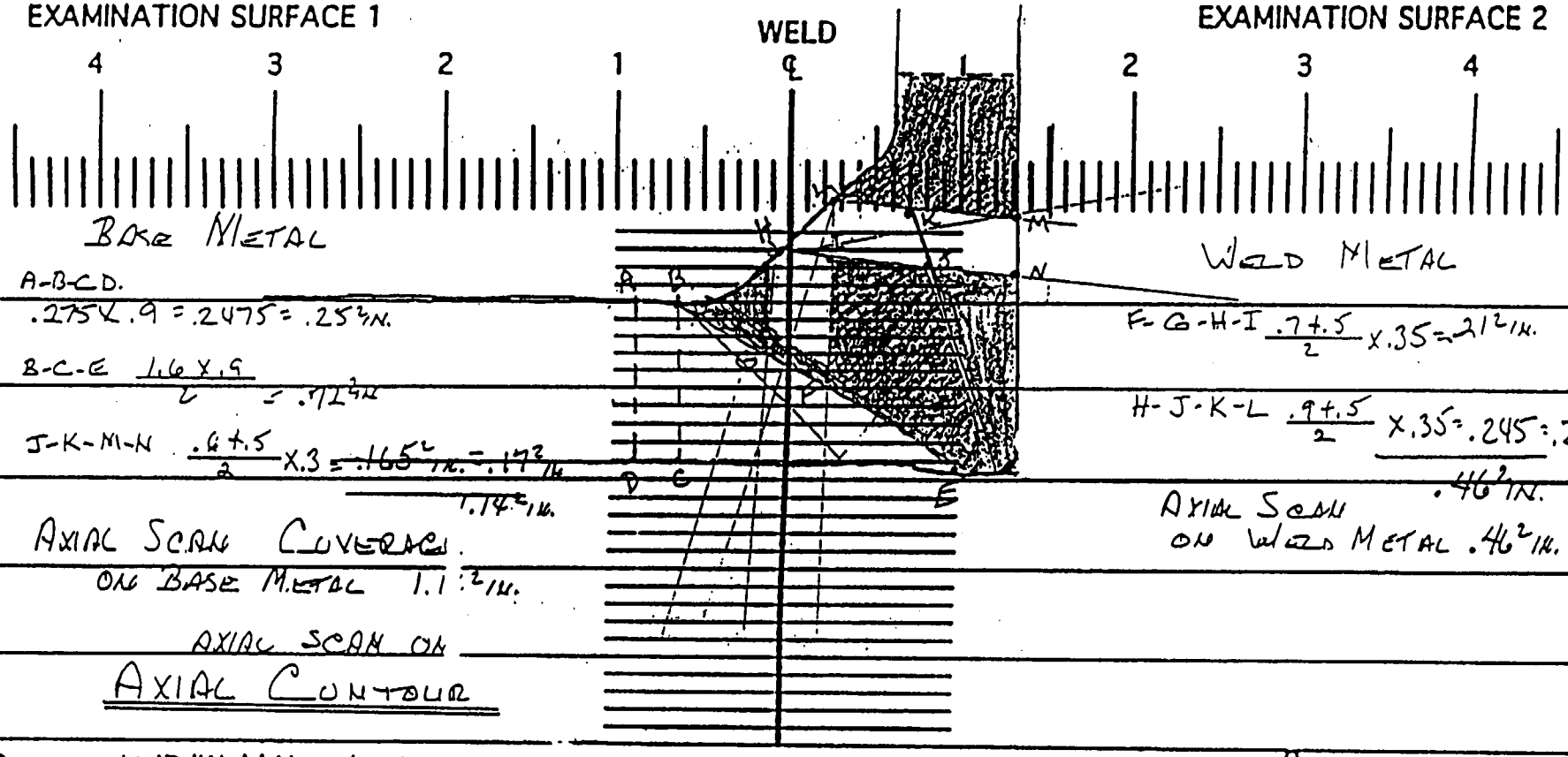
Sheet 8 of 11

DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-U

Revision 1

EXAMINATION SURFACE 1 | WELD | EXAMINATION SURFACE 2



BASE METAL

A-B-C-D.
.275 x .9 = .2475 = .25 in.

B-C-E $\frac{1.6 \times .9}{2}$ = .72 in.

J-K-M-N $\frac{.6+.5}{2} \times .3$ = ~~.165~~ in. = .17 in.

1.14 in.

AXIAL SCAN COVERAGE ON BASE METAL 1.1 in.

AXIAL SCAN ON AXIAL CONTOUR

WELD METAL

F-G-H-I $\frac{.7+.5}{2} \times .35$ = .21 in.

H-J-K-L $\frac{.9+.5}{2} \times .35$ = .245 = .25 in.

.46 in.

AXIAL SCAN ON WELD METAL .46 in.

Component ID/Weld No. 1-LACB-IN-V1

Remarks:

Item No: B03 150.003

Examiner: D E Hansen | Level: III | Date: 4-7-02

Reviewed By: Gary Moore | Level: II | Date: 4-8-02

Authorized Inspector: [signature] | Date: 4-8-02

0 / 270 / 90 / 180

Profile taken at: 0°

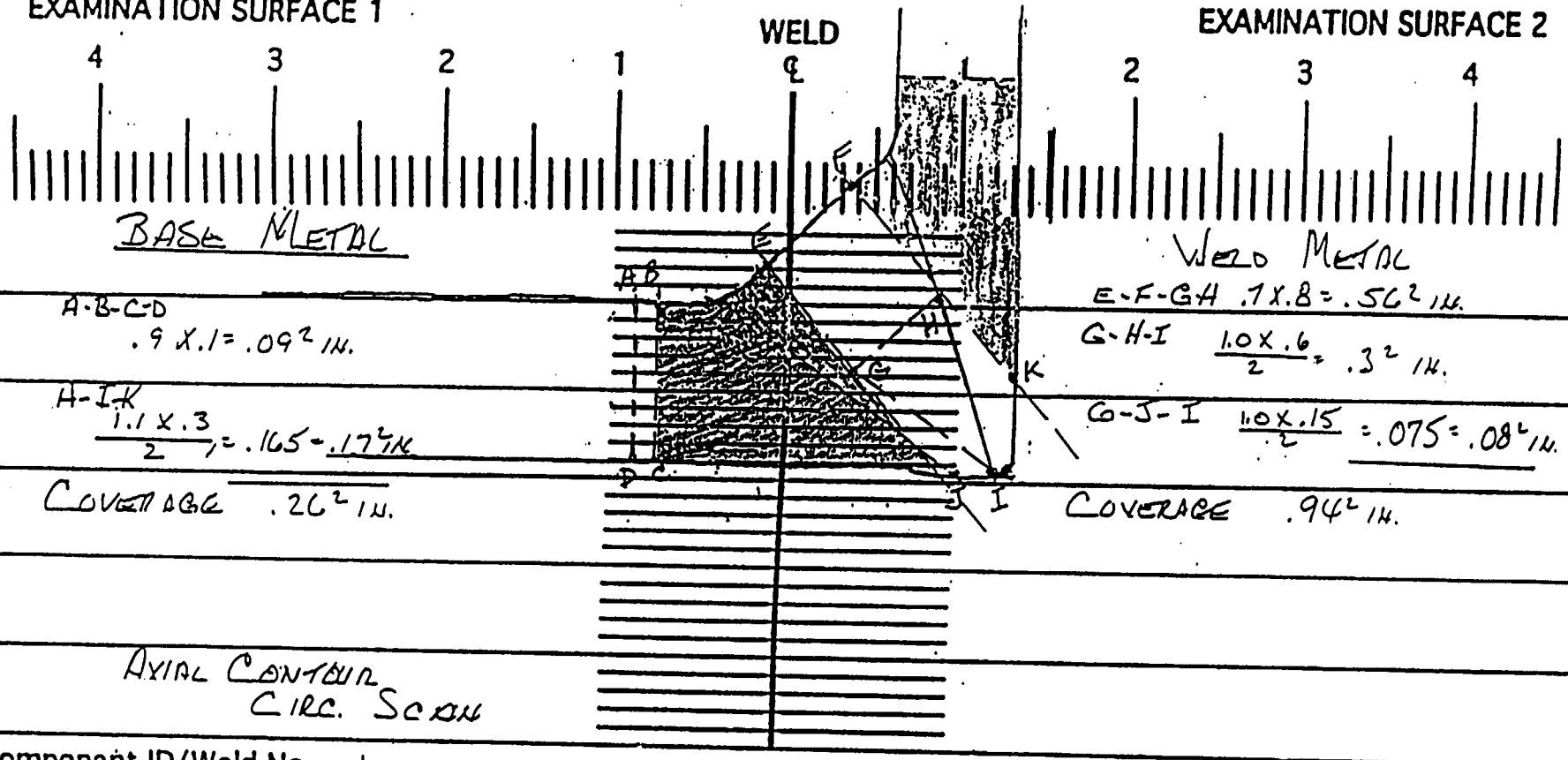
Sheet 9 of 11

DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-UT

Revision 1

EXAMINATION SURFACE 1 | WELD | EXAMINATION SURFACE 2



BASE METAL

A-B-C-D
.9 X .1 = .09² IN.

H-I-K
$\frac{1.1 \times .3}{2}$ = .165 = .17² IN

COVERAGE .26² IN.

WELD METAL

E-F-G-H .7 X .8 = .56² IN.

G-H-I $\frac{1.0 \times .6}{2}$ = .3² IN.

G-J-I $\frac{1.0 \times .15}{2}$ = .075 = .08² IN.

COVERAGE .94² IN.

AXIAL CONTOUR
CIRC. SCAN

Component ID/Weld No. 1-LDCB-IN-V1

Remarks:

0
270 Profile taken at: 0' 90
180

Item No: B03.150.003

Examiner: D E Houser — Level: III — Date: 4-7-02

Reviewed By: Gary A Morris — Level: II — Date: 4-8-02

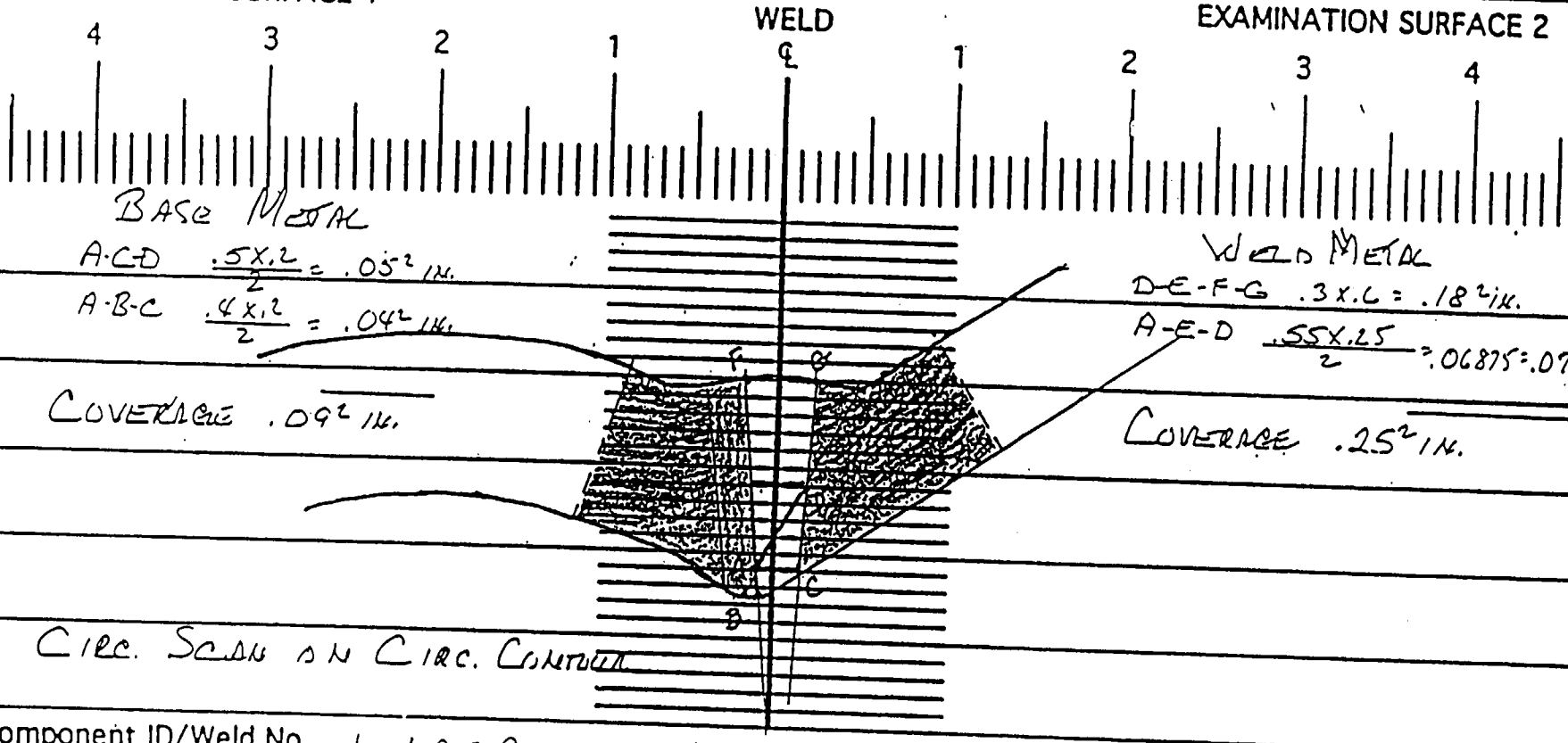
Authorized Inspector: [illegible] — Date: 4/8/02

Sheet 10 of 11

DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-UT-5
Revision 1

EXAMINATION SURFACE 1 | WELD | EXAMINATION SURFACE 2



BASE METAL
A-C-D $\frac{.5 \times .2}{2} = .05^2$ IN.
A-B-C $\frac{.4 \times .2}{2} = .04^2$ IN.
COVERAGE $.09^2$ IN.

WELD METAL
D-E-F-G $.3 \times .6 = .18^2$ IN.
A-E-D $\frac{.55 \times .25}{2} = .06875 = .07^2$ IN.
COVERAGE $.25^2$ IN.

CIRC. SCAN ON CIRC. CONTOUR

Component ID/Weld No. 1-LOCB-IN-V1

: Remarks:

Item No: B03.150.003

Examiner: M E Hauser | Level: III | Date: 4-7-02
Reviewed By: Gary Moore | Level: II | Date: 4-8-02
Authorized Inspector. [signature] | Date: 4/8-02

0
270 Profile taken at: 0° 90
180

Sheet 11 of 11

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1215	Exam Finish: 1231	Form NDE-UT-2A Revision 4

Station: Oconee	Unit: 1	Component/Weld ID: 1-LDCB-OUT-V2	Date: 4/7/2002
Weld Length (in.): 12.75	Surface Condition: GROUND	Lo: 9.2.3	Surface Temperature: 72 ° F

Examiner: Gayle E. Houser Level: III

Examiner: Jay A. Eaton Level: III

Procedure: NDE-630 Rev: 2

FC: 99-02

Calibration Sheet No:
0201093, 0201094, 0201095, 0201096

Scans:

45 ☒ 32 dB 70 ☐ ____ dB

45T ☒ 34 dB 70T ☐ ____ dB

60L ☒ 61 dB

60T ☐ ____ dB

Other: 45L @ 62 dB

Pyrometer S/N: MCNDE 27228

Cal Due: 7/3/2002

Configuration: NOZZLE TO VESSEL

S2 Flow S1

VESSEL to NOZZLE

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 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI															

Remarks: ALL ANGLES SCANNED @ REF. dB DUE TO SIGNAL/NOISE RATIO

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

Sheet 1 of 11

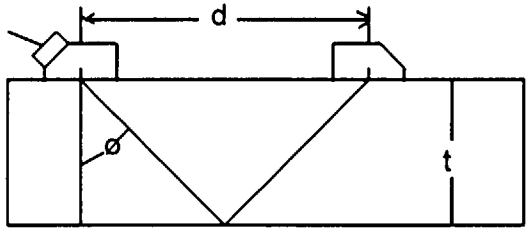
Reviewed By:	Level:	Date:	Authorized Inspector:	Date:	Item No:
Gary Moss	II	4-8-02		4/8/02	B03.150.004

DUKE POWER COMPANY

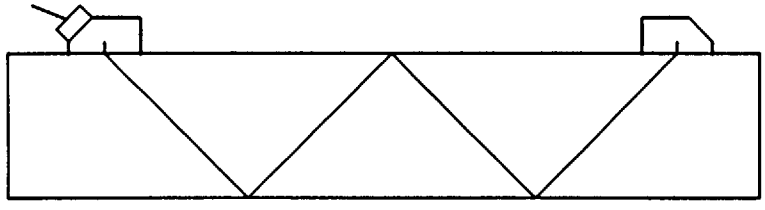
ULTRASONIC BEAM ANGLE MEASUREMENT RECORD

Form NDE-UT-9

Revision 3



$$\tan ø = \frac{(d/2)}{t}$$



For thin wall pipe use 2nd Vee path

$$\tan ø = \frac{(d/2)}{2t}$$

1. Take thickness measurements between . wedge locations.
2. Place search unit on straight turn of pipe, and peak the signal.
3. Measure distance (d) between exit points.
4. Calculate beam angle with formula as shown using measured wall thickness.
5. Use the measured beam angle to determine coverage and when plotting any indications.

Pipe Size: _ _ _ _ _Vessel<2"t_ _ _ _.

Pipe Schedule: _ _ _ _N/A_ _ _ _.

Nominal 45 deg: d= _ _1.7_ _ ; t= _0.875_; measured angle= _44.17_ deg

Nominal 60 deg: d= _ _0_ _ ; t= _ _0_ _; measured angle= _0.00_ deg

Nominal 70 deg: d= _ _0_ _ ; t= _ _0_ _; measured angle= _0.00_ deg

Item No.
B03.150.004

Examiner	Level	Date	Examiner	Level	Date
Jay A. Eaton	III	4/7/2002	Gayle E. Houser	III	4/7/2002
Reviewed By	Level	Date	Authorized Inspector		Date
Gary Moss	II	4-8-02			4/8/02

2 of 11

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1-LDCB-OUT-V2 | Item No: B03.150.004 | Remarks:

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☒ 1 ☐ 2 ☒ cw ☒ ccw

FROM L _____ to L _____
INCHES FROM WO CL + .5 to BEYOND
ANGLE: ☐ 0 ☒ 45 ☒ 60 ☐ Other _____
FROM 0 DEG to 360 DEG

Remarks: DUE TO BRANCH CONNECTION

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☒ 1 ☐ 2
BEAM DIRECTION: ☒ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO CL to 0.5
ANGLE: ☐ 0 ☒ 45 ☒ 60 ☐ Other _____
FROM 0 DEG to 360 DEG

Remarks: DUE TO BRANCH CONNECTION WELD

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM ____ DEG to ____

Prepared By: [signature] Level: III Date: 4/7/02 **Sketch(s) attached** ☒ yes ☐ no Sheet 3 of 11

Reviewed By: Gary Moss Date: 4-8-02 Authorized Inspector: [signature] Date: 4/8/02

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

4 of 11

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
See seperate base metal and weld calculation sheets.	See seperate base metal and weld calculation sheets.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq.in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
		Total	Aggregate	Coverage	59.62	216.96	27.48

		Item No:	B03.150.004
Prepared By: Jay A. Eaton	Level: III		Date: 4/8/2002
Reviewed By: Gary J. Moss	Level: II		Date: 4-8-02
			4-8-02

5 of 11

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
Inspection Area = 1.87sq. in. (see attached calculations).	1.87 sq. in. x 14.5" = 27.12 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	45	CW	.35	14.5	5.08	27.12	18.73
2	45/60	S2	1.65	14.5	23.93	27.12	88.24
3	45/60	S1	0	0	0	27.12	0.00
4	45	CCW	.35	14.5	5.08	27.12	18.73
		Base Metal	Aggregate	Coverage	34.09	108.48	31.43

Item No: B03.150.004

Prepared By: Jay A. Eaton Level: III Date: 4/8/2002

Reviewed By: Gary J. Moss Level: II Date: 4-8-02

4-8-02

6 of 11

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
Inspection Area = 0.95 sq. in. (see attached calculations).	0.95 sq. in. x 14.5" = 13.78 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	45	CW	.59	14.5	8.56	27.12	31.56
2	45/60	S2	.58	14.5	8.41	27.12	31.01
3	45/60	S1	0	0	0	27.12	0.00
4	45	CCW	.59	14.5	8.56	27.12	31.56
		Weld Metal	Aggregate	Coverage	25.53	108.48	23.53

Item No: B03.150.004

Prepared By: Jay A. Eaton Level: III Date: 4/8/2002

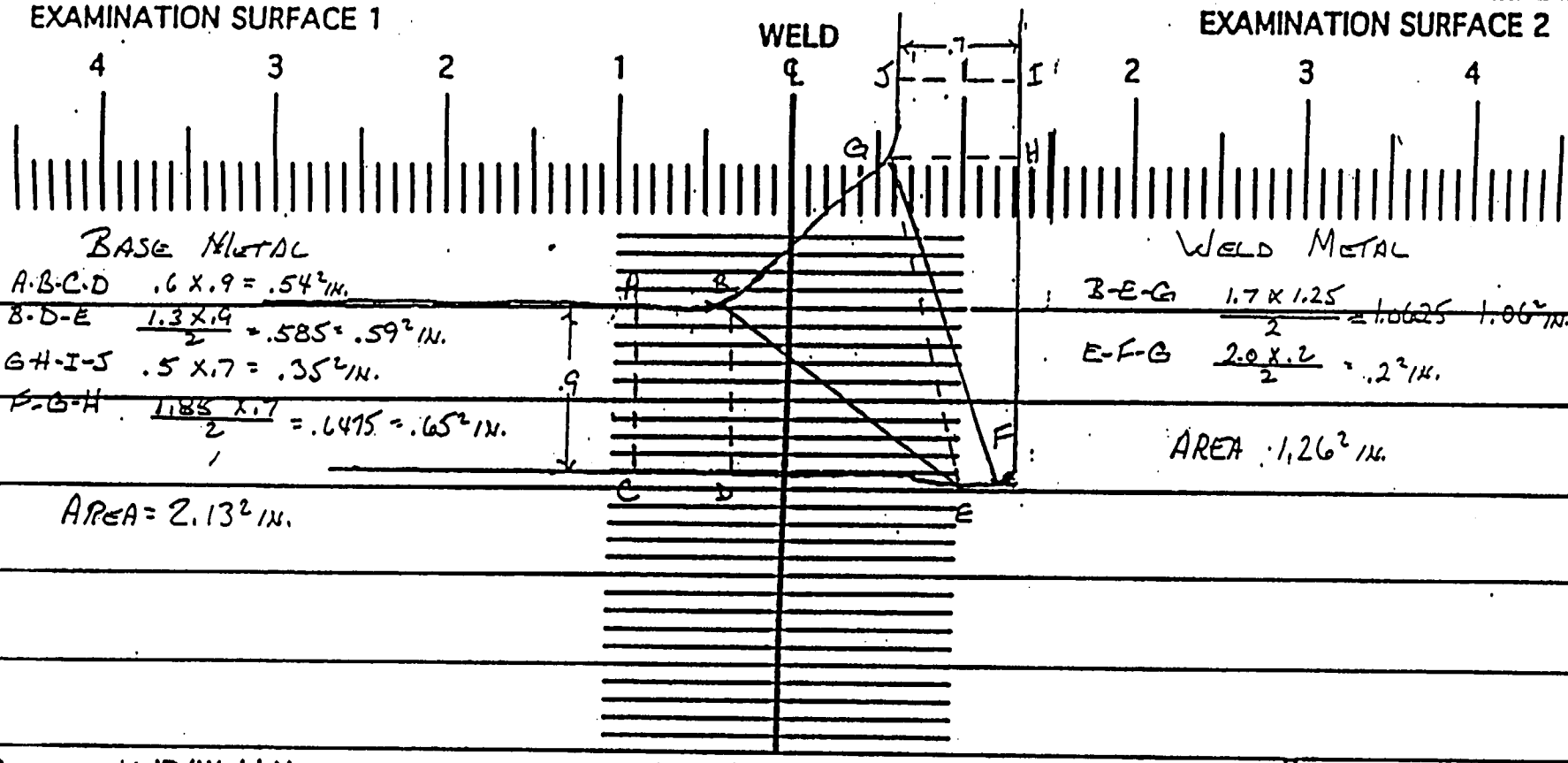
Reviewed By: Gary A Moss Level: II Date: 4-8-02

4-8-02

DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-UT-5
Revision 1

EXAMINATION SURFACE 1 | WELD | EXAMINATION SURFACE 2



BASE METAL

A-B-C-D .6 X .9 = .54² IN.

B-D-E $\frac{1.3 \times .9}{2}$ = .585 = .59² IN.

G-H-I-J .5 X .7 = .35² IN.

F-G-H $\frac{1.85 \times .7}{2}$ = .6475 = .65² IN.

AREA = 2.13² IN.

WELD METAL

B-E-G $\frac{1.7 \times 1.25}{2}$ = 1.0625 1.06² IN.

E-F-G $\frac{2.0 \times .2}{2}$ = .2² IN.

AREA 1.26² IN.

Component ID/Weld No. 1-LOCB-out-V2

Remarks:

Profile taken at: 0°

0 / 90 / 180 / 270

Item No: B03.150.004

Examiner: N E Hansen | Level: III | Date: 4-7-02

Reviewed By: Dan J Moss | Level: II | Date: 4-8-02

Authorized Inspector: [signature] | Date: 4-8-02

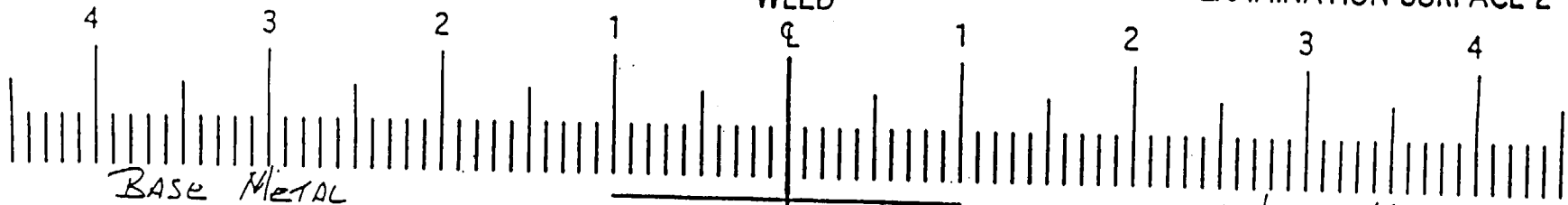
Sheet 7 of 11

DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1

EXAMINATION SURFACE 1 | WELD | EXAMINATION SURFACE 2



BASE METAL

A-B-CD .5 X .9 = .54² IN.

C-D-E $\frac{1.7 \times .35}{2}$ = .2975 = .3² IN.

G-H-I-J .5 X .7 = .35² IN.

G-H-F $\frac{1.2 \times .7}{2}$ = .42² IN.

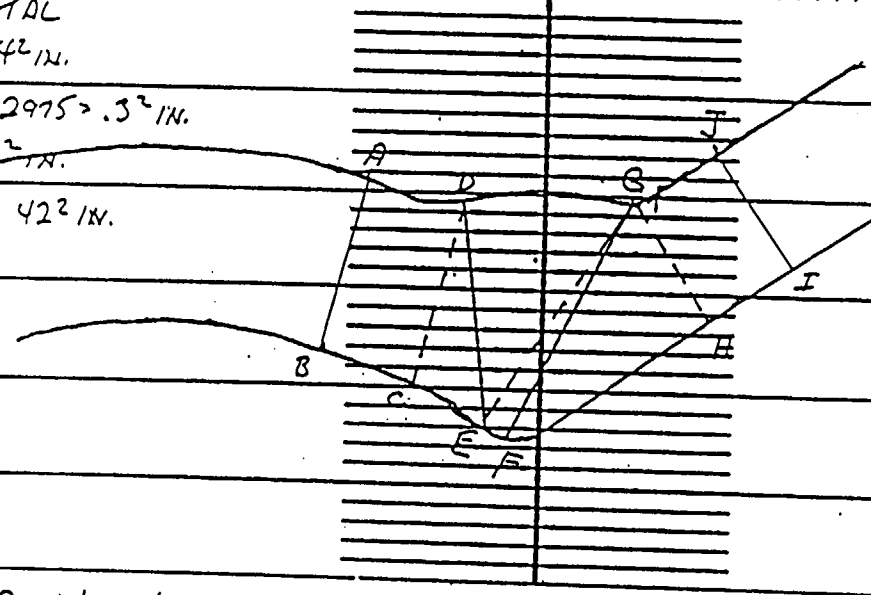
AREA = 1.61² IN.

WELD METAL

D-E-G $\frac{1.4 \times .75}{2}$ = .525 = .53² IN

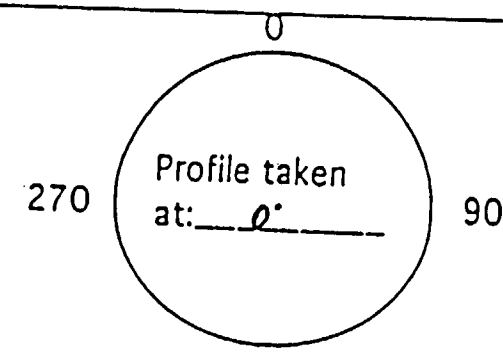
G-F-G $\frac{1.4 \times .15}{2}$ = .105 = .1² IN

AREA = .64² IN.



Component ID/Weld No. 1-LDCB-out-V2

Remarks:



Profile taken at: 0°

Item No: B03.150.004

Examiner: DE Hauser — Level: III — Date: 4-7-02

Reviewed By: Gary Moss — Level: II — Date: 4-8-02

Authorized Inspector: [illegible] — Date: 4-8-02

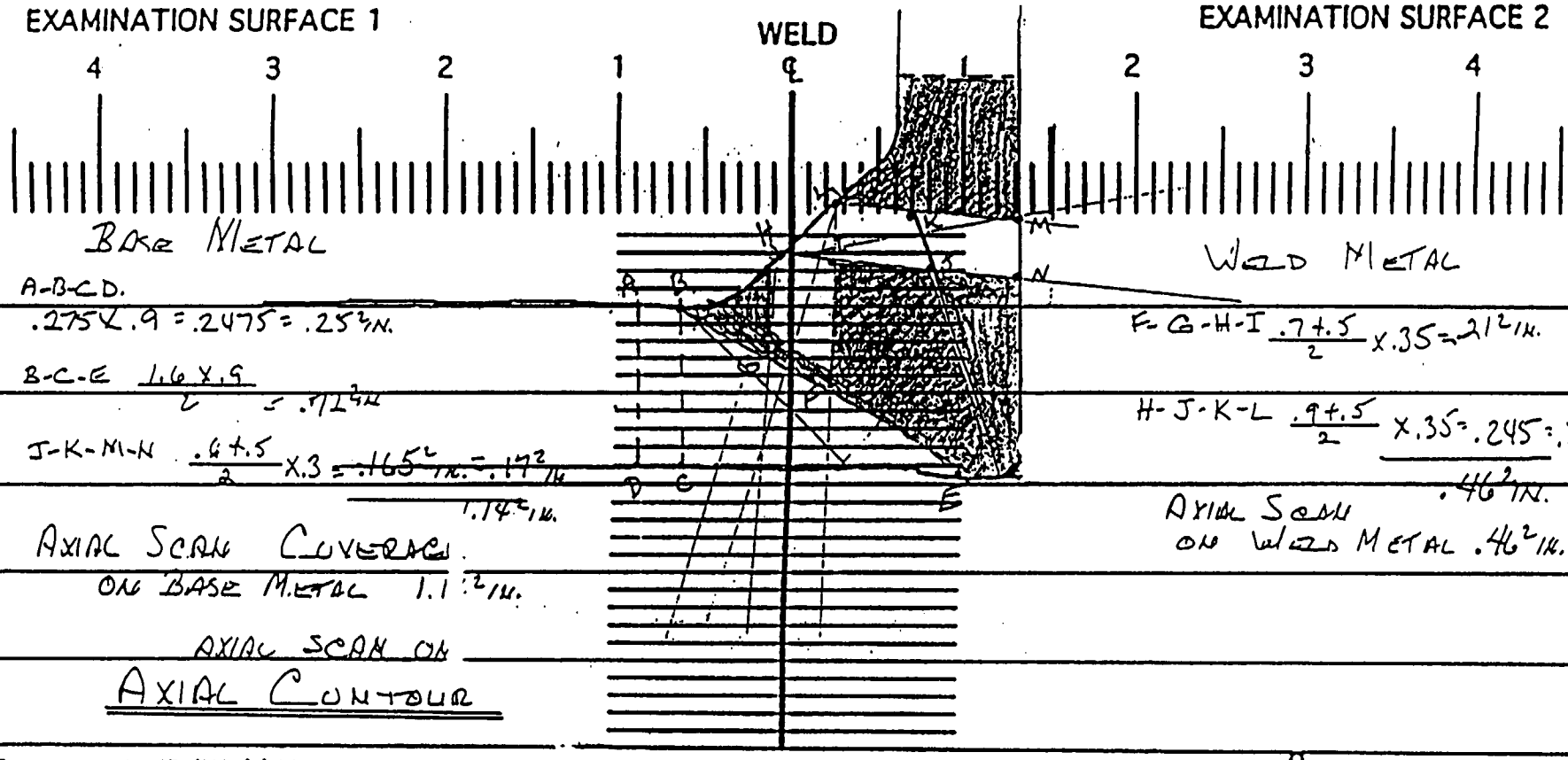
Sheet 8 of 11

DUKE POWER CO. PANY
UT PROFILE/PLOT .EET

NDE-01

Revision

EXAMINATION SURFACE 1 | WELD | EXAMINATION SURFACE 2



BASE METAL

A-B-C-D.
.275 X .9 = .2475 = .25 IN.

B-C-E $\frac{1.6 \times .9}{2}$ = .72 IN

J-K-M-N $\frac{.6+.5}{2}$ X .3 = ~~.165 IN. = .17~~ IN
1.14 IN.

AXIAL SCAN COVERAGE ON BASE METAL 1.1 IN.

AXIAL SCAN ON AXIAL CONTOUR

WELD METAL

F-G-H-I $\frac{.7+.5}{2}$ X .35 = .21 IN.

H-J-K-L $\frac{.9+.5}{2}$ X .35 = .245 = .25 IN.

.46 IN.

AXIAL SCAN ON WELD METAL .46 IN.

Component ID/Weld No. 1-LDCB-04-V2

Remarks:

Profile taken at: 0°

0 / 90 / 180 / 270

Item No: B03.150.004

Examiner: DE Hoover	Level: III	Date: 4-7-02
Reviewed By: Gary Moss	Level: II	Date: 4-8-02
Authorized Inspector:		Date: 4-8-02

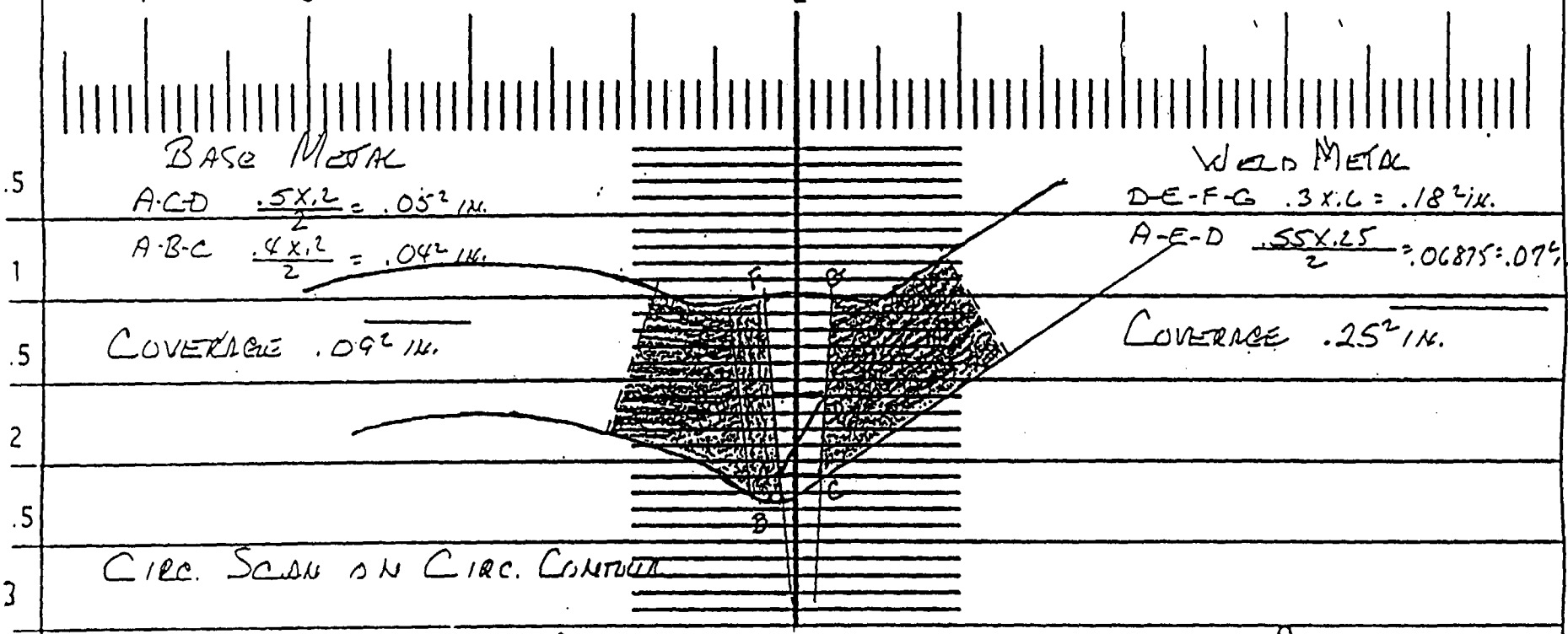
Sheet 9 of 11

DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-UT-5
Revision 1

EXAMINATION SURFACE 1 | WELD | EXAMINATION SURFACE 2

4 3 2 1 ℄ 1 2 3 4



BASE METAL
A-C-D $\frac{.5 \times .2}{2} = .05^2$ IN.
A-B-C $\frac{.4 \times .2}{2} = .04^2$ IN.
COVERAGE $.09^2$ IN.

WELD METAL
D-E-F-G $.3 \times .6 = .18^2$ IN.
A-E-D $\frac{.55 \times .25}{2} = .06875 = .07^2$ IN.
COVERAGE $.25^2$ IN.

CIRC. SCAN ON CIRC. CONTOUR

Component ID/Weld No. 1-LDCB-out-V2

: Remarks:

Profile taken at: 0°

0 / 90 / 180 / 270

Item No: B03.150.004

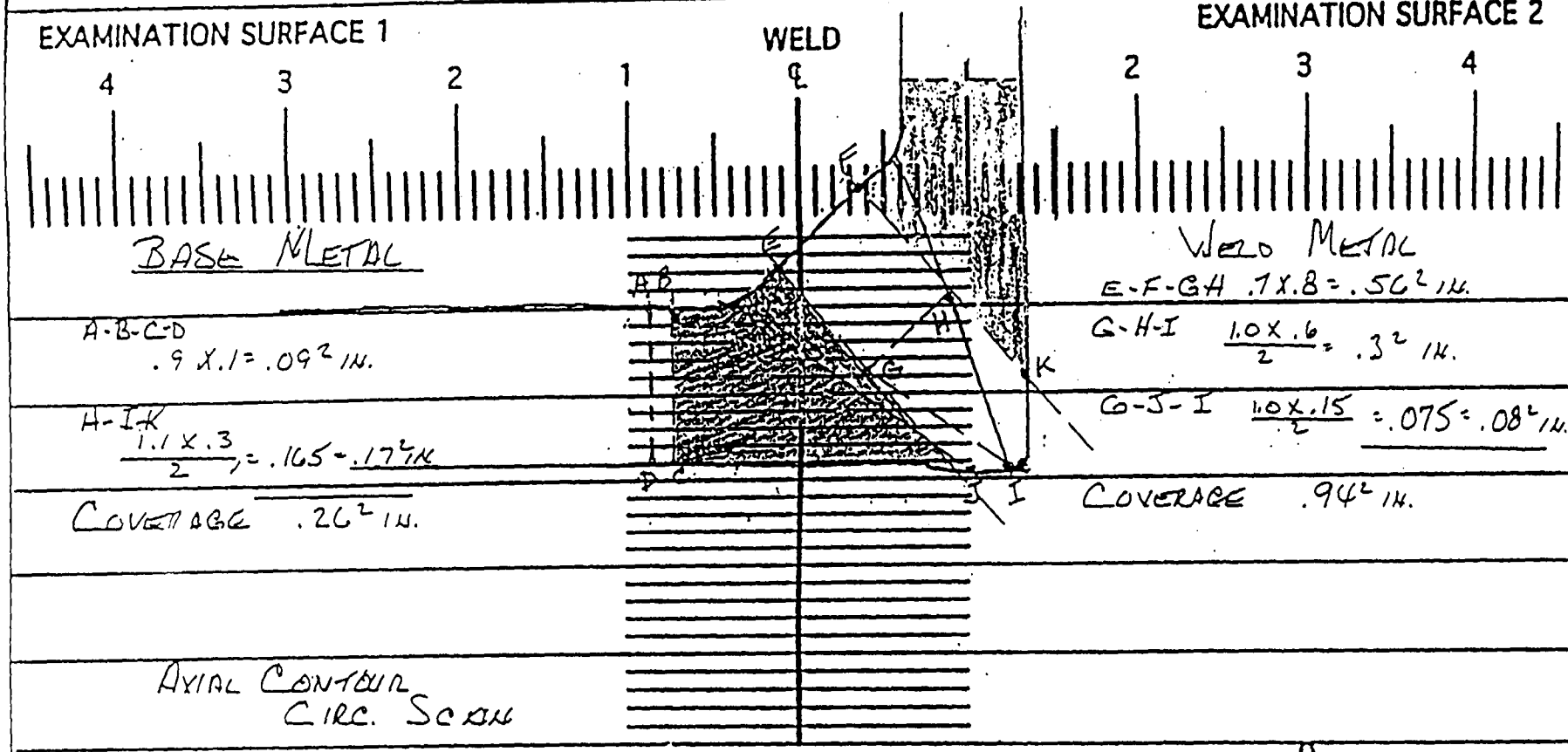
Examiner: D E Howard	Level: III	Date: 4-7-02	
Reviewed By: Gary Moore	Level: II	Date: 4-8-02	
Authorized Inspector:		Date: 4-8-02	

Sheet 10 of 11

DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-UT-5
Revision 1

EXAMINATION SURFACE 1 | WELD | EXAMINATION SURFACE 2



BASE METAL

A-B-C-D
.9 X .1 = .09² IN.

H-I-K
$\frac{1.1 \times .3}{2}$ = .165 = .17² IN

COVERAGE .26² IN.

WELD METAL

E-F-G-H .7 X .8 = .56² IN.

G-H-I $\frac{1.0 \times .6}{2}$ = .3² IN.

G-J-I $\frac{1.0 \times .15}{2}$ = .075 = .08² IN.

COVERAGE .94² IN.

AXIAL CONTOUR
CIRC. SCAN

Component ID/Weld No. 1-LDCB-OUT-V2

Remarks:

Profile taken at: 0°

0 / 90 / 180 / 270

Item No: B03.150.004

Examiner:	ME Houser	Level: III	Date: 4-7-02
Reviewed By:	Gary J Moore	Level: II	Date: 4-8-02
Authorized Inspector:			Date: 4-8-02

Sheet 11 of 11

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1820	Form NDE-UT-2A	
Exam Finish: 1840	Revision 4	

Station: Oconee	Unit: 1	Component/Weld ID: 1-RPV-LIGAMENTS	Date: 3/28/2002
Weld Length (in.): N/A	Surface Condition: Machined	Lo: N/A	Surface Temperature: 72 ° F

Examiner: Jay A. Eaton Level: III

Examiner: Gayle E. Houser Level: III

Procedure: NDE-640 Rev: 1

FC: *

Calibration Sheet No: 0201051, 0201052

Scans:

45 ☐ _____ dB 70 ☐ _____ dB

45T ☐ _____ dB 70T ☐ _____ dB

60 ☐ _____ dB

60T ☐ _____ dB

Other: 0° - 44 dB

Pyrometer S/N: MCNDE 27219

Cal Due: 8/5/2002

Configuration: Vessel Ligaments

N/A Flow N/A

N/A to N/A

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 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	20%dac HMA 50%dac 100%dac	DO NOT WRITE IN THIS SPACE			
NRI	0°														

Remarks: * FC 95-18 & 95-19 Stud Holes @ 180° thru 360°

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

Sheet 1 of 4

Reviewed By:	Level:	Date:	Authorized Inspector:	Date:	Item No:
David K. [illegible]	III	3/30/02	[illegible]	4-1-02	B06.040.001A

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1-RPV-LIGAMENTS Item No: B06.040.001A Remarks:

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☒ 1 ☐ 2 BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L See to L Remarks INCHES FROM WO _____ to _____

ANGLE: ☒ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

See attached sheet for area not scanned at each stud hole.

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2 BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2 BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2 BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

Prepared By: Jay A. Eaton Level: III Date: 3/28/2002 **Sketch(s) attached** ☒ yes ☐ no Sheet 2 of 4

Reviewed By: [signature] III Date: 3/30/02 Authorized Inspector: [signature] Date: 4-1-02

2 of 4

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
Total Area = 25.2 sq. in.	25.2 sq. in. x 6.5" = 163.8 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°	S1	21.3	6.5	138.45	163.8	84.52

		Item No:	B06.040.001A
Prepared By: Jay A. Eaton	Level: III		Date: 3/28/2002
Reviewed By: Gayle E. Houser	Level: III		Date: 3/28/2002

4-1-02

DUKE POWER COMPANY

Form 00184 (R4-88)

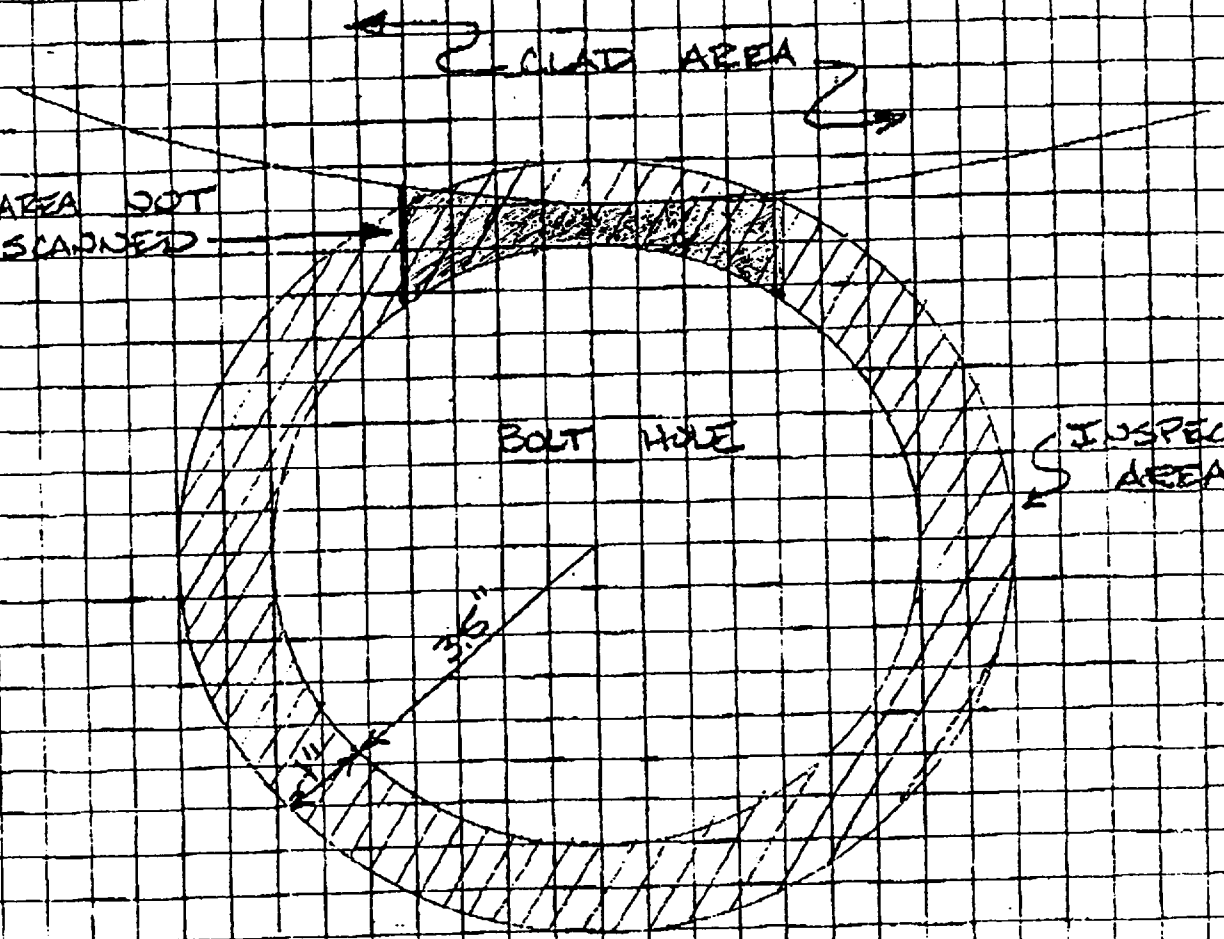
Station OCONEE Unit 1 Rev. ____ File No. ____ Sheet 4 of 4

Subject 1 RPV - LIGAMENTS

ITEM # B06.040.001A By ____ Date 3/28/02

Prob No. ____ Checked By ____ Date ____

ATTACHMENT TO B06.040.001A



INSPECTION AREA = $\pi(4.5^2) - \pi(3.5^2)$

= 63.6 − 38.4

= 25.2 in²

% AREA NOT INSP. = $\frac{3.9}{25.2}$ = 15.5%

AREA INSP. = 100 − 15.5

= 84.5%

AREA NOT INSP = 2.1 + .6 + 1.2 = 3.9 in²

.5 × 4.2 = 2.1 in²

A = ½(2) × .6 = .6 in²

.6 × 2 = 1.2 in²

A = ½(2) × .3 = .3

.3 × 2 = .6 in²

12/04/01 TUE 10:55 FAX 704 875 5936 NDE 005

AHB 4-1-02

Oconee Unit #1
EOC20
NO DATA

CALIBRATION SHEET # 0201027 – 45° & 60°
0201028 – 60°L
#
COMPONENT I.D.# 1LP-128-80
ITEM # C05.011.007

Initial ☐ Final ☑
ANII [illegible] DATE 2/23/02
HSBI & I Co.

- 1 of 4 -

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1LP-128-80 | Item No: C05.011.007 | Remarks:

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☒ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO .75" to BEYOND

ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____ FROM 0 DEG to 360 DEG

DUE TO VALVE CONFIGURATION

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

Prepared By: David K. [illegible] Level: III Date: 01/16/02 **Sketch(s) attached** ☐ yes ☒ no Sheet 2 of 4

Reviewed By: Gary T. Moss Date: 1-17-02 Authorized Inspector: [illegible] Date: FEB 23 2002

2 of 4

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
2.0 IN. X 0.437 IN. = 0.874 SQ. IN.	0.874 SQ. IN. X 40 IN. = 34.96 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	60	2	.340	40	13.6	34.96	
2	60	1	0.0	40	0	34.96	
3	45	CW	.874	40	34.96	34.96	
4	45	CCW	.874	40	34.96	34.96	
					83.52	139.8	59.74
		Supplemental	Coverage				
1	60°L	2	.534	40	21.36	139.8	15.28

Initial ☐ Final ☑
ANII [signature] DATE 8/23/01
HSB1 & I Co.

Item No:	C05.011.007

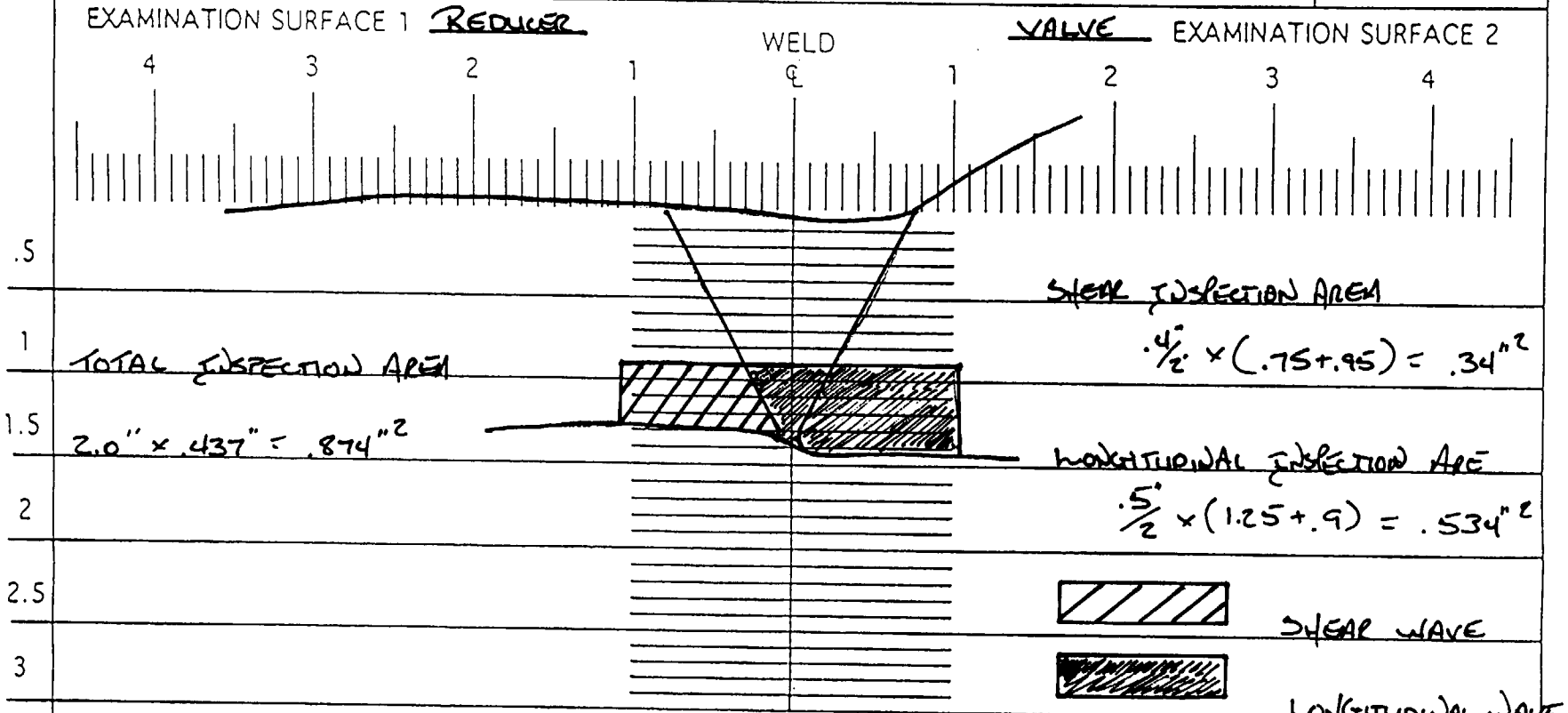
Prepared By: David K [signature]	Level: III	Date: 01/16/02
Reviewed By: Gary M Moss	Level: II	Date: 1-17-02

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

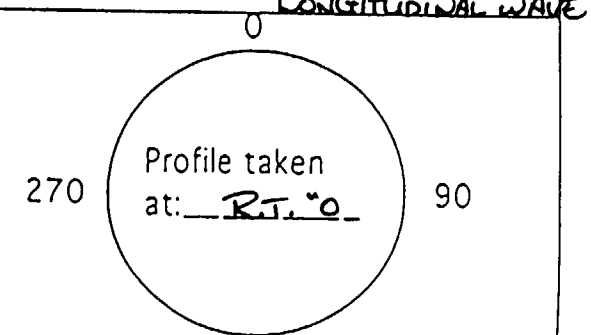
NDE-UT-5

Revision 1



Component ID/Weld No. 1CP-0128-80

: Remarks:



Item No: C05.011.007

Examiner: Daniel K. [illegible]	Level: III	Date: 1-16-02
Reviewed By: Gary [illegible] Moss	Level: II	Date: 1-17-02
Authorized Inspector: [illegible]		Date: FEB 23 2002

Sheet 4 of 4

Oconee Unit #1
EOC20
NO DATA

CALIBRATION SHEET # 0201009 – 45° & 60°
0201029 – 60°L
#
COMPONENT I.D.# 1HP-192-15
ITEM # C05.021.006

Initial ☐ Final ☑
ANII [illegible] DATE 2/23/02
HSBI & I Co.

1 of 9

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 1506		NDE-UT-3A
Exam Finish: 1509		Revision 2

Station: Oconee	Unit: 1	Component/Weld ID: 1HP-192-15	Date: 1/14/2002
Nominal Material Thickness (in): 0.531		Weld Length (in.): 14.2"	Surface Temperature: 78 Deg F
Measured Material Thickness (in): 0.547		Lo: 9.1.1.1	Pyrometer S/N: MCNDE 27010
Surface Condition: AS GROUND		Calibration Sheet No: 0201011	Cal Due: 2/14/2002
Examiner: James L. Panel *James L Panel*	Level: II		Configuration: Pipe to Flange (Orifice)
Examiner: B. Dale Jolly *B. dale Jolly*	Level: II		S2 Flow S1
Procedure: NDE-640	Rev: 1 FC: *		PIPE to FLANGE

IND NO.	4	Ampl ≥ rem BW LOB	L1 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	L2 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	Exam Surf.	Damps
NRI	0													

Remarks: * 95-18 & 95-19

Limitations: see NDE-UT-4 ☐ None: ☒

Sheet 2 of 9

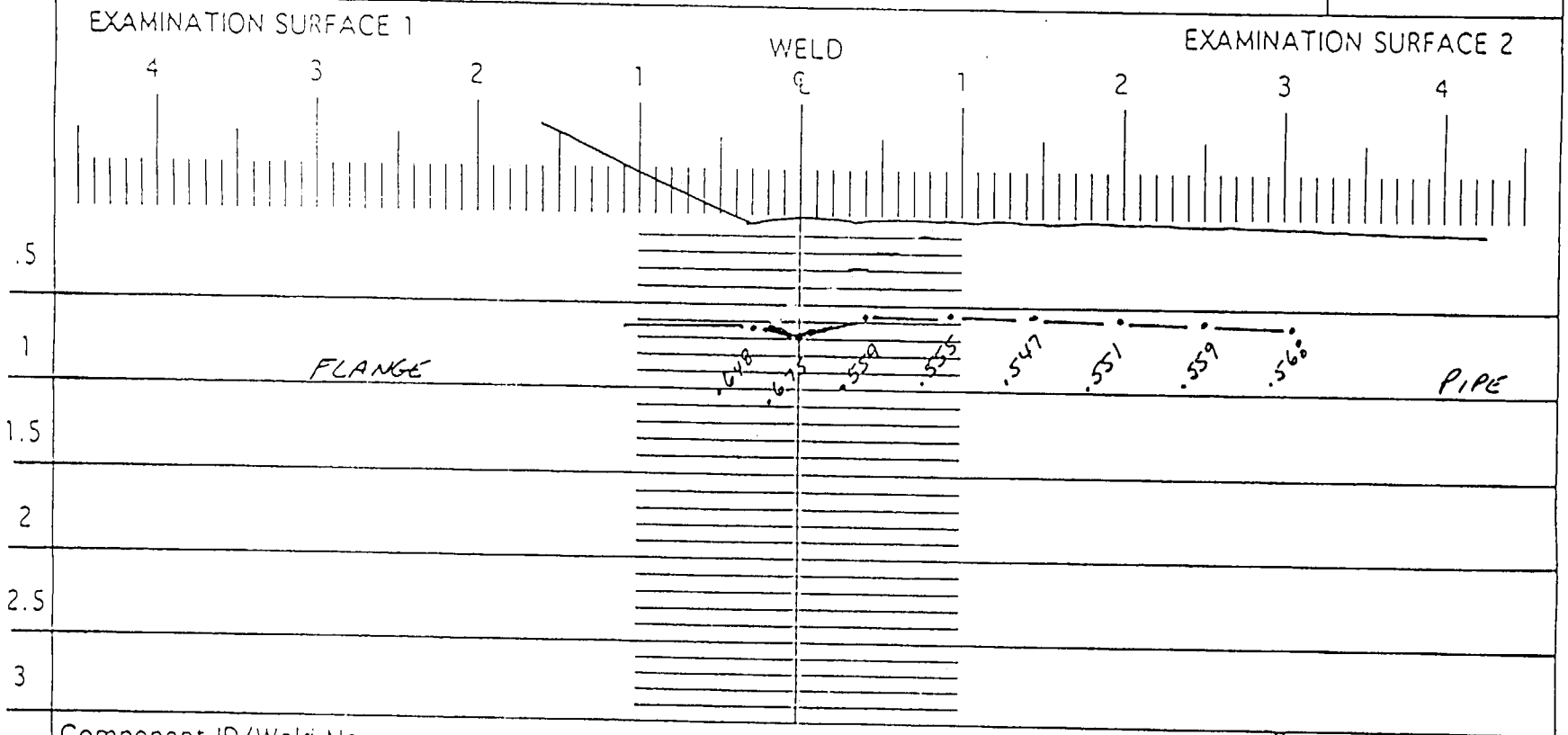
Reviewed By: *Gary Moss*	Level: II	Date: 1-16-01	Item No: C05.021.006
Authorized Inspector: *E McGinnis*	Date: FEB 23 2002		

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



Component ID/Weld No. 1-HP-192-15

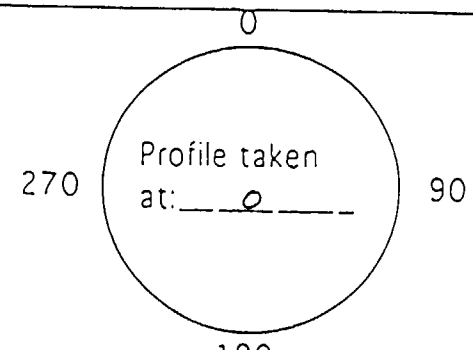
: Remarks:

Item No: C05.021.006

Examiner: [signature] Level: II Date: 1-14-02

Reviewed By: Gary Moss Level: II Date: 1-16-02

Authorized Inspector: [signature] Date: FEB 23 2002



Sheet 3 of 9

DUKE POWER COMPANY
ULTRASONIC INDICATION RECORD FOR PIPING

FORM NDE-UT-10
Revision 0

Station: Oconee	Unit: 1	Component/Weld ID: 1HP-192-15	Date: 1/15/2002
Surface Condition: AS GROUND		Item No: C05.021.006	
Examiner: James L. Panel	Level: II	Procedure: NDE-600 Rev: 14 FC: N/A	
Examiner: B. Dale Jolly	Level: II	Lo: 9.1.1.1 Configuration: Pipe to Flange (Orifice)	
Calibration Sheet No: 0201029		(S2) PIPE to (S1)FLANGE Scan Surface: OD	

IND #	∡	% FSH	Mp Max	W Max	L Max	L1 20 % FSH	L2 20 % FSH	Beam Dir.	Exam Surf.	Scan	Damps	Remarks
1	60°L	100	1.092	.9"	360°	INT.	IND.	1	2	AXIAL	NO	

Reviewed By: Gary Moss	Level: II	Date: 1-17-02	Authorized Inspector:	Date: FEB 23 2002

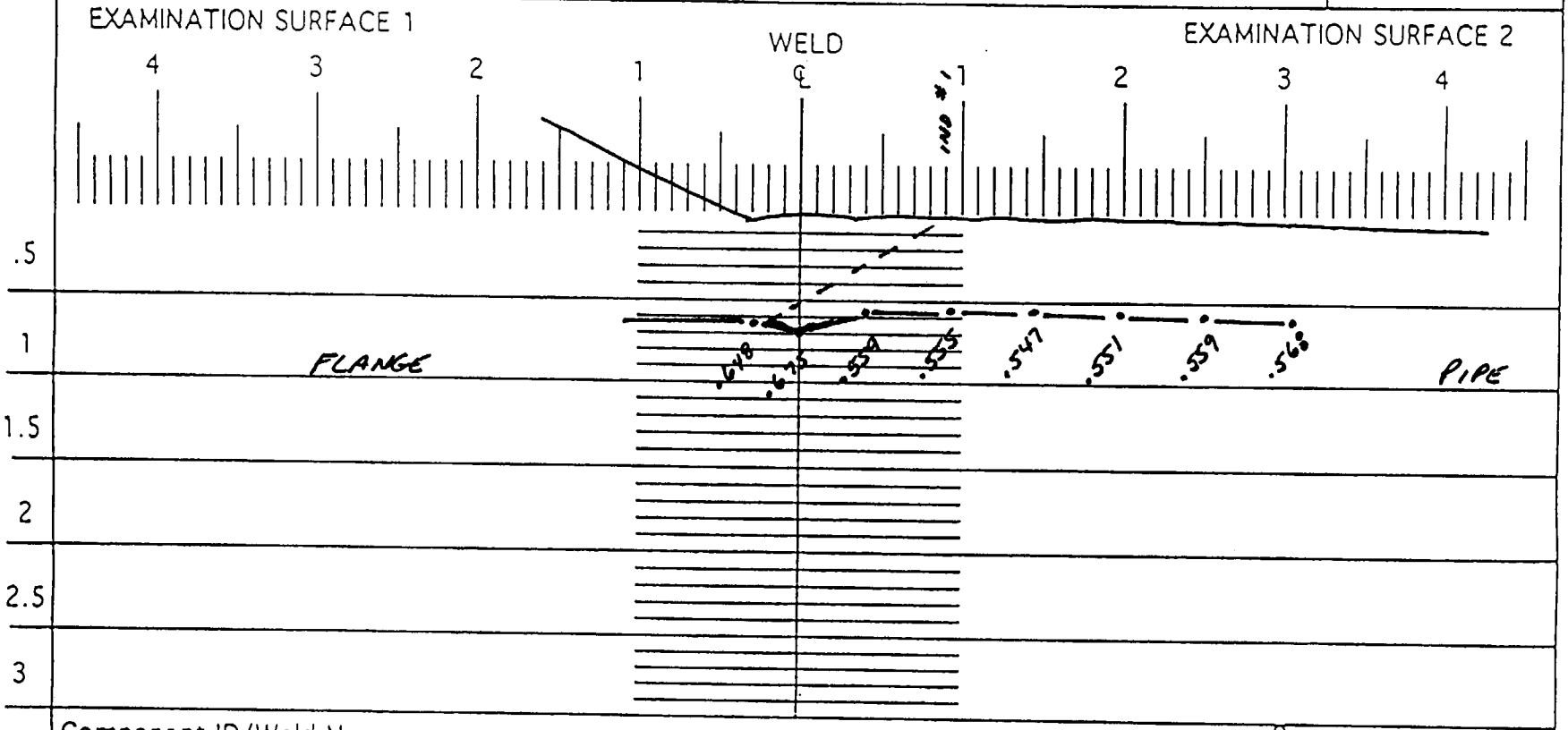
Sheet 4 of 9

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



Component ID/Weld No. 1-HP-192-15

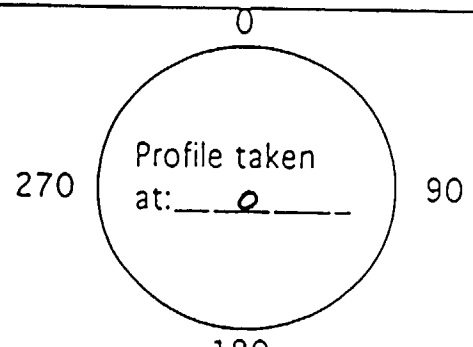
: Remarks:

Item No: C05.021.006

Examiner: [signature] Level: II Date: 1-14-01

Reviewed By: Gary Moss Level: II Date: 1-16-02

Authorized Inspector: [signature] Date: FEB 23 2002



Sheet 5 of 9

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1HP-192-15 | Item No: C05.021.006 | Remarks:

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☒ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO 0.3" to BEYOND
ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____ FROM 0 DEG to 360 DEG

DUE TO FLANGE CONFIGURATION

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____

Prepared By: James L Lanel Level: II Date: 1/14/02 | **Sketch(s) attached** ☐ yes ☒ no Sheet 6 of 9

Reviewed By: Gary J Moss Date: 1-16-02 | Authorized Inspector: [signature] Date: FEB 2 3 2002

DUKE POWER COMPANY

ULTRASONIC INDICATION RESOLUTION SHEET

Form NDE-UT-8

Revision 1

Acceptance Standard:

INDICATION #1 WAS DETERMINED TO BE A GEOMETRIC REFLECTOR DUE TO I.D. WELD ROOT GEOMETRY. THIS WAS DETERMINED BY PLOTTING AND A REVIEW OF THE R.T. FILM.

Item No: C05.021.006

Acceptable Indications: #1

Rejectable Indications: NONE

These indications have been compared with previous ultrasonic data ☐ Yes ☒ No previous data available

Examiner:	Level:	Date:		Sheet 7 of 9
James L. Panel	II	1/14/2002		
Reviewer:	Level:	Date:	Authorized Inspector:	Date:
Gary Moss	II	1-16-02		FEB 23 2002

8 of 9

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
0.2 IN. X 1.25" = 0.25 SQ.IN.	0.25 SQ. IN. X 14.2 IN. = 3.55 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	60	1	0.11	14.2	1.56	3.55	
2	60	2	0.0	14.2	0	3.55	
3	45	CW	0.25	14.2	3.55	3.55	
4	45	CCW	0.25	14.2	3.55	3.55	
					8.66	14.2	60.99
		Supplemental	Coverage				
1	60°L	1	0.14	14.2	1.99	14.2	14.01

Initial ☐ Final ☑
ANII [illegible] DATE [illegible]
HSBI & I Co.

Item No:	C05.021.006

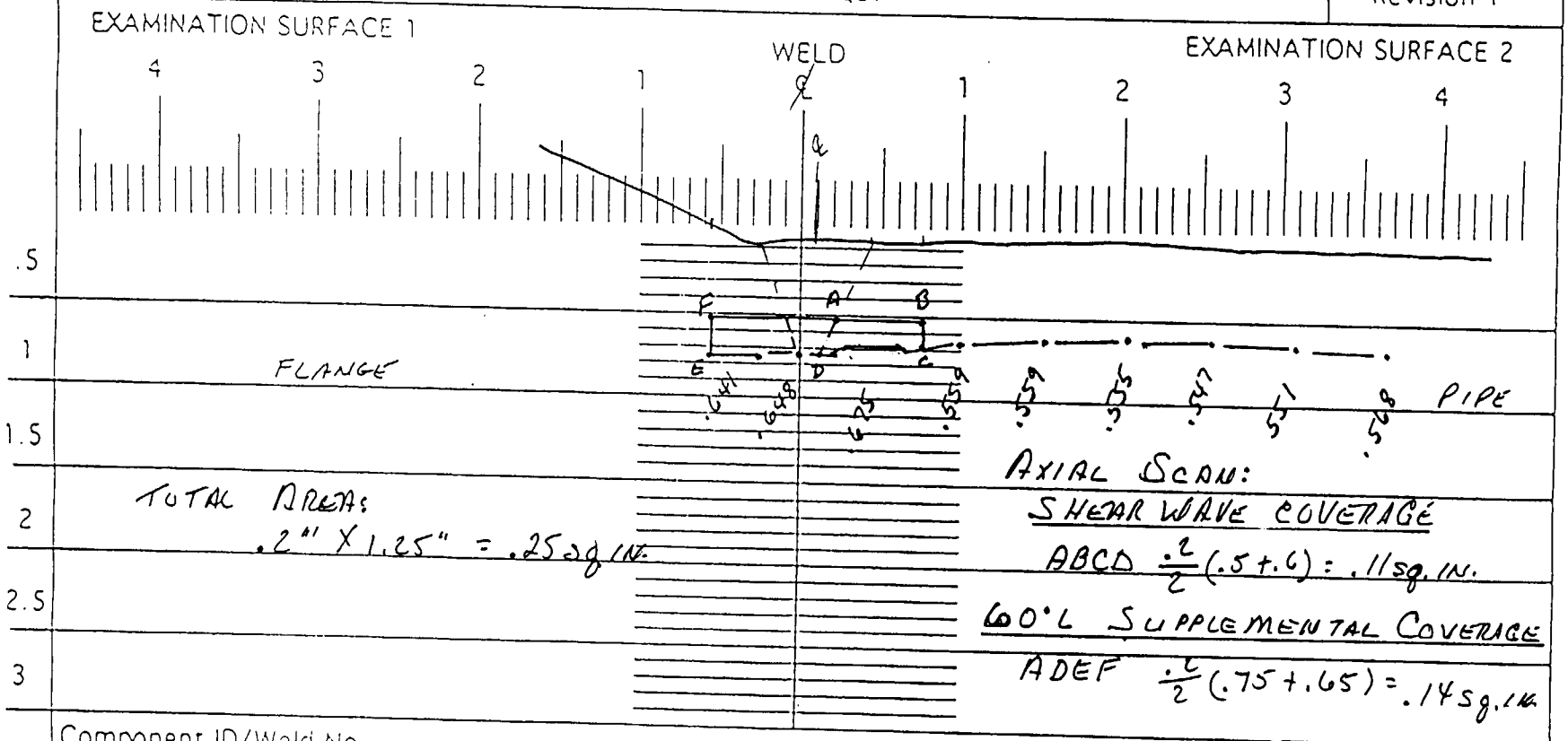
Prepared By:	[illegible]	Level: II	Date: 1/14/02
Reviewed By:	Larry Maulden	Level: III	Date: 1-16-02

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



Component ID/Weld No. 1-HP-192-15

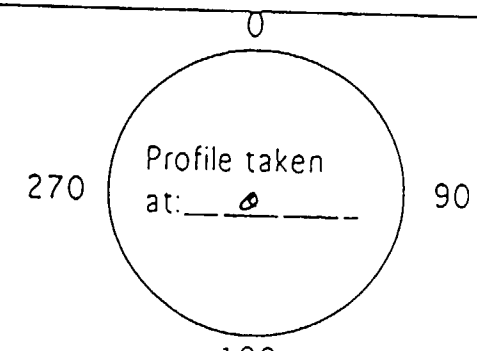
Remarks:

Item No: C05. 021. 006

Examiner: James Lance — Level: II — Date: 1/14/02

Reviewed By: Larry Mauldin — Level: III — Date: 1-16-02

Authorized Inspector: [illegible] — Date: FEB 23 2002



Sheet 9 of 9

Oconee Unit #1
EOC20
NO DATA

CALIBRATION SHEET # 0201040 – 45° & 60°
0201041 – 60°L
#
COMPONENT I.D.# 1-51A-01-91A
ITEM # C05.021.043

Initial ☐	Final ☑
ANII	DATE 2/23/02
HSBI & I Co.	

SHEET 1 OF 6

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 1015		NDE-UT-3A
Exam Finish: 1018		Revision 2

Station: Oconee	Unit: 1	Component/Weld ID: 1-51A-01-91A	Date: 1/22/2002
Nominal Material Thickness (in): 0.531		Weld Length (in.): 14.1"	Surface Temperature: 100 Deg F
Measured Material Thickness (in): 0.536		Lo: 9.1.1.4	Pyrometer S/N: MCNDE 27219
Surface Condition: AS GROUND		Calibration Sheet No: 0201037	Cal Due: 2/14/2002
Examiner: David Zimmerman	Level: III		Configuration: Pipe to Valve (1HP-128)
Examiner: Larry Mauldin	Level: III		S2 Flow S1
Procedure: NDE-640	Rev: 1 FC: *		VALVE to PIPE

IND NO.	4	Ampl ≥ rem BW LOB	L1 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	L2 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	Exam Surf.	Damps
NRI	0													

Remarks: * 95-18 & 95-19

Limitations: see NDE-UT-4 ☐ None: ☒

Sheet 2 of 6

Reviewed By: Gary J Moss	Level: II	Date: 1-24-02	Item No: C05.021.043
Authorized Inspector:		Date: FEB 23 2002	

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

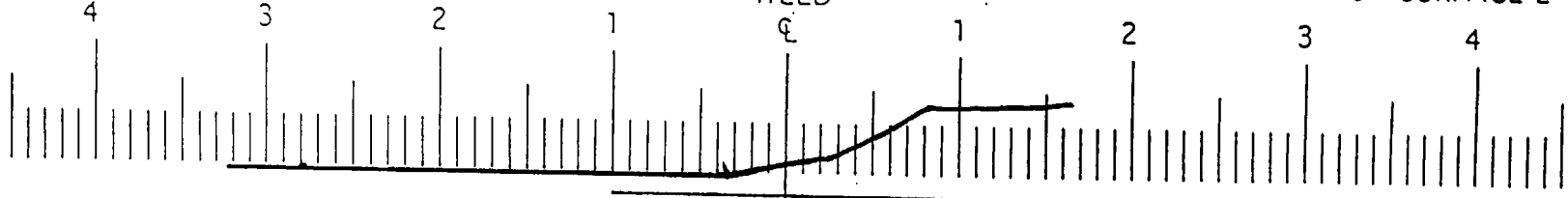
NDE-UT-5

Revision 1

EXAMINATION SURFACE 1 PIPE

WELD ℄

VALVE EXAMINATION SURFACE 2



.5	
1	
1.5	.543 .536 .532 .524 .578 .601
2	
2.5	
3	

Component ID/Weld No. 1-51A-01-91A

: Remarks:

Item No: C05.021.043

Examiner: David K Z Level: III Date: 01/22/02

Reviewed By: Gary A Moss Level: II Date: 1-24-02

Authorized Inspector: C. T. Smith Date FEB 23 2002

0

270 Profile taken at: Wo 90

180

Sheet 3 of 6

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1-51A-01-91A | Item No: C05.021.043 | Remarks:

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☒ 2 ☐ cw ☐ ccw

FROM L N/A to L N/A
INCHES FROM WO 0.4" to BEYOND
ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____
FROM 0 DEG to 360 DEG

DUE TO VALVE CONFIGURATION

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____
FROM ____ DEG to ____

Prepared By: Larry Moulder | Level: III | Date: 1-22-02 | **Sketch(s) attached** ☐ yes ☒ no | Sheet 4 of 6

Reviewed By: Gary J Moss | Date: 1-24-02 | Authorized Inspector: [illegible] | Date FEB 23 2002

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

5 of 6

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
0.18 IN. X 1.1 IN. = 0.198 SQ.IN.	0.198 SQ.IN. X 14.1 IN. = 2.79 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	60	2	0.086	14.1	1.21	2.79	
2	60	1	0.0	14.1	0	2.79	
3	45	CW	0.198	14.1	2.79	2.79	
4	45	CCW	0.198	14.1	2.79	2.79	
					6.79	11.16	60.84
	RL	Supplemental	Coverage				
1	60RL	2	0.113	14.1	1.59	11.16	14.25

Initial ☐ Final ☑
ANII [illegible] DATE 2/23/02
HSBI & I Co.

		Item No:	C05.021.043
Prepared By: David [illegible]	Level: III	Date: 01/22/02	
Reviewed By: Gary Moss	Level: II	Date: 1-24-02	

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

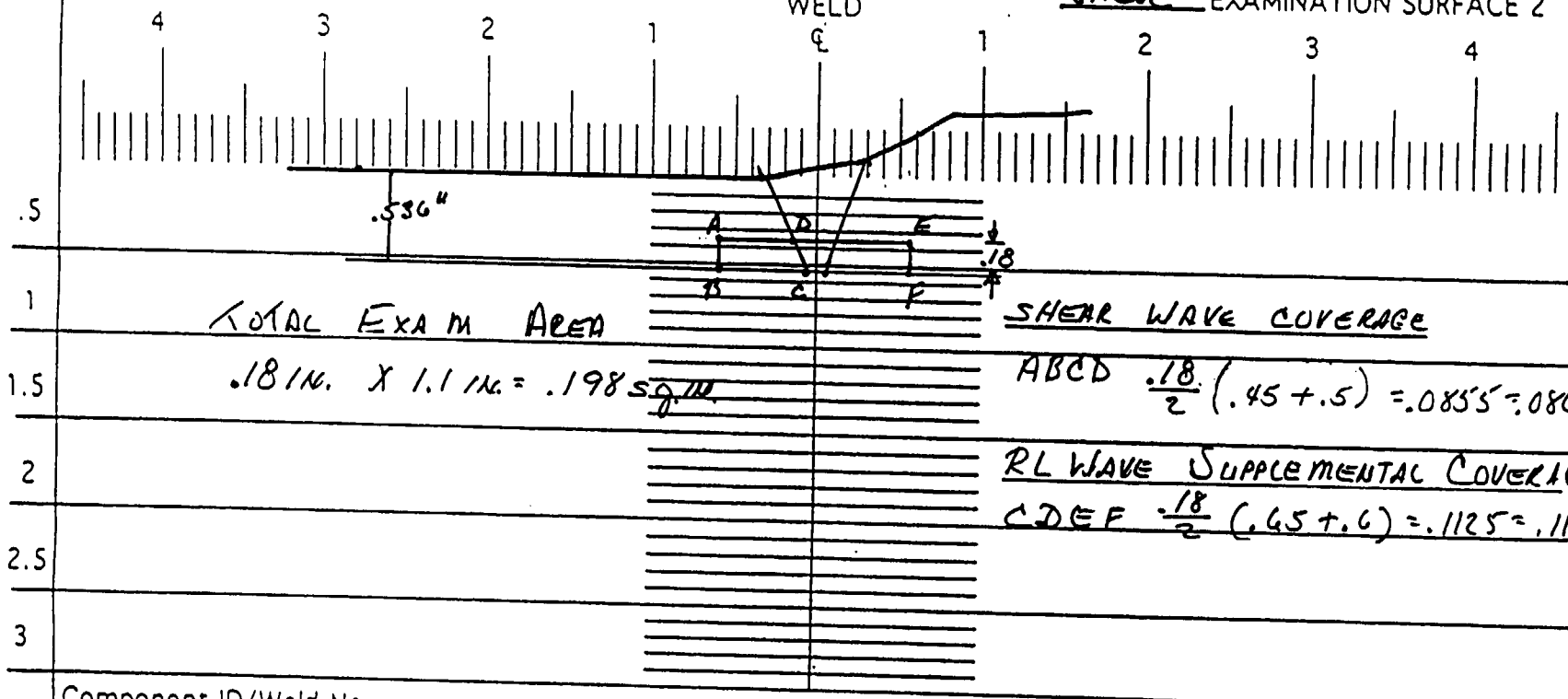
NDE-UT-5

Revision 1

EXAMINATION SURFACE 1 PIPE

WELD ℄

VALVE EXAMINATION SURFACE 2



TOTAL EXAM AREA

.18 IN. X 1.1 IN. = .198 sq. in.

SHEAR WAVE COVERAGE

ABCD $\frac{.18}{2}(.45+.5) = .0855 = .086$ sq. in.

RL WAVE SUPPLEMENTAL COVERAGE

CDEF $\frac{.18}{2}(.65+.6) = .1125 = .113$ sq. in.

Component ID/Weld No. 1-51A-01-91A

: Remarks:

Item No: C05.021.043

Examiner: David K Z — Level: III — Date: 01/22/02

Reviewed By: Gary A Moss — Level: II — Date: 1-24-02

Authorized Inspector: [illegible] 5-1-02 — Date: FEB 0 2 2002

0

270 — Profile taken at: Lo — 90

180

Sheet 6 of 6

Oconee Unit #1
EOC20
NO DATA

CALIBRATION SHEET # 0201009 – 45° & 60°
0201029 – 60°L
#
COMPONENT I.D.# 1HP-324-118B
ITEM # C05.021.065

Initial ☐ Final ☑
ANII [illegible] DATE 2/28/02
HSBI & I Co.

SHEET 1 of 6

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 1513		NDE-UT-3A
Exam Finish: 1517		Revision 2

Station: Oconee	Unit: 1	Component/Weld ID: 1HP-324-118B	Date: 1/14/2002
Nominal Material Thickness (in): 0.375		Weld Length (in.): 9.02"	Surface Temperature: 98 Deg F
Measured Material Thickness (in): 0.400		Lo: 9.1.1.1	Pyrometer S/N: MCNDE 27010
Surface Condition: AS GROUND		Calibration Sheet No: 0201012	Cal Due: 2/14/2002
Examiner: James L. Panel *James L Panel*	Level: II		Configuration: Tee to Valve (1HP-119)
Examiner: B. Dale Jolly *B. Dale Jolly*	Level: II		S2 Flow S1
Procedure: NDE-640	Rev: 1 FC: *		TEE to VALVE

IND NO.	4	Ampl ≥ rem BW LOB	L1 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	L2 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	Exam Surf.	Damps
NRI	0													

Remarks: * 95-18 & 95-19

Limitations: see NDE-UT-4 ☐ None: ☑

Sheet 2 of 6

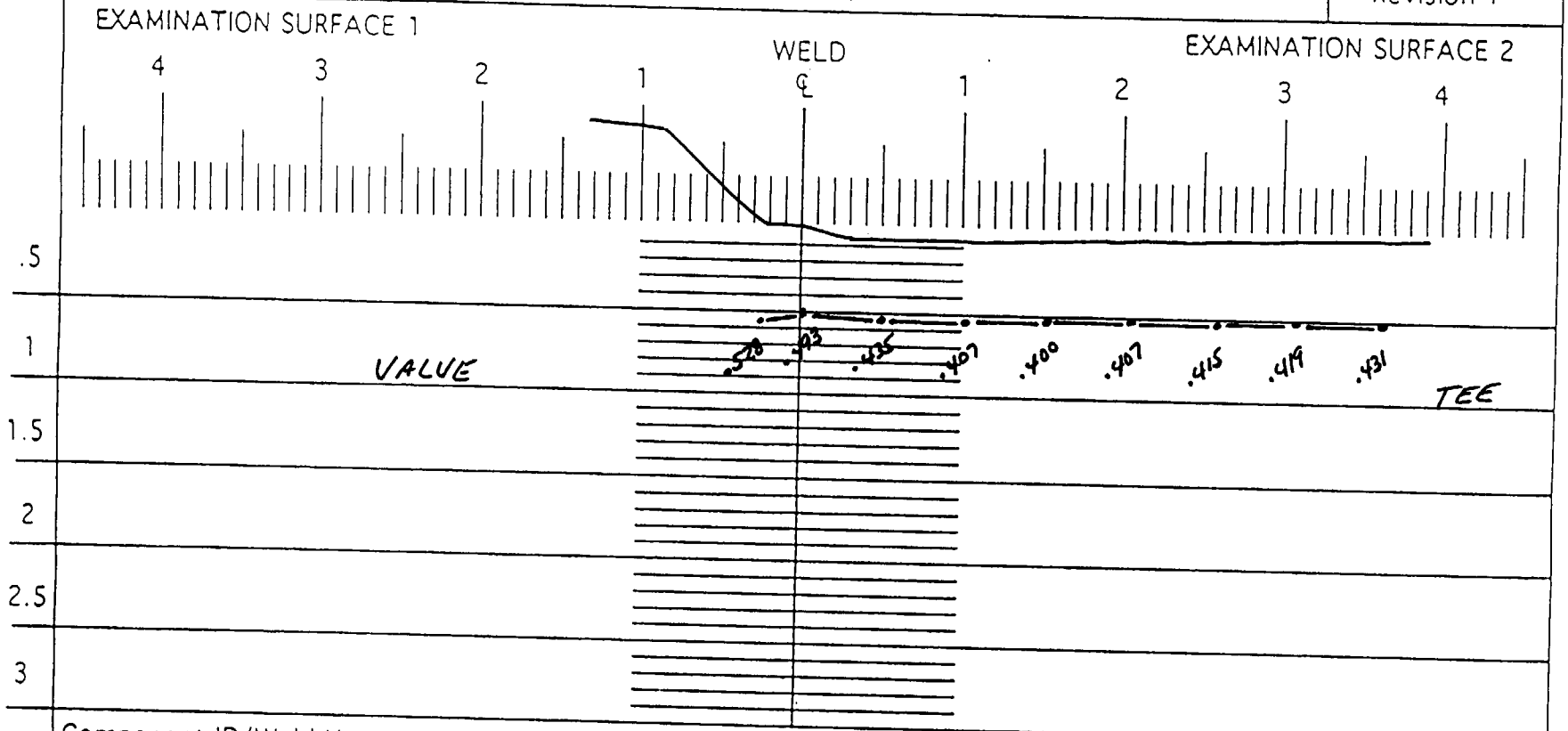
Reviewed By: *Gary J Moss*	Level: II	Date: 1-16-02	Item No: C05.021.065
Authorized Inspector: *C E McGrath*	Date: FEB 23 2002		

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



Component ID/Weld No. 1-HP-324-118B

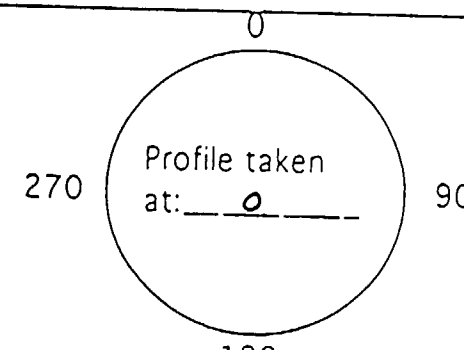
Remarks:

Item No: C05.021.065

Examiner: James E. Lance Level: II Date: 1/14/02

Reviewed By: Gary Moss Level: III Date: 1-14-02

Authorized Inspector: [illegible] Date: FEB 23 2002



Sheet 3 of 6

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1HP-324-118B | Item No: C05.021.065 | Remarks:

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO 0.2" to BEYOND
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM 0 DEG to 360 DEG

Remarks: DUE TO VALVE CONFIGURATION

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____

Prepared By: James [illegible] Level: II Date: 1/14/02 | Sketch(s) attached ☐ yes ☐ no | Sheet 4 of 6

Reviewed By: Gary J Moss Date: 1-16-02 | Authorized Inspector: [illegible] Date: FEB 23 2002

SHEET 5 OF 6

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
0.13 IN. x 1.0 IN.= 0.13 SQ. IN.	0.13 SQ. IN. 9.0 IN. = 1.17 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	60	1	0.06	9	0.54	1.17	
2	60	2	0.0	9	0	1.17	
3	45	CW	0.13	9	1.17	1.17	
4	45	CCW	0.13	9	1.17	1.17	
					2.88	4.68	61.54
		Supplemental	Coverage				
1	60°L	1	0.07	9	0.63	4.68	13.46

Initial ☐ Final ☑
ANII [illegible] DATE 2/23/02
HSBI & I Co.

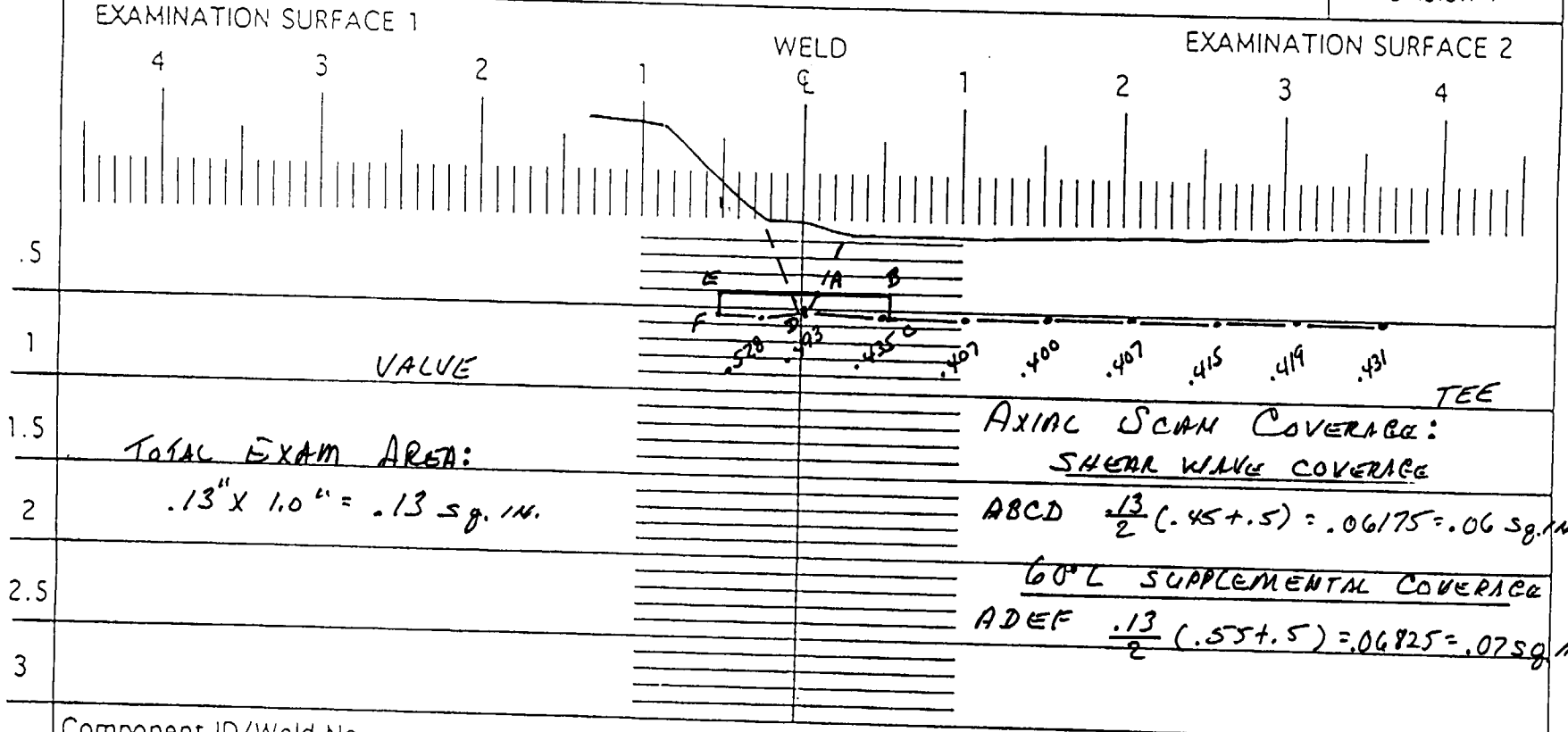
		Item No:	C05.021.065
Prepared By: [illegible]	Level: II	Date: 1/14/02	
Reviewed By: Larry Maulden	Level: III	Date: 1-16-02	

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



Component ID/Weld No. 1-HP-324-118B

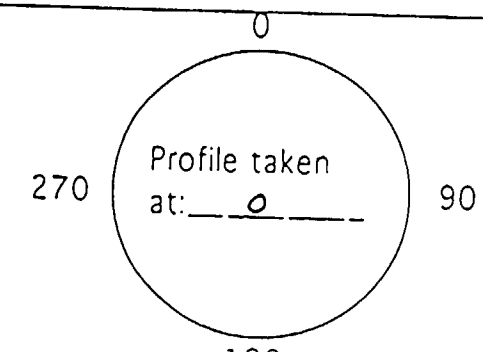
Remarks:

Item No: C05.021.065

Examiner: Jamy J Lance Level: II Date: 1/14/02

Reviewed By: Larry Marcelin Level: III Date: 1-16-02

Authorized Inspector: C. T. [illegible] Date: FEB 23 2002



Sheet 6 of 6

Oconee Unit #1
EOC20
NO DATA

CALIBRATION SHEET # 0201098 - 45° + 60°

0201099 - 60°L

#

COMPONENT I.D.# 1-51A-01-32AA

ITEM # C05.021.078

4/9/02

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 1431		NDE-UT-3A
Exam Finish: 1434		Revision 2

Station: Oconee	Unit: 1	Component/Weld ID: 1-51A-01-32AA	Date: 4/7/2002
Nominal Material Thickness (in): 0.237		Weld Length (in.): 14.1	Surface Temperature: 67° Deg F
Measured Material Thickness (in): .225/.274		Lo: 9.1.1.1	Pyrometer S/N: MCNDE 27220
Surface Condition: GROUND		Calibration Sheet No: 0201097	Cal Due: 8/5/2002
Examiner: James L. Panel *James L Panel*	Level: II		Configuration: CIRC.
Examiner: Marion T. Weaver *Marion T Weaver*	Level: II		S1 Flow S2
Procedure: NDE-640 Rev: 1 FC: *			PIPE to VALVE

IND NO.	4	Ampl ≥ rem BW LOB	L1 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	L2 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	Exam Surf.	Damps
NRI	0°													

Remarks: *FC 95-18, 95-19

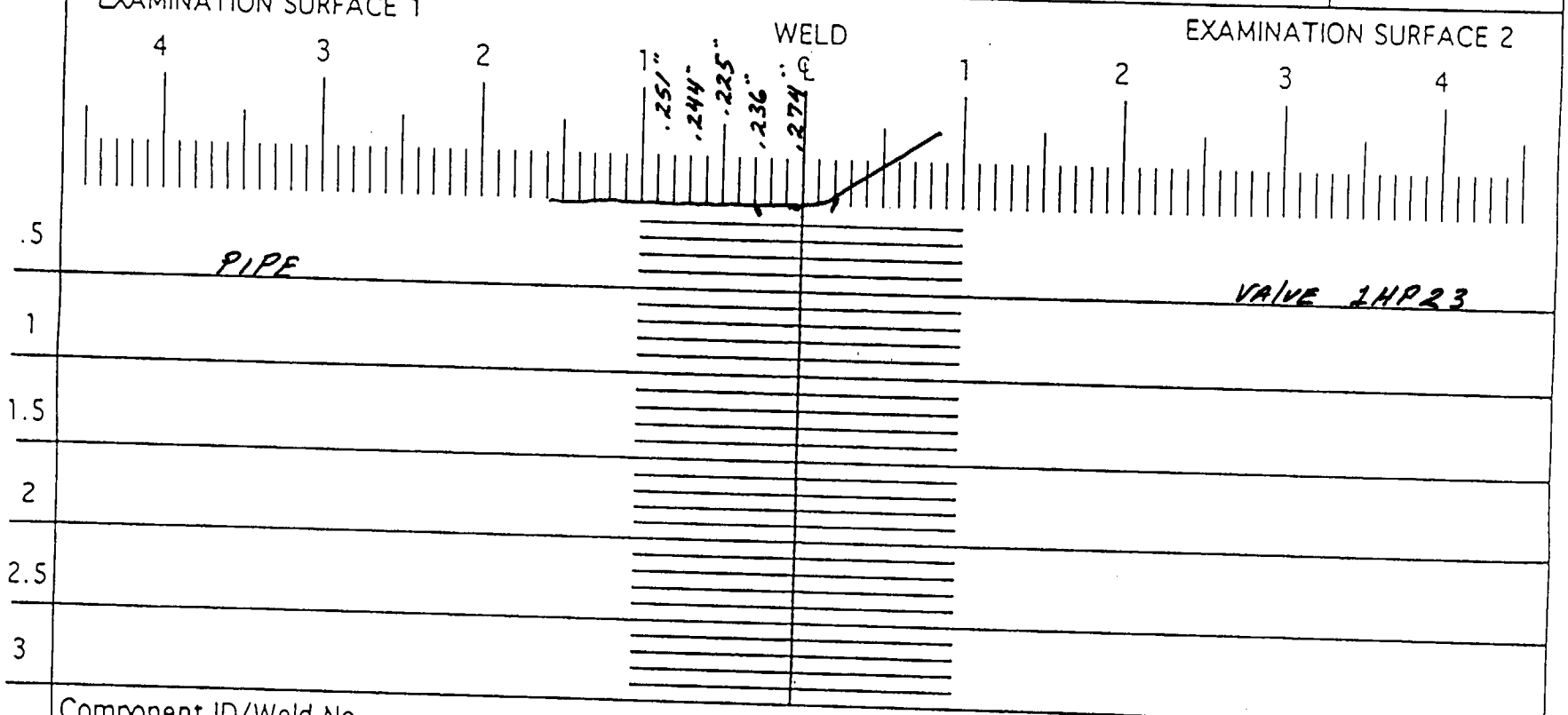
	Limitations: see NDE-UT-4 ☒ None: ☐	Sheet 2 of 6
Reviewed By: *Gary J Moss* Level: II Date: 4-9-02	Authorized Inspector: *[illegible]* Date: 4/9/02	Item No: C05.021.078

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

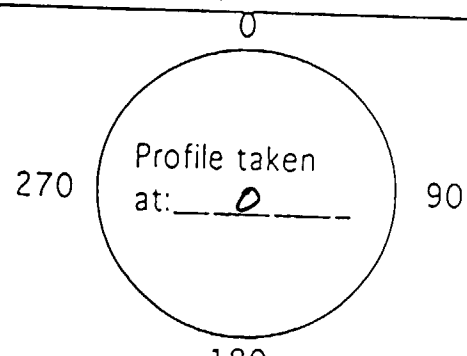
NDE-UT-5

Revision 1



Component ID/Weld No. 1-51A-01-32 AA

Remarks:



Item No: C05.021.078

Examiner: Marvin T. Warner	Level: II	Date: 4-7-02
Reviewed By: Dan Moss	Level: II	Date: 4-9-02
Authorized Inspector: [illegible]		Date: 4-9-02

Sheet 3 of 6

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1-51A-01-32AA | Item No: C05.021.078 | Remarks:

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☒ 2
BEAM DIRECTION: ☒ 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 _____ FROM 0 DEG to 360 DEG

Remarks: DUE TO VALVE 1HP23

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

Prepared By: Marvin T. Weaver Level: II Date: 4-7-02 | **Sketch(s) attached** ☒ yes ☐ no | Sheet 4 of 6

Reviewed By: Gary J. Moss Date: 4-9-02 | Authorized Inspector: [illegible] Date: 4-9-02

DUKE POWER COMPANY
Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

5 of 6

Examination Volume/Area Defined

☒ Base Metal ☒ Weld ☐ Near Surface ☐ Bolting ☐ Inner Radius

Area Calculation	Volume Calculation
.079 IN. X .80 IN. = .063 SQ. IN.	.063 SQ. IN. X 14.1 IN. = 0.89 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	45°	CW	.063	14.1	0.89	0.89	
2	45°	CCW	.063	14.1	0.89	0.89	
3	60°	S1	0	0	0	0.89	
4	60°	S2	.026	14.1	0.37	0.89	
					2.15	3.56	60.39
	SUPP.	COVERAGE					
4	60°	S2	.037	14.1	0.52	3.56	14.61

Item No: C05.021.078

Prepared By: David K. [illegible] Level: III Date: 4/08/02

Reviewed By: Gary M. Moss Level: II Date: 4-9-02

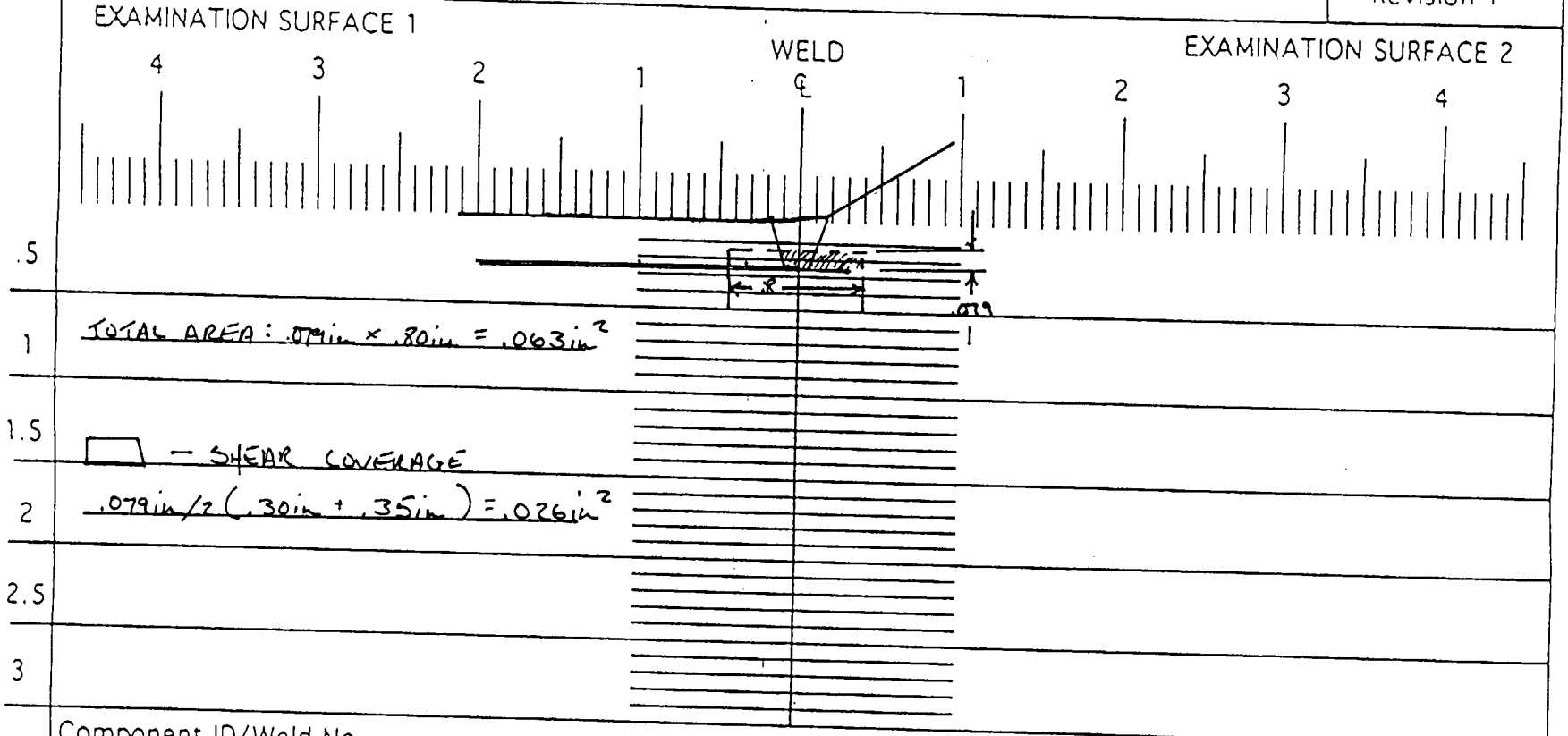
[illegible] [illegible] 4-9-02

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



Component ID/Weld No. 1-51A-01-32AA

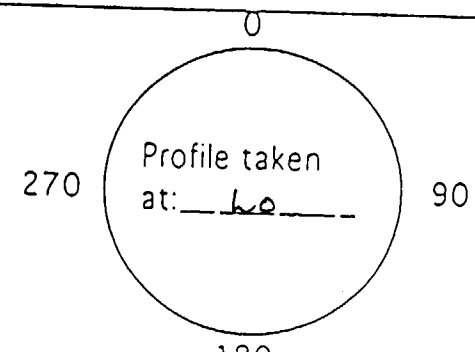
: Remarks:

Item No: C05.021.078

Examiner: David K. [illegible] Level: II Date: 4/08/02

Reviewed By: Gary [illegible] Level: II Date: 4-9-02

Authorized Inspector: [illegible] Date: 4-9-02



Sheet 6 of 6

Oconee Unit #1
EOC20
NO DATA

CALIBRATION SHEET # 0201038 – 45° & 60°
0201039 – 60° L
#
COMPONENT I.D.# 1HP-393-127A
ITEM # C05.021.084

Initial ☐ Final ☑
ANII [signature] DATE 7/23/02
HSBI & I Co.

SHEET 1 of 6

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 1006		NDE-UT-3A
Exam Finish: 1009		Revision 2

Station: Oconee	Unit: 1	Component/Weld ID: 1HP-393-127A	Date: 1/22/2002
Nominal Material Thickness (in): 0.438		Weld Length (in.): 11"	Surface Temperature: 100 Deg F
Measured Material Thickness (in): 0.435		Lo: 9.1.1.4	Pyrometer S/N: MCNDE 27219
Surface Condition: AS GROUND		Calibration Sheet No: 0201033	Cal Due: 2/14/2002
Examiner: David Zimmerman	Level: III		Configuration: Valve (1HP-105) to Pipe
Examiner: Larry Mauldin	Level: III		S2 Flow S1
Procedure: NDE-640	Rev: 1 FC: *		PIPE to VALVE

IND NO.	4	Ampl ≥ rem BW LOB	L1 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	L2 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	Exam Surf.	Damps
NRI	0													

Remarks: * 95-18 & 95-19

Limitations: see NDE-UT-4 ☐ None: ☒

Sheet 2 of 6

Reviewed By: Gary Moss	Level: II	Date: 1-24-02	Authorized Inspector:	Date: FEB 23 2002

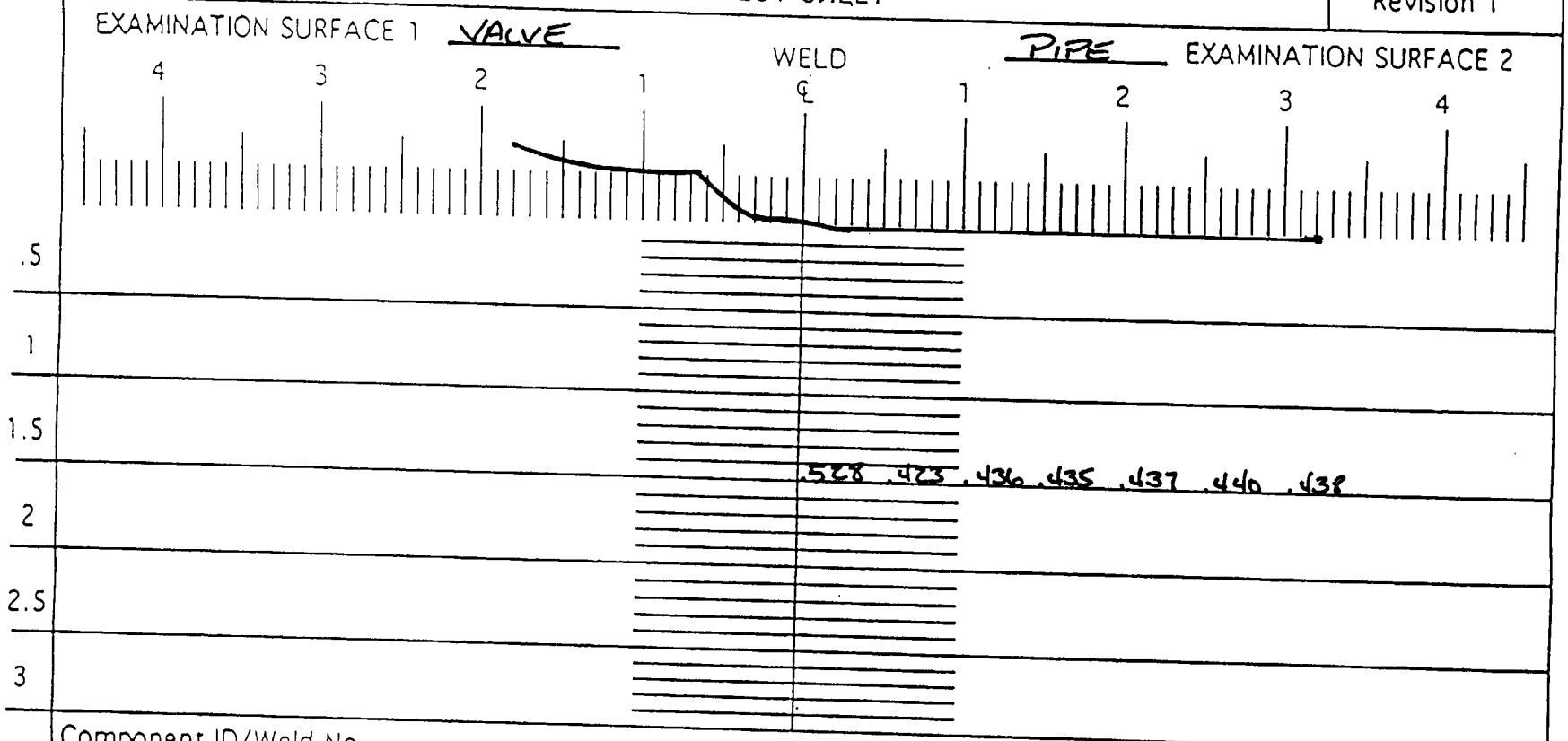
Item No: C05.021.084

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

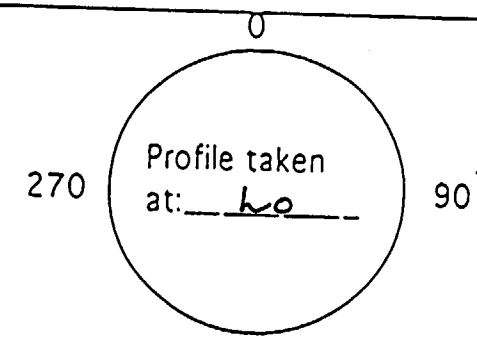
NDE-UT-5

Revision 1



Component ID/Weld No. HP-393-127A

: Remarks:



Item No: C05.021.084

Examiner: David K. B. Level: III Date: 01/22/02

Reviewed By: Gary Moss Level: II Date: 1-24-02

Authorized Inspector: E. M. Date: FEB 23 2002

Sheet 3 of 6

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1HP-393-127A | Item No: C05.021.084 | Remarks:

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☒ 2 ☐ cw ☐ ccw

FROM L N/A to L N/A
INCHES FROM WO 0.3" to BEYOND
ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____ FROM 0 DEG to 360 DEG

DUE TO VALVE CONFIGURATION

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____

Prepared By: Larry Maulden | Level: III | Date: 1-22-02 | **Sketch(s) attached** ☐ yes ☒ no | Sheet 4 of 6

Reviewed By: Gary Moss | Date: II 1-24-02 | Authorized Inspector: [signature] | Date: FEB 2 3 2002

5 of 6

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
0.145 IN. X 1.0 IN. = 0.145 SQ.IN.	0.145 SQ.IN. X 11.0 IN. = 1.595 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	60	1	0.054	11	0.594	1.595	
2	60	2	0.0	11	0	1.595	
3	45	CW	0.145	11	1.595	1.595	
4	45	CCW	0.145	11	1.595	1.595	
					3.784	6.38	59.31
	RL	Supplemental	Coverage				
1	60RL	1	0.091	11	1.001	6.38	15.69

Initial ☐ Final ☑
ANII CW DATE 1/23/02
HSBI & I Co.

Item No: C05.021.084

Prepared By: David C B Level: III Date: 01/23/02

Reviewed By: Gary Moss Level: II Date: 1-24-02

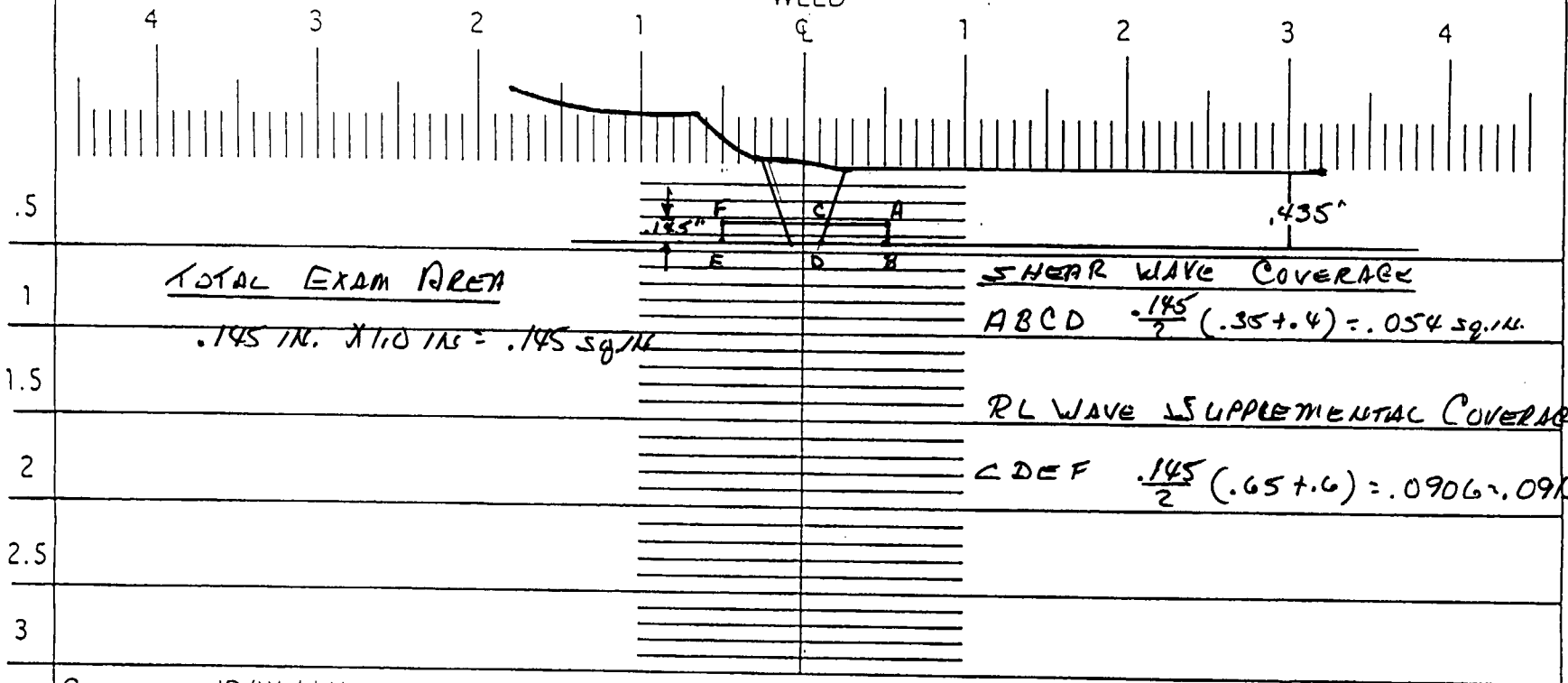
DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1

EXAMINATION SURFACE 1 VALVE — WELD — PIPE EXAMINATION SURFACE 2



TOTAL EXAM AREA

.145 IN. X 1.0 IN = .145 sq/in

SHEAR WAVE COVERAGE

ABCD $\frac{.145}{2}(.35+.4) = .054$ sq.in.

RL WAVE SUPPLEMENTAL COVERAGE

CDEF $\frac{.145}{2}(.65+.6) = .0906 \sim .091$ sq.in.

Component ID/Weld No. HP-393-127A

: Remarks:

Profile taken at: LO

0 / 90 / 180 / 270

Item No: C05.021.084

Examiner: David K. B	Level: III	Date: 01/22/02
Reviewed By: Gary A. Moss	Level: II	Date: 1-24-02
Authorized Inspector: C.M. Smith		Date: FEB 23 2002

Sheet 6 of 6

Oconee Unit #1
EOC20
NO DATA

CALIBRATION SHEET # 0201101 – 45° + 60°

0201102 – 60° L

#

COMPONENT I.D.# 1-51A-02-34B

ITEM # C05.021.090

[illegible] 4-9-02

SHEET 1 OF 6

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 1051		NDE-UT-3A
Exam Finish: 1056		Revision 2

Station: Oconee	Unit: 1	Component/Weld ID: 1-51A-02-34B	Date: 4/7/2002
Nominal Material Thickness (in): 0.531		Weld Length (in.): 14.1	Surface Temperature: 63° Deg F
Measured Material Thickness (in): .567		Lo: 9.1.1.1	Pyrometer S/N: MCNDE 27220
Surface Condition: GR0UND		Calibration Sheet No: 0201100	Cal Due: 8/5/2002
Examiner: Marion T. Weaver	Level: II		Configuration: CIRC.
Examiner: Winfred C. Leeper	Level: II		S2 Flow S1
Procedure: NDE-640	Rev: 1 FC: *		VALVE to ELBOW

IND NO.	∡	Ampl ≥ rem BW LOB	L1 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	L2 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	Exam Surf.	Damps
NRI	0°													

Remarks: *FC 95-18, 95-19

Limitations: see NDE-UT-4 ☒ None: ☐

Sheet 2 of 6

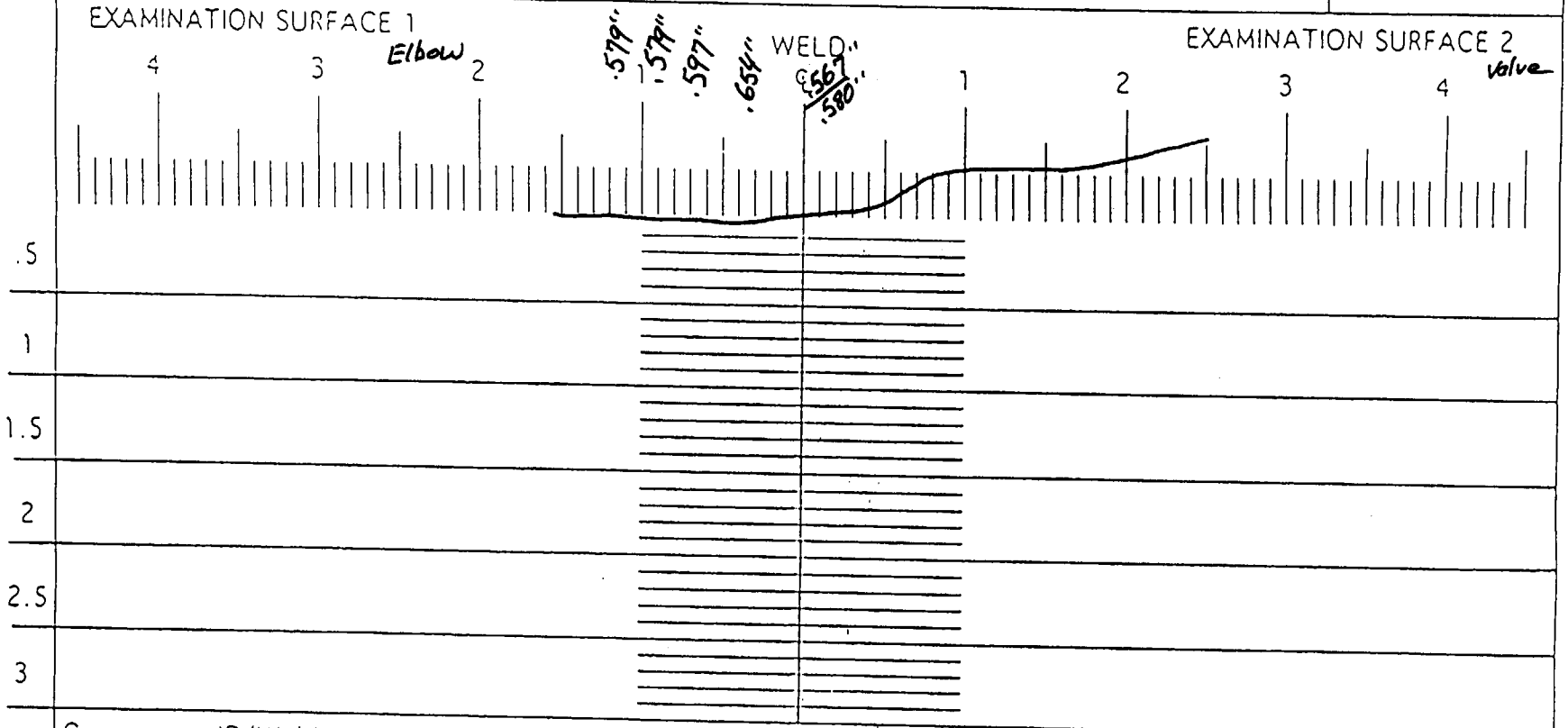
Reviewed By: Gary Moss	Level: II Date: 4-9-02	Authorized Inspector:	Date: 4-9-02
			Item No: C05.021.090

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

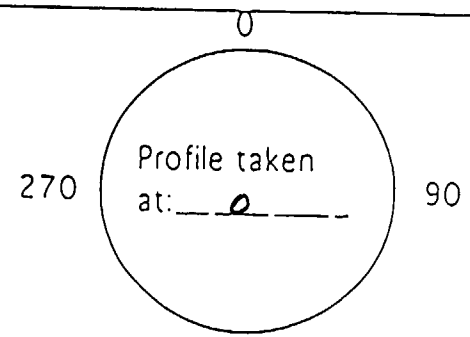
NDE-UT-5

Revision 1



Component ID/Weld No. 1-51A-02-34B

: Remarks:



Item No: C05.021.090

Examiner: Winfield C. Reeper	Level: II	Date: 4-7-02
Reviewed By: Gary Morse	Level: II	Date: 4-9-02
Authorized Inspector: Walter Effler		Date: 4-9-02

Sheet 3 of 6

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1-51A-02-34B | Item No: C05.021.090 | Remarks:

☒ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☑ 2
BEAM DIRECTION: ☒ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO .3 to BEYOND

ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

DUE TO VALVE CONFIGURATION

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

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

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

Prepared By: Winston C. Reagan Level: II Date: 4-7-02 | **Sketch(s) attached** ☐ yes ☒ no | Sheet 4 of 6

Reviewed By: Gary J. Moss Date: 4-9-02 | Authorized Inspector: [illegible] Date: 4-9-02

5 of 6

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
0.177" X 1.0" = 0.177 SQ. IN. (4" PIPE TO VALVE)	0.177 SQ. IN. X 14.13" = 2.5 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	45°	CW	0.177	14.13	2.5	2.5	100.00
2	45°	CCW	0.177	14.13	2.5	2.5	100.00
3	60°	S2	.080	14.13	1.13	2.5	45.20
4	60°	S1	0	0	0	2.5	0.00
		TOTAL	AGGREGATE	COVERAGE	6.13	10	61.30
		60° L WAVE	SUPPLEMENT	COVERAGE			0.00
4	60°L	S2	0.097	14.13	1.37	2.5	54.80

54.8% OF 1 SCAN (25%) = 13.7% OF TOTAL WELD

Item No: C05.021.090

Prepared By: Level: III Date: 4/7/02

Reviewed By: Level: III Date: 4/08/02

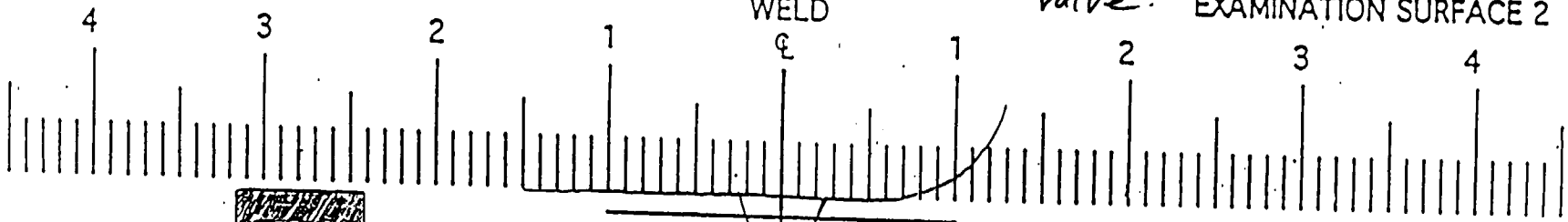
4/8/02

DUKE POWER COMPANY
UT PROFILE/PLOT SHEET

NDE-UT-5
Revision 1

EXAMINATION SURFACE 1 4" PIPE

WELD ℄ valve. EXAMINATION SURFACE 2



.5

AREA INSPECTED - SHEAR WAVE

AREA INSPECTED L-WAVE

1

$\frac{0.177}{2}(0.4 + 0.5) = 0.080 \text{ in}^2$

$\frac{0.177}{2}(0.6 + 0.5) = 0.097 \text{ in}^2$

1.5

2

TOTAL INSPECTION AREA

2.5

$0.177'' \times 1.0'' = 0.177 \text{ in}^2$

3

Component ID/Weld No. 1-51A-02-34B

: Remarks: 4" PIPE TO valve SCH 160 .531" WALL

0

270 Profile taken at: 0 90

180

Item No: C05.021.090

Examiner: [signature] Level: II Date: 4-7-02

Reviewed By: [signature] Level: II Date: 4.9.02

Authorized Inspector: [signature] Date: 4-9-02

Sheet 6 of 6

Oconee Unit #1
EOC20
NO DATA

CALIBRATION SHEET # 0201022 - 45°↓60

0201023 - 60°L

#

COMPONENT I.D.# 1HP-193-12

ITEM # C05.021.096

Initial ☐ Final ☑
ANII [signature] DATE 2/23/02
HSBI & I Co.

SHEET 1 OF 6

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 0929		NDE-UT-3A
Exam Finish: 0934		Revision 2

Station: Oconee	Unit: 1	Component/Weld ID: 1HP-193-12	Date: 1/15/2002
Nominal Material Thickness (in): 0.531		Weld Length (in.): 14.2"	Surface Temperature: 100 Deg F
Measured Material Thickness (in): 0.600		Lo: 9.1.1.1	Pyrometer S/N: MCNDE 27010
Surface Condition: AS GROUND		Calibration Sheet No: 0201021	Cal Due: 2/14/2002
Examiner: James L. Panel *James L Panel*	Level: II		Configuration: Tee to Valve
Examiner: B. Dale Jolly *B. Dale Jolly*	Level: II		S2 Flow S1
Procedure: NDE-640	Rev: 1 FC: *		TEE to VALVE

IND NO.	4	Ampl ≥ rem BW LOB	L1 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	L2 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	Exam Surf.	Damps
NRI	0													

Remarks: * 95-18 & 95-19

Limitations: see NDE-UT-4 ☐ None: ☒

Sheet 2 of 6

Reviewed By: *Gary J Moss* Level: II Date: 1-17-02

Authorized Inspector: *R. T. Grell* Date: FEB 23 2002

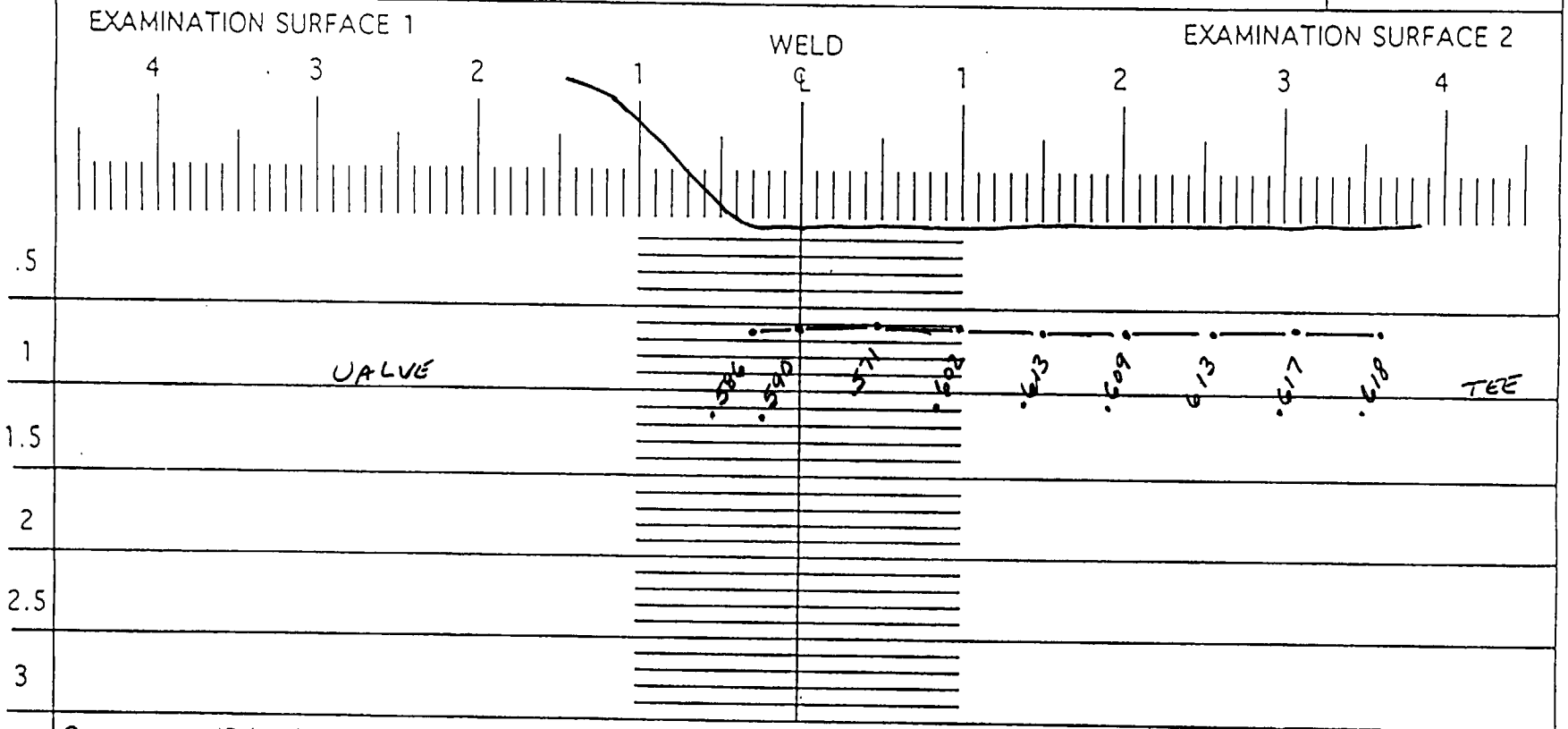
Item No: C05.021.096

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



Component ID/Weld No.

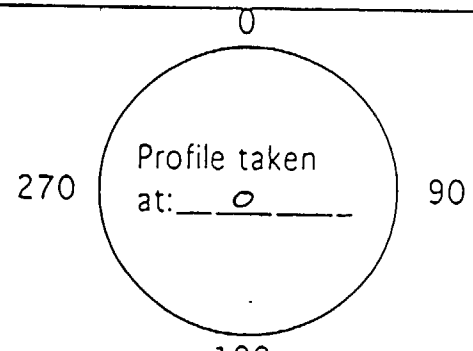
: Remarks:

Item No: C05.021.096

Examiner: [signature] Level: II Date: 1/15/02

Reviewed By: [signature] Level: II Date: 1-17-02

Authorized Inspector: [signature] Date: FEB 23 2002



Sheet 3 of 6

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1HP-193-12 | Item No: C05.021.096 | Remarks:

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO 0.3" to BEYOND
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM 0 DEG to 360 DEG

DUE TO VALVE CONFIGURATION

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____ INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____

Prepared By: James F Powell | Level: II | Date: 1/15/02 | **Sketch(s) attached** ☐ yes ☒ no | Sheet 4 of 6

Reviewed By: Gary Moss | Date: 1-17-02 | Authorized Inspector: [illegible] | Date: FEB 23 2002

Attachment C
Page 117 of 130

5 of 6

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
0.2 IN. X 1.0 IN. = 0.2 SQ. IN.	0.2 SQ. IN. X 14.2 IN. = 2.84 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	60	1	0.075	14.2	1.065	2.84	
2	60	2	0.0	14.2	0	2.84	
3	45	CW	0.2	14.2	2.84	2.84	
4	45	CCW	0.2	14.2	2.84	2.84	
					6.745	11.36	59.37
		Supplemental	Coverage				
1	60°L	1	0.125	14.2	1.775	11.36	15.62

Initial ☐ Final ☑
ANII [illegible] DATE 2/23/02
HSBI & I Co.

Item No: C05.021.096

Prepared By: [illegible] Level: II Date: 1/15/02

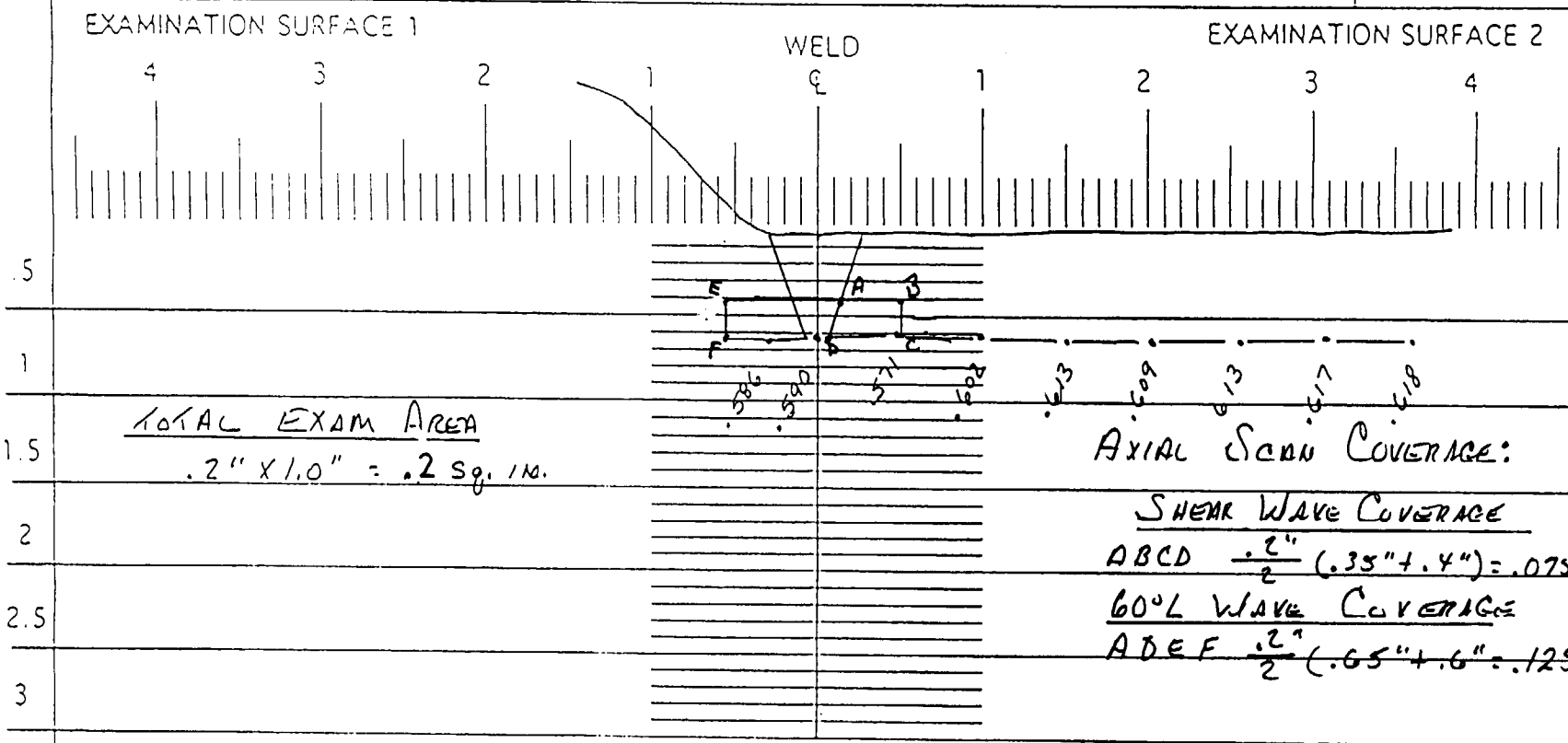
Reviewed By: Larry Moulder Level: III Date: 1-17-02

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1



TOTAL EXAM AREA

.2" X 1.0" = .2 sq. in.

AXIAL SCAN COVERAGE:

SHEAR WAVE COVERAGE

ABCD $\frac{.2"}{2}$ (.35" + .4") = .075 sq. in.

60°L WAVE COVERAGE

ADEF $\frac{.2"}{2}$ (.65" + .6" = .125 sq. in.

Component ID/Weld No. 1-HP-193-12

Remarks:

Item No: C05.021.096

Examiner: Larry L. Powell Level: II Date: 1/15/02

Reviewed By: Larry Mauldin Level: III Date: 1-17-02

Authorized Inspector: C.T. [illegible] Date: FEB 23 2002

0

270 Profile taken at: 0 90

180

Sheet 6 of 6

Oconee Unit #1
EOC20
NO DATA

CALIBRATION SHEET # 0201031 – 45° & 60°

0201032 – 60°

#

COMPONENT I.D.# 1HP-70-11

ITEM # C05.021.102

Initial ☐ Final ☑
ANII [illegible] DATE 2/23/02
HSBI & I Co.

SHEET 1 OF 5

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 1501		NDE-UT-3A
Exam Finish: 1503		Revision 2

Station: Oconee	Unit: 1	Component/Weld ID: 1HP-70-11	Date: 1/16/2002
Nominal Material Thickness (in): 0.237		Weld Length (in.): 14.1"	Surface Temperature: 75 Deg F
Measured Material Thickness (in): 0.225		Lo: 9.1.1.1	Pyrometer S/N: MCNDE 27010
Surface Condition: AS GROUND		Calibration Sheet No: 0201030	Cal Due: 2/14/2002
Examiner: David Zimmerman	Level: III		Configuration: Expansion Joint to Elbow
Examiner: James L. Panel	Level: II		S2 Flow S1
Procedure: NDE-640	Rev: 1 FC: *		ELBOW to EXPAN.

IND NO.	4	Ampl ≥ rem BW LOB	L1 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	L2 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	Exam Surf.	Damps
NRI	0													

Remarks: * 95-18 & 95-19

Limitations: see NDE-UT-4 ☐ None: ☒

Sheet 2 of 5

Reviewed By: Gary Moss Level: II Date: 1-17-02

Authorized Inspector: C. T. [illegible] Date: FEB 23 2002

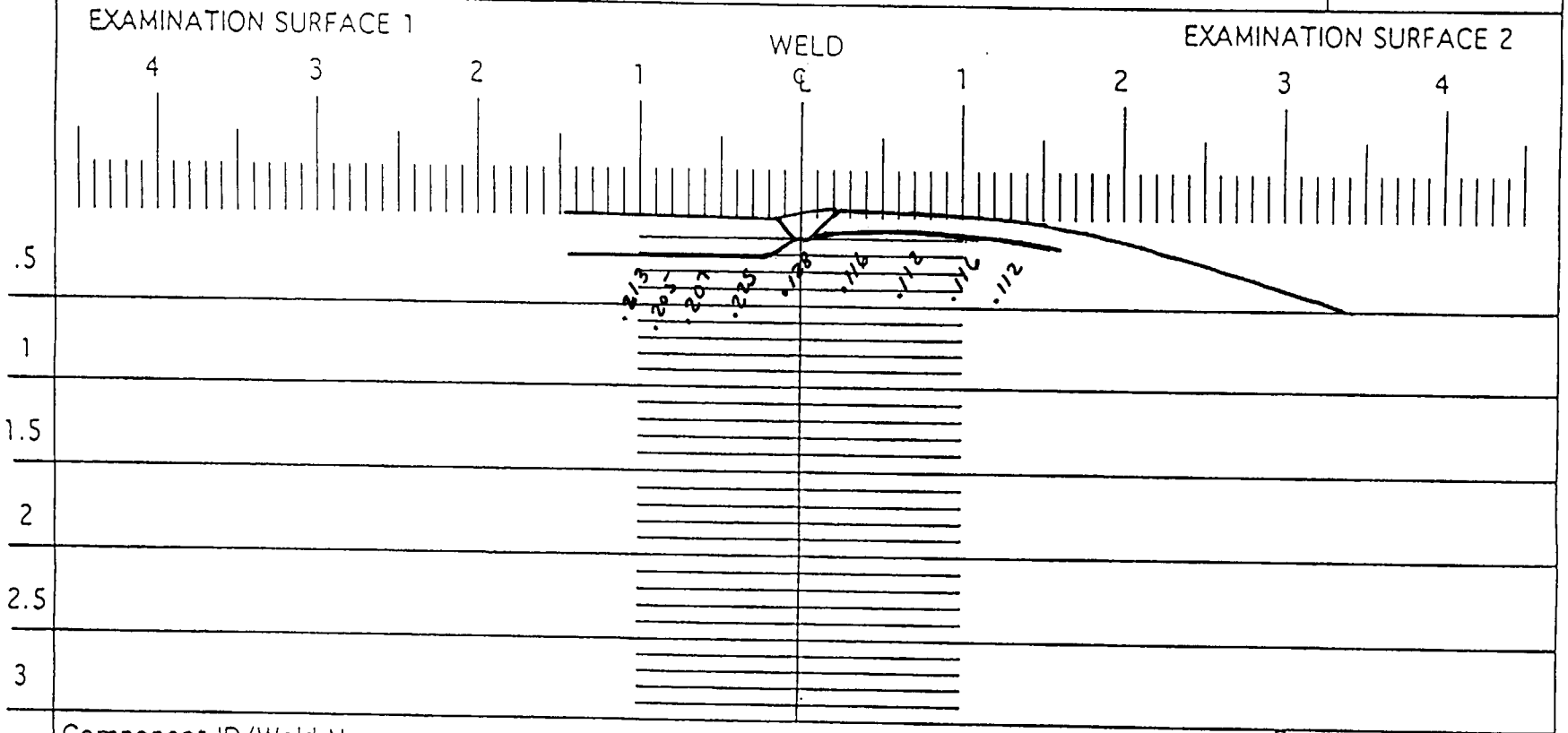
Item No: C05.021.102

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

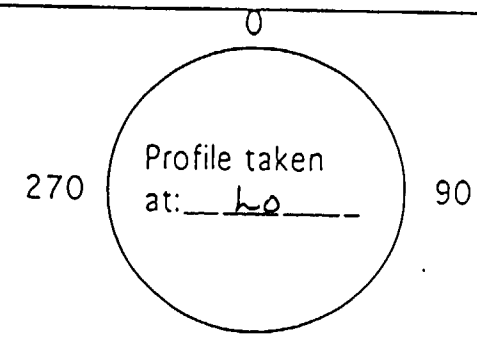
NDE-UT-5

Revision 1



Component ID/Weld No. 1HP-70-11

: Remarks:



Item No: C05.021.102

Examiner: James O Pence	Level: II	Date: 1/16/02
Reviewed By: Gary J Moss	Level: II	Date: 1-17-02
Authorized Inspector: [illegible]		Date: FEB 23 2002

Sheet 3 of 5

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

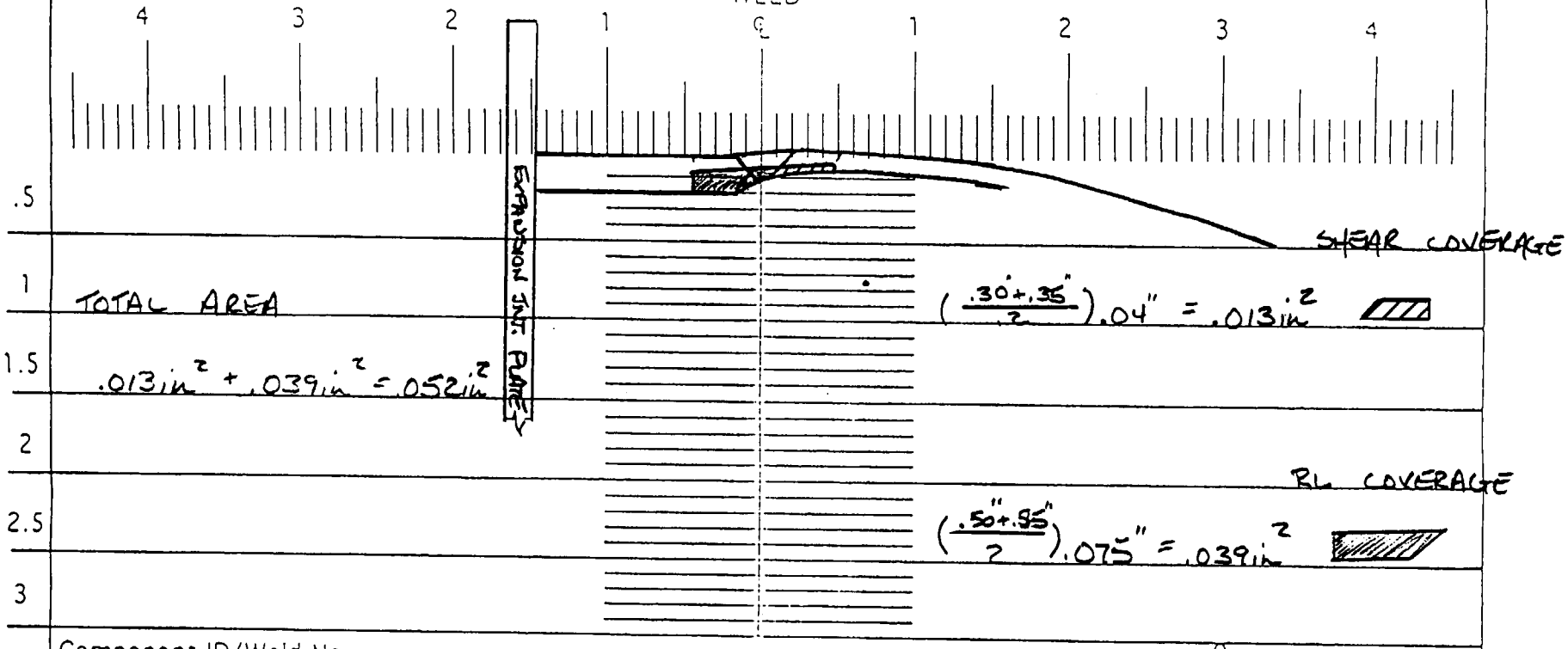
NDE-UT-5

Revision 1

EXAMINATION SURFACE 1 PIPE

WELD

ELBOW EXAMINATION SURFACE 2



Component ID/Weld No. 1HP-70-11

: Remarks:

Profile taken at: Lo

0 270 90 180

Item No: C05.021.102

Examiner: Daniel K. [illegible] Level: III Date: 01/16/02

Reviewed By: Gary Moss Level: II Date: 1-17-02

Authorized Inspector: [illegible] Date: FEB 23 2002

Sheet 4 of 5

5 of 5

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
0.013 IN. X 0.039 IN. = 0.052 SQ. IN.	0.052 SQ. IN. X 14.1 IN. = 0.735 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	45	CW	0.52	14.1	0.735	0.735	
2	45	CCW	0.52	14.1	0.735	0.735	
3	60	1	0.013	14.1	0.183	0.735	
4	60	2	0.0	14.1	0	0.735	
					1.653	2.94	56.22
	60°RL	Supplemental	Coverage				
3	60°RL	1	0.039	14.1	0.55	2.94	18.71

Initial ☐ Final ☒
ANII [illegible] DATE 1/23/02
HSBI & I Co.

Item No: C05.021.102

Prepared By: David K. [illegible] Level: III Date: 01/16/02

Reviewed By: Gary A. Moss Level: II Date: 1-17-02

Oconee Unit #1
EOC20
NO DATA

CALIBRATION SHEET # 0201038 – 45° & 60°
0201039 – 60L
#

COMPONENT I.D.# 1-51A-01-103A
ITEM # C05.021.110

Initial ☐	Final ☑
ANII	DATE 2/23/02
HSBI & I Co.	

Sheet 1 of 6

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 1001		NDE-UT-3A
Exam Finish: 1004		Revision 2

Station: Oconee	Unit: 1	Component/Weld ID: 1-51A-01-103A	Date: 1/22/2002
Nominal Material Thickness (in): 0.438		Weld Length (in.): 11"	Surface Temperature: 100 Deg F
Measured Material Thickness (in): 0.431		Lo: 9.1.1.4	Pyrometer S/N: MCNDE 27219
Surface Condition: AS GROUND		Calibration Sheet No: 0201035	Cal Due: 2/14/2002
Examiner: David Zimmerman	Level: III		Configuration: Valve (1HP-109) to Pipe
Examiner: Larry Mauldin	Level: III		S2 Flow S1
Procedure: NDE-640	Rev: 1 FC: *		PIPE to VALVE

IND NO.	4	Ampl ≥ rem BW LOB	L1 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	L2 ≥ rem BW LOB	W1 ≥ rem BW LOB	Mp1 ≥ rem BW LOB	W2 ≥ rem BW LOB	Mp2 ≥ rem BW LOB	Exam Surf.	Damps
NRI	0													

Remarks: * 95-18 & 95-19

Limitations: see NDE-UT-4 ☐ None: ☒

Sheet 2 of 6

Reviewed By: Gary Moss Level: II Date: 1-24-02

Authorized Inspector: Date: FEB 23 2002

Item No: C05.021.110

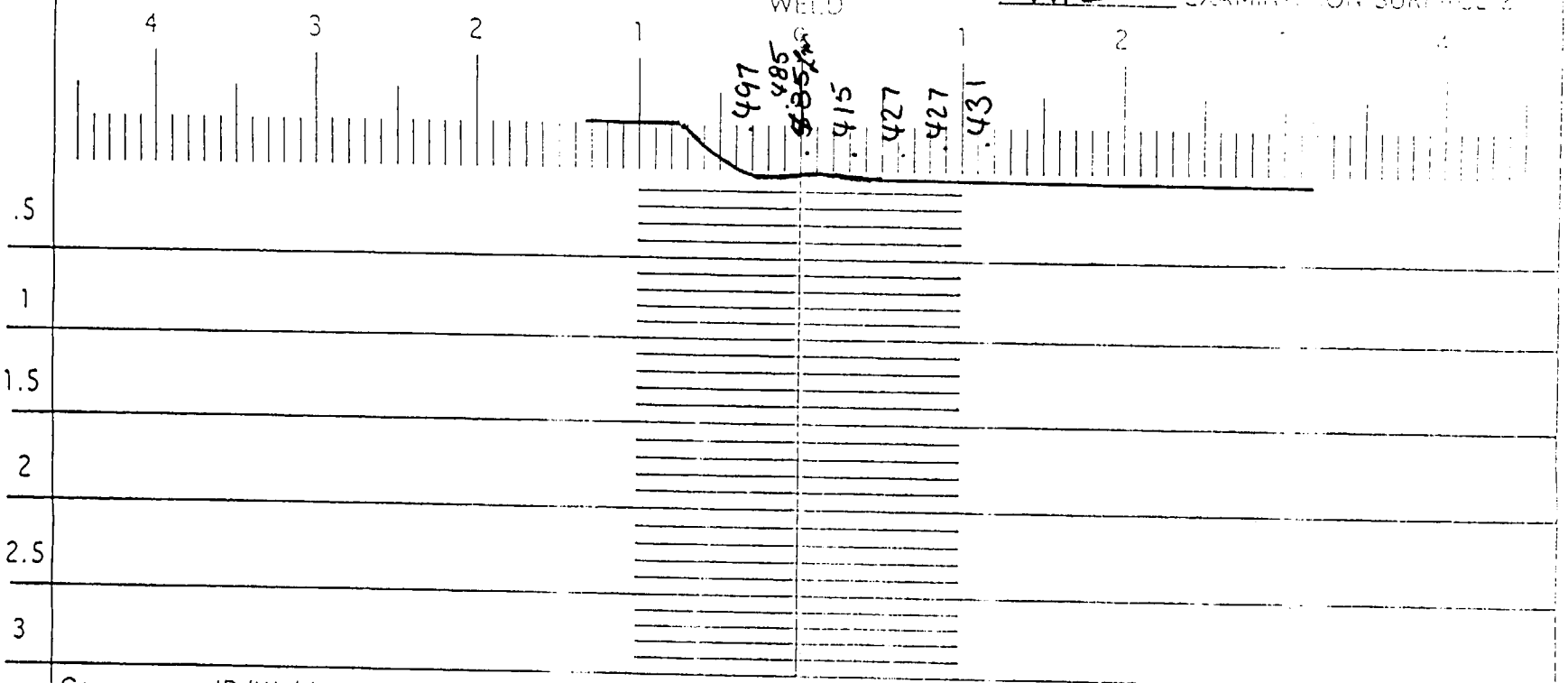
DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-5

Revision 1

EXAMINATION SURFACE 1 VALVE WELD PIPE EXAMINATION SURFACE 2



Component ID/Weld No. 1-SIA-01-103A

Remarks:

Profile taken at: no

270 90 180

Item No: C05.021.110

Examiner: Daniel K. [illegible] Level: III Date: 01/22/02

Reviewed By: Gary Moore Level: II Date: 1-24-02

Authorized Inspector: [illegible] Date: FEB 23 2002

Sheet 3 of 6

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 1-51a-01-103A | Item No: C05.021.110 | Remarks:

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L N/A to L N/A
INCHES FROM WO 0.4" to BEYOND
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM 0 DEG to 360 DEG

DUE TO VALVE CONFIGURATION

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____ DEG

☐ NO SCAN
☐ LIMITED SCAN

SURFACE: ☐ 1 ☐ 2
BEAM DIRECTION: ☐ 1 ☐ 2 ☐ cw ☐ ccw

FROM L _____ to L _____
INCHES FROM WO _____ to _____
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other _____ FROM ____ DEG to ____

Prepared By: Larry Maulden Level: III Date: 1-22-02 | Sketch(s) attached ☐ yes ☒ no | Sheet 4 of 6

Reviewed By: Gary Moss Date: 1-24-02 | Authorized Inspector: [signature] Date: FEB 23 2002

5 of 6

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
0.14 IN. X 1.0 IN. = 0.14 SQ.IN.	0.14 SQ.IN. X 11.0 IN. = 1.54 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	60	1	0.06	11	0.66	1.54	
2	60	2	0.0	11	0	1.54	
3	45	CW	0.14	11	1.54	1.54	
4	45	CCW	0.14	11	1.54	1.54	
					3.74	6.16	60.71
	RL	Supplemental	Coverage				
1	60RL	1	0.08	11	0.88	6.16	14.29

Initial ☐ Final ☑
ANII [illegible] DATE 2/24/02
HSBI & I Co.

Item No: C05.021.110

Prepared By: [illegible] Level: III Date: 01/22/02

Reviewed By: Gary Moss Level: V Date: 1-24-02

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

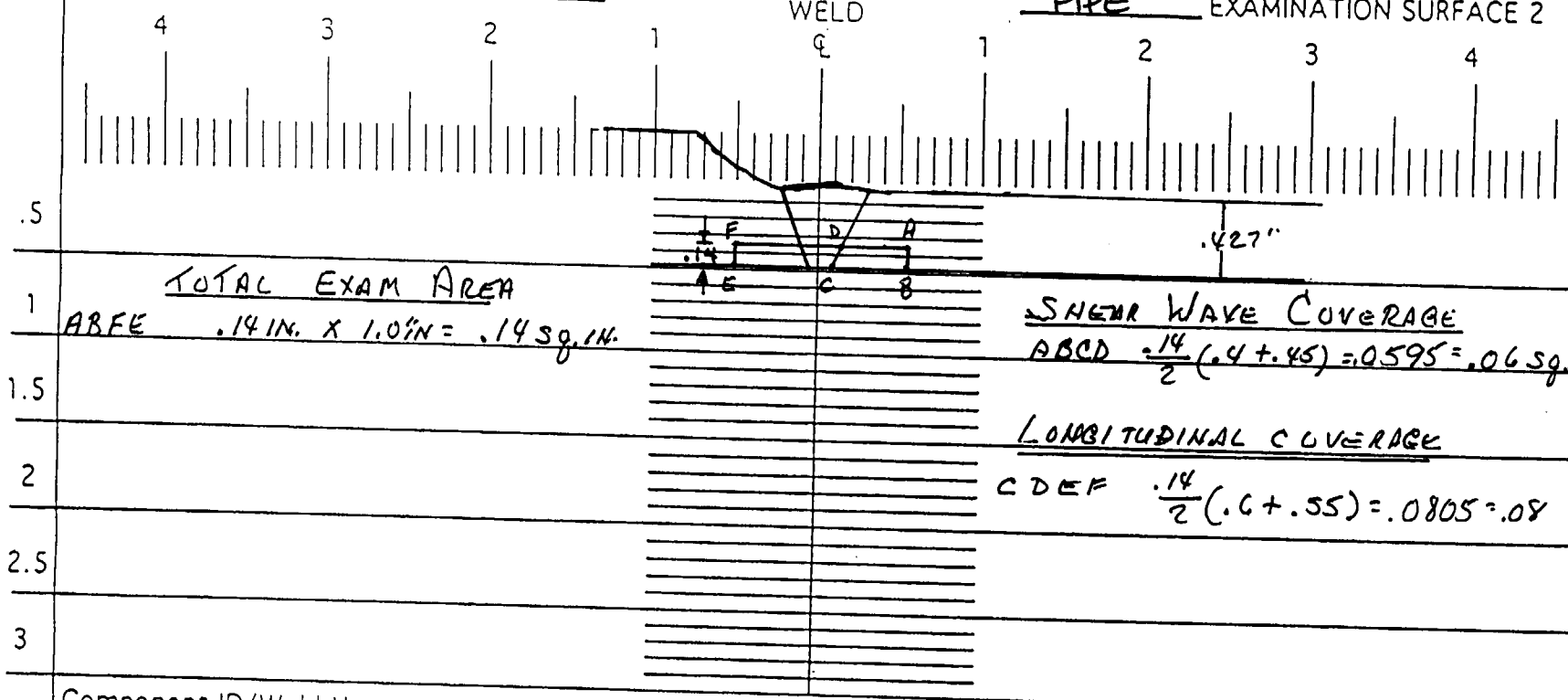
NDE-UT-5

Revision 1

EXAMINATION SURFACE 1 VALVE

WELD ℄

PIPE EXAMINATION SURFACE 2



TOTAL EXAM AREA

ABFE .14 IN. X 1.0"IN = .14 sq.IN.

SHEAR WAVE COVERAGE

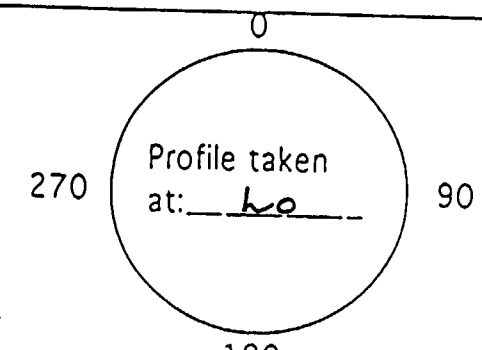
ABCD $\frac{.14}{2}(.4+.45) = .0595 = .06$ sq.IN.

LONGITUDINAL COVERAGE

CDEF $\frac{.14}{2}(.6+.55) = .0805 = .08$

Component ID/Weld No. 1-51A-01-103A

: Remarks:



Item No: C05.021.110

Examiner: Daniel K. [illegible]	Level: III	Date: 01/22/02
Reviewed By: Gary A. Moss	Level: II	Date: 1-24-02
Authorized Inspector: [illegible]		Date: FEB 23 2002

Sheet 6 of 6