9.0 Reference Documents

The following reference documents apply to the inservice inspection performed during EOC18 (Outage 4) at Oconee 2.

Duke Energy Request for Relief 01-011

PIP O-00-03186

PIP O-01-01475

PIP O-01-01716

PIP O-01-01857

PIP O-01-02313

Fracture Mechanics Assessment Report (by Framatome ANP)

Duke Energy Corporation

Oconee Nuclear Station Units 2

Third 10-YEAR INTERVAL REQUEST FOR RELIEF NO. 01-011

Duke Energy Corporation has determined that conformance with certain ASME Section XI Code requirements is impractical. Therefore, pursuant to 10CFR50.55a(g)(5)(iii), Duke Energy requests relief from applicable portions of the code.

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

A. Unit 2 Steam Generator A Primary Inlet Nozzle-to-Vessel Weld

Unit	ID Number	Item Number
2	2-SGA-WG25	B03.130.005

B. Unit 2 Steam Generator A Primary Inlet Nozzle-to-Vessel Inside Radius Section:

Unit	ID Number	Item Number
2	2-SGA-WG25	B03.140.005

C. Unit 2 Steam Generator A, Shell to Shell Weld

ID Number	Item Number
2-SGA-WG8-1	C01.010.001

D. Unit 2 Steam Generator A, Upper Tubesheet to Shell Weld

ID Number	Item Number
2-SGA-WG60	C01.030.001

E. Valve 2HP-120 to Pipe:

ID Number	Item Number
2HP-341-V1	C05.021.044

II. Code Requirement:

Examination Category B-D: Figure IWB-2500-7 (as modified by Code Case N-460). ASME Section V, Article 4, Paragraph T-424.1 states: "The volume shall be examined by moving the search unit over the examination surface so as to scan the entire examination volume."

Examination Category C-A: Figure IWC-2500-1 (a) or (b) (as modified by Code Case N-460). ASME Section V, Article 4, Paragraph T-424.1 states: "The volume shall be examined by moving the search unit over the examination surface so as to scan the entire examination volume."

Examination Category C-F-1: Figure IWC-2500-7.
10 CFR 50.55a(b)(2)(xv)(A) states: "When applying Supplements 2 and 3 to Appendix VIII, the following examination coverage criteria requirements must be used:

(1) Piping must be examined in two axial directions and when examination in the circumferential direction is required, the circumferential examination must be performed in two directions, provided access is available.

(2) Where examination from both sides is not possible, full coverage credit may be claimed from a single side for ferritic welds. Where examination from both sides is not possible on austenitic welds, full coverage credit from a single side may be claimed only after completing a successful single sided Appendix VIII demonstration using flaws on the opposite side of the weld."

10 CFR 50.55a(b)(2)(xvi)(B) states: "Examinations performed from one side of a ferritic or stainless steel pipe weld must be conducted with equipment, procedures, and personnel that have demonstrated proficiency with single sided examinations. To demonstrate equivalency to two sided examinations, the demonstration must be performed to the requirements of Appendix VIII as modified by this paragraph and 50.55a(b)(2)(xv)(A)."

III. Code Requirement from which Relief is Requested:

Examination Category B-D and C-A: Relief is being sought from the requirement to scan the entire examination volume.

Examination Category C-F-1: Relief is being sought from the requirement to perform examinations of stainless steel piping welds from one side using equipment, procedures, and personnel that have demonstrated proficiency with single sided examinations demonstrated to the requirements of Appendix VIII as modified by this paragraph and 50.55a(b)(2)(xv)(A).

IV. Basis for Relief:

A. Steam Generator 2A Nozzle-to-Vessel Weld 2-SGA-WG25 (Item B03.130.005) was examined to the maximum extent practical using ultrasonic techniques in accordance with the requirements of ASME Section XI, Appendix VIII, Supplements 4 and 6 of the 1995 Edition with the 1996 Addenda as administered by the Performance Demonstration Initiative (PDI). The qualifications were conducted on samples with access to both sides of the weld. Therefore, Duke Energy Corporation does not claim credit for a single sided examination. Reference Attachment A for a drawing of the Generator.

This weld is limited to 57.98% coverage of the required volume because of the nozzle configuration. In order to achieve more coverage, the nozzle would have to be re-designed to allow scanning from both sides of the weld.

B. Steam Generator 2A Nozzle-to-Vessel Inside Radius Section for welds 2-SGA-WG25 (Item B03.140.005) was examined to the maximum extent practical using ultrasonic techniques in accordance with the requirements of ASME Section XI, Appendix I of the 1989 Edition. Reference Attachment A for a drawing of the Generator.

This weld is limited to 70.21% coverage of the required volume. Limitations were caused by the ratio of the nozzle OD to the vessel thickness. When the nozzle OD is large in relation to the vessel thickness, less coverage can be obtained when scanning from the vessel side.

Nozzle inner radius sections were examined with the ultrasonic method to the maximum extent practical from the vessel wall. Calibration blocks and procedures were in accordance with ASME Section V, Article 4.

Duke Energy Corporation is investigating the use of computer modeling to resolve the coverage problem for future examinations.

C. Unit 2 Steam Generator A Shell to Shell Weld 2-SGA-WG8-1 (Item C01.010.001) was examined to the maximum extent practical using ultrasonic techniques in accordance with the requirements of ASME Section XI, Appendix VIII Supplements 4 and 6 of the 1995 Edition with the 1996 Addenda as administered by the PDI. Reference Attachment A for a drawing of the Steam Generator 2A.

This weld is limited to 50.89% coverage of the required volume because of the taper configuration. In order to achieve more coverage, the weld would have to be re-designed to allow scanning from both sides.

D. Unit 2 Steam Generator A Upper Tubesheet to Shell Weld 2-SGA-WG60 (Item C01.030.001) was examined to the maximum extent practical using ultrasonic techniques in accordance with the requirements of ASME Section XI, Appendix VIII Supplements 4 and 6 of the 1995 Edition with the 1996 Addenda as administered by the PDI. Reference Attachment A for a drawing of the Steam Generator 2A.

This weld is limited to 42.15% coverage of the required volume because of the configuration, and a support hanger and support pad interfering with UT scans. In order to achieve more coverage, the weld would have to be re-designed to allow scanning from both sides.

E. Valve 2HP-120 to Pipe Weld 2HP-341-V1 (Item C05.021.044) is limited to 61.34% coverage of the required volume because of the single sided access due to the valve configuration. In order to achieve more coverage, the valve configuration would have to be re-designed to allow scanning from both sides of the weld. Reference Attachment B for a drawing of the valve to pipe weld.

Reference Attachment C for copies of the examination records for welds addressed in this request.

V. Alternate Examinations or Testing:

The use of radiography as an alternate volumetric examination of the welds/components referenced in this request is not a viable option. Restrictions to performing radiography are primarily due to limited access for placement of film and component geometry. No additional examinations are planned during the current interval for ID Numbers:

2-SGA-WG25, 2-SGA-WG8-1, 2-SGA-WG60, 2HP-341-V1. Duke Energy Corporation will continue to use the most current ultrasonic techniques available to obtain maximum coverage for future examinations of these ID Numbers.

VI. Justification for the Granting of Relief:

General statement regarding C-F Piping Welds:

Current ultrasonic technology is not capable of reliably detecting or sizing flaws on the far side of austenitic weld configurations common to US nuclear plants. Duke Energy Corporation has demonstrated that the best available techniques were applied through the Performance Demonstration Initiative (PDI). The PDI Performance Demonstration Qualification Summary (PDQS) for austenitic piping certifies that examinations from one side are a "best effort". Therefore, coverage on the far side of the weld is not claimed.

The subject weld was examined to the maximum extent practical using ultrasonic techniques qualified in accordance with the requirements of ASME Section XI, Appendix VIII, Supplements 2 and 3 of the 1995 Edition with the 1996 Addenda as administered by the PDI.

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 Number B15.030 and Table IWC-2500-1, Item Numbers C07.010 and C07.30) that a system leakage test be performed after each refueling outage for Class 1 items and a functional/system inservice test once each period for Class 2 items. Additionally a system hydrostatic test (reference Table IWB-2500-1, Item Number B15.031 and Table IWC-2500-1, Item Numbers C07.020 and 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. Specifically, leakage from these 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 method is the RCS mass balance calculation. Another method is by use of 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. In addition to the radiation monitors, a level indicator in the Reactor Building normal sump also monitors leakage. Another check would be a loss of level in the Letdown Storage Tank.

Duke Energy has examined the welds/components referenced in this request to the maximum extent possible utilizing the latest in examination techniques and equipment. Duke Energy will continue to perform ultrasonic examination of all welds/components identified in Section I of this request to the maximum extent practical, within the limits of original design and construction, in accordance with the requirements of ASME Section V, Article 4, and ASME Section XI, Appendix I, of the 1989 Edition, and Code Case N-460. Appendix VIII as administered by the PDI will be used to examine piping and pressure vessel welds within the scope of the PDI qualified procedures. This will provide reasonable assurance of weld/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.

These welds were rigorously inspected by radiography and liquid penetrant examination during construction and verified to be free from unacceptable fabrication defects. Duke Energy will continue to ultrasonically examine the welds, and inside radius sections, to the extent practical within the limits of original design and construction. This will provide reasonable assurance of weld/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.

The Code requires 100% volumetric examination of all Steam Generator Nozzle-to-Vessel Welds and Inside Radius. However, the taper on the nozzle side of the weld restricts scanning and prevents complete volumetric coverage of Steam Generator Nozzle-to-Vessel Weld 2-SGA-WG25. Therefore, the 100% volumetric examination is impractical. To meet Code examination requirements, modifications to the nozzles would be necessary to allow scanning from both sides of the weld. Modification to this portion of the reactor coolant system would be impractical. Duke Energy obtained 57.98% coverage of Steam Generator Nozzle-to-Vessel Weld 2-SGA-WG25 and 70.21% coverage of the Inside Radius.

The Code requires 100% volumetric examination of all Steam Generator Shell to Shell Welds. However, taper configuration of the weld restricts scanning and prevents complete volumetric coverage of Steam Generator Shell to Shell Weld 2-SGA-WG8-1. Therefore, the 100% volumetric examination is impractical. To meet Code examination requirements, modifications to the nozzles would be necessary to allow scanning from both sides of the weld. Modification to this portion of the reactor coolant system would be impractical. Duke Energy obtained 50.89% coverage of Steam Generator Shell to Shell Weld 2-SGA-WG8-1.

The Code requires 100% volumetric examination of all Steam Generator Upper Tubesheet to Shell Welds. However, configuration of the weld and Supports restrict scanning and prevents complete volumetric coverage of Steam Generator Upper Tubesheet to Shell Weld 2-SGA-WG60. Therefore, the 100% volumetric examination is impractical. To meet Code examination requirements, modifications to the Steam Generator would be necessary to allow scanning from both sides of the weld. Modification to this portion of the reactor coolant system would be impractical. Duke Energy obtained 42.15% coverage of Steam Generator Upper Tubesheet to Shell Weld 2-SGA-WG60.

The Code requires 100% volumetric examination of the Valve 2HP-120 to Pipe Weld 2HP-341-V1. However, the valve configuration restricts scanning and prevents complete volumetric coverage of the above mentioned weld. Therefore, the 100% volumetric examination is impractical. To meet Code examination requirements, modifications to the configurations would be necessary to allow scanning from both sides of the weld. Modification of this nature would be impractical. Duke Energy obtained 61.34% coverage of the Valve 2HP-120 to Pipe Weld 2HP-341-V1.

Duke Energy obtained less than 90% coverage on all the items listed in Section I of this Request for Relief (actual percentage of coverage obtained for each item is shown in Section IV). It is recognized that this represents less than the required Code examination volume. However, this level of examination, in conjunction with the Code required VT-2 visual examination after each refueling outage for class 1 items and once each period for class 2 items and the 10-year hydrostatic test, provides reasonable assurance of the continued structural integrity of the subject welds/components.

VII. Implementation Schedule:

Duke Energy Corporation will continue to use ultrasonic examination procedures to obtain maximum coverage to the extent practical for inspections in future intervals of the item numbers referenced in Section I of this Request for Relief.

The following individuals were involved in the development of this request for relief:

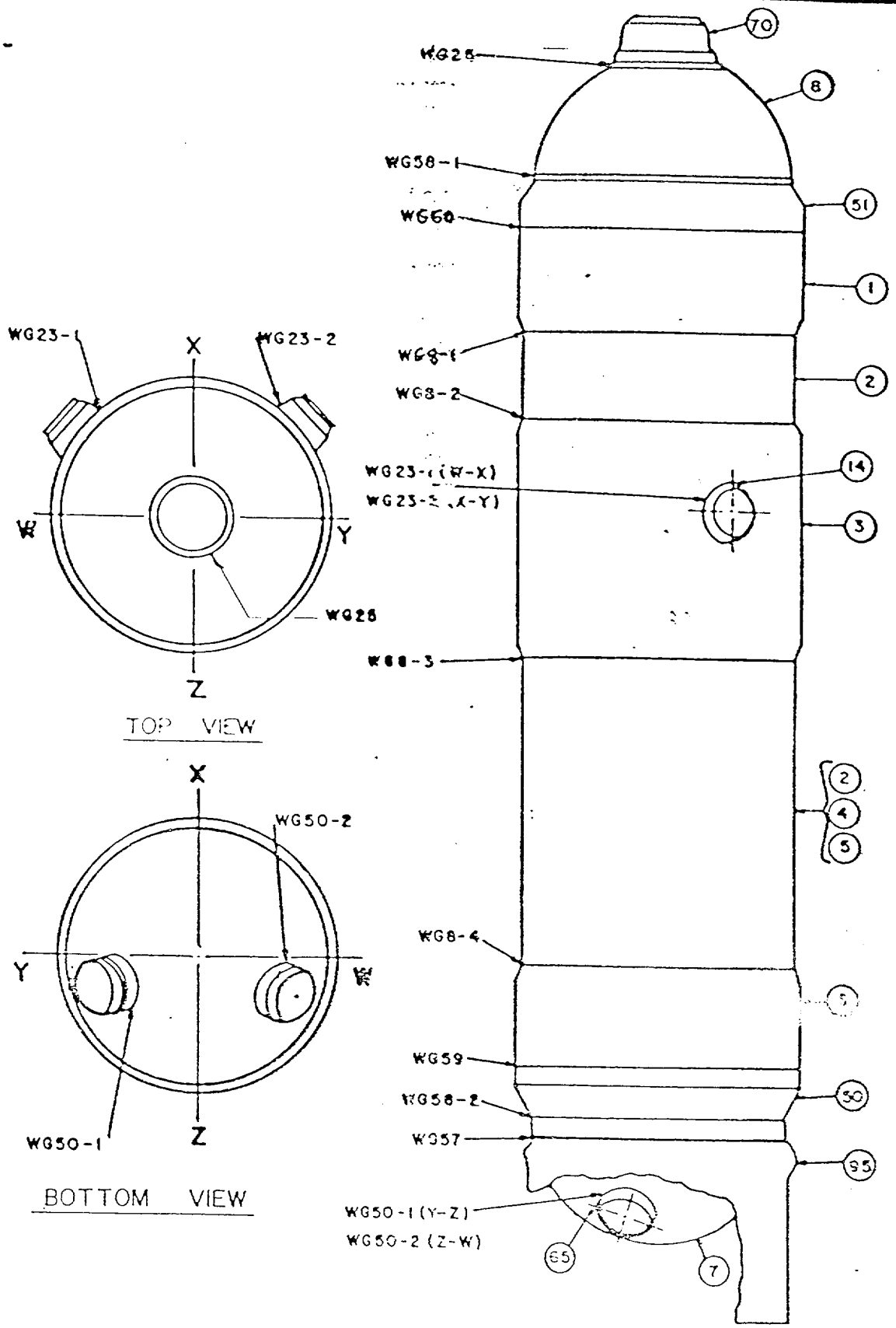
B. W. Carney Jr., Oconee Engineering provided input to Sections V and VI of this request.

J. J. McArdle III, NDE Level III provided input for Sections II, III, IV, and V of this request.

L. C. Keith, Oconee ISI Plan Manager compiled and completed this request.

Sponsored By: Larry C. Keith Date: 7-11-01

Approved By: R. Kevin Rhyne Date: 7/11/01



A ___ BE PRECEDED BY "25GA"	1	[illegible]	[illegible]	AJH	TMH	TITLE
SHOWN IN CIRCLES			[illegible]	9/81	[illegible]	STEAM GENERATOR "A"
	0	ORIGINAL	AWS	[illegible]	TMH	WELD OUTLINE
			9/20/81	[illegible]	[illegible]	
	NO.	REVISION	DR'N	CHK'D	APP'D	DWG NO. REV.
			DATE	DATE	DATE	ISI-OCN2-003 1

Attachment B
Request for Relief 01-011

BILL OF MATERIALS

ITEM	TYPE	SPEC.	GRADE	DESCRIPTION	CONST.	SIZE	SCH.
A	SS	SA376	TP304	PIPE	SMLS	½"	160
B	SS	SA182	F304	COUPLING, HALF (SV)	FOR	½"	[illegible]
C	SS	SA182	F304	CAP (SV)	FOR	½"	[illegible]
D	SS	SA182	F316	S/N* 706371-1-1 ONY-1100 VALVE, 2HP-120 (SV)		2½"	160
E							
F							
G							
H							
J							
K							
L							
M							
N							
P							
Q							
R							
S							
T							
U							
V							
W							
X							
Y							
Z							

NOTES:

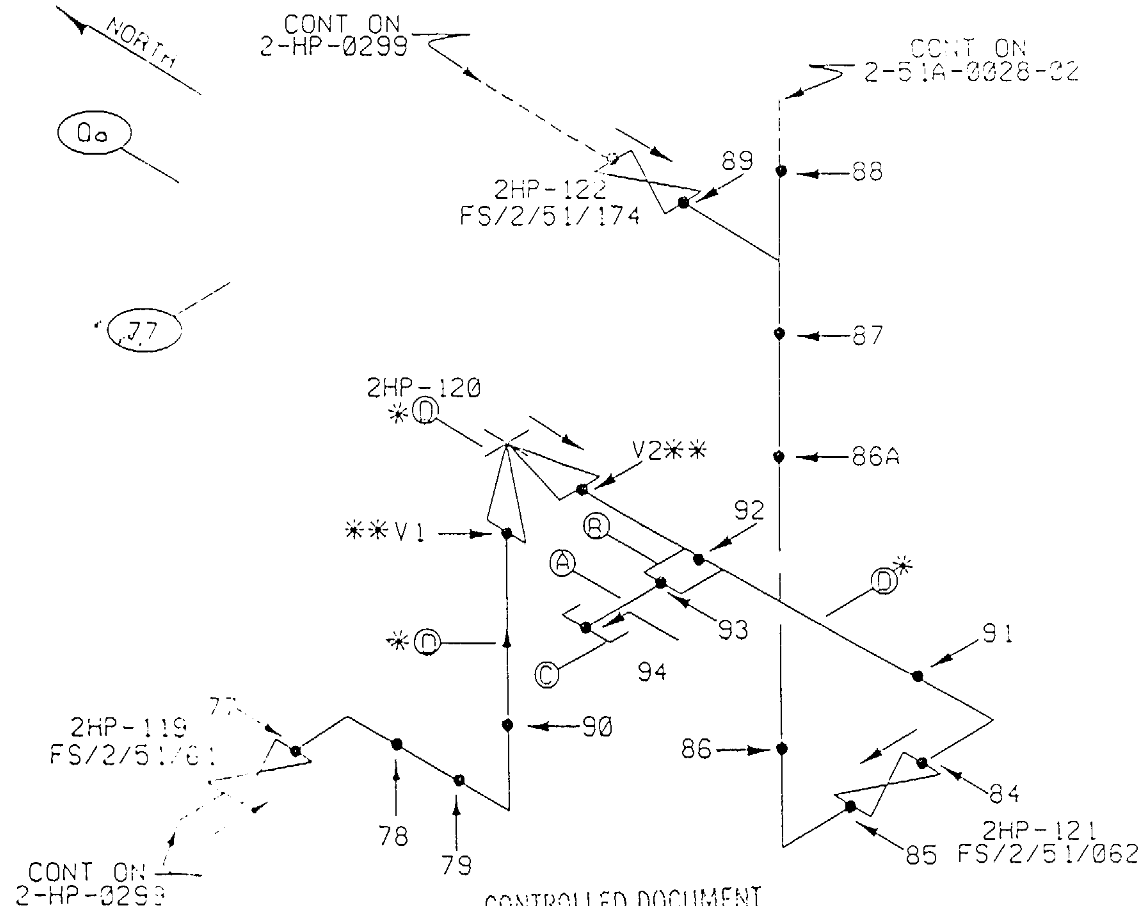
1. WELDS TRANSFERRED FROM 2-51A-0028-02

WELD TRANSFER CHART

ORIG. WELD NUMBER	SIZE X WALL THICKNESS	NEW WELD NUMBER	ORIG. WELD NUMBER	SIZE X WALL THICKNESS	NEW WELD NUMBER
77	2½" X .375				
78	2½" X .375				
79	2½" X .376				
84	2½" X .375				
85	2½" X .375				
86	2½" X .552				
86A	2½" X .552				
87	2½" X .552				
88	2½" X .552				
89	2½" X .375				

2. ALL WELD NO'S SHALL BE PRECEDED BY 2-HP-0341
3. LAST WELD NO. 94 LAST TWO JOINT * N/A
4. REF. LAYOUT DRAWING 0-1439A
5. REF. FLOW DIAGRAM OFD-101A-2.4
6. DESIGN TEMP./DESIGN PRESS. 200°, 150° / 3343, 3120 PSIG
7. VALVE HAS PIPE EXTENSIONS ON BOTH ENDS (VENDOR SUPPLIE[illegible]
8. WELDS V1 & V2 ARE VENDOR WELDS THEY ARE BEING ADDED TO THE ISO FOR LOCATION TO PERFORM ADDITIONAL NDE (REF PIP-[illegible]

ERN: 0X0098R1



CONTROLLED DOCUMENT
DO NOT REPRODUCE

* SEE NOTE 7
**SEE NOTE 6

NO	REVISIONS	DRAWN BY / DATE	CHECKED / DATE
1	[illegible]	HCV 12/27/99	[illegible]
0	OE-11490 WO 98156091 TRANSFER WELDS PER NOTE 1 ADD WELDS 90-94, MAT'L A-D	TSC 10/7/99	CES 10/7/99

DUKE POWER COMPANY
OCONEE NUCLEAR STATION UNIT 2

TITLE: HIGH PRESSURE INJECTION FROM HP-P2A TO REACTOR INLET LINE "2A2"

SYS.	HP	LINE NO.	32
CODE	B31.7	DUKE CLASS	B
QA CONDITION	1	XI CLASS	B
PIPING SPEC.	P.S. 1501.2		
LOCATION	AUX BLDG EAST PEN ROOM 437		

DWG. NO. 2-HP-0341 REV. 1

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start 1105 | Form NDE-UT-2A

Exam Finish: 1125 | Revision 4

Station: Oconee | Unit: 2 | Component/Weld ID: 2-SGA-WG25 | Date: 5/17/01

Weld Length (in.): 152.8 | Surface Condition: AS GROUND | Lo: 9.2.3 | Surface Temperature: 72 ° F

Examiner: Larry Mauldin Level: III

Examiner: David Zimmerman Level: II

Pyrometer S/N: MCNDE 27008

Cal Due: 8/20/01

Procedure: NDE-970 Rev: 0

NDE-640 1

FC: *

Scans:

45 ☐ ____ dB 70 ☐ ____ dB

45T ☐ ____ dB 70T ☐ ____ dB

60 ☒ 63 dB

60T ☒ 63 dB

Other: 0° @ 21 dB

Configuration: Nozzle to Head

S2 Flow S1

NOZZLE to HEAD

Scan Surface: OD

Applies to NDE-680 only

Skew Angle:

Calibration Sheet No:

0102095, 0102094

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°														
NRI	60°														

Remarks: *FC 00-08 (NDE-970)

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

Sheet 1 of 13

Reviewed By: Gary J Moss Level: II Date: 5-19-01

Authorized Inspector: Date: MAY 2 9 2001

Item No: B03.130.005

Attachment C
Request for Relief 01-011
Page 1 of 49

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1117 | Form NDE-UT-2A

Exam Finish: 1130 | Revision 4

Station: Oconee | Unit: 2 | Component/Weld ID: 2-SGA-WG25 | Date: 5/17/01

Weld Length (in.): 152.8 | Surface Condition: AS GROUND | Lo: 9.2.3

Surface Temperature: 72 ° F

Examiner: Winfred C. Leeper Level: II

Examiner: James L. Panel Level: II

Pyrometer S/N: MCNDE 27008

Cal Due: 8/20/01

Procedure: NDE-970 Rev: 0 | FC: 00-08

Calibration Sheet No: 0102096

Scans:

45 ☒ 55.5 dB 70 ☐ ____ dB

45T ☒ 55.5 dB 70T ☐ ____ dB

60 ☐ ____ dB

60T ☐ ____ dB

Other: ____ dB

Configuration: CIRC. WELD

S2 Flow S1

NOZZLE to HEAD

Scan Surface: OD

Applies to NDE-680 only

Skew Angle:

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

Remarks:

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

Sheet 2 of 13

Reviewed By: Jay Moss Level: II Date: 5-19-01

Authorized Inspector: Date: MAY 29 2001

Item No: B03.130.005

Attachment C
Request for Relief 01-011
Page 2 of 49

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2-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 _____ to _____

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: II Date: 05/17/01 Sketch(s) attached ☐ yes ☒ no Sheet 3 of 13

Reviewed By: [signature] Date: 5/19/01 Authorized Inspector: [signature] Date: MAY 29 2001

Attachment C
Request for Relief 01-011
Page 3 of 49

4 of 13

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 = 2750.4 CU. IN.

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq in.)	Length Examined (in.)	Volume Examined (cu.in.)	Volume Required (cu.in.)	Percent Coverage
1	0	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: Larry Wauldin Level: III Date: 5-17-01

Reviewed By: Gary J Moss Level: II Date: 5-19-01

ANII [illegible] Date 5/29
HSBI&I Co.

5 of 13

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 73.7 SQ. IN	73.7 SQ. IN X 152.8 IN. = 11261.36 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

ANII [illegible] Date 5/22
HSBI&I Co.

Item No: B03.130.005

Prepared By: Larry Maulden Level: III Date: 5-17-01

Reviewed By: Gary J Moss Level: II Date: 5-19-01

6 of 13

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
					47001.3	81060.6	57.98

ANII Date 5/22
HSBI&I Co.

Item No:	B03.130.005	
Prepared By: Larry Maulden	Level: III	Date: 5-17-01
Reviewed By: Gary Moss	Level: II	Date: 5-20-01

OCONEE NOZZLE TO UH HEAD (GENERATOR)

EXAM AREAS:

BASE MATERIAL:

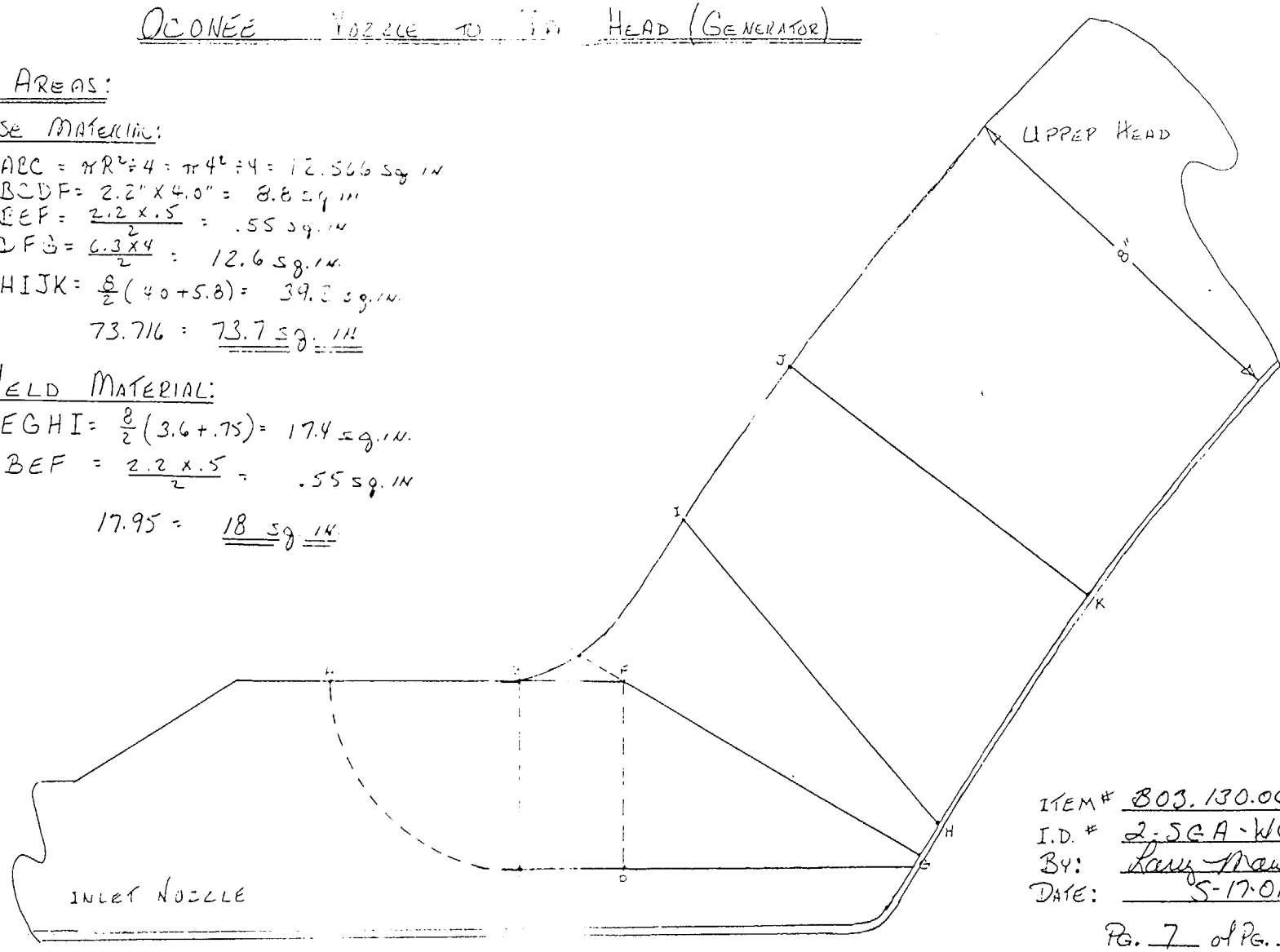
ABC = $\pi R^2 \div 4 = \pi 4^2 \div 4 = 12.566$ sq in
BCDF = 2.2" X 4.0" = 8.8 sq in
EEF = $\frac{2.2 \times .5}{2}$ = .55 sq. in
DFG = $\frac{6.3 \times 4}{2}$ = 12.6 sq. in.
HIJK = $\frac{8}{2}(4.0 + 5.8)$ = 39.3 sq. in.

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. # 2-SGA-WG25
BY: Lary Maulli
DATE: 5-17-01

PG. 7 of PG. 13

ANII Date 5/24
HSB&I Co.

OCONEE NUCLEAR STATION — HEAD (GENERATOR)

0° SCAN COVERAGE

BASE MATERIAL:

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

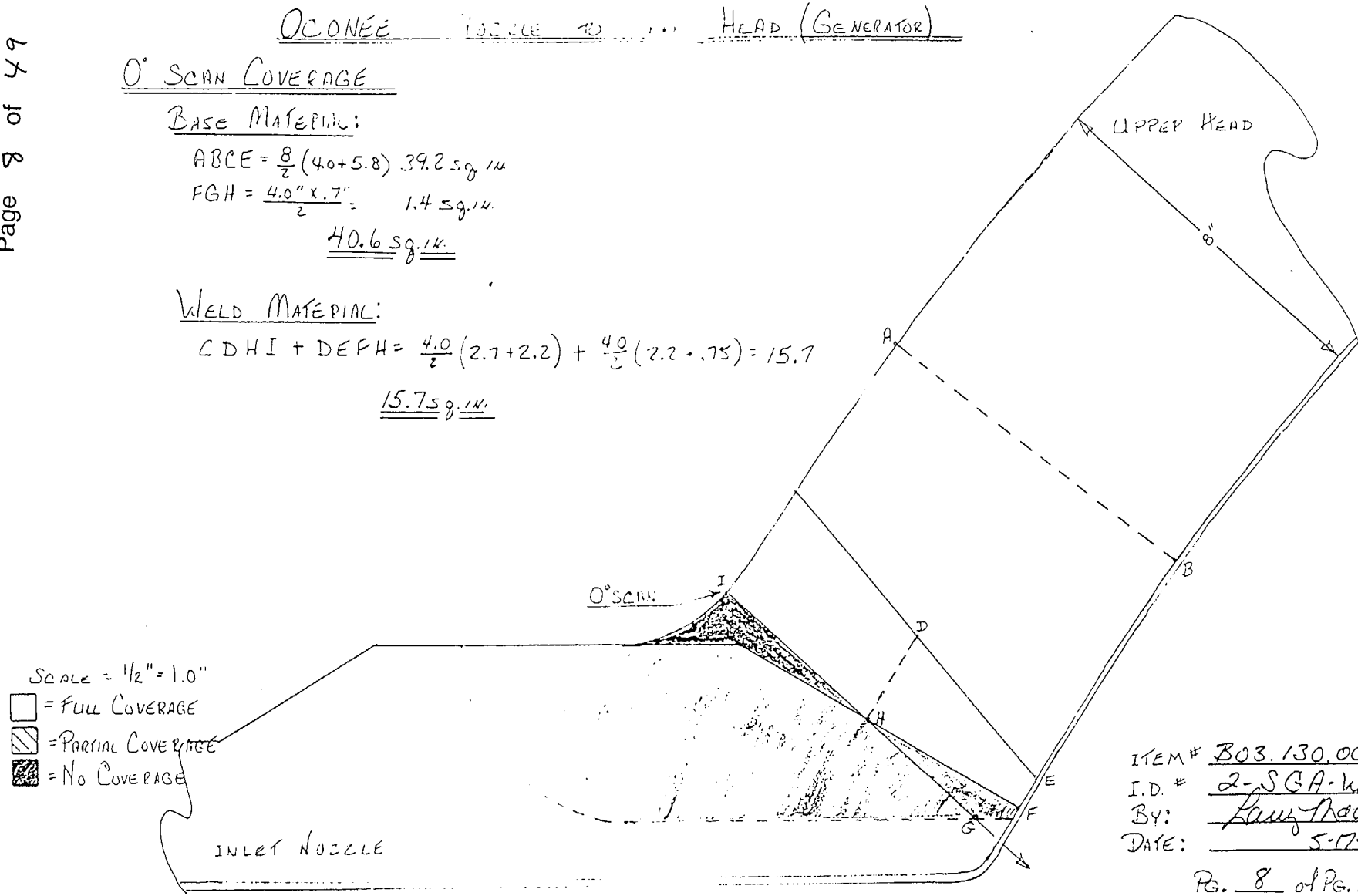
$FGH = \frac{4.0" \times .7"}{2}$ = 1.4 sq. in.

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. # 2-SGA-WG25
BY: Larry Mauldin
DATE: 5-17-01

PG. 8 of PG. 13

ANII Date 5/22
HSB&I Co.

OCONEE Nozzle to (Fwd) Head (Generator)

45° Scans (Axial)

Base Material

S1 to S2

ACDF = $\frac{5}{2}(4.0 + 5.8) = 39.2$ sq. in.

$\triangle HI = \frac{6.7 \times 2.9}{2} = 9.715$ sq. in.

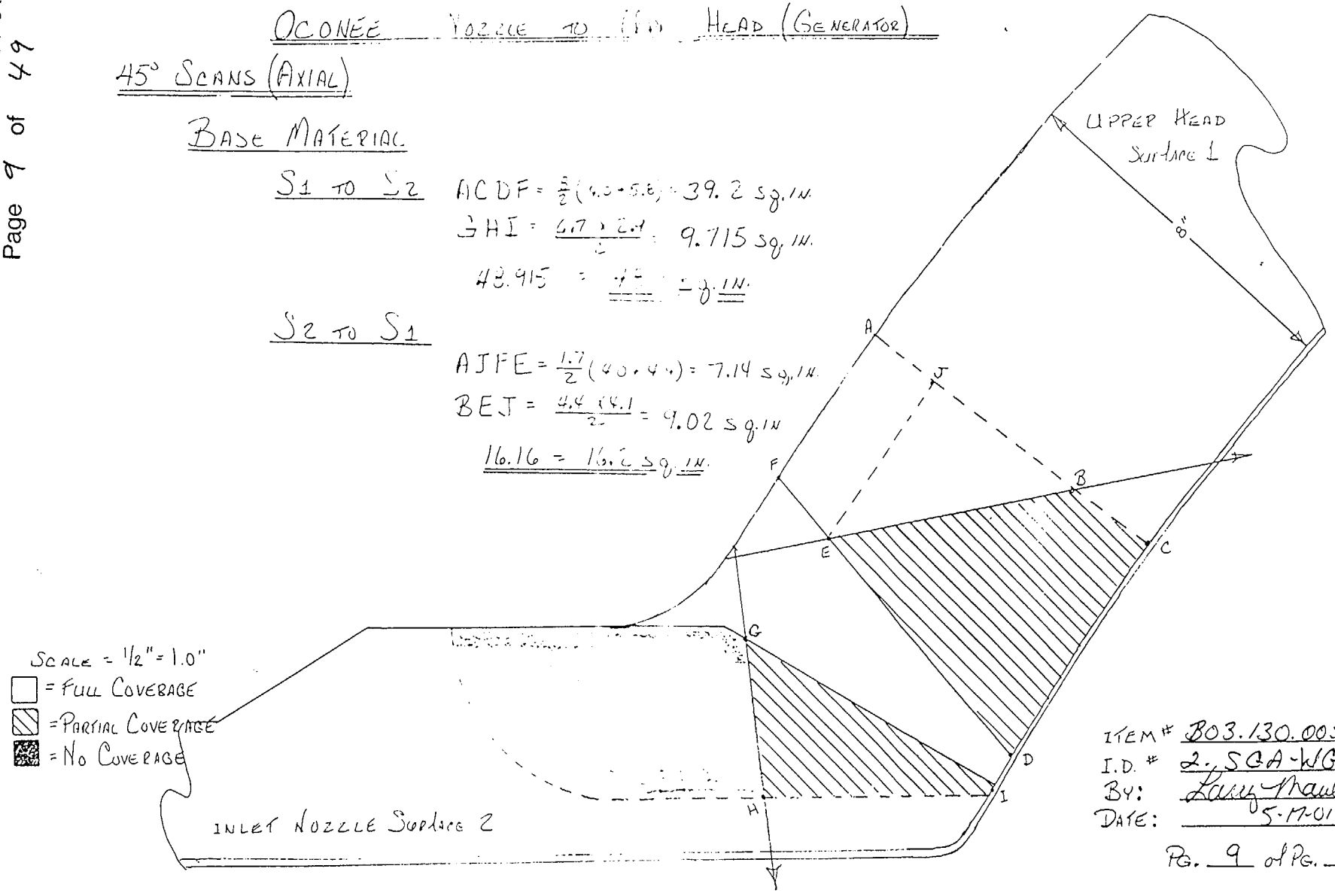
$48.915 = 49 \pm 0.1$ in.

S2 to S1

AJFE = $\frac{1.7}{2}(40.4) = 7.14$ 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 # B03.130.005
I.D. # 2-SGA-WG25
BY: Larry Maullin
DATE: 5-17-01

Pg. 9 of Pg. 13

ANII 02 Date 7/29
HSBI&I Co

OCONEE NOZZLE TO [illegible] HEAD (GENERATOR)

45° SCANS (AXIAL)

WELD MATERIAL:

S1 TO S2:

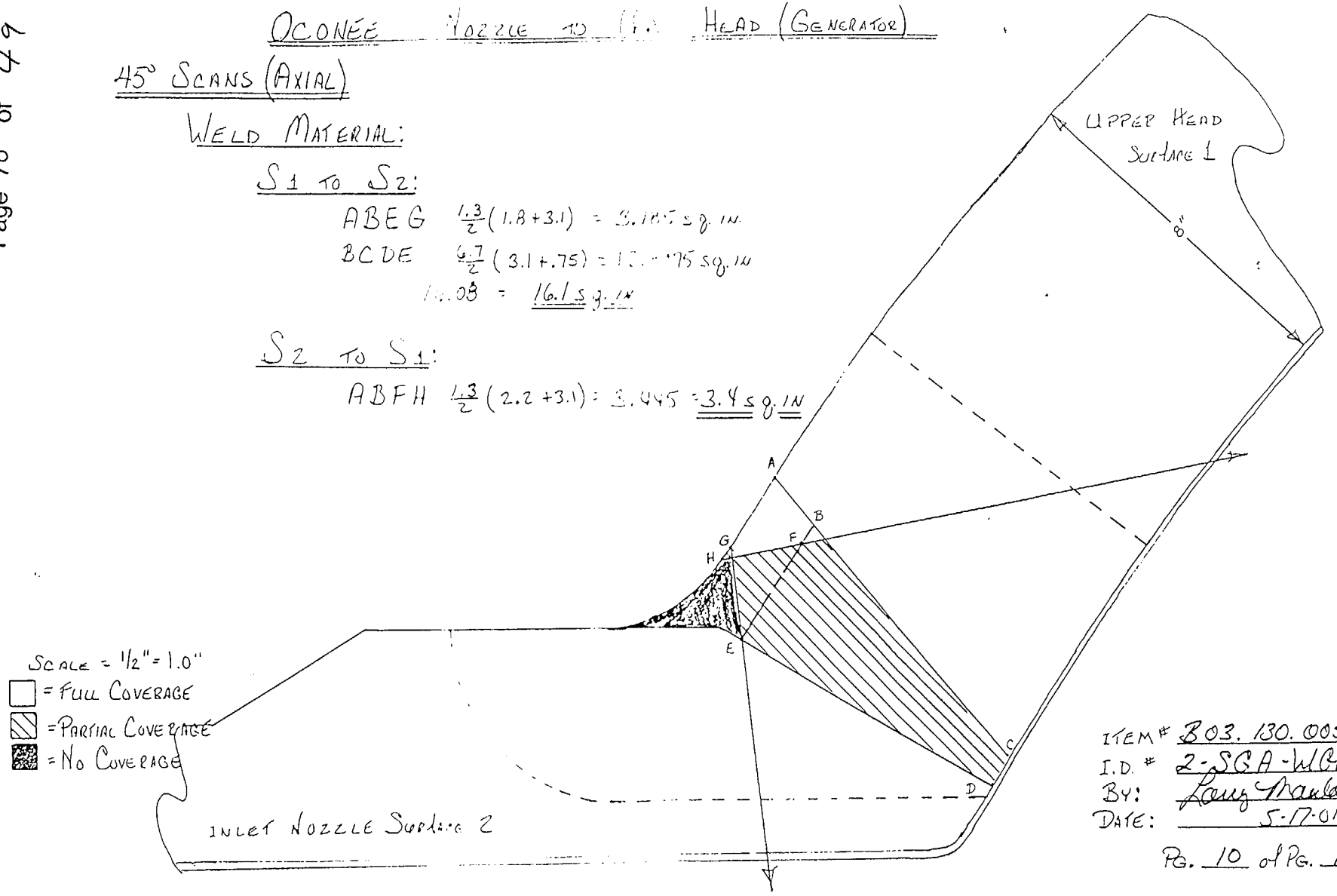
ABEG $\frac{1.3}{2}(1.8+3.1) = 3.185 \leq$ [illegible] SQ. IN.

BCDE $\frac{6.7}{2}(3.1+.75) = 13.[illegible]75$ SQ. IN

16.08 = 16.1 SQ. IN

S2 TO S1:

ABFH $\frac{1.3}{2}(2.2+3.1) = 3.445 = 3.4 \leq$ SQ. IN



ITEM # B03.130.005
I.D. # 2-SGA-WB25
BY: Larry Mauldin
DATE: 5-17-01

PG. 10 of PG. 13

ANII Date 5/15
HSB I&I Co.

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

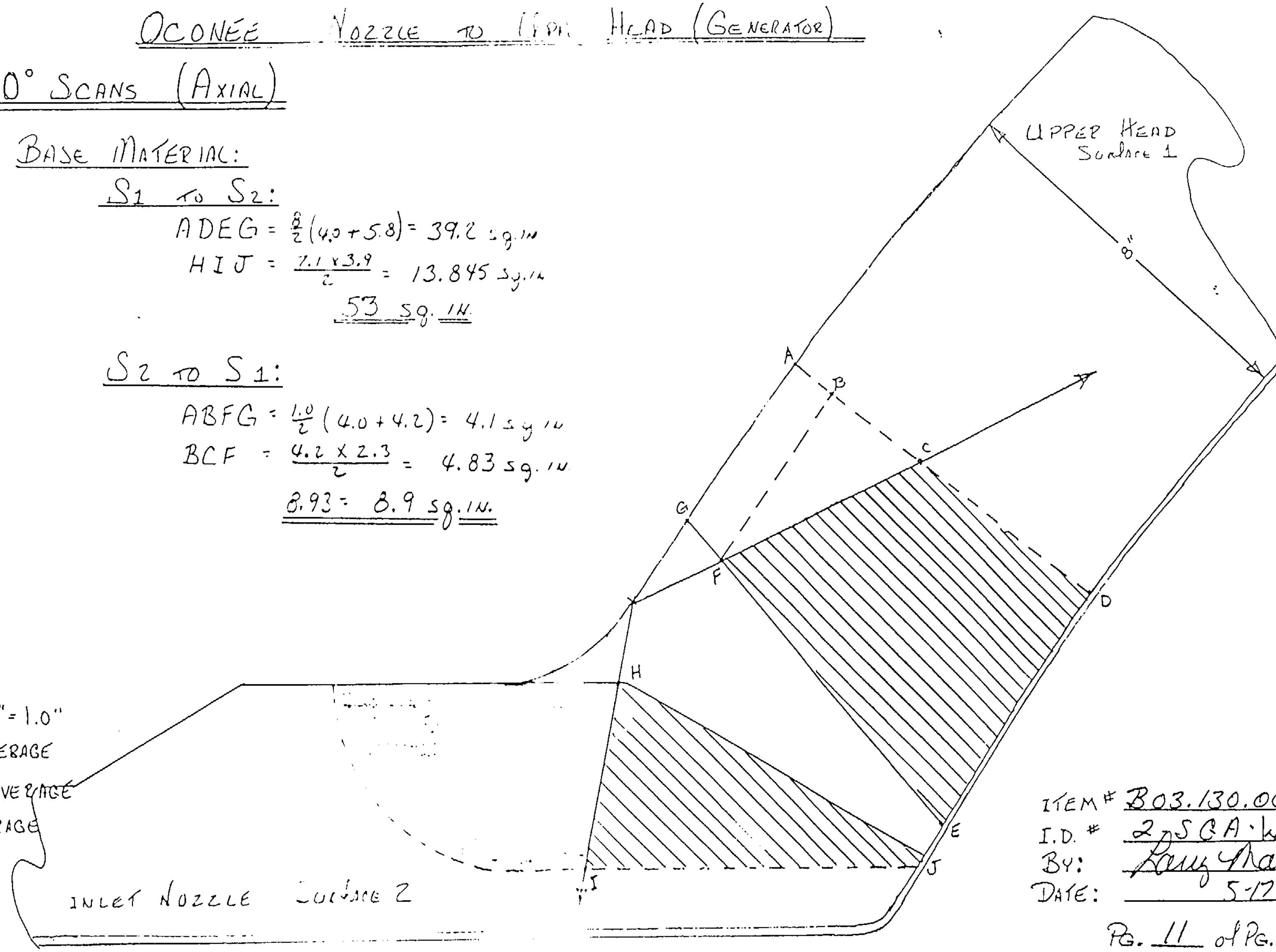
53 sq. IN.

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 # B03.130.005
I.D. # 2-SGA-W025
BY: [signature]
DATE: 5-17-01

PG. 11 of PG. 13

ANII [initials] Date 5/24
HSB I&I Co.

OCONEE NOZZLE TO UPPER HEAD (GENERATOR)

60° SCANS (AXIAL)

WELD MATERIAL:

1 TO 2:

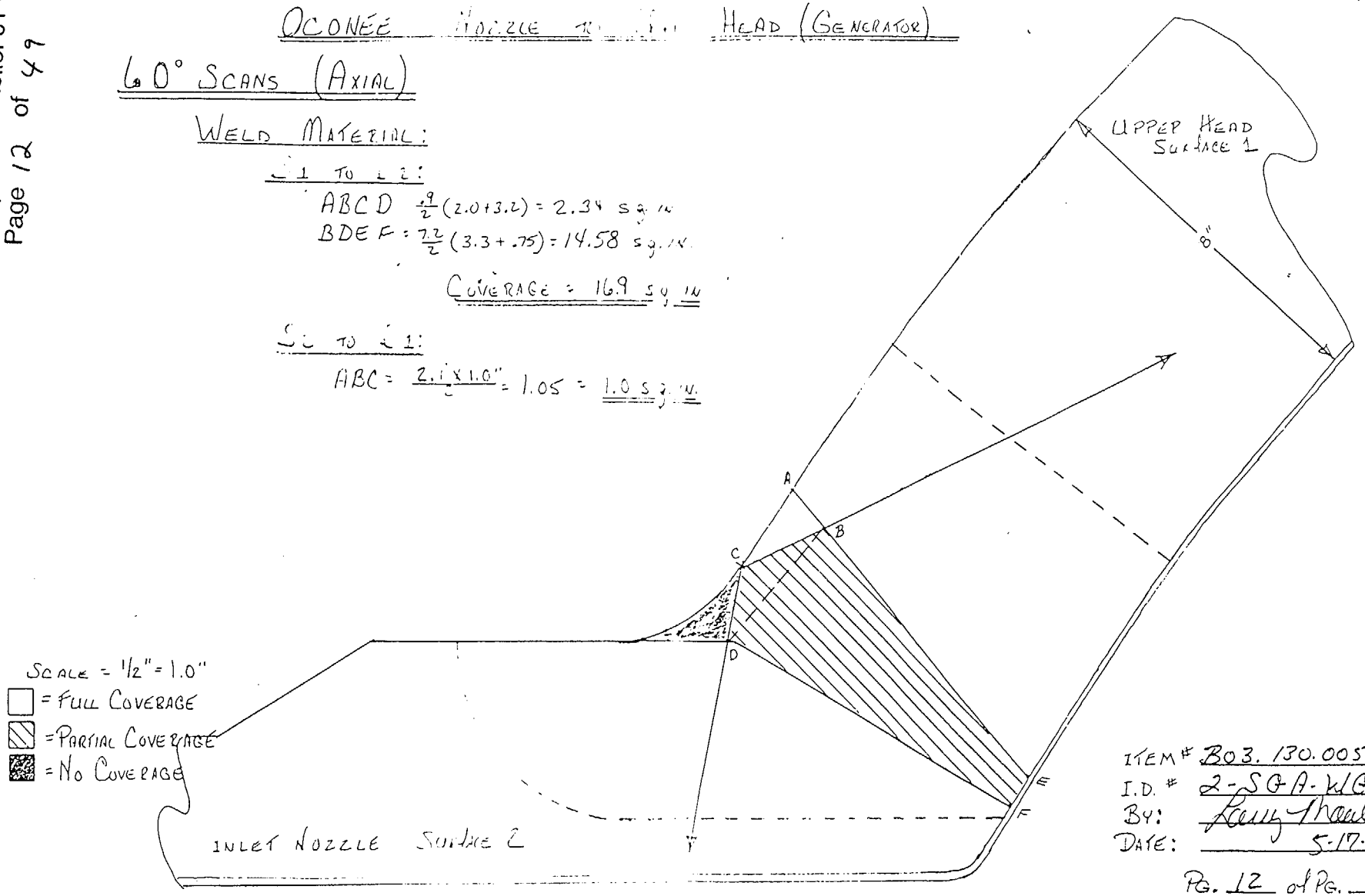
ABCD $\frac{.9}{2}(2.0+3.2) = 2.34$ sq. in

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

COVERAGE = 16.9 sq. in

2 TO 1:

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



ITEM # B03.130.005
I.D. # 2-SGA-WG25
BY: Larry Hamblin
DATE: 5-17-01

PG. 12 of PG. 13

ANII AE Date 7/23
HSBI&I Co.

OCONEE NOZZLE TO U.H. HEAD (GENERATOR)

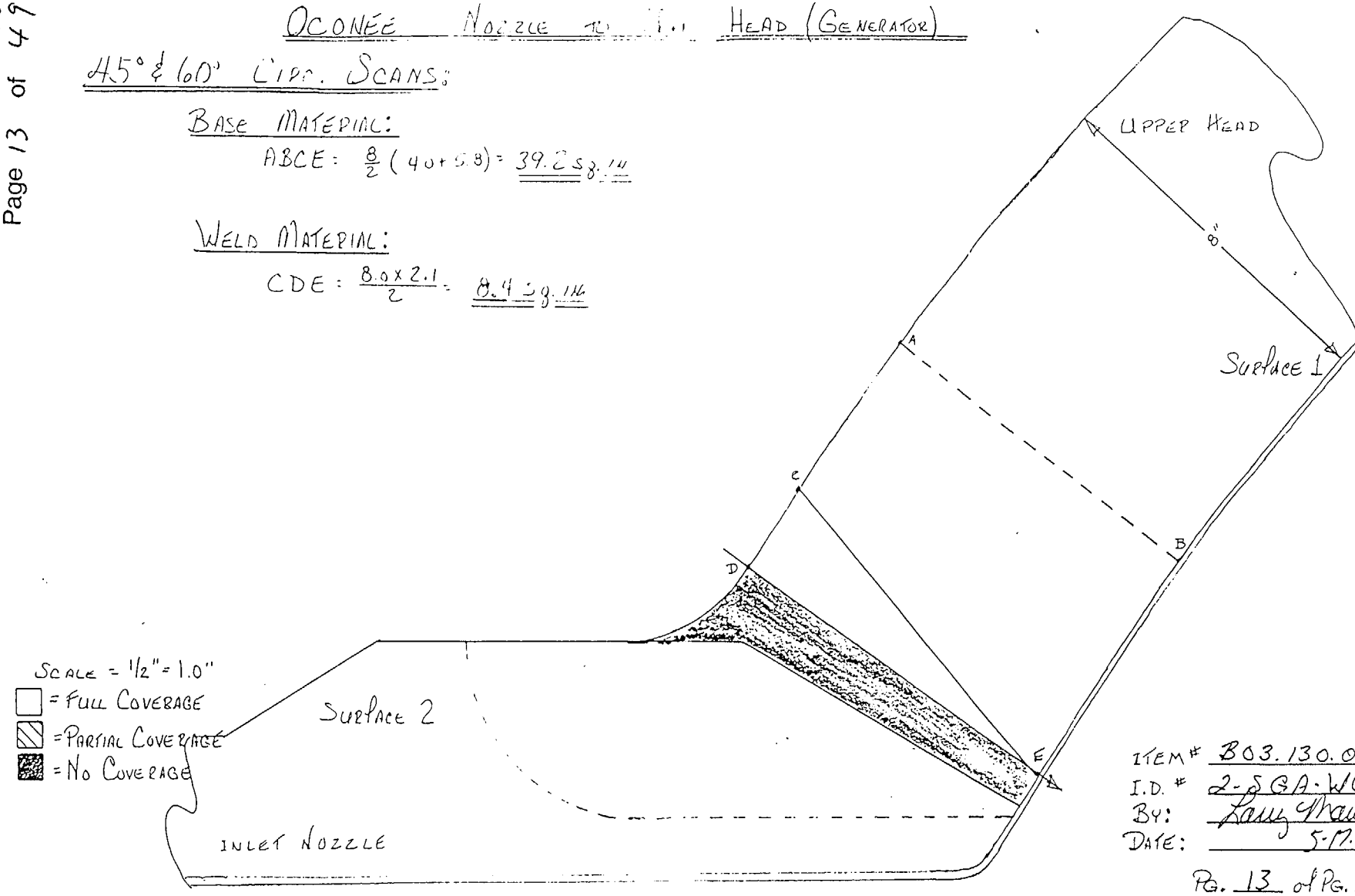
45° & 60° CIRC. SCANS:

BASE MATERIAL:

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

WELD MATERIAL:

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



ITEM # B03.130.005
I.D. # 2-SGA-WC25
BY: Larry Maulden
DATE: 5-17-01

PG. 13 of PG. 13

ANII Date 5/24
HSBI&I Co.

Attachment C
Request for Relief 01-011
Page 14 of 49

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1110 | Form NDE-UT-2A

Exam Finish: 1125 | Revision 4

Station: Oconee | Unit: 2 | Component/Weld ID: 2-SGA-WG25 | Date: 5/17/01

Weld Length (in.): 152.8 | Surface Condition: AS GROUND | Lo: 9.2.3

Surface Temperature: 72 ° F

Examiner: David Zimmerman Level: II

Examiner: Larry Mauldin Level: III

Pyrometer S/N: MCNDE 27008

Cal Due: 8/20/01

Procedure: NDE-680 Rev: 2

FC: N/A

Calibration Sheet No: 0102092

Scans:

45 ☐ _____ dB 70 ☒ 70.5 dB

45T ☐ _____ dB 70T ☐ _____ dB

60 ☒ 57 dB

60T ☐ _____ dB

Other _____ dB

Configuration: INNER RADIUS

S2 Flow S1

NOZZLE to HEAD

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	60°														

Remarks:

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

Sheet 1 of 4

Reviewed By: Larry Moore Level: II Date: 5-19-01

Authorized Inspector: Date: MAY 2 9 2001

Item No: B03.140.005

Attachment C
Request for Relief 01-011
Page 15 of 49

DUKE POWER COMPANY

ULTRASONIC EXAMINATION DATA SHEET FOR PLANAR REFLECTORS

Exam Start: 1128 | Exam Finish: 1145 | Form NDE-UT-2A | Revision 4

Station: Oconee | Unit: 2 | Component/Weld ID: 2-SGA-WG25 | Date: 5/17/01

Weld Length (in.): 152.8 | Surface Condition: AS GROUND | Lo: 9.2.3

Surface Temperature: 72 ° F

Examiner: James L. Panel Level: II

Examiner: Winfred C. Leeper Level: II

Pyrometer S/N: MCNDE 27008

Cal Due: 8/20/01

Procedure: NDE-680 Rev: 2

FC: N/A

Calibration Sheet No: 0102093

Scans:

45 ☐ ____ dB 70 ☒ 70.5 dB

45T ☐ ____ dB 70T ☐ ____ dB

60 ☐ ____ dB

60T ☐ ____ dB

Other: ____ dB

Configuration: INNER RADIUS

S2 Flow S1

NOZZLE to HEAD

Scan Surface: OD

Applies to NDE-680 only

Skew Angle:

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

Remarks:

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

Sheet 2 of 4

Reviewed By: Gary Moss Level: II Date: 5-19-01

Authorized Inspector: Date: MAY 29 2001

Item No: B03.140.005

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 CALCULATIONS 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
					1008.48	1436.32	70.21

Item No: B03.140.005		
Prepared By: Larry Mauldin	Level: III	Date: 5-17-01
Reviewed By: Gary Moss	Level: II	Date: 5-19-01

ANII Date 5/29
HSBI&I Co.

INLET NOZZLE TO UPPER HEAD

INNER RADIUS INSPECTION AREA

I.D# 2.SGA-WG25
ITEM# B03.140.005
BY: Larry Moulder
DATE: 5-12-01

A-B-C-D + CDGH ABCD $(\pi \times 1.0^2) - (\pi \times .5^2) \times .16 = .424$ sq in
(65° = 18% of a circle)

CDGH $\frac{.5}{2}(2.4+8.6) = 4.25$ sq in

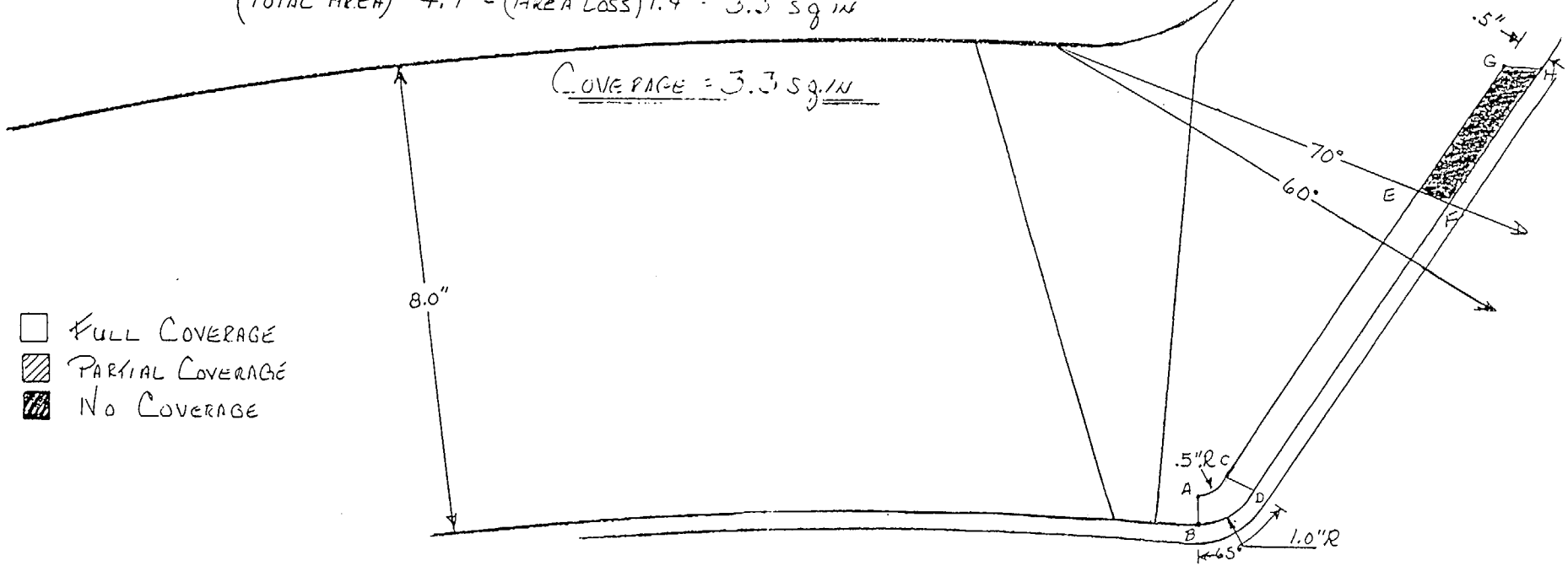
TOTAL AREA = 4.674 = 4.7 sq in

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

ANII Date
HSBI&I Co.

DUKE POWER COMPANY
ULTRASONIC DATA SHEET FOR PLANAR REFLECTORS IN FERRITIC PRESSURE VESSELS

Station: OCONEE	Unit: 2	Component/Weld ID: 2SGA-WLB-1	Date: 5-7-01
Weld Length (in.): 433.4	Surface Condition: GROUND	Lo 9.2.1	Exam Start: 0930	Exam Finish: 1030

Procedure No:	Scans	Configuration		Calibration Sheet No:
NDE-620	70° ___ dB Zone I 60° 75 dB Zone II	CIRC.	Surface Temp. 75 °F	0102064
Revision: 8	60° 75 dB Zone III Axial	Scan Surface: OD	Pyrometer s/n: mCODE-27008	0102065
FC 00-07	60° 75 dB Zone III Circ.		Cal. Due Date: 8/20/01	

Indication #	∠	MP_{max}	% FSH	L_{max}	W_{max}	SU LOCATION	BEAM DIRECTION	SCAN ⊥ ∥	REMARKS
NRI	60°								

> 90% Coverage obtained: yes ☐ no ☒ (see NDE-UT-4) Limitation report is required

Item No: C01.010.001

Examiner: Larry Maudlin Level: III Date: 5-7-01 Examiner: David K. Z Level: II Date: 05/07/01

Reviewed by: Gary Moss Level: II Date: 5-12-01 Authorized Inspector: S. Hart Date: 5-16-01

DUKE POWER COMPANY
ULTRASONIC DATA SHEET FOR PLANAR REFLECTORS IN FERRITIC PRESSURE VESSE[illegible]S

Station: OCONEE	Unit: 2	Component/Weld ID: 2-SGA-WLG8-1	Date: 5-7-01
Weld Length (in.): 433.4	Surface Condition: GROUND	Lo 9.2.1	Exam Start: 0930	Exam Finish: 1030

Procedure No:	Scans	Configuration		Calibration Sheet No:
NDE-620	70° 57 dB Zone I 60° ___ dB Zone II	CIRC.	Surface Temp. 75 °F	0102066
Revision: 8	60° ___ dB Zone III Axial	Scan Surface: OD	Pyrometer s/n: MCNDE-27008	
FC 00-07	60° ___ dB Zone III Circ.		Cal. Due Date: 8/20/01	

Indication #	∠	MP_{max}	% FSH	L_{max}	W_{max}	SU LOCATION	BEAM DIRECTION	SCAN ⊥ =	REMARKS
NRI	70°								

> 90% Coverage obtained: yes ☐ no ☒ (see NDE-UT-4) Limitation report is required

Item No: C01.010.001

Examiner: James T Lowe Level: II Date: 5/7/01 Examiner: [signature] Level: II Date: 5/7/01

Reviewed by: Gary A Moss Level: II Date: 5-12-01 Authorized Inspector: [signature] Date: 5-16-01

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2-SGA-WG8-1 | Item No C01.010.001 | Remarks:

	SURFACE	BEAM DIRECTION		
☐ NO SCAN ☒ LIMITED SCAN	☒ 1 ☒ 2	☒ 1 ☒ 2 ☐ cw ☐ ccw	FROM L N/A to L N/A	INCHES FROM WO 0.0 to 0.7"
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other 70°RL			FROM 0 DEG to 360 DEG	DUE TO TAPER CONFIGURATION
☐ NO SCAN ☒ LIMITED SCAN	☒ 1 ☒ 2	☒ 1 ☒ 2 ☐ cw ☐ ccw	FROM L N/A to L N/A	INCHES FROM WO 0.0 to 1.0"
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other 60°RL			FROM DEG to 360 DEG	DUE TO TAPER CONFIGURATION
☐ NO SCAN ☒ LIMITED SCAN	☒ 1 ☒ 2	☐ 1 ☐ 2 ☒ cw ☒ ccw	FROM L N/A to L N/A	INCHES FROM WO 0.0 to 0.75"
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other 70°RL			FROM 0 DEG to 360 DEG	DUE TO TAPER CONFIGURATION
☐ NO SCAN ☒ LIMITED SCAN	☒ 1 ☒ 2	☐ 1 ☐ 2 ☒ cw ☒ ccw	FROM L N/A to L N/A	INCHES FROM WO 0.0 to 1.1"
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other 60°RL			FROM 0 DEG to 360	DUE TO TAPER CONFIGURATION

Prepared By: [signature] Level: III Date 5-7-01 | Sketch(s) attached ☒ yes ☐ no | Sheet 3 of 8

Reviewed By: [signature] Date: 5-12-01 | Authorized Inspector: [signature] Date: 5-16-01

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 DRWGS ZONE 1- 2.7 SQ. IN. ZONES 2 & 3 - 8.6 SQ. IN	ZONE 1 2.7 SQ. IN. X 433.5 IN = 1170.5 CU. IN. ZONES 2 & 3 8.6 SQ. IN X 433.5 IN. = 3728.1 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	70°	1	2.2	433.5	953.7	1170.5	81.48
2	70°	2	1.6	433.5	693.6	1170.5	59.26
3	70°	CW	1.0	433.5	433.5	1170.5	37.04
4	70°	CCW	1.0	433.5	433.5	1170.5	37.04
5	60°	1	8.3	433.5	3598.1	3728.1	96.51
6	60°	2	7.9	433.5	3424.7	3728.1	91.86
7	60°	CW	.5	433.5	216.8	3728.1	5.82
8	60°	CCW	.5	433.5	216.8	3728.1	5.82
					9970.7	19594.4	50.89

Item No: C01.010.001

Prepared By: Larry Rawlins Level: III Date: 5-7-01

Reviewed By: Gary N Moss Level: II Date: 5-12-01

ANII [illegible] Date 5/16
HSBI&I Co.

4 of 8

Oconee Std Generator
Shell to Shell

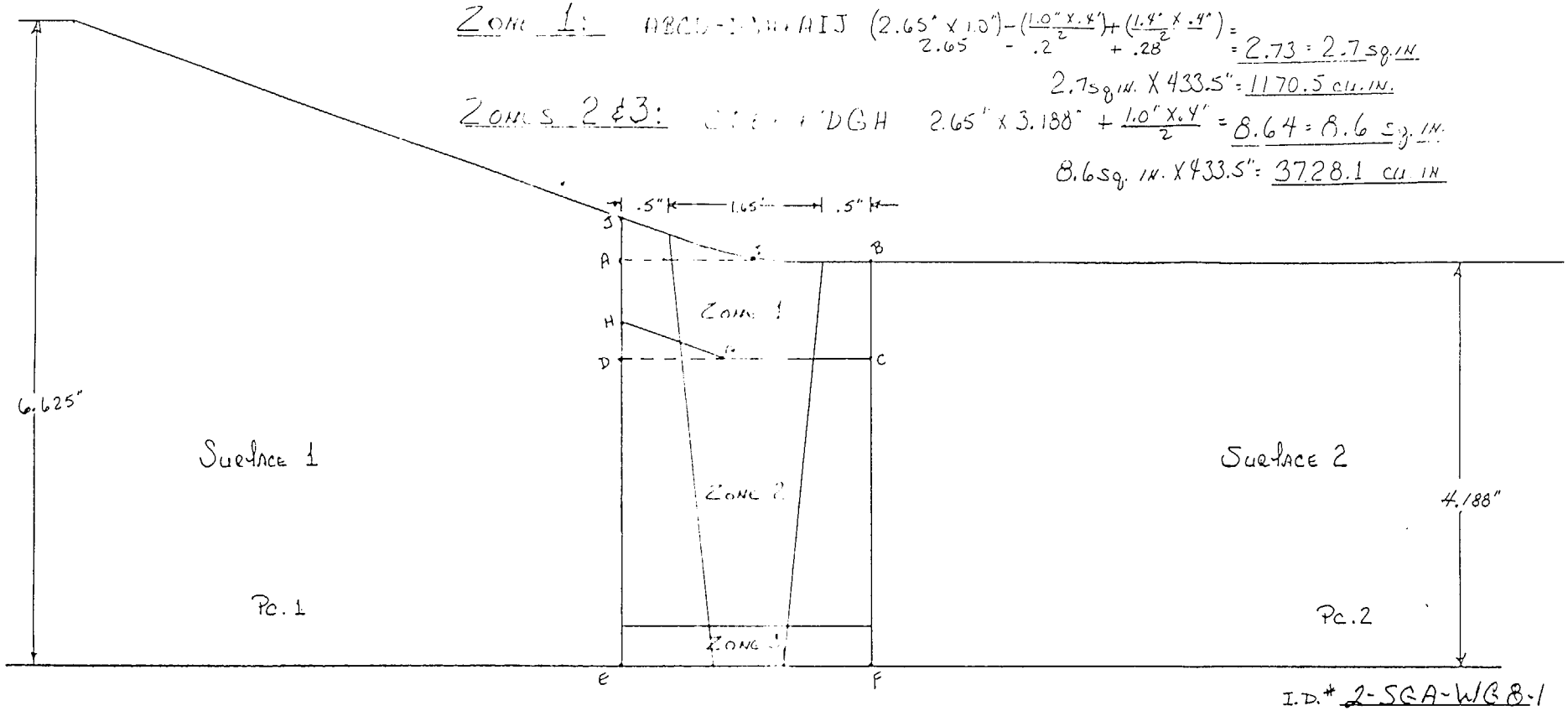
Inspection Area

Zone 1: ABCD - [illegible] AIJ $(2.65" \times 1.0") - \left(\frac{1.0" \times .8"}{2}\right) + \left(\frac{1.4" \times .4"}{2}\right) =$
$2.65 - .2 + .28$
$= 2.73 = 2.7$ sq. in.

2.7 sq. in. $\times 433.5" = 1170.5$ cu. in.

Zones 2 & 3: [illegible] DGH $2.65" \times 3.188" + \frac{1.0" \times .4"}{2} = 8.64 = 8.6$ sq. in.

8.6 sq. in. $\times 433.5" = 3728.1$ cu in



I.D.* 2-SGA-WG8-1
ITEM# C01.010.001
By: Larry Mauldin
Date 05-7-01
Pg. 5 of 8

ANII [illegible] Date 5/16
HSBI&I Co.

OCONEE STEAM GENERATOR
SHELL TO SHELL

COVERAGE

SUR. 2 . 1 (70°) ZONE 1 (LOSS) ABC + BCDE $\frac{.6" \times .2"}{2} + \frac{.7"}{2}(.6" + 2.2") = .522 = .5$ sq. in.

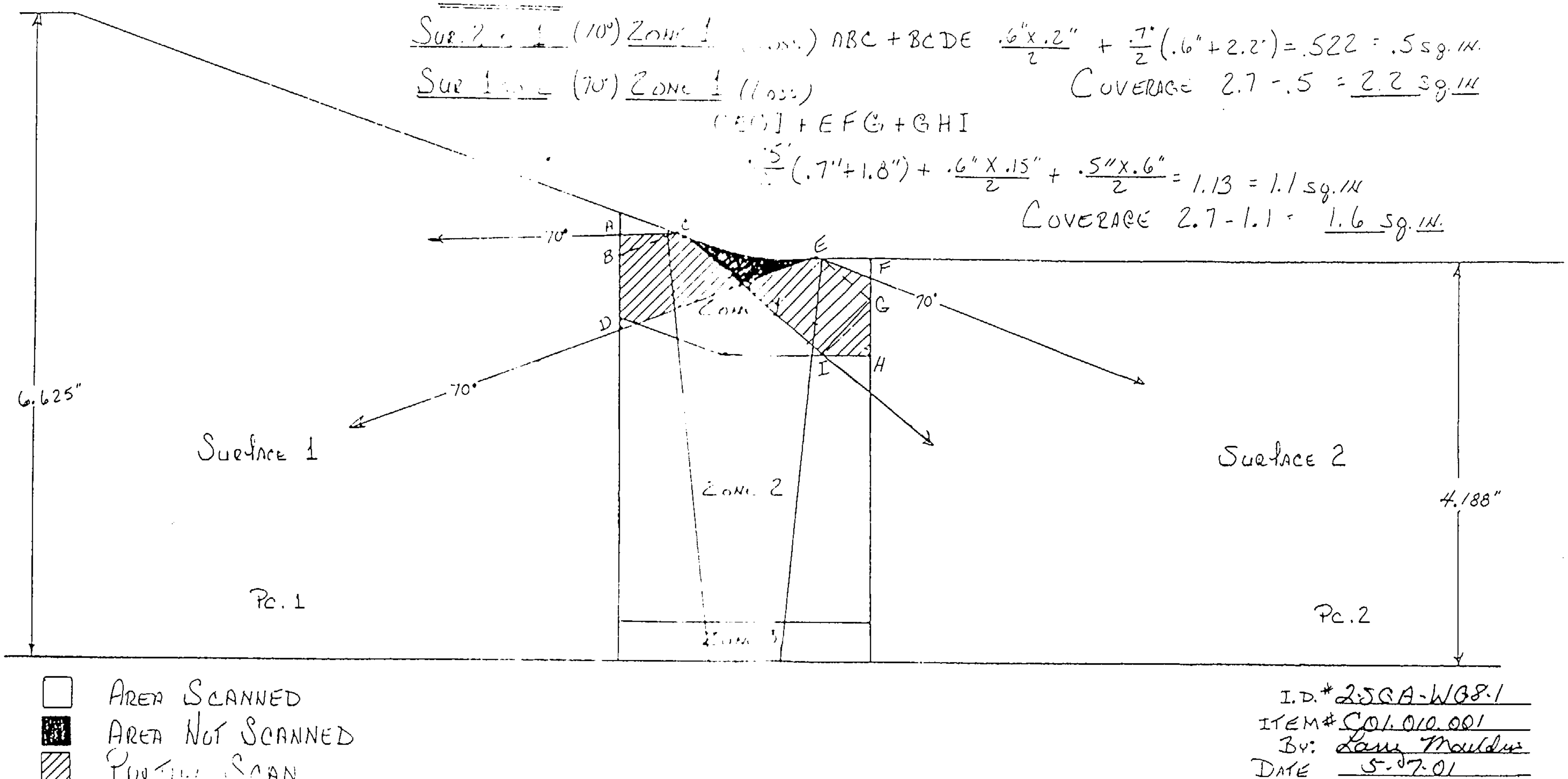
COVERAGE 2.7 − .5 = 2.2 sq. in.

SUR 1 . . . (70°) ZONE 1 (LOSS)

(EFG) + EFG + GHI

$\frac{.5"}{2}(.7" + 1.8") + \frac{.6" \times .15"}{2} + \frac{.5" \times .6"}{2} = 1.13 = 1.1$ sq. in.

COVERAGE 2.7 − 1.1 = 1.6 sq. in.



I.D.# 2SGA-WG8.1
ITEM# C01.010.001
BY: Larry Moulder
DATE 5-07-01
PG. 6 of 8

ANII Date 5-16
HSBI&I Co.

OCONEE STEAM GENERATOR
SHELL TO SHELL

COVERAGE

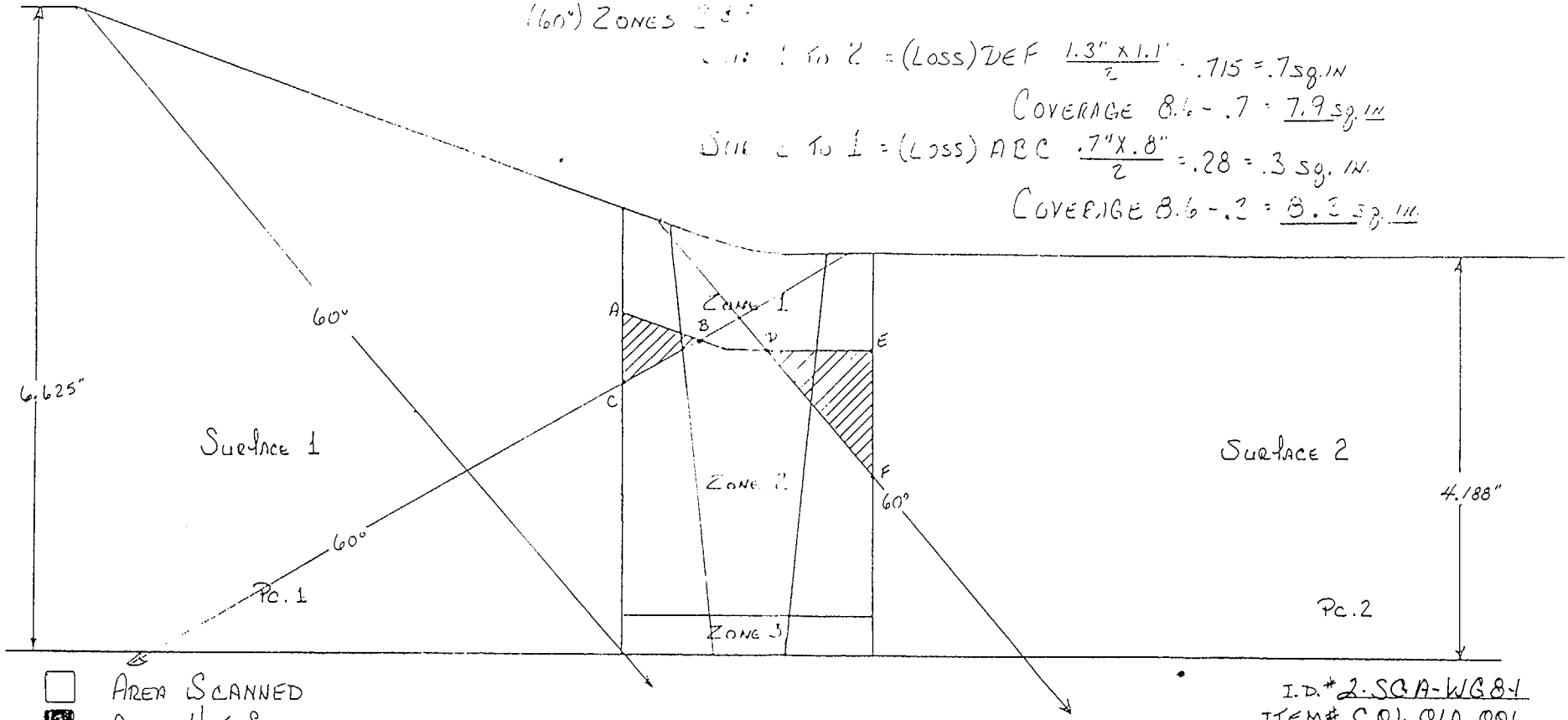
(60°) ZONES 2 & 3

SHELL 2 TO 2 = (LOSS) DEF $\frac{1.3" \times 1.1"}{2}$ = .715 = .7 sq. IN

COVERAGE 8.4 - .7 = 7.7 sq. IN

SHELL 2 TO 1 = (LOSS) ABC $\frac{.7" \times .8"}{2}$ = .28 = .3 sq. IN.

COVERAGE 8.6 - .3 = 8.3 sq. IN.



AREA SCANNED
AREA NOT SCANNED
PARTIAL SCAN

I.D.# 2-SGA-WG84
ITEM# C01.010.001
BY: Larry Maulden
DATE 05-7-01
Pg. 7 of 8

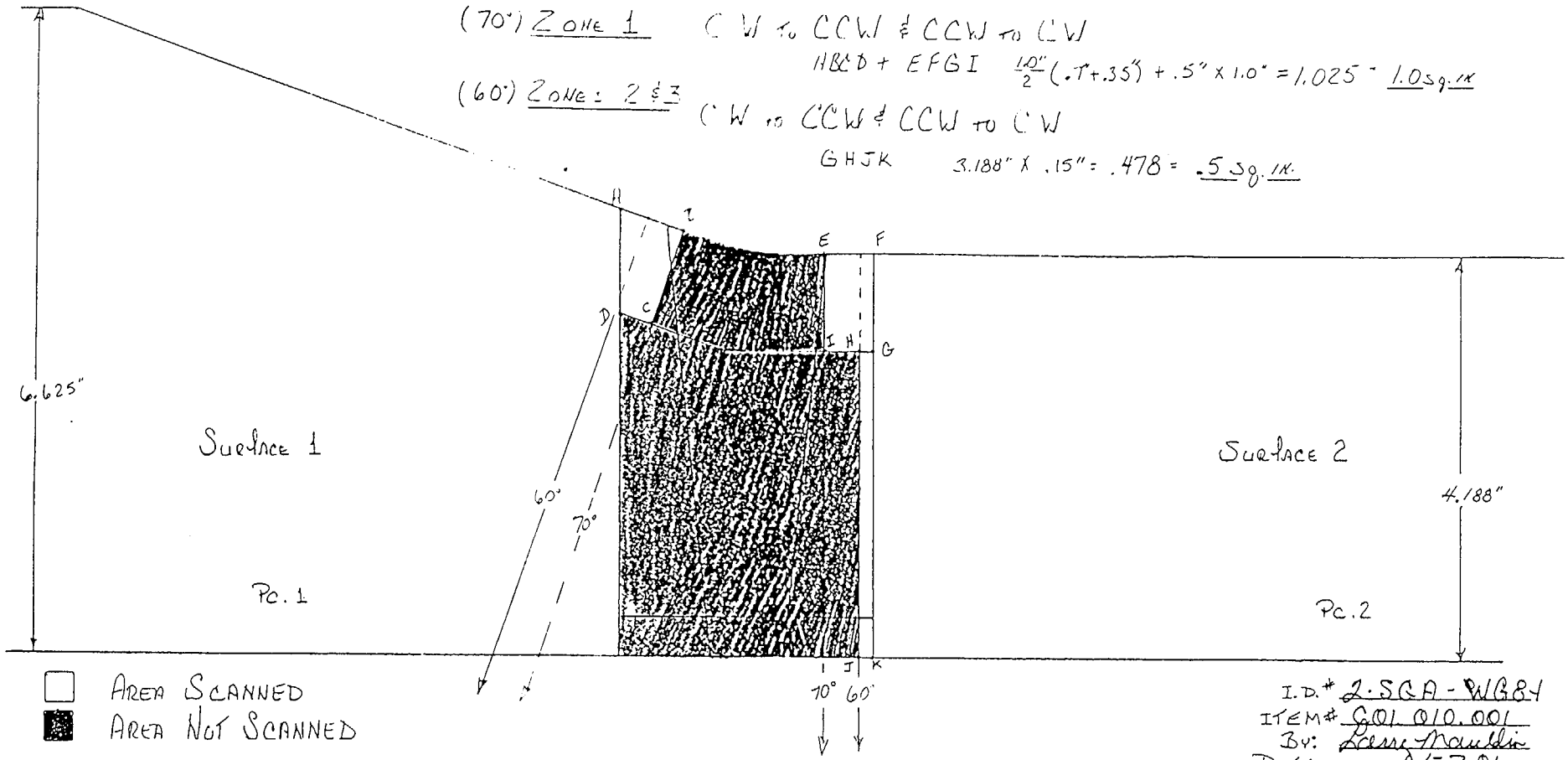
ANII Date
HSBI&I Co.

Oconee Steam Generator
Shell to Shell

Coverage

(70°) Zone 1 CW to CCW & CCW to CW
H&D + EFGI $\frac{1.0"}{2}(.7+.35") + .5" \times 1.0" = 1.025"$ 1.0 Sq. In.

(60°) Zone: 2 & 3 CW to CCW & CCW to CW
GHJK $3.188" \times .15" = .478 =$ .5 Sq. In.



I.D.# 2-SGA-WG84
ITEM# C01.010.001
By: Larry Mauldin
Date 5-7-01
Pg. 8 of 8

ANII ~~2004~~ Date 5-16
HSBI&I Co.

Attachment C
Request for Relief 01-011
Page 26 of 49

Form NDE-620
Revision 0

DUKE POWER COMPANY
ULTRASONIC DATA SHEET FOR PLANAR REFLECTORS IN FERRITIC PRESSURE VESSELS

Station: OCONEE	Unit: II	Component/Weld ID: 2-SGA-WG60	Date: 05/16/01
Weld Length (in.): 480.0	Surface Condition: As Ground	L0 "X" Axis	Exam Start: 0946	Exam Finish: 1020

Procedure No:	Scans	Configuration		Calibration Sheet No:
NDE-620 Revision: 8 FC 00-007	70° 58.0 dB Zone I 60° ___ dB Zone II 60° ___ dB Zone III Axial 60° ___ dB Zone III Circ.	CIRC. WELD Scan Surface: OD	Surface Temp. 70 °F Pyrometer s/n: MGNDE27008 Cal. Due Date: 8/20/01	0102089

Indication #	∠	MP_{max}	% FSH	L_{max}	W_{max}	SU LOCATION	BEAM DIRECTION	SCAN ⊥ ∥	REMARKS
NRI	70°								

> 90% Coverage obtained: yes ☐ no ☒ (see NDE-UT-4) Limitation report is required

Examiner: Marion T. Weaver Level: II Date: 5-16-01 Examiner: [signature] Level: II Date: 5-16-01 Item No: C01.030.001

Reviewed by: Gary J. Moss Level: II Date: 5-20-01 Authorized Inspector: [signature] Date: MAY 29 2001

Attachment C
Request for Relief 01-011
Page 27 of 49

Form NDE-620
Revision 0

DUKE POWER COMPANY
ULTRASONIC DATA SHEET FOR PLANAR REFLECTORS IN FERRITIC PRESSURE VESSELS

Station: OCONEE	Unit: II	Component/Weld ID: 2-SGA-WG60	Date: 05/16/01

Weld Length (in.): 480.0	Surface Condition: As Ground	Lo "X" Axis	Exam Start: 0954	Exam Finish: 1035

Procedure No:	Scans	Configuration		Calibration Sheet No:
NDE-620 Revision: 8 FC 00-007	70° ___ dB Zone I 60° 68.0 dB Zone II 60° 72.5 dB Zone III Axial 60° 72.5 dB Zone III Circ.	CIRC. WELD Scan Surface: OD	Surface Temp. 70 °F Pyrometer s/n: MCNDE27008 Cal. Due Date: 8/20/01	0102090 0102091

Indication #	∠	MP_{max}	% FSH	L_{max}	W_{max}	SU LOCATION	BEAM DIRECTION	SCAN ⊥ =	REMARKS
1	60	6.8	40	34'-8"	7.25"	S2	S1	AX	

> 90% Coverage obtained: yes ☐ no ■ (see NDE-UT-4) Limitation report is required

Item No: C01.030.001

Examiner: [signature] Level: II Date: 5-16-01 Examiner: [signature] Level: II Date: 5/16/01

Reviewed by: [signature] Level: III Date: 5-20-01 Authorized Inspector: [signature] Date: MAY 29 2001

Attachment C
Request for Relief 01-011
Page 28 of 49

DUKE POWER COMPANY

Ultrasonic Data Sheet for Planar Flaw Sizing

Exam Start: 1430			Form NDE-UT-670B
Exam Finish: 1500			Revision 1
Station: Oconee	Unit: 2	Date: 5/16/01	Item No: C01.030.001
Measured Wall Thickness: 6.625 in.	Material Type: CS		Component/Weld ID: 2-SGA-WG60
Surface Condition: FLUSH	L max: 34' - 8" (from exam data sheet)		Pyrometer S/N: MCNDE 27205
Examiner: Jay A. Eaton Level: II	Configuration: Tubesheet to Shell		Cal. Due Date: 7/18/01
Examiner: Gayle E. Houser Level: II			Surface Temp: 74 ° F
Procedure: PDI-UT-7 Rev: D FC: 2/A	Calibration Sheet No: 0102098		

Ind.#	4	30-70-70	PATT	M-PATT	HALT	Full-V 45 °	Reported Thru-Wall	Exam Surface	Beam Direction
1	45°		YES				0.5	S2	S1

Remarks:
SEE ATTACHED CALCULATIONS

Sheet 3 of 18

Reviewed By:	Level:	Date:	Authorized Inspector:	Date:
Gary Moss	II	5-20-01		MAY 2 9 2001

Attachment C
Request for Relief 01-011
Page 29 of 49

DUKE POWER COMPANY

FORM NDE-UT-670A

ULTRASONIC CALIBRATION SHEET FOR PLANAR FLAW SIZING

Revision 3

Station: Oconee	Unit: 2	Date: 5/16/01	Sheet Number: 0102098
Procedure: PDI-UT-7	Rev: D FC N/A	Couplant: ULTRAGEL II	Batch No: 00325
Examiner: Jay A. Eaton	Level: II	Calibration Block ID: 50470	Pyrometer S/N: MCNDE 27205
Examiner: Gayle E. Houser	Level: II	Calibration Block Temp: 72° deg F	Cal. Due Date: 7/18/01

REFERENCE BLOCK

ID: 97-5589
Type: ROMPAS
Mat'l: CS

INSTRUMENT

☐ Staveley ☒ Krautkramer
Model: USK-7D
S/N: 32810-4022

SEARCH UNIT

Type: Single ☒ Dual ☐
Size: .500 Freq: 2.25 Mhz
Manufacturer: KBA
S/N: 0085LN
Angle: 45° Wedge: MSW-QC

SIMULATOR BLOCK

ID: 97-5589
Reflector Type: SDH
CE-2: N/A Div's
Depth: .75 in.

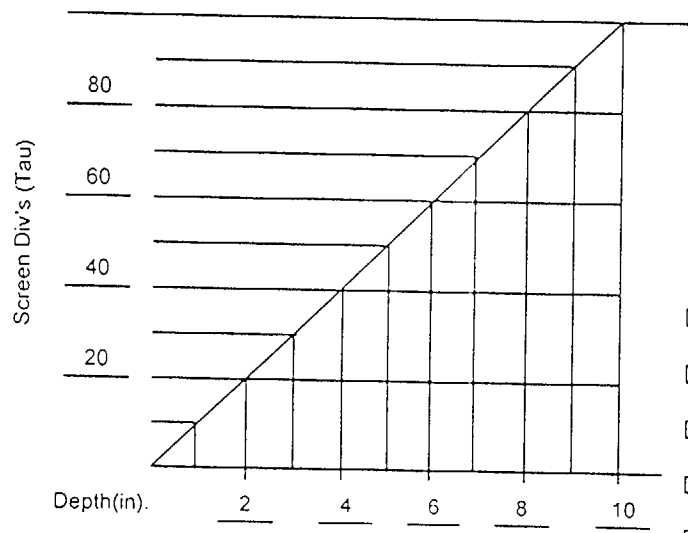
INSTRUMENT SETTINGS

Jack: T ☐ R ☒

Range	14.1
Delay	5.6
Vel	128.3
Units	IN
Gain	60
Display	FULL
Freq	1-5
Rej	OFF
Pulse	HIGH
Damping	N/A
PRF/PRR	HIGH
Pulser	HIGH

Pulse/Echo ☒ Dual ☐

CALIBRATION



Wave Mode
Shear ☒
Long. ☐
Bi-Modal ☐

☒ PATT
☐ M-PATT
☐ HALT
☐ 30-70-70 CE-2 ____ Div's
☐ 45° Full V ____ "Mp

CABLES

RG58 ☐
RG174 ☒
# of connectors 0
Length: 6'

INITIAL CAL

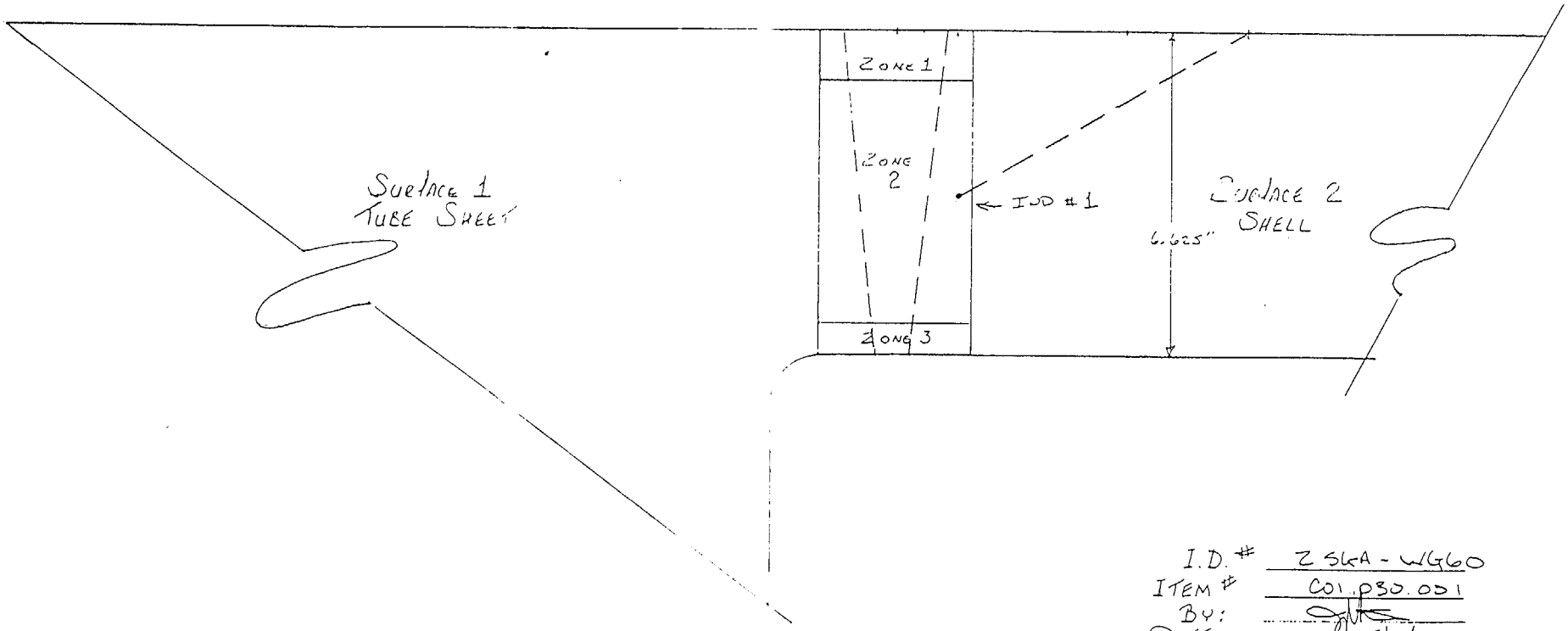
TIME	INITIALS
1400	

CAL CHECKS

1430	
1500	

Reviewed By: Gary J. Moss Level: II Date: 5-20-01 Authorized Inspector: Date: MAY 29 2001

STEAM GENERATOR
UPPER TUBE SHEET TO SHELL



I.D. # Z 5LA - WG60
ITEM # C01.030.001
BY:
DATE 5/14/01

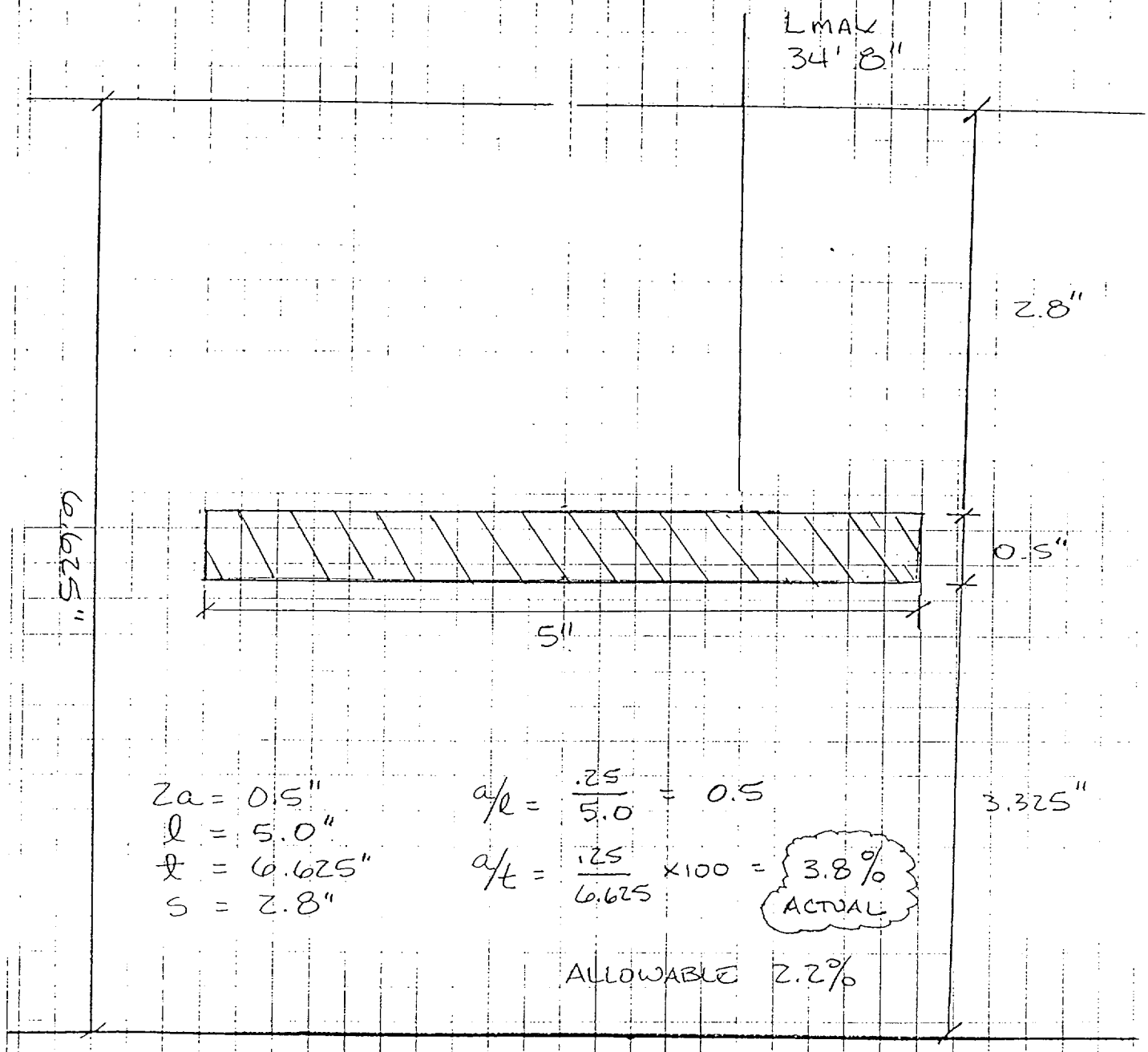
PG. 5 of 18

ANII Date 5/14
HSBI&I Co.

Station OCONEE Unit 2 Rev. File No. Sheet 6 Of 18

Subject ITEM # C01.030.001
WELD # 2-SGA-WG60 By Date 5/16/01

Prob No. INDICATION # 1 Checked By Larry Maulden Date 5-16-01



$2a = 0.5"$
$\ell = 5.0"$
$t = 6.625"$
$s = 2.8"$

$a/\ell = \frac{.25}{5.0} = 0.5$

$a/t = \frac{.25}{6.625} \times 100 = 3.8\%$ ACTUAL

ALLOWABLE 2.2%

$s < .4d$
$2.8 < .4(.25)$
$2.8 > 0.1$ so SUBSURFACE

$Y = s/a = \frac{2.8}{.25} = 11.2 = 1$

ANII Date 5-01
HSBI&I Co.

Attachment C
Request for Relief 01-011
Page 32 of 49

DUKE POWER COMPANY ULTRASONIC INDICATION RESOLUTION SHEET	Form NDE-UT-8 Revision 1

Acceptance Standard:

INDICATION #1 - 60° IS A SUBSURFACE INDICATION WITH AN a/t RATIO OF 3.8%. THE CODE ALLOWS 2.2%. THIS INDICATION IS REPORTABLE PER ACCEPTANCE STANDARD: 1WB-3510-1. SEE THE ATTACHED CALCULATION SHEET. FORM QA 516A HAS BEEN ISSUED FOR EVALUATION. SEE PIP 0-01-01857.

Item No: C01.030.001

Acceptable Indications: REPORTABLE - IND. #1 - 60°

Rejectable Indications:

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

Examiner: Jay A. Eaton	Level: II	Date: 5/16/01	[redacted]	Sheet 7 of 18
Reviewer: Larry Rawlins	Level: III	Date: 5-16-01	Authorized Inspector:	Date: MAY 29 2001

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2-SGA-WG60 | Item No: C01.030.001 | Remarks:

	SURFACE	BEAM DIRECTION		Remarks
☐ NO SCAN ☒ LIMITED SCAN	☐ 1 ☒ 2	☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 36.0" to L 44.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____ DEG	SUPPORT HANGER
☐ NO SCAN ☒ LIMITED SCAN	☐ 1 ☒ 2	☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 76.0" to L 84.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____ DEG	SUPPORT HANGER
☐ NO SCAN ☒ LIMITED SCAN	☐ 1 ☒ 2	☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 116.0" to L 124.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____ DEG	SUPPORT HANGER
☐ NO SCAN ☒ LIMITED SCAN	☐ 1 ☒ 2	☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 144.0" to L 152.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____	SUPPORT HANGER

Prepared By: Larry Maulden Level: III Date: 5-16-01 | Sketch(s) attached ☒ yes ☐ no | Sheet 8 of 18

Reviewed By: Gary Moss Date: 5.20.01 | Authorized Inspector [signature] Date: MAY 29 2001

Attachment C
Request for Relief 01-011
Page 34 of 49

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2-SGA-WG60 | Item No: C01.030.001 | Remarks:

☐ NO SCAN ☒ LIMITED SCAN	SURFACE ☐ 1 ☒ 2	BEAM DIRECTION ☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 196.0" to L 204.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____ DEG	SUPPORT HANGER
☐ NO SCAN ☒ LIMITED SCAN	SURFACE ☐ 1 ☒ 2	BEAM DIRECTION ☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 276.0" to L 284.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____ DEG	SUPPORT HANGER
☐ NO SCAN ☒ LIMITED SCAN	SURFACE ☐ 1 ☒ 2	BEAM DIRECTION ☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 236.0" to L 244.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____ DEG	SUPPORT HANGER
☐ NO SCAN ☒ LIMITED SCAN	SURFACE ☐ 1 ☒ 2	BEAM DIRECTION ☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 316.0" to L 324.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other _____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____	SUPPORT HANGER

Prepared By: Larry Maulden Level: III Date: 5-16-01 | Sketch(s) attached ☒ yes ☐ no | Sheet 9 of 18

Reviewed By: Larry Moss Date: 5-20-01 | Authorized Inspector: [signature] Date: MAY 29 2001

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2-SGA-WG60 | Item No C01.030.001 | Remarks:

☐ NO SCAN ☒ LIMITED SCAN	SURFACE ☐ 1 ☒ 2	BEAM DIRECTION ☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 356.0" to L 364.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other ____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____ DEG	SUPPORT HANGER
☐ NO SCAN ☒ LIMITED SCAN	SURFACE ☐ 1 ☒ 2	BEAM DIRECTION ☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 396.0" to L 404.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other ____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____ DEG	SUPPORT HANGER
☐ NO SCAN ☒ LIMITED SCAN	SURFACE ☐ 1 ☒ 2	BEAM DIRECTION ☒ 1 ☐ 2 ☐ cw ☐ ccw	FROM L 468.0" to L 472.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other ____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____ DEG	SUPPORT HANGER
☐ NO SCAN ☒ LIMITED SCAN	SURFACE ☐ 1 ☒ 2	BEAM DIRECTION ☐ 1 ☒ 2 ☐ cw ☐ ccw	FROM L 444.0" to L 12.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other ____	INCHES FROM WO 9.0" to 16.0" FROM ____ DEG to ____	SUPPORT PAD (48" IN LENGTH)

Prepared By: Larry Mauldin Level: III Date: 5-16-01 | Sketch(s) attached ☒ yes ☐ no | Sheet 10 of 18

Reviewed By: Gary Moss Date: 5-20-01 | Authorized Inspector: [signature] Date: MAY 29 2001

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2-SGA-WG60 | Item No C01.030.001 | Remarks:

	SURFACE	BEAM DIRECTION		Remarks
☒ NO SCAN ☐ LIMITED SCAN	☒ 1 ☐ 2	☐ 1 ☒ 2 ☐ cw ☐ ccw	FROM L 54.0" to L 102.0"	INCHES FROM WO 9.0" to 16.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other 70° FROM ____ DEG to ____ DEG	SUPPORT PAD
☒ NO SCAN ☐ LIMITED SCAN	☒ 1 ☐ 2	☐ 1 ☒ 2 ☐ cw ☐ ccw	FROM L 166.0" to L 214.0"	INCHES FROM WO 9.0" to 16.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other 70° FROM ____ DEG to ____ DEG	SUPPORT PAD
☒ NO SCAN ☐ LIMITED SCAN	☒ 1 ☐ 2	☐ 1 ☒ 2 ☐ cw ☐ ccw	FROM L 261.0" to L 309.0"	INCHES FROM WO 9.0" to 16.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other 70° FROM ____ DEG to ____ DEG	SUPPORT PAD
☒ NO SCAN ☐ LIMITED SCAN	☒ 1 ☐ 2	☐ 1 ☒ 2 ☐ cw ☐ ccw	FROM L 356.0" to L 404.0"	INCHES FROM WO 9.0" to 16.0" ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other 70° FROM ____ DEG to ____	SUPPORT PAD

Prepared By: Larry Maulden Level: III Date 5-16-01 | Sketch(s) attached ☒ yes ☐ no | Sheet 11 of 18

Reviewed By: Gary J. Moss Date: 5-20-01 | Authorized Inspector: C. T. Date MAY 29 2001

12 of 18

DUKE POWER COMPANY

Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

Examination Volume/Area Defined

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

Area Calculation	Volume Calculation
SEE DRWG. ZONES 2 & 3 17.7 SQ. IN.	17.7 SQ. IN. X 433.5 IN. = 7672.95 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	11.8	88	1038.4	1557.6	66 67
1	60	1	17.5	240	4200	4248	98 87
1	60	1	17.7	105.5	1867.35	1867.35	100.00
2	60	2	17.7	193.5	3424.95	3424.95	100.00
2	60	2	0.0	240	0	4248	0.00
3	60	CW	2.5	433.5	1083.75	7672.95	14.12
3	60	CW	2.5	433.5	1083.75	7672.95	14.12
					12698.2	30731.8	41.32

Item No: C01.030.001

Prepared By: Larry Maulden Level: III Date: 5-16-01

Reviewed By: Gary J Moss Level: II Date: 5-20-01

ANII [illegible] Date [illegible]
HSBI&I Co.

13 of 18

DUKE POWER COMPANY

Limited Examination Coverage Worksheet

NDE-91-1

Revision 0

Examination Volume/Area Defined

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

Area Calculation	Volume Calculation
SEE DRWG. ZONE 1 - 3.2 SQ. IN.	ZONE 1 - 3.2 SQ. IN. X 433.5 IN. = 1387.2 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	70	1	3 2	193.5	619.2	619.2	100.00
1	70	1	2 3	240	552	768	71.88
2	70	2	3 2	193 5	619 2	619 2	100 00
2	70	2	.1	240	24	768	3.13
3	70	CW	.9	433.5	390.15	1387.2	28.12
4	70	CCW	.9	433.5	390.15	1387.2	28.12
					2594.7	5548.8	46.76

Item No: C01.030.001

Prepared By: Larry Maulden Level: III Date: 5-16-01

Reviewed By: Gary J Moss Level: III Date: 5-20-01

ANII [illegible] Date 5/19
HSBI&I Co.

14 of 18

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

Examination Volume/Area Defined

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

Area Calculation	Volume Calculation

Coverage Calculations

Scan #	Angle	Beam Direction	Area Examined (sq in.)	Length Examined (in)	Volume Examined (cu.in.)	Volume Required (cu in.)	Percent Coverage
	70				2594.7	5548.8	46 76
	60				12698.2	30731 8	41 32
					15292 9	36280 6	42 15

Item No: C01.030.001		
Prepared By: Larry Maulden	Level: III	Date: 5-16-01
Reviewed By: Gary Moss	Level: II	Date: 5-20-01

ANII [illegible] Date 5/21
HSBI&I Co.

OCONEE STEAM GENERATOR
UPPER TUBE SHEET TO SHELL

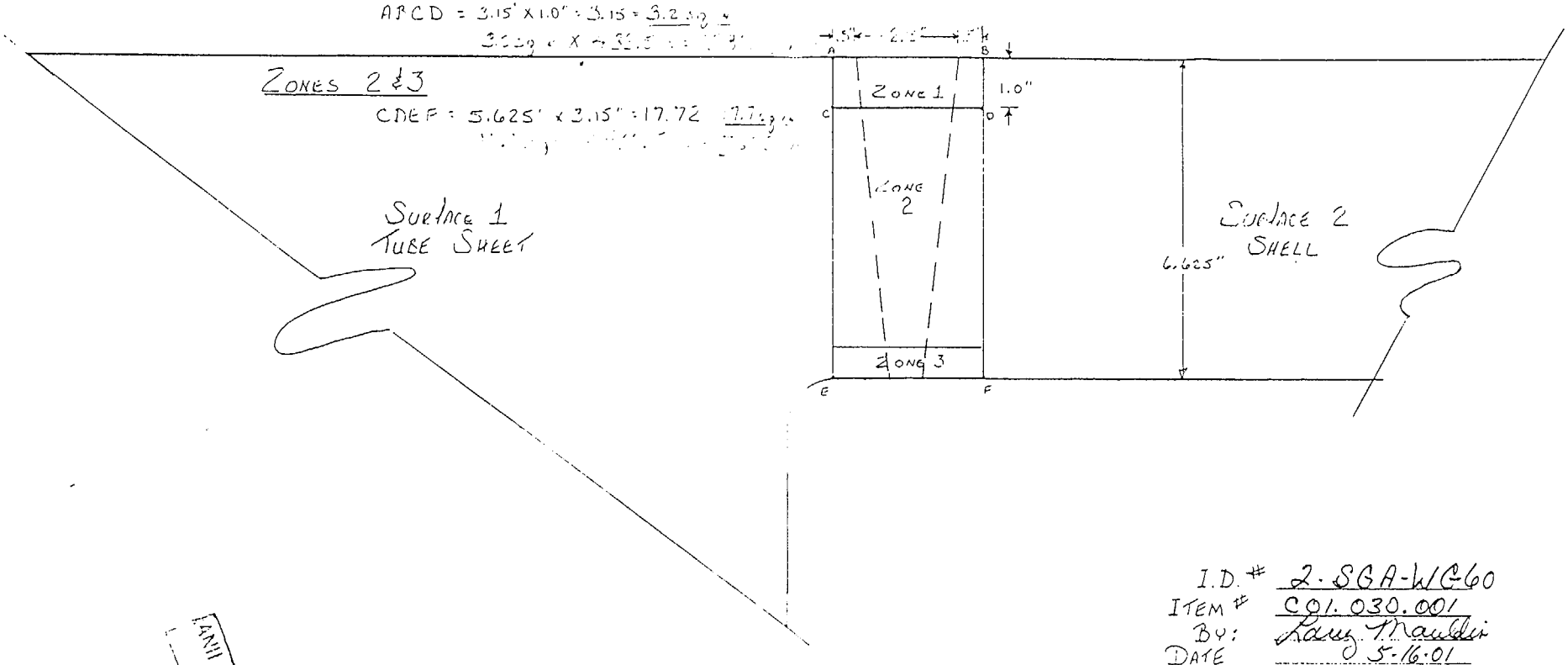
AREA OF ZONE 1:

ZONE 1

ABCD = 3.15" X 1.0" = 3.15 = 3.2 sq in

ZONES 2 & 3

CDEF = 5.625" x 3.15" = 17.72 sq in



I.D. # 2-SGA-WG-60
ITEM # C01.030.001
BY: Larry Mauldin
DATE 05-16-01

PG. 15 OF 18

FANNI HSB&I Co. Date 5/24

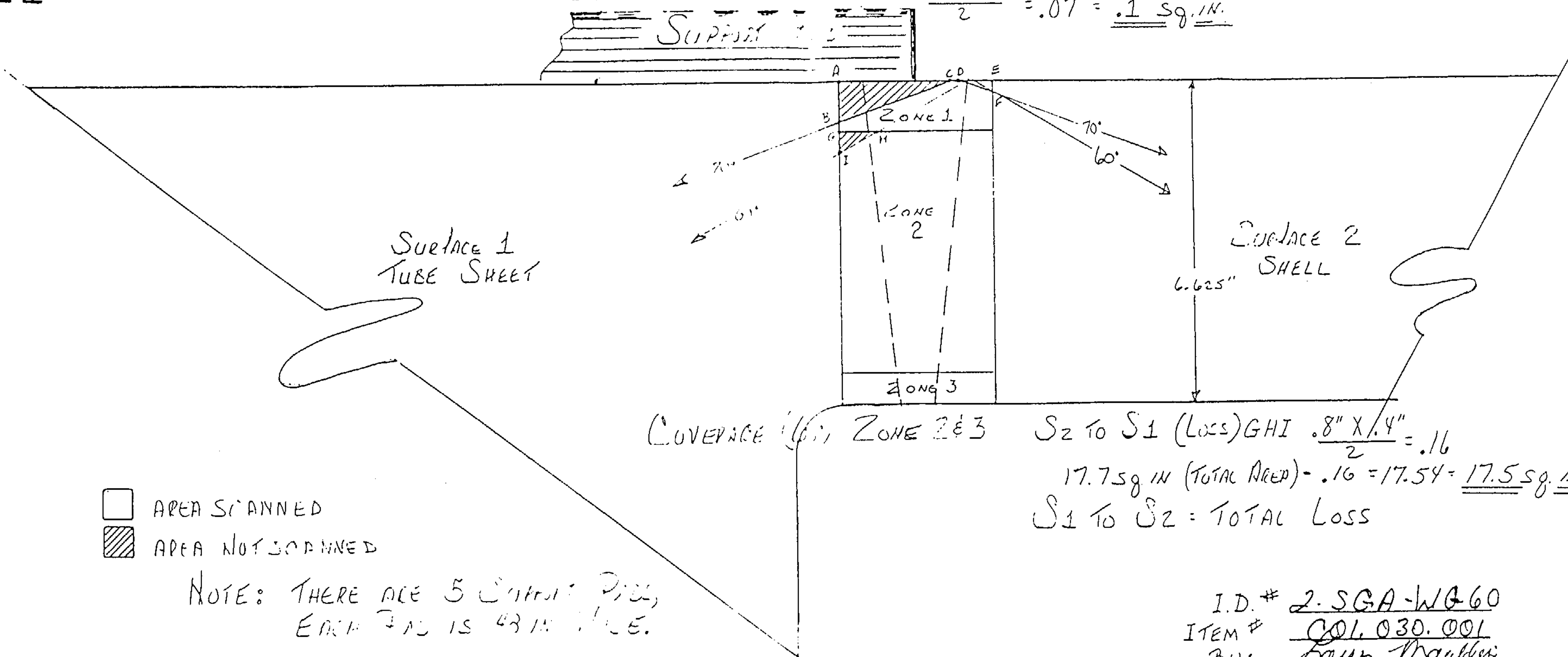
Oconee Steam Generator

Upper Tube Sheet to Shell

Limited Scan Due to Support Pads

Coverage (70°) Zone 1: S2 to S1 (Loss) ABC = $\frac{2.25" \times .8"}{2}$ = .9   3.2 sq.in (Total Area) - .9 sq.in (Loss) = 2.3 sq.in.

S1 to S2   DEF = $\frac{.7" \times .2"}{2}$ = .07 = .1 sq.in.



Coverage (60°) Zone 2 & 3   S2 to S1 (Loss) GHI $\frac{.8" \times .4"}{2}$ = .16

17.7 sq.in (Total Area) - .16 = 17.54 = 17.5 sq.in

S1 to S2 = Total Loss

☐ Area Scanned

▨ Area Not Scanned

Note: There are 5 Support Pads, Each Pad is 43 in. [illegible]

I.D. # 2-SGA-WG60
Item # C01.030.001
By: [signature]
Date 5-16-01

Pg. 16 of 18

ANII [initials] Date 5/22
HSBI&I Co.

OCONEE STEAM GENERATOR

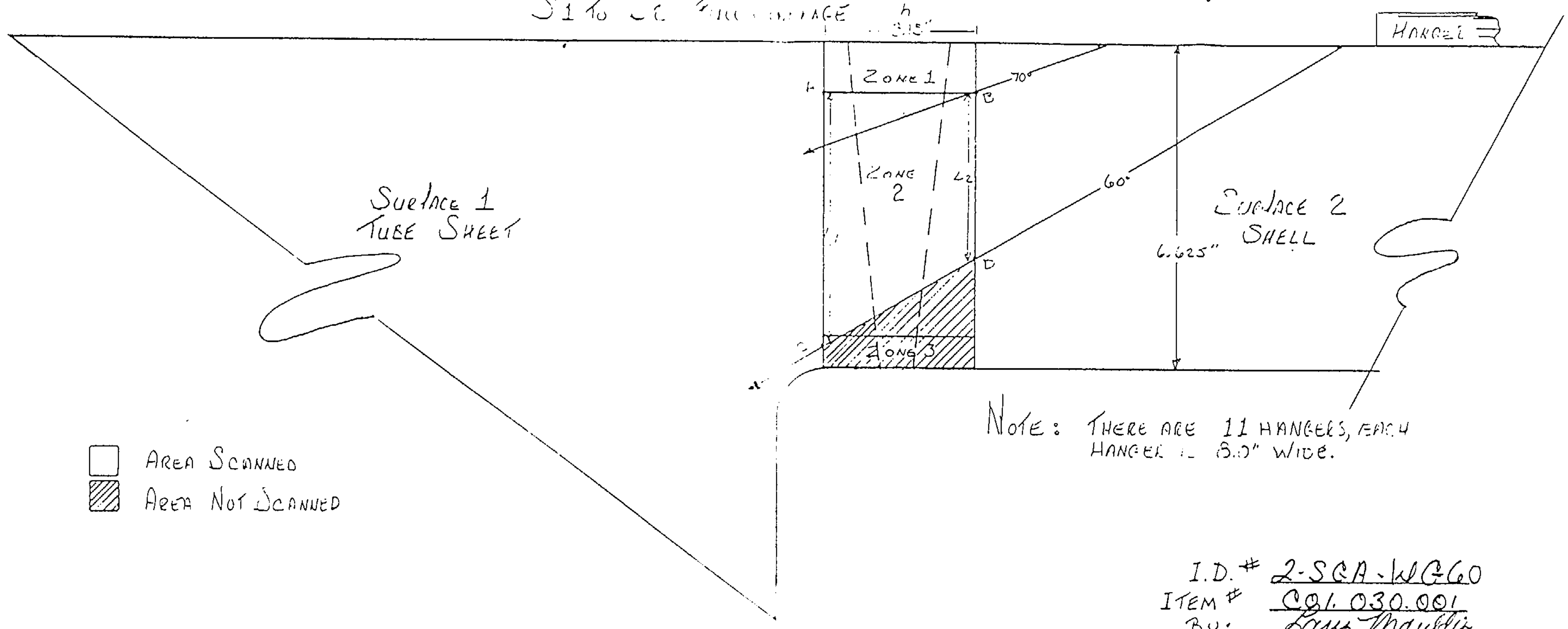
UPPER TUBE SHEET TO SHELL

LIMITED [illegible]

COVERAGE (70°) ZONE 1: [illegible] FULL COVERAGE

(60°) ZONE 2 & 3: [illegible] $\frac{h}{2}(L_1+L_2) = \frac{3.15}{2}(4.1+3.4) = 11.8$ sq. in.

S1 TO S2 [illegible]



NOTE: THERE ARE 11 HANGERS, EACH HANGER IS 8.0" WIDE.

I.D. # 2-SGA-WG60
ITEM # C01.030.001
BY: Larry Mauldin
DATE 5-16-01

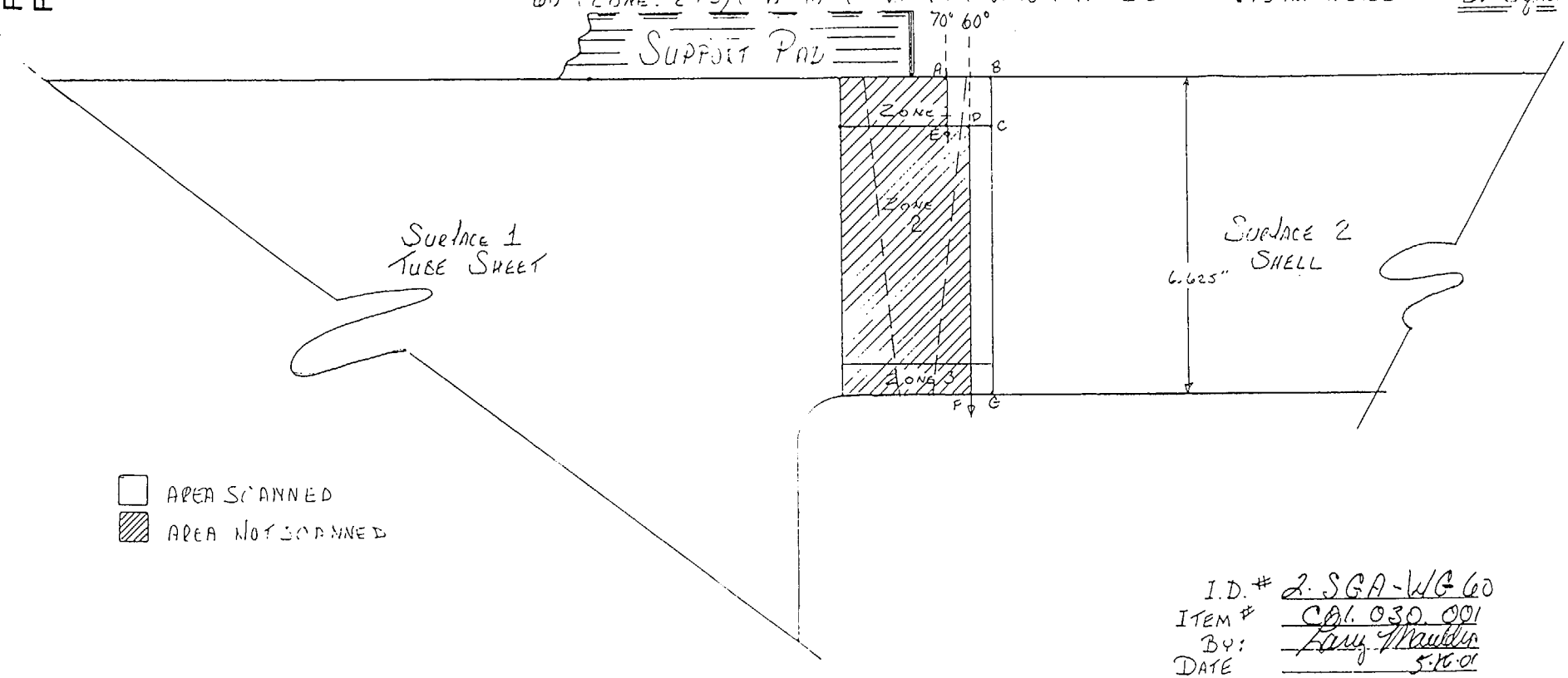
ANII [signature] Date 5/21
HSBI&I Co.

Oconee Steam Generator

Upper Tube Sheet to Shell

Limited Coverage Due to Support Pad

Coverage 70° (Zone 1) CW to CW & CW to CW AREA = .9 in. x 1 in. = .9 sq in
60° (Zone 2&3) CW to CW & CW to CW CEFC = .45 in. x 5.625 in. = 2.5 sq in



I.D. # 2.SGA-WG-60
Item # C01.030.001
By: Larry Mauldin
Date 5.16.01

Pg. 18 of 18

ANII Date HSB I&I Co.

Oconee Unit #2
EOC18
NO DATA

CALIBRATION SHEET # 0102005 – 45° & 60°
0102011 – 60° L
#
COMPONENT I.D.# 2HP-341-V1
ITEM # C05.021.044

ANII [illegible] Date 5-7
HSBI&I Co.

Attachment C
Request for Relief 01-011
Page 45 of 49

DUKE POWER COMPANY
ULTRASONIC EXAMINATION DATA SHEET FOR LAMINAR REFLECTORS

Exam Start: 1408			NDE-UT-3A
Exam Finish: 1411			Revision 2
Station: Oconee	Unit: 2	Component/Weld ID: 2HP-341-V1	Date: 1/30/01
Nominal Material Thickness (in): 0.375		Weld Length (in.): 9.03"	Surface Temperature: 82 Deg F
Measured Material Thickness (in): .323"		Lo: 9.1.1.1	Pyrometer S/N: MCNDE 27008
Surface Condition: AS GROUND		Calibration Sheet No: 0102006	Cal Due: 3/26/01
Examiner: James L. Panel James L Panel	Level: II		Configuration: Valve (Valve 2HP-V23) to Reducer
Examiner: David Zimmerman David K Zimmerman	Level: II		PIPE Flow VALVE
Procedure: NDE-640	Rev: 1 FC: *		S2 to S1

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: 2-1-01

Authorized Inspector: S. Hamm Date: 5-7-01

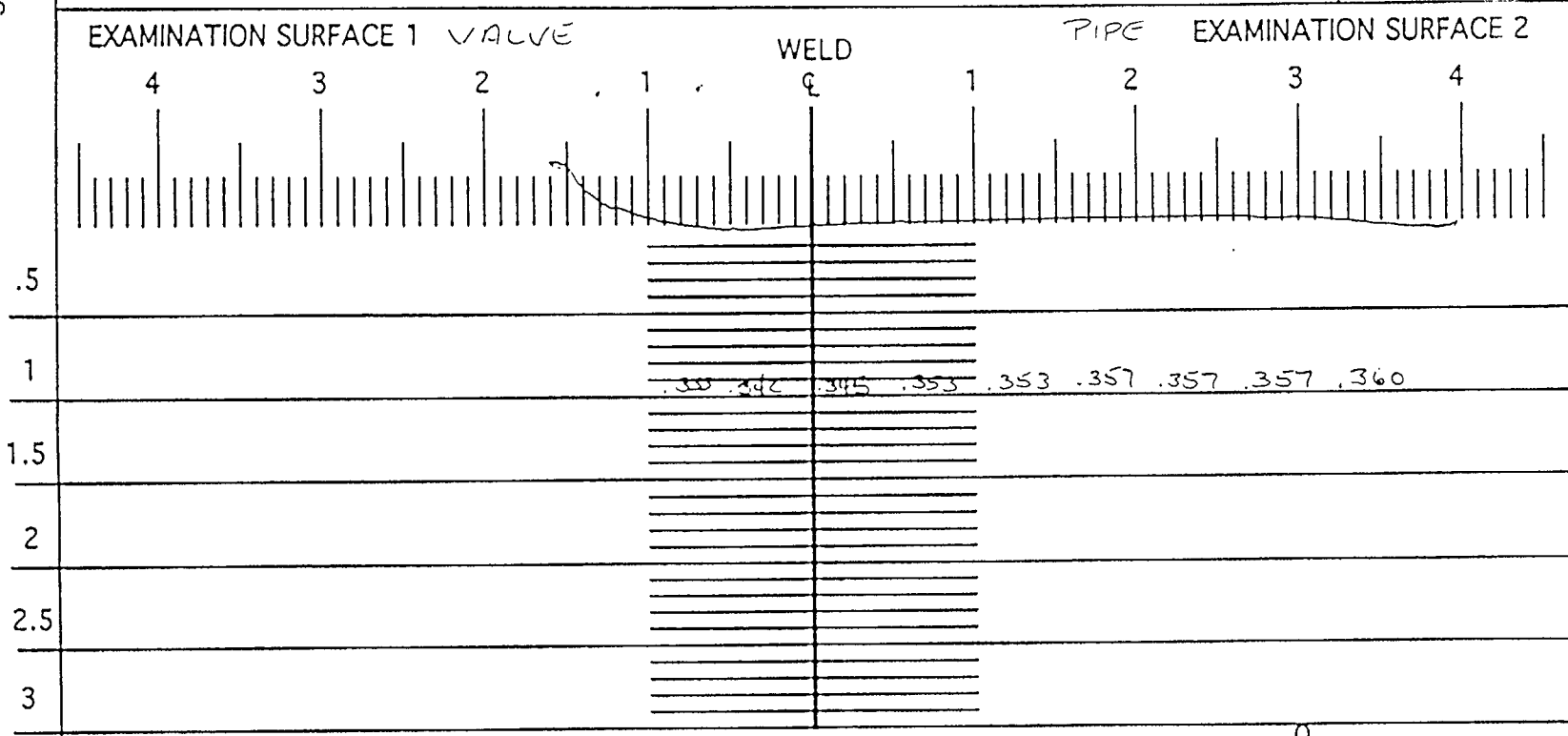
Item No: C05.021.044

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT-

Revision

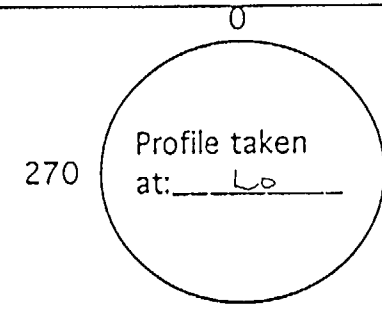


Component ID/Weld No. 2HP-341-V1

: Remarks:

Item No: C05.021.044

Examiner: David K. B	Level: II	Date: 01/30/01
Reviewed By: Sam R Moore	Level: II	Date: 2.1.01
Authorized Inspector: S. Fowler		Date: 5-7-01



Sheet 3 of 6

DUKE POWER COMPANY
ISI LIMITATION REPORT

FORM NDE-UT-4
Revision 1

Component/Weld ID: 2HP-341-V1 Item No: C05.021.044

Remarks:

Scan	Surface	Beam Direction	Remarks
☒ NO SCAN ☐ LIMITED SCAN	☒ 1 ☐ 2	☐ 1 ☒ 2 ☐ cw ☐ ccw	DUE TO VALVE CONFIGURATIION
FROM L N/A to L N/A		INCHES FROM WO CL to BEYOND	
ANGLE: ☐ 0 ☐ 45 ☒ 60 ☐ Other ____		FROM 0 DEG to 360 DEG	
☐ NO SCAN ☐ LIMITED SCAN	☐ 1 ☐ 2	☐ 1 ☐ 2 ☐ cw ☐ ccw	
FROM L ____ to L ____		INCHES FROM WO ____ to ____	
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ____		FROM ____ DEG to ____ DEG	
☐ NO SCAN ☐ LIMITED SCAN	☐ 1 ☐ 2	☐ 1 ☐ 2 ☐ cw ☐ ccw	
FROM L ____ to L ____		INCHES FROM WO ____ to ____	
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ____		FROM ____ DEG to ____ DEG	
☐ NO SCAN ☐ LIMITED SCAN	☐ 1 ☐ 2	☐ 1 ☐ 2 ☐ cw ☐ ccw	
FROM L ____ to L ____		INCHES FROM WO ____ to ____	
ANGLE: ☐ 0 ☐ 45 ☐ 60 ☐ Other ____		FROM ____ DEG to ____	

Prepared By: David K. Zimmerman *[signature]* Level: II Date: 1/30/01 Sketch(s) attached ☒ yes ☐ no Sheet 4 of 6

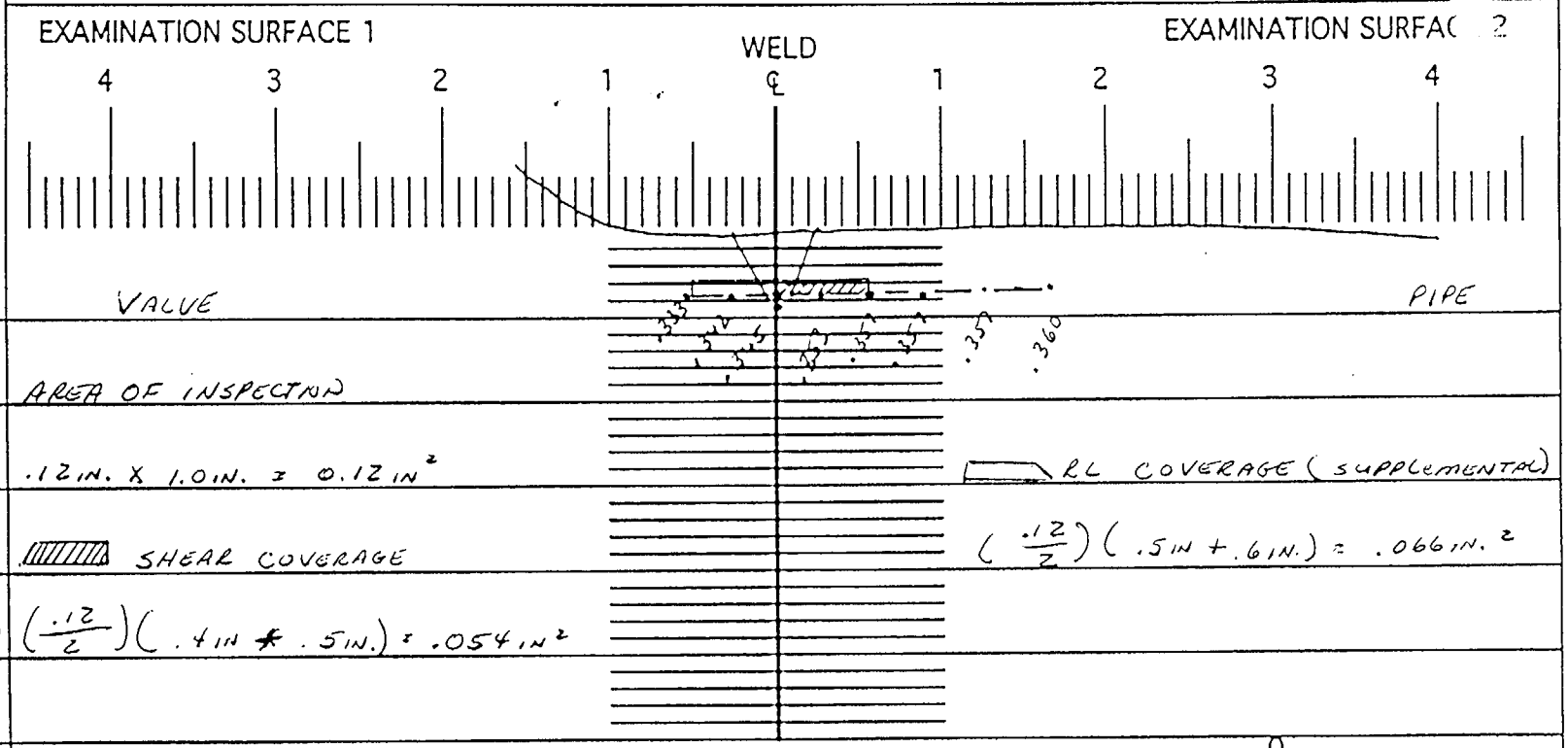
Reviewed By: *Gary Moss* Date: 2-1-01 Authorized Inspector: *[signature]* Date: 5-7-01

DUKE POWER COMPANY

UT PROFILE/PLOT SHEET

NDE-UT

Revision

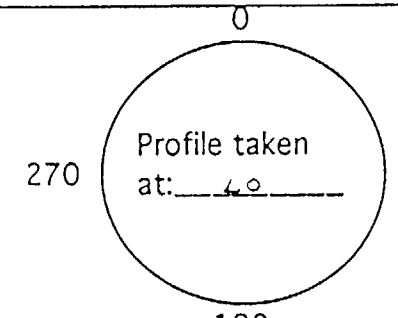


Component ID/Weld No. 2HP-341-V1

: Remarks:

Item No: C05.021.044

Examiner: James L Payne	Level: II	Date: 1/30/01
Reviewed By: Larry Maulden	Level: III	Date: 2-1-01
Authorized Inspector: S. Hamrick		Date: 5-7-01



Sheet 5 of 6

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

SHEET 6 OF 7

Examination Volume/Area Defined

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

Area Calculation	Volume Calculation
.12 in. X 1.0 in. = 0.12 sq.in.	0.12 sq.in. X 9.03 in. = 1.08 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	054	9 03	0 49	1 08	
2	60°	2	0	9 03	0	1 08	
3	45°	CW	.12	9 03	1.08	1.08	
4	45°	CCW	.12	0.03	1.08	1.08	
		Shear Wave	Aggregate	Coverage	2.65	4.32	61.34
	60°L	Supplemental	Coverage				0.00
1	60°L	1	.066	9.03	0.6	1.08	55.56
							0.00

Shear Wave Aggregate Coverage = 61.34%
Supplemental Coverage = 55.56% of 1 Scan (25%) = 13.89% of Total Weld

Item No: C05.021.044			
Prepared By: David K. Zimmerman	Level: II		Date: 1/30/01
Reviewed By: Larry Maulden	Level: III		Date: 2-1-01

ANII ~~Date~~ Date 5-7
HSBI&I Co.

Problem Investigation Process
Oconee Nuclear Station

PIP Serial No:	Action Category:	LER No:	Other Report:
O-00-03186	4		

Problem Identification

Discovered Time/Date: 07:42 08/31/2000 **Occurred Time/Date:** 13:00

Unit(s) Affected:

Unit	Mode	%Power	Unit Status Remarks
2	1		

System(s) Affected:

PR Purge

Affected Equipment

(No Equipment Affected)

Location of Problem:

Bldg: Column Line: Elev:

Location Remarks:

Method Used to Discover Problem:

Brief Problem Description:
EQUIPMENT SUPPORT DISCREPANCIES

Detail Problem Description:

Operability Assessment:

The unit 2 filter # PR-FL-000A was inspected by P.H.Patel and Andy Wells of CEN/Civil on 8/31/00. The equipment is supported on 10 legs with a total of 20- ¾" self drilled anchors. All anchors cannot be rotated by hand. However, five anchors have gaps between bolt head and washer varying from visual to about 1/16" and two bolts have this gap about 1/8" to ¼". There is a base plate that has a gap about ½" between concrete floor and the plate. Shims are installed at this base plate. The base plates have oversized holes. However, the drawing OM-201-0571 call for oversized 1-1/16" holes for ¾" bolts. An inspection of other filter 2B and identical filters in units 1 and 3 have somewhat identical discrepancies. In addition, some bolts are missing for filfer 1A and 3B in units 1 and 3 respectively. The Calculation OSC-1881 qualifies these equipments where the bolts are missing. The minimum factor of safety of anchorage with four missing bolts is still more than 27 against 5 required. Based on calculated safety factors in existing analysis and engineering judgement it is felt that the anchor bolts will still meet design basis requirements. A work order to add shims and washers at anchor bolts should correct the problem.

Last Updated By: PHP4260: PATEL, PARSHOTTAM H Team: RAH8344 Group: CEN Date: 08/31/2000

THIS PIP IS BEING WRITTEN TO DOCUMENT A REQUEST FOR ENGINEERING EVALUATION AND INSPECTION/REPAIR FOR EQUIPMENT ITEM #PR-FL-000A (AMERICAN AIR FILTER , 6th FLOOR PURGE/VENTILATION ROOM, UNIT 2). BASE PLATES ARE NOT BEARING ON CONCRETE, HAVE OVERSIZED HOLES AND ARE NOT SHIMMED. ANCHORS HAVE STACKED WASHERS AND, IN SOME CASES, ARE LOOSE. SIMILAR DISCREPANCIES EXIST ON UNIT 1, BUT THESE ARE DOCUMENTED ON A QAL-14A FORM FOR IN-SERVICE INSPECTION FOR THE UPCOMING UNIT ONE OUTAGE.

Originated By: PSE1290: EBERHART, PATMAN S Team: GER8996 Group: WCG Date: 08/31/2000

Problem Investigation Process
Oconee Nuclear Station

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

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

Immediate Corrective Actions:

Immediate Corrective Action Documents / Work Orders:

	Indiv	Team	Group	Date
Problem Identified By:	PSE1290 GER8996	WCG		08/31/2000
Problem Entered By:	PSE1290 GER8996	WCG		08/31/2000

Screening

Is the Problem Significant? No Action Category: 4 Condition Adverse to Quality:

OEP No:

Other Report Nos:

Event Codes:

F3 Equipment Out of Norm

Screening Remarks:

This event has been reviewed by the CST and found not to meet the MSE significance criteria.

Screening members present for this review: Barry Loftis (ENG), Randy Todd (RGC), RD Burns (MNT & WCG), and Mike Pruitt (OPS).

Originated By: EHD8302: DUMMEYER, EDWARD H Team: RTB7310 Group: SRG Date: 08/31/2000

Assignments:

Responsible Groups(s) for Problem Evaluation: Responsible Group for Present Operability: N/A
Responsible Group for Past Operability: N/A
Responsible Group for Reportability: N/A
Responsible Group for Overall PIP Approval: WCG Work Control

Signature Type	Indiv	Team	Group	Date
Screened By:	EHD8302	RTB7310	SRG	08/31/2000

Present Operability

Responsible Group: Status:

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

Required Mode:

Comments:

No Current Signatures For This Section

Past Operability:

Responsible Group: Status:

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

Required Mode:

Comments:

No Current Signatures For This Section

Reportability

Responsible Group: Status:

Problem Reportable(Y,N,E):

Reportable Per:

Comments:

No Current Signatures For This Section

Investigation Report:

Responsible Group: Act Date:

Investigator: Group:

Due Date:
Date Due to VP or Sta. Mgr:
Date Regulatory or Agency Rpt Due:
Date Investigation Report Approved:

NRC Cause Codes:

Problem Evaluation

Event	Cause Code	Cause Description	Primary	Causing Groups

Problem Evaluation From: N/A

Corrective Actions

CA Seq. No: 1

Resp Group	Status	Orig Group	Event Code	Prop CAC	Cause Code
RES	Closed	RES	F3	B9	YYY

Proposed Corrective Action:

Per the operability assessment, "A work order to add shims and washers at anchor bolts should correct the problem." Therefore, this CA is initiated to document the origination of the required WR/WOs.

Originated By: SNS3927: SEVERANCE, SANDRA N Team: CAL7344 Group: CEN Date: 09/01/2000
Last Updated By: SNS3927: SEVERANCE, SANDRA N Team: CAL7344 Group: CEN Date: 09/15/2000

Signature Type	Indiv	Team	Group	Date
Approval Assigned To:	CAL7344	CAL7344	RES	09/01/2000
Ready For Approval:	SNS3927	CAL7344	RES	09/15/2000
Approved By:	SNS3927	CAL7344	RES	09/15/2000

General: Outage: INNAGE 71 Mode: N/A

Other Tracking Processes

Type	Number	Text
WO	98311831	Install washers and shims: 1-PEN-ROOM-FLTR-A.
WO	98336960	Install washers: 1-PR-FLTR-B.
WO	98337015	Install washers/shims: 2-PR-FLTR-A & B.
WO	98337079	Install washers/anchor: 3-PR-FL-A & B.

Actual Corrective Action:
Priority: I2d Actual CAC: B9 Status: Closed Due Date: 11/30/2000
Following work orders are originated to add shims/washers and/or missing bolts.

WO# 98311831 for 1-PR-FL-000A. (this WO was originated due to noted ISI inspection discrepancy)
WO# 98336960 for 1-PR-FL-000B.
WO# 98337015 for 2-PR-FL-000A and 000B.
WO# 98337079 for 3-PR-FL-000A and 000B.

Originated By: PHP4260: PATEL, PARSHOTTAM H Team: RAH8344 Group: CEN Date: 11/30/2000

Signature Type	Indiv	Team	Group	Date
Accepted By:	RAH8344	RAH8344	RES	09/18/2000
Assigned To:	PHP4260	RAH8344	RES	09/18/2000
Due Date:	11/30/2000			
Ready For Approval:	PHP4260	RAH8344	RES	11/30/2000
Approval Assigned To:	RAH8344	RAH8344	RES	11/30/2000
Approved By:	RAH8344	RAH8344	RES	11/30/2000

Final and Overall PIP Approval

Responsible Group: WCG Status: Closed

Signature Type	Indiv	Team	Group	Date
Assigned To:			WCG	08/31/2000
Approval Assigned To:	JNW8302	JNW8302	WCG	12/01/2000
Approved By:	JNW8302	JNW8302	WCG	02/14/2001

Any Supplemental Concurrence Signatures Above Do Not Affect PIP Closure.

Closure Document Type	Closure Document No

Attachments

Generic Applicability

Responsible Group: Status:
GO PIP No:

Assessment Remarks:
No Current Signatures For This Section

Failure Prevention Investigation

No FPI Records for this PIP.

Remarks

No Remarks for this PIP.

Maintenance Rule

No Maintenance Rule Records for this PIP.

End of the Document for PIP No: O-0-3186
The status of this PIP is: Closed
The duration of this PIP was: 167 days

Problem Investigation Process
Oconee Nuclear Station

PIP Serial No:	Action Category:	LER No:	Other Report:
O-01-01475	3		

Problem Identification

Discovered Time/Date: 09:00 04/30/2001 **Occurred Time/Date:** 13:00 04/26/2001

Unit(s) Affected:

Unit	Mode	%Power	Unit Status Remarks
2	6	0	N/A

System(s) Affected:
LPS Low Pressure Service Water

Affected Equipment

(No Equipment Affected)

Location of Problem:
Bldg: TB Column Line: Elev:

Location Remarks:

Method Used to Discover Problem:
ISI

Brief Problem Description:
Pipe support # 2-14B-1437A-SR38 is incapable of restraining its design seismic loads.

Detail Problem Description:
ISI identified that the lugs on S/R# 2-14B-1437A-SR38 on the east side of the Turbine Building wall are only 1/2" tall instead of 3" tall. This support has 2 lugs on each side of the TB/AB wall to restrain the pipe in the east/west (axial) direction. The 1/2" tall lugs are not tall enough to bear against the pipe sleeve and restrain the pipe in the west direction. The lugs on the west side of the TB/AB wall are 3" tall and do restrain the pipe in the east direction.

Thermal loads on this support are in the east direction and are being restrained. However, this support is incapable of restraining westerly seismic forces.

This problem was discovered by Engineering on 4/26/01, but impact on current operability requirements was not realized until 4/30/01. This support is located downstream of valve 2LPSW-251 on the 2A LPI Cooler discharge piping. This section of piping does have operability requirements during MODE 5 and 6.

Operability Assessment
****
An operability evaluation will be required. This piping is not clearly inoperable and there is a reasonable assurance this piping is Operable But Degraded/Nonconforming.

Originated By: PAW4981: WELLS, PHILLIP A Team: RAH8344 Group: MCE Date: 04/30/2001

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

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

Immediate Corrective Actions:

Work order 98384067 has been initiated to repair these lugs and restore the support to design conditions.

Originated By: PAW4981: WELLS, PHILLIP A Team: RAH8344 Group: MCE Date: 04/30/2001

Immediate Corrective Action Documents / Work Orders: 98384067

	Indiv	Team	Group	Date
Problem Identified By:	PAW4981	RAH8344	MCE	04/30/2001
Problem Entered By:	PAW4981	RAH8344	MCE	04/30/2001

Screening

Is the Problem Significant? No Action Category: 3 Condition Adverse to Quality: Yes

OEP No:

Other Report Nos:

Event Codes:

F3 Equipment Out of Norm

Screening Remarks:

This event has been reviewed by the CST and found to meet the criteria for the selected action category.

Screening members present for this review: Sandy Severance (ENG), Sammy Oates (MNT & WCG), Randy Todd (RGC), and Mike Pruitt (OPS)

Originated By: EHD8302: DUMMEYER, EDWARD H Team: RTB7310 Group: SRG Date: 04/30/2001

Assignments:

Responsible Groups(s) for Problem Evaluation:	MCE	Mech/Civil Eq. Eng.
Responsible Group for Present Operability:	MCE	Mech/Civil Eq. Eng.
Responsible Group for Past Operability:	RGC	Regulatory Compliance
Responsible Group for Reportability:	RGC	Regulatory Compliance
Responsible Group for Overall PIP Approval:	MCE	Mech/Civil Eq. Eng.

Signature Type	Indiv	Team	Group	Date
Screened By:	EHD8302	RTB7310	SRG	04/30/2001

Present Operability

Responsible Group: MCE Status: Closed

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

Required Mode: 6

Comments:

Last Updated By: PCC2458: CHAU, PETER C Team: RAH8344 Group: MCE Date: 05/02/2001

Problem Investigation Process
Oconee Nuclear Station

1. Statement of Problem
   Support 2-14B-1437A-SR38 could not perform its design function.

2. Relation to QA Condition
   Both piping and support are QA 1.

3. Applicable codes And standards
   USAS B31.1 Code for Pressure Piping (1967).

4. Evaluation Inputs/Methods Used
   USAS B31.1 Code.
   SUPERPIPE Computer Analysis.

5. Other Evaluation Criteria
   N/A

6. Applicable Licensing References
   UFSAR Section 9.2.2.2.3

7. Assumptions
   None.

8. References
   OSC-487 Rev. 30

9. Calculation/Evaluation
   The piping system has been re-analyzed without the subject support. The results show that both piping and associated supports are below design allowable limits.
   The piping and associated supports evaluation are documented in OSC-474 rev. 30.

10. Compensatory Actions Required for Operability
    None.

11. Conclusions
    The piping and supports are operable.
    The piping and associated supports have been reviewed and found to be within design limit.

Originated By: PCC2458: CHAU, PETER C Team: RAH8344 Group: MCE Date: 05/02/2001

Signature Type	Indiv	Team	Group	Date
Due Date:	05/03/2001			
Accepted By:	RAH8344	RAH8344	MCE	05/01/2001
Assigned To:	PCC2458	RAH8344	MCE	05/01/2001
Ready for Checked By:	PCC2458	RAH8344	MCE	05/02/2001
Checked By Assigned To:	BHJ8363	RAH8344	MCE	05/02/2001
Checked By:	BHJ8363	RAH8344	MCE	05/02/2001
Ready For Approval:	BHJ8363	RAH8344	MCE	05/02/2001
Approval Assigned To:	RAH8344	RAH8344	MCE	05/02/2001
Approved By:	RAH8344	RAH8344	MCE	05/02/2001
Evaluation Assigned To:	JAS7314	LEN2127	RGC	05/03/2001
Evaluated By:	JASMITH	LEN2127	RGC	05/08/2001

Problem Investigation Process
Oconee Nuclear Station

Past Operability:

Responsible Group: RGC Status: NotRequired

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

Required Mode:

Comments:

No Current Signatures For This Section

Reportability

Responsible Group: RGC Status: Closed

Problem Reportable(Y,N,E): N

Reportable Per:

Comments:
Operabilty eval has concluded that the inoperabilty of this support did not impact the operabilty of the system/train as a whole. Therefore, this event is not reportable.

Originated By: RPT7314: TODD, RANDALL P Team: LEN2127 Group: RGC Date: 05/08/2001

Signature Type	Indiv	Team	Group	Date
Assigned To:	RPT7314	LEN2127	RGC	04/30/2001
Ready For Approval:	RPT7314	LEN2127	RGC	05/08/2001
Approval Assigned To:	LEN2127	LEN2127	RGC	05/08/2001
Approved By:	LEN2127	LEN2127	RGC	05/10/2001

Investigation Report:

Responsible Group: Act Date:

Investigator: Group:

Due Date:
Date Due to VP or Sta. Mgr:
Date Regulatory or Agency Rpt Due:
Date Investigation Report Approved:

NRC Cause Codes:

Problem Evaluation

Event	Cause Code	Cause Description	Primary	Causing Groups
53	X	UNKNOWN	Yes	UNK

Problem Evaluation From: Resp. Group: MCE Status: Closed OEDB Checked: No

Problem was created during original construction of this support. Even with discrepancy, piping meets design requirements. No problem evaluation is required. Likewise, no additional insights can be gained from performance of problem evaluation.

Originated By: RAH8344: HEINECK, ROBERT A Team: RAH8344 Group: MCE Date: 05/14/2001

OEDB Comments:
OEDB check is not needed to aid in resolution of this problem.

Originated By: RAH8344: HEINECK, ROBERT A Team: RAH8344 Group: MCE Date: 05/14/2001

Remarks Comments:

Signature Type	Indiv	Team	Group	Date
Due Date:	05/30/2001			
Assigned To:		RAH8344	MCE	05/02/2001
Accepted By:	RAH8344	RAH8344	MCE	05/14/2001
Ready For Approval:	RAH8344	RAH8344	MCE	05/14/2001
Approval Assigned To:	RAH8344	RAH8344	MCE	05/14/2001
Approved By:	RAH8344	RAH8344	MCE	05/14/2001

Corrective Actions

CA Seq. No: 1

Resp Group	Status	Orig Group	Event Code	Prop CAC	Cause Code
MCE	Closed	MCE	F3	B9	YYY

Proposed Corrective Action:
Confirm that repairs to restore full capability of S/R 2-14B-1437A-SR38 are complete.

Originated By: RAH8344: HEINECK, ROBERT A Team: RAH8344 Group: MCE Date: 05/02/2001

Signature Type	Indiv	Team	Group	Date
Ready For Approval:	RAH8344	RAH8344	MCE	05/02/2001
Approval Assigned To:	RAH8344	RAH8344	MCE	05/02/2001
Approved By:	RAH8344	RAH8344	MCE	05/02/2001

General: Outage: 2EOC18 Mode: N/A

Other Tracking Processes
Type Number TextWO 98384067 Repair Lugs on S/R# 2-14B-1437A-SR38

Actual Corrective Action:
Priority: O2d Actual CAC: B9 Status: Closed Due Date: 05/24/2001
Work order 98384067 was written to replace the deficient lugs on S/R# 2-14B-1437A-SR38. This work order is scheduled for implementation during startup at end of 2EOC18. The system was determined to be OPERABLE without this support. Therefore, no further actions are required for this corrective action.

Problem Investigation Process
Oconee Nuclear Station

Originated By: PAW4981: WELLS, PHILLIP A Team: RAH8344 Group: MCE Date: 05/24/2001

Signature Type	Indiv	Team	Group	Date
Accepted By:	RAH8344	RAH8344	MCE	05/02/2001
Assigned To:	PAW4981	RAH8344	MCE	05/02/2001
Due Date:	05/24/2001			
Ready For Approval:	PAW4981	RAH8344	MCE	05/24/2001
Approval Assigned To:	RAH8344	RAH8344	MCE	05/24/2001
Approved By:	RAH8344	RAH8344	MCE	05/24/2001

Final and Overall PIP Approval

Responsible Group: MCE Status: Closed

Signature Type	Indiv	Team	Group	Date
Assigned To:			MCE	04/30/2001
Accepted By:	SNS3927	TDC7309	MCE	05/02/2001
Approval Assigned To:		RAH8344	MCE	06/07/2001
Approved By:	RAH8344	RAH8344	MCE	06/18/2001

Any Supplemental Concurrence Signatures Above Do Not Affect PIP Closure.

Closure Document Type **Closure Document No**

Attachments

Generic Applicability

Responsible Group: Status:
GO PIP No:

Assessment Remarks:
No Current Signatures For This Section

Failure Prevention Investigation

Quality of CA: Quality of Cause: Resp Group: SRG Status: Closed

Special Codes:
N12

Comments

Signature Type	Indiv	Team	Group	Date
Assigned To:			SRG	04/30/2001
Ready For Approval:	RWVASSEY	RTB7310	SRG	05/15/2001
Approval Assigned To:	RTB7310	RTB7310	SRG	05/15/2001
Approved By:	RWVASSEY	RTB7310	SRG	05/15/2001

Problem Investigation Process
Oconee Nuclear Station

Remarks

No Remarks for this PIP.

Maintenance Rule

Responsible Group: MCE Status: Closed

Maintenance Rule SSC

SSC	Description	Risk Significant	Primary System
LPS	Low Pressure Service Water System	None	Yes

Equipment Group: C01
Applicable Unit: Unit 2
Functional Failure: No MPFF: No Repetitive MPFF: No

Functional Failure Comments:
Per the Present Operability Section of this PIP, the piping and supports are presently operable. Thus, no functional failure occurred.

Originated By: VBB4478: BOWMAN, VANCE B Team: BGD7309 Group: MCE Date: 06/05/2001

MPFF Comments:

Repetitive MPFF Comments:

Reactor Trip: No Safety System Actuation: No Loss of Heat Decay Removal: No
Force Outage Rate or Plant Transient: No Loss Of Spent Fuel: No

Comments:

Signature Type	Indiv	Team	Group	Date
Assigned To:	VBB4478	BGD7309	MCE	05/02/2001
Due Date:	06/13/2001			
Ready For Approval:	VBB4478	BGD7309	MCE	06/05/2001
Approval Assigned To:	BGD7309	BGD7309	MCE	06/05/2001
Approved By:	BGD7309	BGD7309	MCE	06/05/2001

Problem Investigation Process
Oconee Nuclear Station

End of the Document for PIP No: O-1-1475
The status of this PIP is: Closed
The duration of this PIP was: 49 days

Problem Investigation Process
Oconee Nuclear Station

PIP Serial No:	Action Category:	LER No:	Other Report:
O-01-01716	3		

Problem Identification

Discovered Time/Date: 16:28 05/10/2001 **Occurred Time/Date:** 13:00

Unit(s) Affected:

Unit	Mode	%Power	Unit Status Remarks
2	6	0	2EOC18 Refueling Outage

System(s) Affected:

MS Main Steam

Affected Equipment

(No Equipment Affected)

Location of Problem:

Bldg: R Column Line: Elev:

Location Remarks:

36" MS pipe riser to SG 2A at El. 854'

Method Used to Discover Problem:

Routine Inservice Inspection.

Brief Problem Description:

Deficiency in constant spring support 01A-O-1481B-H11B.

Detail Problem Description:

Last Updated By: RAH8344: HEINECK, ROBERT A Team: RAH8344 Group: MCE Date: 05/21/2001

The constant spring support 01A-O-1481B-H11B has only two shear lugs taking vertical load, the other two shear lugs have gap between the pipe clamp and shear lugs which renders them in-active.

Specifically, the shear lug at North-West has .04" gap and shear lug at North-East has .16" gap according to ISI Item Number F01.022.002.

The subject support is used to restraint the 36" Main Steam piping from Penetration 26 to Steam generator 2A. It is shown on OFD-122A 2.1. The piping is qualified in OSC-1315-06 Rev. D10.

The piping is class F which is designed for dead weight, thermal, seismic, and water hammer loading. The design temperature and pressure are 630 F and 1050 psig respectively.

PIPING OPERABILITY ASSESSMENT.

The unit 2 is in refueling outage; therefore, there is no current operability concern.

It should be noted that the piping is past and present operable according to the stress calculation.
With two shear lugs in services, the lug stress = 2 x 7548 = 15096 psi.
Total EQ. 8 stress = 15096 psi + 6978 psi (pipe stress) = 22074 psi < 2 x 25400 = 50800 psi (operability allowable).

Problem Investigation Process
Oconee Nuclear Station

Additional Operability Assessment Information (Added by RAH 5-21-01) : PIP 010-1910 documents a scheduling error that caused the work identified to resolve this ISI discrepancy to be deferred until the next refueling outage. Accordingly, the current operability section of this PIP needs to be completed to document a NCI because of exceeding design allowable stresses. This evaluation must be completed prior to entering Mode 4.

Originated By: PCC2458: CHAU, PETER C Team: RAH8344 Group: MCE Date: 05/10/2001

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

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

Immediate Corrective Actions:
WO# 98386779 has been written to restore the subject support to its design configuration.

Originated By: PCC2458: CHAU, PETER C Team: RAH8344 Group: MCE Date: 05/10/2001

Immediate Corrective Action Documents / Work Orders:

	Indiv	Team	Group	Date
Problem Identified By:	PCC458C	RAH8344	MCE	05/10/2001
Problem Entered By:	PCC458C	RAH8344	MCE	05/10/2001

Screening

Is the Problem Significant? No Action Category: 3 Condition Adverse to Quality: Yes

OEP No:

Other Report Nos:

Event Codes:

F3	Equipment Out of Norm
O2a	ASME SECTION XI

Screening Remarks:
This event has been reviewed by the CST and found to meet the criteria for the selected action category.

Screening members present for this review: Sandy Severance (ENG), RD Burns (MNT & WCG), Randy Todd (RGC), and Mike Pruitt (OPS).

Originated By: RWV1470: VASSEY, RAY W Team: RTB7310 Group: SRG Date: 05/14/2001

Assignments:

Responsible Groups(s) for Problem Evaluation:	MCE	Mech/Civil Eq. Eng.
Responsible Group for Present Operability:	MCE	Mech/Civil Eq. Eng.
Responsible Group for Past Operability:	N/A	
Responsible Group for Reportability:	RGC	Regulatory Compliance
Responsible Group for Overall PIP Approval:	MCE	Mech/Civil Eq. Eng.

Signature Type	Indiv	Team	Group	Date
Screened By:	EHD8302	RTB7310	SRG	05/21/2001

Problem Investigation Process
Oconee Nuclear Station

Present Operability

Responsible Group: MCE Status: Closed

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

Required Mode: 4

Comments:

Last Updated By: PCC2458: CHAU, PETER C Team: RAH8344 Group: MCE Date: 05/23/2001

1. Statement of Problem
Two of the four shear lugs on the spring support 01A-0-1481B-H11B can not carry vertical load due to gaps betwwen pipe clamp and shear lugs.

2. Relation to QA Condition
The piping and subject support are QA 1.

3. Applicable codes And standards
USAS B31.1 Code for Pressure Piping (1967).

4. Evaluation Inputs/Methods Used
SUPERPIPE Computer Program for piping analysis.
LUGS Computer Program for shear lugs evaluation.

5. Other Evaluation Criteria
None.

6. Applicable Licensing References
UFSAR Chapter 10.3 "Main Steam System".

7. Assumptions
None.

8. References
1) OSC-1315-06 Volume A.
2) ASME Appendices F

9. Calculation/Evaluation
The shear lug stress is evaluated in Ref. 1. The lug stress is 7548 psi for four (4) shear lugs to carry the vertical load of 29834#. Since only two (2) lugs are actually carrying the load, the lug stress is 2 x 7548 psi = 15096 psi.

The piping material is SA155 KC 70 with a yield stress of 27600 psi at 650 F. Stress intensity Sm = 17500 psi @ 650F.
It should be noted that 2 x yield is approximately equal to 3 x Sm in Table F-1322.2-1

EQ 8 stress = 6978 psi + 15096 psi = 22074 psi > 17500 psi The lugs fail design limits.

EQ 9 stress = 7681 psi + 15096 psi = 22777 psi > 21000 psi The lugs fail design limits.

EQ 9F stress = 7911 psi + 15096 psi = 23007 psi < 27800 psi The lugs pass design limits.

EQ 10 stress = 2695 psi + 15096 psi = 17791 psi > 26250 psi The lugs pass design limits.

The piping pass operable limits:
6978 psi + 7911 psi + 15096 psi = 29985 psi < 2 x 27600 psi = 55200 psi O.K.

10. Compensatory Actions Required for Operability

None.

11. Conclusions
The piping is operable with NCI which is the two shear lugs having gaps with the pipe clamp.

Originated By: PCC2458: CHAU, PETER C Team: RAH8344 Group: MCE Date: 05/23/2001

Signature Type	Indiv	Team	Group	Date
Due Date:	05/24/2001			
Accepted By:	RAH8344	RAH8344	MCE	05/22/2001
Assigned To:	PCC2458	RAH8344	MCE	05/22/2001
Checked By Assigned To:	BHJ8363	RAH8344	MCE	05/23/2001
Ready for Checked By:	PCC2458	RAH8344	MCE	05/23/2001
Checked By:	BHJ8363	RAH8344	MCE	05/23/2001
Ready For Approval:	BHJ8363	RAH8344	MCE	05/23/2001
Approval Assigned To:	RAH8344	RAH8344	MCE	05/23/2001
Approved By:	RAH8344	RAH8344	MCE	05/23/2001
Evaluation Assigned To:	JAS7314	LEN2127	RGC	05/24/2001
Evaluated By:	JAS7314	LEN2127	RGC	05/24/2001

Past Operability:

Responsible Group: Status:

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

Required Mode:

Comments:

No Current Signatures For This Section

Reportability

Responsible Group: RGC Status: Closed

Problem Reportable(Y,N,E): N

Reportable Per:

Comments:
Per Operability Evaluation, the piping is still operable despite the hanger issue. Therefore, there is no los of safety function and this event is not reportable.

Originated By: RPT7314: TODD, RANDALL P Team: LEN2127 Group: RGC Date: 05/29/2001

Signature Type	Indiv	Team	Group	Date
Assigned To:	RPT7314	LEN2127	RGC	05/22/2001
Ready For Approval:	RPT7314	LEN2127	RGC	05/29/2001
Approval Assigned To:	LEN2127	LEN2127	RGC	05/29/2001
Approved By:	LEN2127	LEN2127	RGC	05/31/2001

Problem Investigation Process
Oconee Nuclear Station

Investigation Report:

Responsible Group: Act Date:

Investigator: Group:

Due Date:
Date Due to VP or Sta. Mgr:
Date Regulatory or Agency Rpt Due:
Date Investigation Report Approved:

NRC Cause Codes:

Problem Evaluation

Event	Cause Code	Cause Description	Primary	Causing Groups
O2a	X	UNKNOWN	Yes	UNK

Problem Evaluation From: Resp. Group: MCE Status: Closed OEDB Checked: No

The lack of bearing between pipe support and welded lugs was likely caused during original construction, though that cannot be substantiated. No further cause evaluation is required because of the age of the problem and lack of benefit from further research.

Originated By: RAH8344: HEINECK, ROBERT A Team: RAH8344 Group: MCE Date: 05/29/2001

OEDB Comments:
No benefit from further research of this problem.

Originated By: RAH8344: HEINECK, ROBERT A Team: RAH8344 Group: MCE Date: 05/29/2001

Remarks Comments:

Signature Type	Indiv	Team	Group	Date
Due Date:	06/09/2001			
Accepted By:	RAH8344	RAH8344	MCE	05/29/2001
Assigned To:	RAH8344	RAH8344	MCE	05/29/2001
Ready For Approval:	RAH8344	RAH8344	MCE	05/29/2001
Approval Assigned To:	RAH8344	RAH8344	MCE	05/29/2001
Approved By:	RAH8344	RAH8344	MCE	05/29/2001

Corrective Actions

CA Seq. No: 1

Resp Group	Status	Orig Group	Event Code	Prop CAC	Cause Code
MCE	Closed	MCE	F3	J	YYY

Proposed Corrective Action:
Ensure that the operability assessment associated with this item is completed prior to entering Mode 4.

Per the problem description, "The constant spring support 01A-O-1481B-H11B has only two shear lugs taking vertical load, the other two

shear lugs have gap between the pipe clamp and shear lugs which renders them in-active. PIP 010-1910 documents a scheduling error that caused the work identified to resolve this ISI discrepancy to be deferred until the next refueling outage. Accordingly, the current operability section of this PIP needs to be completed to document a NCI because of exceeding design allowable stresses."

Originated By: SNS3927: SEVERANCE, SANDRA N Team: TDC7309 Group: MCE Date: 05/22/2001

Signature Type	Indiv	Team	Group	Date
Ready For Approval:	SNS3927	TDC7309	MCE	05/22/2001
Approval Assigned To:	TDC7309	TDC7309	MCE	05/22/2001
Approved By:	SNS3927	TDC7309	MCE	05/22/2001

General:Outage: 2EOC18 Mode: 4

Other Tracking Processes

Type	Number	Text

Actual Corrective Action:

Priority: O2a Actual CAC: J Status: Closed Due Date: 06/05/2001

Current Operability Evaluation is complete. This corrective action is closed.

Originated By: RAH8344: HEINECK, ROBERT A Team: RAH8344 Group: MCE Date: 05/23/2001

Signature Type	Indiv	Team	Group	Date
Due Date:	06/05/2001			
Accepted By:	RAH8344	RAH8344	MCE	05/22/2001
Assigned To:	PCC2458	RAH8344	MCE	05/22/2001
Ready For Approval:	RAH8344	RAH8344	MCE	05/23/2001
Approval Assigned To:	RAH8344	RAH8344	MCE	05/23/2001
Approved By:	RAH8344	RAH8344	MCE	05/23/2001

CA Seq. No: 2

Resp Group	Status	Orig Group	Event Code	Prop CAC	Cause Code
MCE	Closed	MCE	O2a	B9	YYY

Proposed Corrective Action:

Upon completion of Work Order to shim lugs on Unit 2 36" MS pipe, change the Current Operability Evaluation to reflect operable status. The Work Order is expected to complete during 2EOC19 refueling outage.

Originated By: RAH8344: HEINECK, ROBERT A Team: RAH8344 Group: MCE Date: 05/29/2001

Changed incorrect Unit 1 references to Unit 2.

Last Updated By: SNS3927: SEVERANCE, SANDRA N Team: TDC7309 Group: MCE Date: 07/05/2001

Problem Investigation Process
Oconee Nuclear Station

Signature Type	Indiv	Team	Group	Date
Approval Assigned To:	RAH8344	RAH8344	MCE	05/29/2001
Ready For Approval:	SNS3927	TDC7309	MCE	07/05/2001
Approved By:	SNS3927	TDC7309	MCE	07/05/2001

General:Outage: 2EOC19 Mode: N/A

Other Tracking Processes

Type	Number	Text2a	2a	2a

Actual Corrective Action:

Priority: O2a Actual CAC: Status: Open Due Date: 05/01/2002

Signature Type	Indiv	Team	Group	Date
Accepted By:	RAH8344	RAH8344	MCE	05/29/2001
Assigned To:	PCC2458	RAH8344	MCE	05/29/2001
Due Date:	05/01/2002			
Mgt Excepted By:	HDUMEYER	RTB7310	SRG	06/18/2001

Final and Overall PIP Approval

Responsible Group: MCE Status: Screened

Signature Type	Indiv	Team	Group	Date
Assigned To:			MCE	05/14/2001
Accepted By:	SNS3927	TDC7309	MCE	05/15/2001
Approval Assigned To:		RAH8344	MCE	05/17/2001

Any Supplemental Concurrence Signatures Above Do Not Affect PIP Closure.

Closure Document Type **Closure Document No**

Attachments

Generic Applicability

Responsible Group: Status:
GO PIP No:

Assessment Remarks:

No Current Signatures For This Section

Failure Prevention Investigation

No FPI Records for this PIP.

Remarks

No Remarks for this PIP.

Maintenance Rule

Responsible Group: MCE Status: Closed

Maintenance Rule SSC

SSC	Description	Risk Significant	Primary System
MS	Main Steam System	None	Yes

Equipment Group: C01
Applicable Unit: Unit 2
Functional Failure: No MPFF: No Repetitive MPFF: No

Functional Failure Comments:
The MS system has several functions to supply steam to various components. The failure of this snubber did not affect the system's ability to supply steam as needed. Therefore this is not a functional failure.

Originated By: RSM2939: MANNING, ROBERT S Team: BGD7309 Group: MCE Date: 05/15/2001

MPFF Comments:
This is not a functional failure, therefore this is not a MPFF.

Originated By: RSM2939: MANNING, ROBERT S Team: BGD7309 Group: MCE Date: 05/15/2001

Repetitive MPFF Comments:
This is not a functional failure, therefore this is not a repetitive MPFF.

Originated By: RSM2939: MANNING, ROBERT S Team: BGD7309 Group: MCE Date: 05/15/2001

Reactor Trip: No Safety System Actuation: No Loss of Heat Decay Removal: No
Force Outage Rate or Plant Transient: No Loss Of Spent Fuel: No

Comments:

Signature Type	Indiv	Team	Group	Date
Due Date:	06/13/2001			
Assigned To:	RSM2939	BGD7309	MCE	05/15/2001
Ready For Approval:	RSM2939	BGD7309	MCE	05/29/2001

Problem Investigation Process
Oconee Nuclear Station

Signature Type	Indiv	Team	Group	Date
Approval Assigned To:	BGD7309	BGD7309	MCE	05/29/2001
Approved By:	BGD7309	BGD7309	MCE	05/29/2001

End of the Document for PIP No: O-1-1716
The status of this PIP is: Screened
The duration of this PIP was: 19 days

Problem Investigation Process
Oconee Nuclear Station

PIP Serial No:	Action Category:	LER No:	Other Report:
O-01-01857	3		

Problem Identification

Discovered Time/Date: 07:59 05/17/2001 **Occurred Time/Date:**

Unit(s) Affected:

Unit	Mode	%Power	Unit Status Remarks
2	6	0	refueling

System(s) Affected:

GEN Generator

Affected Equipment

(No Equipment Affected)

Location of Problem:

Bldg: R Column Line: n/a Elev: ~837'

Location Remarks:

2A Steam Generator

Method Used to Discover Problem:

Ultrasonic Examination

Brief Problem Description:

A reportable indication was identified in the upper tubesheet to shell weld.

Detail Problem Description:

**********OPERABILITY ASSESSMENT**********

There was no operability requirement for the SG's at the time of discovery in MODE 6. A formal Operability Evaluation is contained in ACA #1.

Last Updated By: RVH4032: HESTER, ROBERT V Team: RAH8344 Group: MCE Date: 05/25/2001

During ultrasonic examination (UT) of the upper tubesheet to shell weld (weld 2-SGA-WG60, ISI Item C01.030.001) a reportable indication was identified. The indication is located in the subsurface and is 5" long and 1/2" wide, exceeding the acceptance criteria.

Originated By: TJC0182: COLEMAN, TOMMY J Team: GES8270 Group: MNT Date: 05/17/2001

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

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

Immediate Corrective Actions:

Implement QA-516 Evaluation of ISI Indications.

Originated By: TJC0182: COLEMAN, TOMMY J Team: GES8270 Group: MNT Date: 05/17/2001

Immediate Corrective Action Documents / Work Orders:

Indiv	Team	Group	Date

Problem Investigation Process
Oconee Nuclear Station

Problem Identified By: TJC0182 GES8270MNT 05/17/2001
Problem Entered By: TJC0182 GES8270MNT 05/17/2001

Screening

Is the Problem Significant? No Action Category: 3 Condition Adverse to Quality: Yes

OEP No:

Other Report Nos:

Event Codes:

F3 Equipment Out of Norm
O2a ASME SECTION XI

Screening Remarks:

This event has been reviewed by the CST and found to meet the criteria for the selected action category.

Screening members present for this review Sandy Severance (ENG), Richard Ledford (MNT & WCG), Randy Todd (RGC), and Mike Pruitt (OPS).

Originated By: RWV1470: VASSEY, RAY W Team: RTB7310 Group: SRG Date: 05/17/2001

Assignments:

Responsible Groups(s) for Problem Evaluation	WCG	Work Control
esponsible Group for Present Operability:	N/A	
Responsible Group for Past Operability:	N/A	
Responsible Group for Reportability:	N/A	
Responsible Group for Overall PIP Approval:	MNT	Maintenance MECH/IAE

Signature Type	Indiv	Team	Group	Date
Screened By:	RWV1470	RTB7310	SRG	05/17/2001

Present Operability

Responsible Group: Status:

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

Required Mode:

Comments:

No Current Signatures For This Section

Past Operability:

Responsible Group: Status:

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

Required Mode:

Comments:

No Current Signatures For This Section

Reportability

Responsible Group: Status:

Problem Reportable(Y,N,E):

Reportable Per:

Comments:

No Current Signatures For This Section

Investigation Report:

Responsible Group: Act Date:

Investigator: Group:

Due Date:
Date Due to VP or Sta. Mgr:
Date Regulatory or Agency Rpt Due:
Date Investigation Report Approved:

NRC Cause Codes:

Problem Evaluation

Event	Cause Code	Cause Description	Primary	Causing Groups
O2a	N/A	Not Applicable	Yes	UNK

Problem Evaluation From: Resp. Group: WCG Status: Closed OEDB Checked: No

A subsurface indication, code allowable a/t ratio is 2.2%, the actual a/t ratio is 3.8% in the upper tubesheet to shell weld (2-SGA-WG-60, ISI Item C01.030.001). This weld was previously inspected in 2EOC11 without any reportable indications. The recording criteria in 1990 was to record any indications greater than 50% distance amplitude curve (DAC) using the shear wave technique. The recording criteria in 2001 uses EPRI standards and records indications 20% DAC using longitudinal wave technique. The recent inspection revealed the indication for the first time. Therefore, the indication is assumed to have always existed but undetected. The recent inspection uses much more sensitive recording criteria. Corrective Action 1 was created to use analytical evaluation to justify continued operation of the 2A Steam Generator. Additional examination of weld 2-SGA-WG-59 was performed in accordance with ASME Section XI IWC-2430 (Additional Examinations) and was acceptable.

PE performed by TJ Coleman.

Originated By: GES8270: SHERWOOD, GUY E Team: GES8270 Group: WCG Date: 05/19/2001

OEDB Comments:

Remarks Comments:

Signature Type	Indiv	Team	Group	Date
Due Date:	06/16/2001			
Accepted By:	RHL8302	RHL8302	WCG	05/17/2001
Assigned To:	GES8270	GES8270	WCG	05/17/2001
Ready For Approval:	GES8270	GES8270	WCG	05/19/2001
Approval Assigned To:	GES8270	GES8270	WCG	05/19/2001
Approved By:	GES8270	GES8270	WCG	05/19/2001

Corrective Actions

CA Seq. No: 1

Resp Group	Status	Orig Group	Event Code	Prop CAC	Cause Code
MCE	Closed	MCE	O2a	J	YYY

Proposed Corrective Action:
Perform ASME Section XI flaw evaluation prior to startup of Unit 2. Based upon initial assessment, determine if NRC review prior to startup would be prudent.

Originated By: RAH8344: HEINECK, ROBERT A Team: RAH8344 Group: MCE Date: 05/18/2001

Signature Type	Indiv	Team	Group	Date
Ready For Approval:	RAH8344	RAH8344	MCE	05/18/2001
Approval Assigned To:	RVH4032	RAH8344	MCE	05/18/2001
Approved By:	RAH8344	RAH8344	MCE	05/18/2001

General: Outage: 2EOC18 Mode: 4

Other Tracking Processes
Type Number Text

Actual Corrective Action:
Priority: O2a Actual CAC: B3 Status: Closed Due Date: 05/24/2001
FTI analysis, in their document number 32-5013026, OC-2 SG-A Weld WG60 Flaw Evaluation, concluded the flaw indication is acceptable for not less than 12 future cycles of normal heatup and cooldown transients based on ASME Code Section XI rules for evaluation by analysis, including allowance for upset and faulted conditions, assuming the geometry of the flaw as provided by Oconee, and conservative material properties.

Last Updated By: RVH4032: HESTER, ROBERT V Team: RAH8344 Group: MCE Date: 05/23/2001

Per Larry Nicholson, RGC Manager, NRC review of this flaw evaluation prior to startup is not needed. GL 91-18 gives explicit guidance on situations requiring NRC approval prior to startup.

FTI is scheduled to provide the calculation showing compliance with ASME Section XI, Subsection IWB 3600, by Wednesday, 5-23-01.

Originated By: RAH8344: HEINECK, ROBERT A Team: RAH8344 Group: MCE Date: 05/22/2001

Problem Investigation Process
Oconee Nuclear Station

Signature Type	Indiv	Team	Group	Date
Accepted By:	RAH8344	RAH8344	MCE	05/18/2001
Assigned To:	RVH4032	RAH8344	MCE	05/18/2001
Due Date:	05/24/2001			
Ready For Approval:	RVH4032	RAH8344	MCE	05/23/2001
Approval Assigned To:	PAW4981	RAH8344	MCE	05/23/2001
Approved By:	PAW4981	RAH8344	MCE	05/23/2001

CA Seq. No: 2

Resp Group	Status	Orig Group	Event Code	Prop CAC	Cause Code
MCE	Closed	MCE	O2a	A2	N/A

Proposed Corrective Action:
The Steam Generators have been determined operable for not less than 12 Heat Up/Cool Down cycles with the flaw described in the Problem Identification Section. Identify and revise any documents requiring revision as a result of a 12 cycle limit. In particular, identify the tracking process to ensure 12 cycles are not exceeded prior to SG replacement in 2EOC20.

Originated By: RVH4032: HESTER, ROBERT V Team: RAH8344 Group: MCE Date: 05/25/2001

Signature Type	Indiv	Team	Group	Date
Ready For Approval:	RVH4032	RAH8344	MCE	05/25/2001
Approval Assigned To:	RAH8344	RAH8344	MCE	05/25/2001
Approved By:	RAH8344	RAH8344	MCE	05/29/2001

General: Outage: N/A Mode:

Other Tracking Processes

Type	Number	Text

Actual Corrective Action:
Priority: I2b Actual CAC: Status: Open Due Date: 08/30/2001

Signature Type	Indiv	Team	Group	Date
Accepted By:	RAH8344	RAH8344	MCE	05/29/2001
Assigned To:	DWP6037	RAH8344	MCE	05/29/2001
Due Date:	08/30/2001			

Final and Overall PIP Approval

Responsible Group: MNT Status: Screened

Signature Type	Indiv	Team	Group	Date
Assigned To:			MNT	05/17/2001

Problem Investigation Process
Oconee Nuclear Station

Any Supplemental Concurrence Signatures Above Do Not Affect PIP Closure.

Closure Document Type **Closure Document No**

Attachments

Generic Applicability

Responsible Group: Status:
GO PIP No:

Assessment Remarks:
No Current Signatures For This Section

Failure Prevention Investigation

Quality of CA: Quality of Cause: Resp Group: SRG Status: Closed

Special Codes:
N11

Comments

Signature Type	Indiv	Team	Group	Date
Assigned To:			SRG	05/17/2001
Ready For Approval:	HDUMEYER	RTB7310	SRG	05/21/2001
Approval Assigned To:	RTB7310	RTB7310	SRG	05/21/2001
Approved By:	HDUMEYER	RTB7310	SRG	05/21/2001

Remarks

No Remarks for this PIP.

Maintenance Rule

Responsible Group: MCE Status: Closed

Maintenance Rule SSC

SSC	Description	Risk Significant	Primary System
RC	Reactor Coolant System	None	Yes

Equipment Group: M06
Applicable Unit: Unit 2
Functional Failure: No MPFF: No Repetitive MPFF: No

Functional Failure Comments:
During ultrasonic examination (UT) of the 2A S/G upper tubesheet to shell weld (weld 2-SGA-WG60, ISI Item C01.030.001) a reportable indication was identified. The indication is located in the subsurface and is 5" long and 1/2" wide, exceeding the acceptance criteria. Based on the Problem Evaluation, this indication has probably always existed but was only identified now because of more

sensitive inspection criteria. This flaw does not prevent the S/G from performing its design function (RC.01) and the S/G continues to provide a barrier to prevent release of fission products from the RCS (RC.02). NOTE: With the existing flaw, the S/G is acceptable for 12 more startup/shutdown cycles which will ensure that this condition is acceptable until the S/G is replaced.

Therefore, this is NOT a Functional Failure.

Originated By: KRA7360: ALTER, KENT R Team: SDC3511 Group: MCE Date: 07/06/2001

MPFF Comments:
N/A. NOT a Functional Failure.

Originated By: KRA7360: ALTER, KENT R Team: SDC3511 Group: MCE Date: 07/06/2001

Repetitive MPFF Comments:
N/A. NOT a Functional Failure.

Originated By: KRA7360: ALTER, KENT R Team: SDC3511 Group: MCE Date: 07/06/2001

Reactor Trip: No Safety System Actuation: No Loss of Heat Decay Removal: No
Force Outage Rate or Plant Transient: No Loss Of Spent Fuel: No

Comments:

Signature Type	Indiv	Team	Group	Date
Due Date:	07/10/2001			
Assigned To:	KRA7360	SDC3511	MCE	06/08/2001
Ready For Approval:	KRA7360	SDC3511	MCE	07/06/2001
Approval Assigned To:	SDC3511	SDC3511	MCE	07/06/2001
Approved By:	SDC3511	SDC3511	MCE	07/10/2001

End of the Document for PIP No: O-1-1857
The status of this PIP is: Screened
The duration of this PIP was: 0 days

Problem Investigation Process
Oconee Nuclear Station

PIP Serial No:	Action Category:	LER No:	Other Report:
O-01-02313	4		

Problem Identification

Discovered Time/Date: 13:57 06/18/2001 **Occurred Time/Date:** 13:00

Unit(s) Affected:

Unit	Mode	%Power	Unit Status Remarks
2	1	100	Power Operation

System(s) Affected:

FDW Feedwater

Affected Equipment

(No Equipment Affected)

Location of Problem:

Bldg: AB Column Line: various Elev: various

Location Remarks:

Throughout AB and TB

Method Used to Discover Problem:

Review of 2EOC18 ISI Discrepancies.

3rief Problem Description:

Many FDW pipe supports were designed for opposite pipe movements.

Detail Problem Description:

Last Updated By: PCC2458: CHAU, PETER C Team: RAH8344 Group: MCE Date: 06/19/2001

Many FDW pipe supports have been designed for the opposite pipe movements (i.e. the pipe moves South but the pipe support have been designed for the pipe moving North). These supports should be revised in order to reflect the correct piping movements.

The piping movement discrepancy on the pipe support drawings were discovered during a review of 2EOC18 pipe support ISI discrepancies. In resolving the pipe support 2-03-0-551-H51 clearance issue, it was noted that the subject pipe support drawing shows a 1.781" movement toward North direction. A casual observation of the piping isometric reveals that the piping can not possibly move North at that location.

The FDW piping for unit 1 and 2 is similar in dimemsions but running opposite directions (the unit 1 running North and unit 2 running South). A review of the unit 2 piping calculation shows that the unit 2 FDW piping was analyzed as a mirror image of that of the unit 1. In other words, the exact math model for unit 1 FDW piping was used to analyze for unit 2 FDW piping. In doing so, The analysis output piping movements in the North- South directions must be reverved to compensate for mirror image methodology. The curent movements on many pipe support drawings are wrong due to failure to interpret analysis output corretly.

This is considered as a human error happening many years ago.

The affected piping calculation is OSC 454 rev. 18. The piping is class G and F terminating at penetation 25 and 27 which is shown on OFD 121B 2.3. The design temperature and pressure are 475F and 1275 psig respectively.

OPERABILITY ASSESSMENT.
Both the piping and pipe supports are acceptable for continuing operation without NCI.

The affected pipe supports have been reviewed by pipe support engineer and determined to be clearly operable within design allowable.
The affected pipe supports are: 2-03-0-1401A-R3, R2, R15, R4, R13, R12, R14, R7, H4087, 2-03-0-551-DE001, and 2-03-0-1401C-DMB-0601.

There is no adverse impact on the piping system.

Originated By: PCC2458: CHAU, PETER C Team: RAH8344 Group: MCE Date: 06/18/2001

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

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

Immediate Corrective Actions:
The affected pipe supports (a total 11) were reviewed and found to be acceptable.

Originated By: PCC2458: CHAU, PETER C Team: RAH8344 Group: MCE Date: 06/18/2001

Immediate Corrective Action Documents / Work Orders:

	Indiv	Team	Group	Date
Problem Identified By:	PCC458C	RAH8344	MCE	06/18/2001
Problem Entered By:	PCC458C	RAH8344	MCE	06/18/2001

Screening

Is the Problem Significant? No Action Category: 4 Condition Adverse to Quality: Yes

OEP No:

Other Report Nos:

Event Codes:

D6f Civil Calc
F11 Equipment Misapplication

Screening Remarks:
This event has been reviewed by the CST and found to meet the criteria for the selected action category.

Screening members present for this review: Sandy Severance (ENG), RD Burns (MNT & WCG), Randy Todd (RGC), and Mike Pruitt (OPS).

Originated By: RWV1470: VASSEY, RAY W Team: RTB7310 Group: SRG Date: 06/19/2001

Assignments:

Responsible Groups(s) for Problem Evaluation: Responsible Group for Present Operability: N/A
Responsible Group for Past Operability: N/A
Responsible Group for Reportability: N/A
Responsible Group for Overall PIP Approval: MCE Mech/Civil Eq. Eng.

Signature Type	Indiv	Team	Group	Date
Screened By:	RWV1470	RTB7310	SRG	06/19/2001

Problem Investigation Process
Oconee Nuclear Station

Present Operability

Responsible Group: Status:

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

Required Mode:

Comments:

No Current Signatures For This Section

Past Operability:

Responsible Group: Status:

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

Required Mode:

Comments:

No Current Signatures For This Section

Reportability

Responsible Group: Status:

Problem Reportable(Y,N,E):

Reportable Per:

Comments:

No Current Signatures For This Section

Investigation Report:

Responsible Group: Act Date:

Investigator: Group:

Due Date:
Date Due to VP or Sta. Mgr:
Date Regulatory or Agency Rpt Due:
Date Investigation Report Approved:

NRC Cause Codes:

Problem Evaluation

Event	Cause Code	Cause Description	Primary	Causing Groups

Problem Investigation Process
Oconee Nuclear Station

Problem Evaluation From: N/A

Corrective Actions

CA Seq. No: 1

Resp Group	Status	Orig Group	Event Code	Prop CAC	Cause Code
MCE	Closed	MCE	D6f	B1a	YYY

Proposed Corrective Action:
Generate a minor mod (or mods) to revise the affected pipe supports to reflect the correct piping movements. The affected supports are 2-03-0-1401A-R3, R2, R15, R4, R13, R12, R14, R7, H4087, 2-03-0-551-DE001, and 2-03-0-1401C-DMB-0601. Per the problem description, "Many FDW pipe supports have been designed for the opposite pipe movements (i.e., the pipe moves South but the pipe supports have been designed for the pipe moving North). Generate additional corrective actions as required.

Originated By: SNS3927: SEVERANCE, SANDRA N Team: TDC7309 Group: MCE Date: 06/19/2001

Signature Type	Indiv	Team	Group	Date
Ready For Approval:	SNS3927	TDC7309	MCE	06/19/2001
Approval Assigned To:	TDC7309	TDC7309	MCE	06/19/2001
Approved By:	SNS3927	TDC7309	MCE	06/19/2001

General: Outage: N/A Mode:

Other Tracking Processes

Type	Number	Text

Actual Corrective Action:
Priority: I2d Actual CAC: Status: Open Due Date: 01/17/2002

Signature Type	Indiv	Team	Group	Date
Accepted By:	RAH8344	RAH8344	MCE	06/21/2001
Assigned To:	PHP4260	RAH8344	MCE	06/21/2001
Due Date:	01/17/2002			

Final and Overall PIP Approval

Responsible Group: MCE Status: Screened

Signature Type	Indiv	Team	Group	Date
Assigned To:			MCE	06/19/2001
Accepted By:	SNS3927	TDC7309	MCE	06/19/2001

Any Supplemental Concurrence Signatures Above Do Not Affect PIP Closure.

Closure Document Type **Closure Document No**

Attachments

Generic Applicability

Responsible Group: Status:
GO PIP No:

Assessment Remarks:
No Current Signatures For This Section

Failure Prevention Investigation

No FPI Records for this PIP.

Remarks

No Remarks for this PIP.

Maintenance Rule

No Maintenance Rule Records for this PIP.

End of the Document for PIP No: O-1-2313
The status of this PIP is: Screened
The duration of this PIP was: 1 day

FRAMATOME ANP

May 23, 2001
FANP-01-1372

Mr. Bob Hester
Duke Energy Corporation
Oconee Nuclear Station
Mail Code ON03MC
7800 Rochester Highway
Seneca, S.C. 29672
Fax: (864) 885-3402

Subject: Requested Evaluations of Flaw in "A" OTSG

Dear Mr. Hester:

In response of Duke Energy Corporation's request for engineering support of the recently discovered flaw in "A" OTSG during the Oconee Unit 2 outage, Framatome ANP (FRA-ANP) is pleased to submit the following engineering evaluations.

- OC-2 SG-A Weld WG60 Flaw Evaluation (Doc. No. 32-5013026)
- OTSG Upper Tubesheet-to-Shell Weld Stresses for Flaw Evaluation (Doc. No. 86-5013015-00)

If you have any questions about these evaluations, please contact the principle engineer, Ashok Nana at (804) 832-2393. You may also contact me at (804) 832-2432 or jleighliter@framatech.com.

Sincerely,

John A. Leighliter
Project Manager

cc: James McClure, Duke Energy, Oconee
A. Nana, OF50

enc.