DUKE POWER COMPANY

Request for Relief From

Inservice Inspection Requirement

Station: Oconee

Unit: 3

Requesting Department: Nuclear Generation

Reference Code: ASME Section XI, 1980 Edition, with the Winter 1980 Addenda

I. Component for which exemption is requested:

a. Name and Identification Number:

Pressurizer Nozzle To Vessel Welds

Weld Numbers	Item Numbers
3PZR-WP26-1	B03.110.009
3PZR-WP26-3	B03.110.011
3PZR-WP26-7	B03.110.012

Pressurizer Nozzles, Inside Radius

Weld Numbers	Item Numbers
3PZR-WP26-1	B03.120.009
3PZR-WP26-3	B03.120.011
3PZR-WP26-7	B03.120.012

Steam Generator Nozzles, Inside Radius

Weld Numbers	Item Numbers
3SGA-WG50-1	B03.140.002
3SGA-WG25	B03.140.005
3SGB-WG25	B03.140.006

Core Flood Tank Nozzle, Inside Radius

Weld Number	Item Number
3-CFTB-Outlet	C02.022.006

Reactor Vessel

Weld Numbers	Item Numbers	Weld Numbers	Item Numbers
3RPV-WR18	B01.011.003	3RPV-WR54	B03.090.007
3RPV-WR34	B01.021.002	3RPV-WR54	B03.090.007A
3RPV-WR19	B01.030.001	3RPV-WR54A	B03.090.008
3RPV-WR13	B03.090.001	3RPV-WR54A	B03.090.008A
3RPV-WR13	B03.090.001A	3RPV-WR12	B03.100.003
3RPV-WR13A	B03.090.002	3RPV-WR12A	B03.100.004
3RPV-WR13A	B03.090.002A	3RPV-WR12B	B03.100.005
3RPV-WR12	B03.090.003	3RPV-WR12C	B03.100.006
3RPV-WR12A	B03.090.003A	3RPV-WR54	B03.100.007
3RPV-WR12A	B03.090.004	3RPV-WR54	B03.100.007A
3RPV-WR12A	B03.090.004A	3RPV-WR54A	B03.100.008
3RPV-WR12B	B03.090.005	3RPV-WR54A	B03.100.008A
3RPV-WR12B	B03.090.005A		
3RPV-WR12C	B03.090.006		
3RPV-WR12C	B03.090.006A		

b. Function:

Pressurizer - Maintains the RCS pressure during operation & limits pressure changes during transients.

Steam Generator - Provides steam to the turbine.

Core Flood Tank - Core flooding tanks are provided as part of the ECCS to re-flood the core during the initial stages of a LOCA resulting from large pipe breaks.

Reactor Vessel - Contains the fission process.

c. ASME Section XI Code Class:

Pressurizer, Steam Generator and Reactor Vessel - Class 1

Core Flood Tank - Class 2

d. Construction Code and Class (If Applicable):

Pressurizer (ASME Section III, 1965 with Summer 1967 Addenda, Class 1), Steam Generator (ASME Section III, 1965 with Summer 1967 Addenda, Class 1) Core Flood Tank, (USAS - B31.7, 1967 Class II) and Reactor Vessel, (ASME Section III, 1965 with Summer 1967 Addenda, Class 1)

e. Valve Category (If Applicable):

Not Applicable

II. Reference Code Requirement that has been determined to be impractical:

Figure IWB-2500-7, Examination Category B-D, Nozzle-to-Shell or Head Weld Joints - 100 % examination coverage.

Table IWB 2500-1, Examination Category B-A, Pressure Retaining Welds in Reactor Vessel, "Note 2: Includes 100% of the weld length"

Figure IWB-2500- 8, Examination Category B-J, Pressure Retaining Welds in Piping, "Note 3: Includes 100% of the weld length"

Figure IWC-2500-4, Examination Category C-B, Nozzle-to-Shell or Head Weld Joints - Inside Radius Section

III. Basis for Requesting Relief:

The Construction Permit for Oconee was issued on November 6, 1967. 10 CFR 50.55a(g) allows for plants whose Construction Permit was issued prior to January 1, 1971 to meet the requirements of ASME Section XI to the extent practical within the limitations of design, geometry and materials of construction of the components.

Due to part geometry and actual physical barriers, obtaining examination coverage on at least 90% of the weld volume as required by ASME Section XI, 1980 Edition as modified by Code Case N-460 was not possible.

The attached examination reports document the amount of Code required examination coverage obtained. To supplement this coverage, additional non-Code examination UT techniques were used in an effort to obtain as much examination coverage as possible.

The Reactor Coolant System meets the design requirements specified in 10 CFR 50 Appendix A (addressed in Chapter 3 of Oconee's Final Safety Analysis Report) and is constructed so as to have an exceedingly low probability of a gross rupture or significant leakage throughout its design life. Additionally, the reactor containment building is designed to sustain the initial effects of gross equipment failure. Technical Specification 3.1.6 limits the amount of acceptable leakage in the reactor containment building. Specifically, Technical Specification 3.1.6.2 limits unknown reactor coolant leakage to 1 gallon per minute, if that value is exceeded, then the reactor must be brought to cold shutdown within 24 hours.

All of the welds contained in this request are located within the reactor containment building. The reactor containment building is designed to contain any leakage, so if these were to fail any release would be contained within the reactor containment building. Section 15.14 of the FSAR addresses the loss of coolant accident and documents that any releases that

Based on the above evaluations, not meeting the requirements of ASME Section XI while performing these examinations will not endanger the health and safety of the general public.

IV. Alternate Examination:

The Class 1 welds will be included in the Class 1 pressure test performed at the end of each refueling outage. The Class 2 weld on the Core Flood Tank Nozzle has been examined by means of the system pressure test as required by Paragraph IWC-5000, ASME Section XI, 1980 Edition with Winter 1980 Addenda.

The use of radiography as an alternate volumetric examination method is not possible on pressure vessel welds, due to the impracticality of using double wall technique, no location to place film, etc.). Additionally, inservice radiography on pipe welds, in some cases will not be feasible due to physical barriers that would prohibit gaining access for the placement of number bands, film, etc.

Ultrasonic examinations will continued to be performed to the maximum extent possible during future inservice inspections.

V. Implementation Schedule:

Unit 3, Refueling Outage 14 (current outage December 1993 thru February 1994).

Evaluated By: R B Rouse Date 3/24/94

Level III Review: James J. McGuillen Date 3/28/94

Component Engineering Review: T. J. Coleman Date 4/4/94

Reviewed By: J D Barlow Date 3/24/94

ASME Class 1 and 2 Components NDE Inservice Inspection Request For Relief
For Oconee Unit 3 Based On ASME Section XI - 1980 Code Through Winter 1980 Addenda

Item No.	Exam Category/ Figure No.	System Or Component	Function	Area To Be Examined	Reason for Request	Proposed Alternate Examination
B01.011.003	B-A Figure IWB-2500-1	Reactor Vessel	Contains the fission process	Circ. Shell Weld	Limited scan due to weld location being between nozzles, 13" below the nozzle centerline. Actual coverage obtained = 73.4%.	None
B01.021.002	B-A Figure IWB-2500-3	Reactor Vessel	Contains the fission process	Circ. Head Weld	Limited scan due to Core catcher lugs Actual coverage obtained = 43.5%.	None
B01.030.001	B-A Figure IWB-2500-4	Reactor Vessel	Contains the fission process	Shell to Flange Weld	Limited scan due to location of clad patches. Actual coverage obtained in the areas of thiese patches= 67.9%.	None
B03.090.001	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Outlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 47.6%.	None
B03.090.001A	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Outlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 47.6%.	None
B03.090.002	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Outlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 47.6%.	None
B03.090.002A	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Outlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 47.6%.	None
B03.090.003	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 71.7%.	None
B03.090.003A	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 71.7%.	None
B03.090.004	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 71.7%.	None
B03.090.004A	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 71.7%.	None
B03.090.005	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 71.7%.	None
B03.090.005A	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 71.7%.	None

ASME Class 1 and 2 Components NDE Inservice Inspection Request For Relief
For Oconee Unit 3 Based On ASME Section XI - 1980 Code Through Winter 1980 Addenda

Item No!	Exam Category Figure No.	System Of Component	Function	Area To Be Examined	Reason for Request	Proposed Alternate Examination
B03.090.006	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 71.7%.	None
B03.090.006A	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 71.7%.	None
B03.090.007	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Core Flood Nozzle to Shell Weld	Limited scan due to part geometry (Core Flood Nozzle is blocked by flange taper on top side). Actual coverage obtained = 87.9%.	None
B03.090.007A	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Core Flood Nozzle to Shell Weld	Limited scan due to part geometry (Core Flood Nozzle is blocked by flange taper on top side). Actual coverage obtained = 87.9%.	None
B03.090.008	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Core Flood Nozzle to Shell Weld	Limited scan due to part geometry (Core Flood Nozzle is blocked by flange taper on top side). Actual coverage obtained = 87.9%.	None
B03.090.008A	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Core Flood Nozzle to Shell Weld	Limited scan due to part geometry (Core Flood Nozzle is blocked by flange taper on top side). Actual coverage obtained = 87.9%.	None
B03.100.003	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld Inside Radius	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 68.4%.	None
B03.100.004	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld Inside Radius	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 68.4%.	None
B03.100.005	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld Inside Radius	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 68.4%.	None
B03.100.006	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Inlet Nozzle to Shell Weld Inside Radius	Limited scan due to part geometry (nozzle configuration). Actual coverage obtained = 68.4%.	None
B03.100.007	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Core Flood Nozzle to Shell Inside Radius	Limited scan due to part geometry (Core Flood Nozzle is blocked by flange taper on top side). Actual coverage obtained = 50%.	None
B03.100.007A	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Core Flood Nozzle to Shell Inside Radius	Limited scan due to part geometry (Core Flood Nozzle is blocked by flange taper on top side). Actual coverage obtained = 50%.	None

ASME Class 1 and 2 Components NDE Inservice Inspection Request For Relief
For Oconee Unit 3 Based On ASME Section XI - 1980 Code Through Winter 1980 Addenda

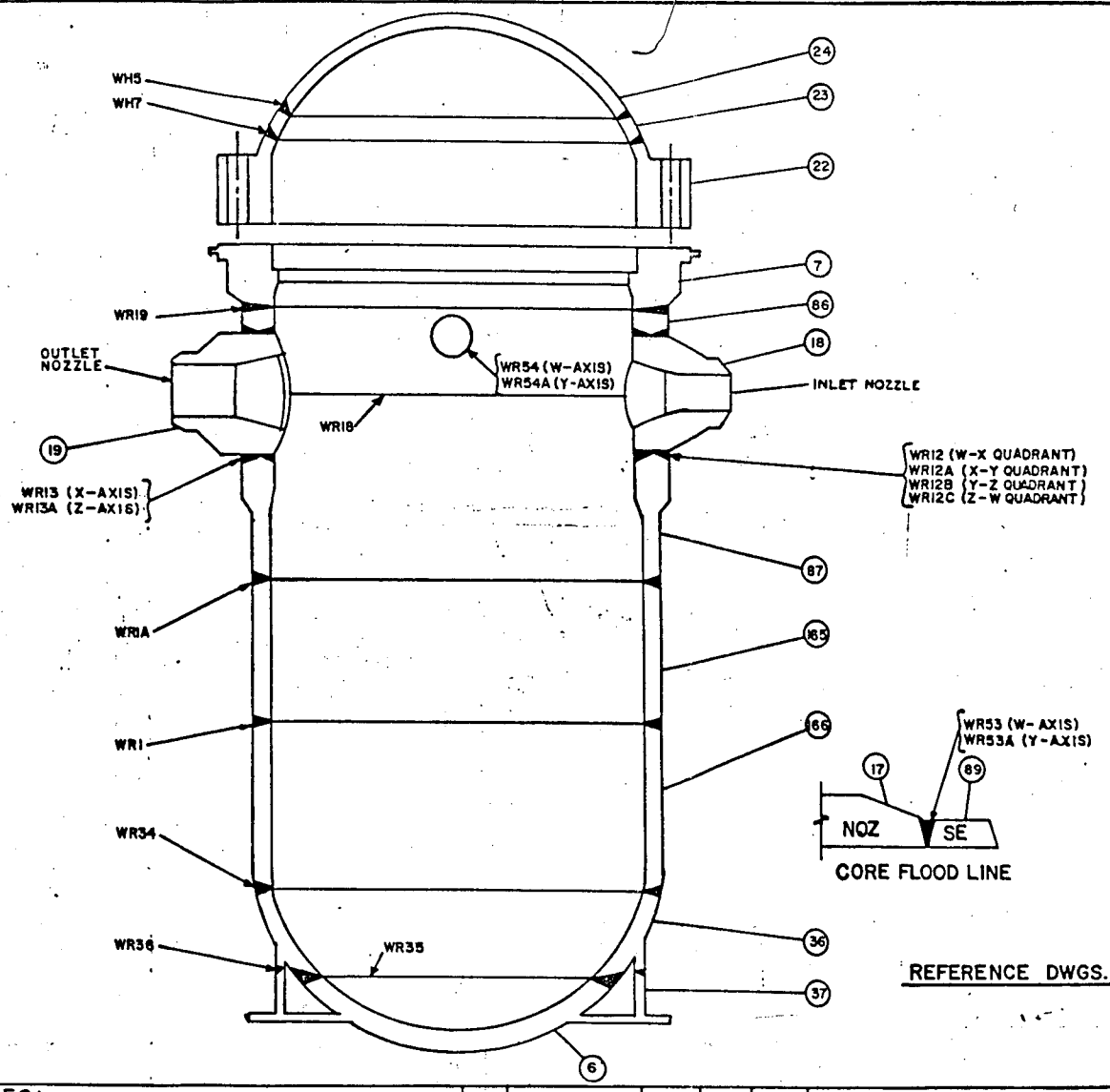
Item No.	Exam Category/ Figure No.	System Or Component	Function	Area To Be Examined	Reason for Request	Proposed Alternate Examination
B03.100.008	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Core Flood Nozzle to Shell Inside Radius	Limited scan due to part geometry (Core Flood Nozzle is blocked by flange taper on top side). Actual coverage obtained = 50%.	None
B03.100.008A	B-D Figure IWB-2500-7	Reactor Vessel	Contains the fission process	Core Flood Nozzle to Shell Inside Radius	Limited scan due to part geometry (Core Flood Nozzle is blocked by flange taper on top side). Actual coverage obtained = 50%.	None
B03.110.009	B-D Figure IWB2500-7	Pressurizer	Maintains the RCS pressure during operation & limits pressure changes during transients	Nozzle to vessel weld	Limited scan due to part geometry (nozzle configuration, heater bundle and lower head). Actual coverage obtained = 34.39%.	None
B03.110.011	B-D Figure IWB2500-7	Pressurizer	Maintains the RCS pressure during operation & limits pressure changes during transients	Nozzle to vessel weld	Limited scan due to part geometry (head configuration). Actual coverage obtained = 35.5%.	None
B03.110.012	B-D Figure IWB2500-7	Pressurizer	Maintains the RCS pressure during operation & limits pressure changes during transients	Nozzle to vessel weld	Limited scan due to part geometry ((nozzle configuration, heater bundle and lower head). Actual coverage obtained = 34.39%.	None
B03.120.009	B-D Figure IWB2500-7	Pressurizer	Maintains the RCS pressure during operation & limits pressure changes during transients	Nozzle inside radius	Limited scan due to part geometry (heater bundle). Actual coverage obtained = 60.6%.	None
B03.120.011	B-D Figure IWB2500-7	Pressurizer	Maintains the RCS pressure during operation & limits pressure changes during transients	Nozzle inside radius	Limited scan due to part geometry (heater bundle). Actual coverage obtained = 66.7%.	None
B03.120.012	B-D Figure IWB2500-7	Pressurizer	Maintains the RCS pressure during operation & limits pressure changes during transients	Nozzle inside radius	Limited scan due to part geometry (heater bundle). Actual coverage obtained = 60.6%.	None
B03.140.002	B-D Figure IWB2500-7	Steam Generator A	Provides steam to the turbine	Outlet nozzle inside radius	Limited scan due to part geometry (support skirt). Actual coverage obtained = 80%.	None
B03.140.005	B-D Figure IWB2500-7	Steam Generator A	Provides steam to the turbine	Inlet nozzle inside radius	Limited scan due to part geometry (support skirt). Actual coverage obtained = 74%.	None
B03.140.006	B-D Figure IWB2500-7	Steam Generator B	Provides steam to the turbine	Inlet nozzle inside radius	Limited scan due to part geometry (support skirt). Actual coverage obtained = 74%.	None

ASME Class 1 and 2 Components NDE Inservice Inspection Request For Relief
For Oconee Unit 3 Based On ASME Section XI - 1980 Code Through Winter 1980 Addenda

Item No.	Exam Category / Figure No.	System Or Component	Function	Area To Be Examined	Feason for Request	Proposed Alternate Examination
C02.022.006	C-B Figure IWC-2500-4	Core Flood Tank B	Part of the ECCS to re-flood the core during the initial stages of a LOCA resulting from large pipe breaks	Nozzle to Shell Inside radius	Limited scan due to part geometry. Actual coverage obtained = 72%.	None

Serial No. 94-01
Attachment 2
Page 1 of 6

IAL	MATL.
	CL1 SA533 GRB
	SA508 CL2
LE	SA508 CL2
	SA508 CL2
	SA508 CL2
GE	SA508 CL2
	SA508 CL2
	SA533 GRB CL1
	SA508 CL2
	SA516 GR70
NG	SA508 CL2
NG	SA508 CL2
	SA336-65 F8M
NG	SA508 CL2
NG	SA508 CL2



REFERENCE DWGS.

NOTES:
1. ALL ID NUMBERS SHALL BE PRECEDED BY "3RPV-".
2. PIECE NUMBERS ARE SHOWN IN CIRCLES.

NO.	REVISION	DRWN	RVWD	APPD
0	ORIG.	MJC	TMH	JEC
		7-8-91	2-5-92	2-19-92
		DATE	DATE	DATE

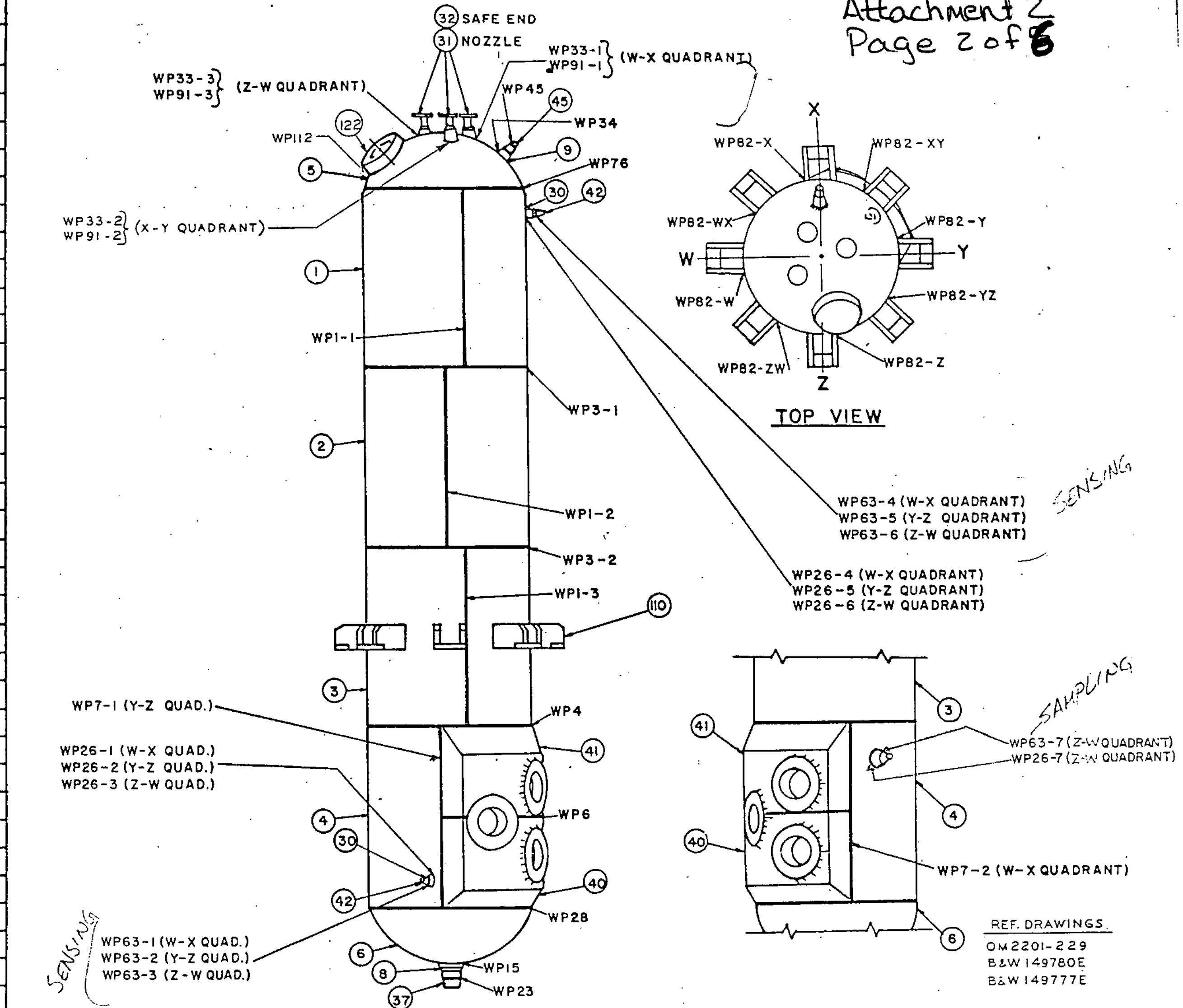
TITLE
REACTOR VESSEL
WELD OUTLINE

DWG NO. ISI-OCN3-001 REV. 0

Serial No. 94-01
Attachment 2
Page 2 of 6

	MATL.
:	SA 516 GR.70
E	SA 516 GR.70
E	SA 516 GR.70
	SA 516 GR.70
	SA 516 GR.70
	SA 516 GR.70
E	SA 508 CL. I
Y	SA 508 CL. I
	SA 508 GR. B
F	SA 508 CL. I
F	SA 182 F316
E	SA 336 CL. F8M
T	SA 508 CL. I
T	SA 508 CL. I
	SB-166
	SB-166
RT	SA-516 GR. 70
	SA-508 CL. I

	THICK.
PS	1.000
PS	1.000
PS	1.000
	1.1575
	4.750



NOTES:

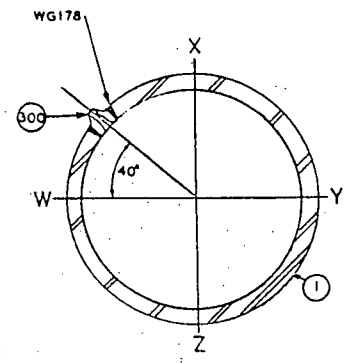
1. ALL I.D. NUMBERS SHALL BE PRECEDED BY "3PRZ-"
2. PIECE NUMBERS ARE SHOWN IN CIRCLES.

NO.	REVISION	DRWN	RVWD	APPD
1	REV. WELD QUAD.	TLT 10-9-90	[illegible] 10-9-9.	JEC 10-10-9.
0	ORIGINAL	WSB 1-15-82	TMH 2-2-82	[illegible]
		DATE	DATE	DATE

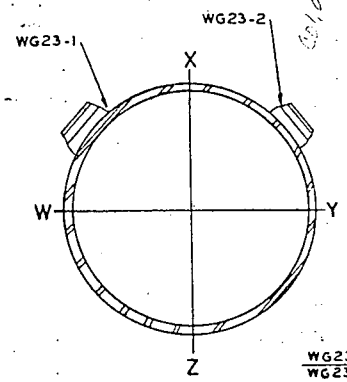
TITLE
PRESSURIZER WELD OUTLINE
DWG NO. ISI-OCN3-002 REV. 1

Serial No. 94-01
Attachment 2
Page 3 of 6

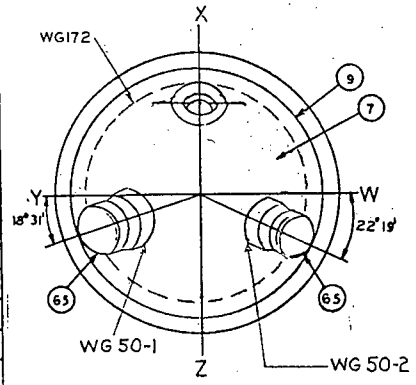
RIAL	
N	MATL.
	SA516 GR.70
	SA516 GR.70
	SA516 GR.70
	SA516 GR.70
	SA516 GR.70
	SA302 GR.B
	SA302 GR.B
RGING	SA508 CL 2
ZZLE	SA508 CL 1
ET	SA508 CL 2
ET	SA508 CL 2
	SA508 CL 1
	SA508 CL 1
T	SA533 GR.B
OZZLE	SA508 CL 1



SECTION A-A



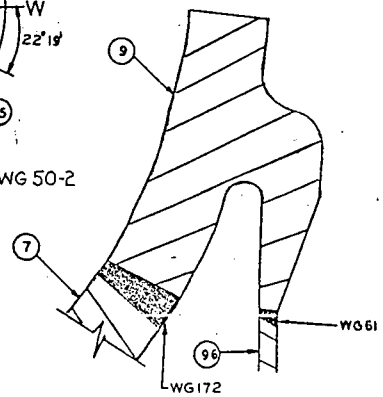
SECTION B-B



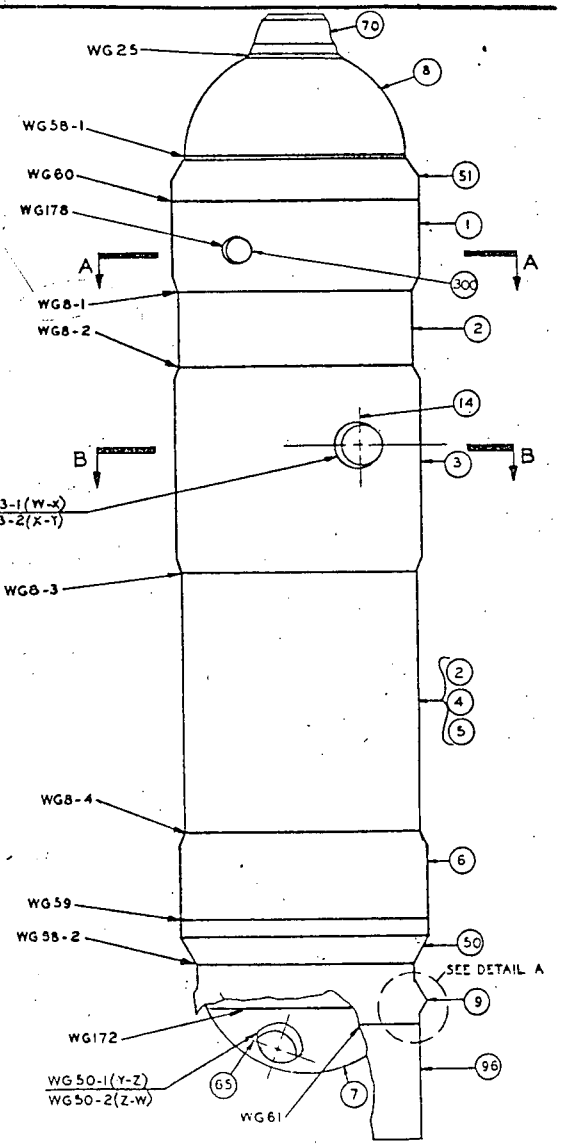
BOTTOM VIEW OF LOWER HEAD

REFERENCE DWGS.

OM 2201-6
OM 2201-222
OM 2201-480
B&W 111450
B&W 149830



DETAIL A



NOTES:

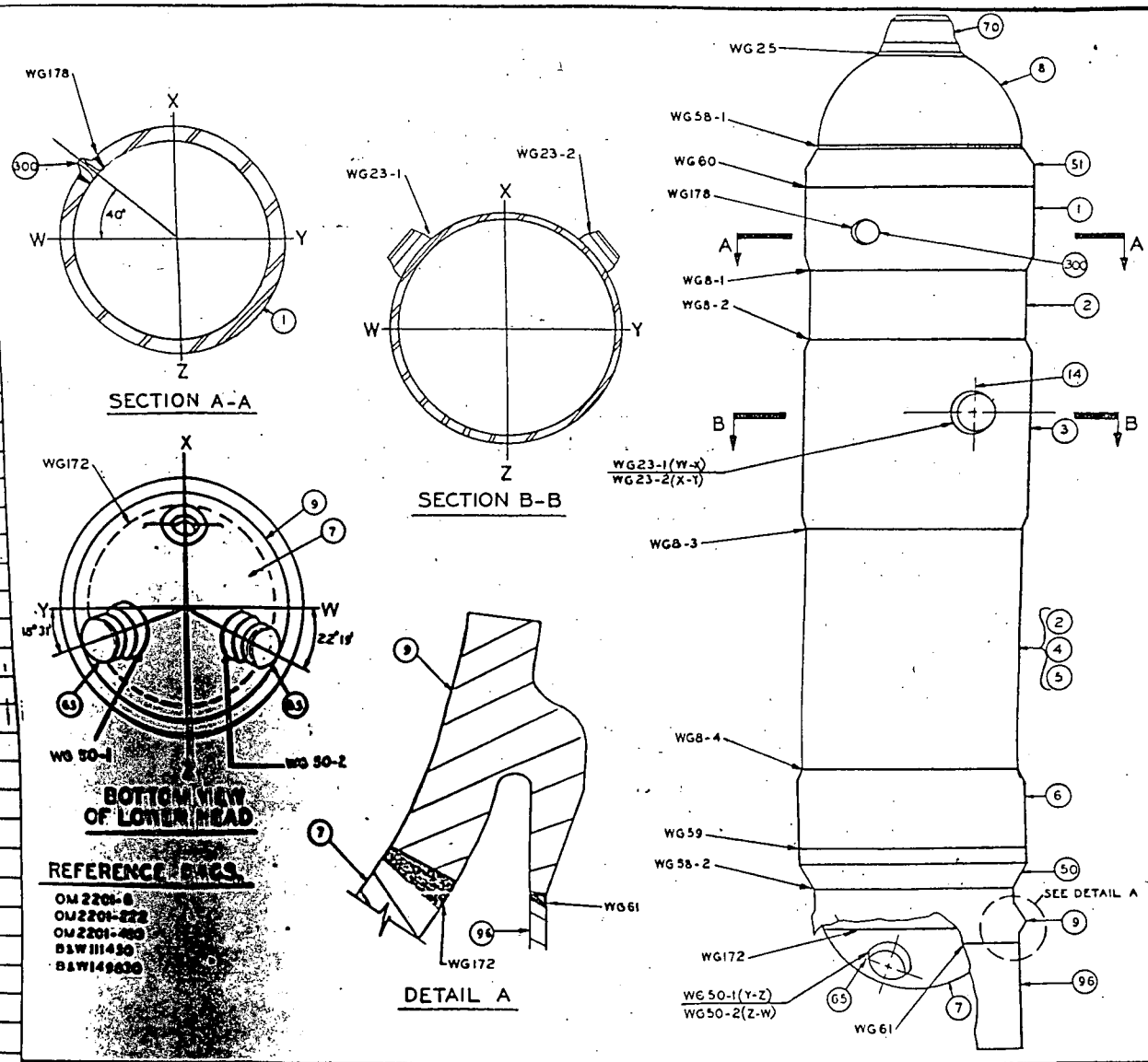
1. ALL I.D. NUMBERS SHALL BE PRECEDED BY "3SGA-".
2. PIECE NUMBERS ARE SHOWN IN CIRCLES.

NO.	REVISION	DRWN DATE	RVWD DATE	APPD DATE
1	PIECE NO. FOR WG58-2	TLT 11-26-89	JEC 11-29-89	WRH 11-29-89
0	ORIGINAL	WSB 2-1-82	TMH [illegible]	JEC 2-18-82

TITLE
STEAM GENERATOR "A"
WELD OUTLINE

DWG NO. ISI-OCN3-003 REV. 1

RIAL	
)N	MATL.
N	SA516 GR.70
N	SA516 GR.70
	SA516 GR.70
	SA516 GR.70
	SA516 GR.70
N	SA516 GR.70
	SA302 GR.B
	SA302 GR.B
ORGING	SA508 CL 2
IOZZLE	SA508 CL 1
HEET	SA508 CL 2
HEET	SA508 CL 2
Y	SA508 CL 1
LE	SA508 CL 1
	SA508 CL 1
IRT	SA533 GR.B
NOZZLE	SA508 CL 1



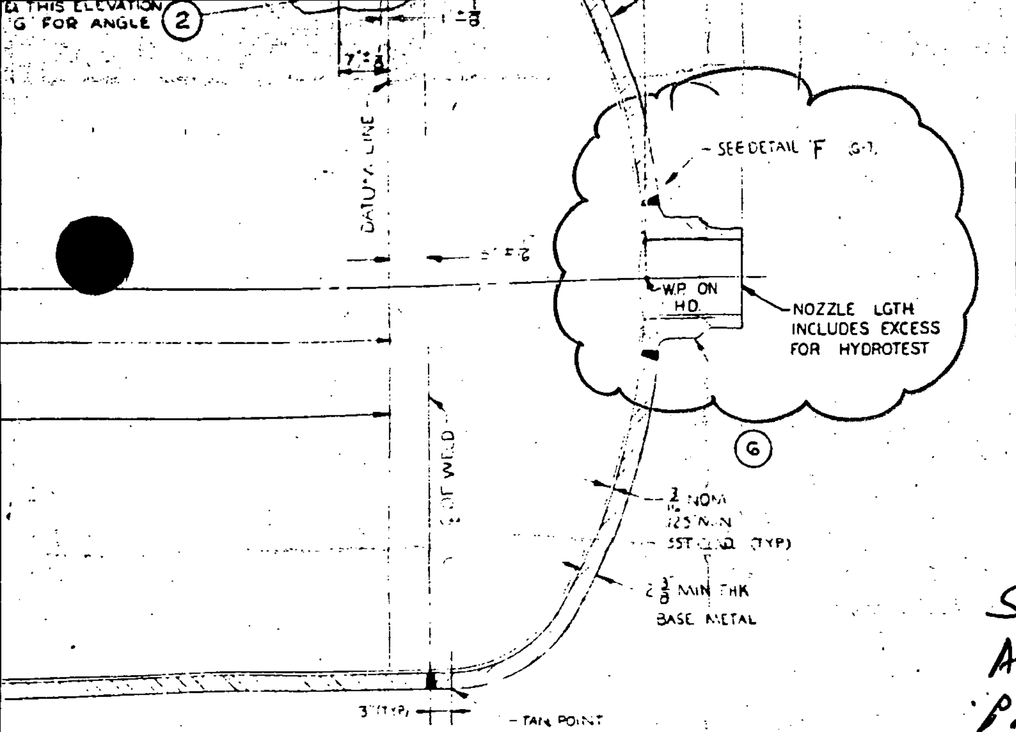
NOTES:

1. ALL I.D. NUMBERS SHALL BE PRECEDED BY "33GB-".
2. PIECE NUMBERS ARE SHOWN IN CIRCLES.

NO.	REVISION	DRWN	RVWD	APPD
		DATE	DATE	DATE
1	PIECE NO. FOR WG 58-2	TLT 11-20-89	JEC 11-27-89	WRH 11-29-89
0	ORIGINAL	WSB 2-1-82	TMH 2-2-82	JEC 2-18-82

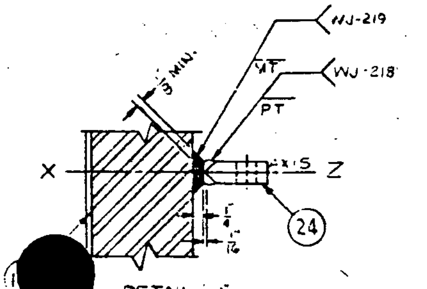
TITLE
STEAM GENERATOR "B"
WELD OUTLINE

DWG NO. 1SI-OCN3-004 REV. 1

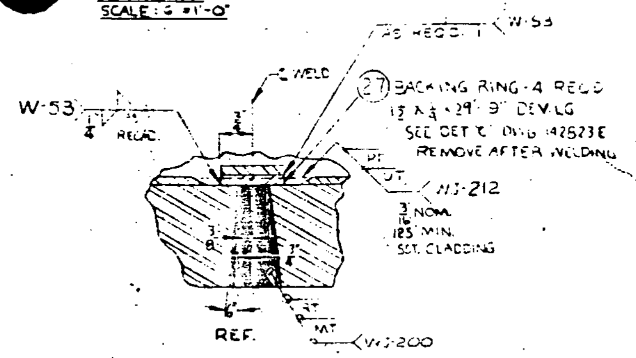


REV.	DESCRIPTION	DATE	BY
2	RELOCATED MANWAY FROM ℄ OF VESSEL TO THE W-Y AXIS. RELOCATED NOZZLE MK A-3 FROM "A" Y AXIS TO 45° OFF THE Y-Z AXIS. ADDED FLANGE (C-3). REVISED SUPPORT LUG ... WAS 6'-3$\frac{3}{4}$" (A-8) REVISED DET. "F" ... 4'-4$\frac{1}{8}$" ± $\frac{1}{8}$" WAS 3'-10$\frac{5}{8}$". (A-10) TAK/	[illegible]	[illegible]
[illegible]	ADDED: $\frac{3}{16}$ (H-3) ... (H-2) DET. H ~ KEY PLAN VIEW RELOCATED LUGS ~ REDREW DET. D ~ REMOVED "A" FROM MK. NO. RAS/ELH	[illegible]/64	ELH
4	(VIEW G) REM MK-29 — SECT A-A) ADDED (E-3) 3'-0$\frac{9}{32}$" REF, (D-3) 3'-5" REF (C-2) 23$\frac{7}{8}$" REF, MK-41, (B-2) 2'-5$\frac{3}{16}$ REF, (A-3) 2'-10$\frac{3}{16}$ REF (D-1, A-4, C-11) NOTE, (D-4) 2'-6$\frac{1}{16}$ ± $\frac{1}{8}$, (H-5) MK-40, — REM (E-2) MK-21 & 22 (B-2) MK-15, 16, 20, (D-2) 7$\frac{5}{8}$ DIA (A-4) 5$\frac{7}{8}$ DIA, (B-3) REF, (C-4) 1$\frac{3}{4}$ ± $\frac{1}{8}$, (D-3) 13°-0' ± 0°-30' WAS 13°-0'-30', (C-3) 2'-3" WAS 27" (C-4) 5'-8$\frac{1}{4}$ REF WAS 5'-7$\frac{3}{4}$ ± $\frac{1}{8}$, (A-10) 4'-5$\frac{3}{16}$ WAS 4'-4$\frac{1}{8}$" ± $\frac{1}{8}$" ~ ADDED DET. J — REMOVED DET. D & E — BB/SDH	9/24/69	BWH

Serial No. 94-01
Attachment 2
Page 5 of 6



DETAIL "H"
SCALE: 3" = 1'-0"



DETAIL A (A&E-4) (A&E-3)
SCALE ...1'-0"

REFERENCES

NO.	TITLE	DWG. NO.
1	FORMING OF HEAD & MISC. DETAILS	142822E
2	MISC. DET. OF CORE FLOODING TANK	142824E
3	CORE FLOODING TANK NOZZLES	142825E
4	FORMING & ASS'Y. OF SHELL	142823E

NOTES

1. FOR GENERAL NOTES SEE DWG. 142820E.
2. BEVEL OF CLADDING TO BE SUITABLE FOR PT EXAM & SUBSEQUENT WELDING.
3. SURFACE FINISH MAY HAVE ISOLATED TOOL MARKS OR SIMILAR DEPRESSIONS PROVIDED THEY ARE MINOR IN NATURE, OR NOT ON SURFACES WHICH ARE TO BE USED TO SEAL PRESSURE BOUNDARIES AND DO NOT VIOLATE MINIMUM THICKNESS REQUIREMENTS. ALL UPSET OR RAISED METAL IS TO BE REMOVED AND SHARP EDGES OF ALL DEPRESSIONS MUST BE FAIRED TO AT LEAST 3 TO 1.
4. SYMBOL DESIGNATION:
   - PT - DYE PENETRANT TEST
   - MT - MAGNETIC PARTICLE TEST
   - UT - ULTRASONIC TEST
   - RT - RADIOGRAPHIC TEST
   - WJ - WELD SPECIFICATION NUMBER

RECEIVED
84-69
DUKE POWER COMPANY
DESIGN ENGINEERING

OM 201-1021

APPROVED
DUKE POWER COMPANY
By W. H. Owen Date 9-9-69

NO COMMENTS: 7/21/69 ... KEM

OCONEE 1

TOLERANCES UNLESS OTHERWISE SPECIFIED
DIMENSIONS ARE FOR PART TEMPERATURE OF 68° F

	UP TO 6 INCL.	OVER 6" TO 12" INCL.	OVER 12" TO 24" INCL.	OVER 24" TO 6'-0" INCL.	OVER 5'-0" TO 14'-0" INCL.	OVER 14'-0"
DECIMAL DIM.	±.003"	±.005"	±.005"	±.010"	±.031"	--
FRAC. DIM. MACH.	±1/64"	±1/32"	±1/32"	±1/16	±1/16"	1/8
FRAC. DIM. UNMACH.	±1/16"	±1/16"	±3/32"	±1/8	±3/16	±1/4
DIM. FCA BURNING	±1/8"	±1/8"	±1/8"	±1/8	±3/16"	±3/16
MACHINED SURFACES: FLATNESS	.001 PER INCH OF SURFACE UP TO .020 MAX.					
PERPENDICULARITY	.002 PER INCH OF SURFACE UP TO .020 MAX.				BREAK CORNERS 1/64 R MIN	
CONCENTRICITY	.015 / TIR				OR CHAMFER	
ANGULARITY	±0° 30'				CHAMFERS ±5°	
PRESSURE VESSEL: NON-CIRCULARITY	A.S.M.E. CODE TOLERANCE					
TRAVEL	UP TO 42" DIA. INCL. ±3/16"			OVER 42" DIA. ±3/8"		
STRAIGHTNESS	1/4 PER 20 FEET OF LENGTH					

ALL MACHINED SURFACES TO HAVE 250 RMS FINISH UNLESS OTHERWISE NOTED

DWN BY R. HOLLANDER
CHKD BY C. WALKER
PASSED BY ...
APP'D BY ...
STD / SPL / DATE
620-0003-61
DO NOT SCALE USE DIMENSIONS ONLY

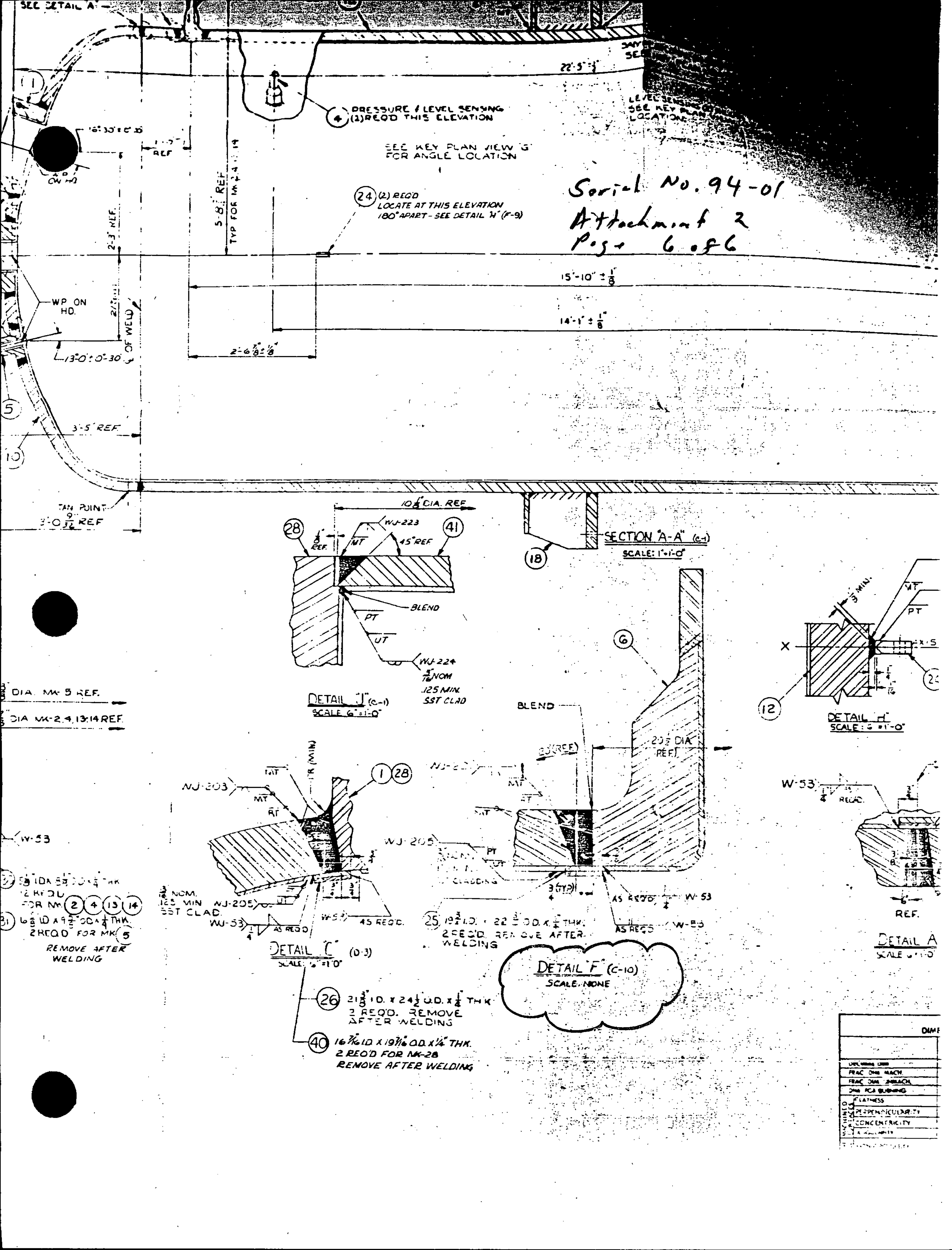
ASSEMBLY OF CORE FLOODING TANK

SCALE AS NOTED

THE BABCOCK & WILCOX COMPANY

DWG. NO. 142821 E — REV. 4

9 10 11 12 13



Serial No. 94-01
Attachment 2
Page 6 of 6

Serial No. 94-01
Attachment 3
Page 1 of 8

Limited Exam Data Sheet

Station RONEE Unit 3 I.D. # 3 PZR.-WP26-1

By Larry Thaubler Date 1-28-94 Item # B03.110.009

Checked By _____ Date _____ Page 3 Of 10

DETERMINING THE CUMULATIVE TOTAL OF WELD VOLUME INSPECTED
(in percentage)

Total Cross Sectional Area 6.11 x (Number of Scans) 11 = 672.21 (% Factor)

Vessels:

Area Loss : Zone #1 83.13

Zone #2 94.82

Zone #3 255.84

Total Zone Loss 433.79 /(% Factor) 672.21 x 100 = 64.5 % of Loss

Lump Sum Loss From Other Limitations + 1.11 %

Total Loss 65.61 %

100% - (Total Loss) 65.61 = 34.39 % of Coverage

(Additional 0 % of Partial Coverage)

Qualifies for Request for Relief ☒ Yes ☐ No

Piping:

Axial Scan _____ (Loss) ____ / ____ (% Factor) x 100 = ____ % of Loss

Circumferential Scan Over Root Area ☐ Yes ☐ No ____ % of Loss

Axial Loss _____ + Circ. Loss _____ = _____ /2 = _____ % Loss

Additional Losses (Due to hangers, restraints, etc.) + _____ % Loss

Explain: _____ _____ Total % Loss

100% - (Total Loss) _____ = _____ % of Coverage

Qualifies for Request for Relief ☐ Yes ☐ No

Disposition: _____

By: _____ Date: _____

Form 00184 (R4-88) DUKE POWER COMPANY

Station OCONEE Unit 3 Rev. ____ File No. 3PER-WP26-1 Sheet ____ Of ____

Subject LIMITED EXAM DATA

By Larry Moulder Date 1-28-94

Prob No. B03.110.009 Checked By ____ Date PAGE 4 OF 10

SUMMARY:

TO DETERMINE % FACTOR TOTAL EXAM AREA X NUMBER of SCANS

61.N SQ.IN. X N SCANS = 672.21 % FACTOR

AREA Losses: DUE TO Nozzle Configuration

AREA for ZONE 1	83.13	SQ.IN.
ZONE 2	94.82	SQ.IN.
ZONE 3	255.84	SQ.IN.
	433.79	SQ.IN.

433.79 ÷ 672.21 X 100 = 64.5% Loss

Loss DUE TO LIMITATIONS:

DUE TO HEATER BUNDLE	1.04%
DUE TO LOWER HEAD	.07%
	1.11%

64.5 + 1.11 = 65.61% Loss

100% 65.61% = 34.39% COVERAGE

Form 00184 (R4-88) DUKE POWER COMPANY

Station OCONEE Unit 3 Rev. ____ File No. 3PER-WP26-1 Sheet ____ Of ____

Subject LIMITED EXAM DATA

By Larry Moulder Date 1-28-94

Prob No. B03.110.009 Checked By ____ Date PAGE 5 OF 10

ZONE 1

AREA of LOSS:

35°	1 TO 2	$= \frac{1.5 \times .4}{2} =$	.375 SQ IN.
35°	2 TO 1	$= \frac{6.8 \times .8}{2} + \frac{4.1 \times 6.8}{2} =$	16.66 SQ IN.
45°	1 TO 2	$= \frac{.4 \times 1.1}{2} =$	.22 SQ IN.
45°	2 TO 1	$= \frac{6.8 \times 1.4}{2} + \frac{4.1 \times 6.8}{2} =$	18.7 SQ IN.
60°	1 TO 2	$= \frac{.6 \times .25}{2} =$	.075 SQ IN.
60°	2 TO 1	$= \frac{4.1 \times 6.8}{2} + \frac{6.8 \times 1.9}{2} =$	20.4 SQ IN.
35°	CW	$= \frac{6.5 \times .2}{2} + \frac{6.5 \times 1.6}{2} =$	5.85 SQ IN.
35°	CCW		5.85 SQ. IN.
45°	CW		5.85 SQ IN.
45°	CCW		5.85 SQ IN.
0°		$\frac{5.5 \times 1.2}{2} =$	3.3 SQ IN.

TOTAL AREA of LOSS 83.13 SQ IN.

ZONE 2

AREA of LOSS:

35°	1 TO 2	$= \frac{4.7 \times .3}{2} + \frac{4.7 \times 2.3}{2} + \frac{1.8 \times 1}{2} =$	7.01 SQ IN.
35°	2 TO 1	= TOTAL LOSS	10.05 SQ IN.
45°	1 TO 2	$= \frac{3.7 \times .35}{2} + \frac{2.3 \times 2.7}{2} + \frac{1.8 \times 1}{2} =$	4.65 SQ IN.
45°	2 TO 1	= TOTAL LOSS	10.05 SQ IN.
60°	1 TO 2	$= \frac{2.8 \times .2}{2} + \frac{2.3 \times 1.4}{2} + \frac{1.8 \times 1}{2} =$	2.79 SQ IN.
60°	2 TO 1	= TOTAL LOSS	10.05 SQ IN.
35°	CW	= TOTAL LOSS	10.05 SQ IN
35°	CCW	= TOTAL LOSS	10.05 SQ IN.
45°	CW	= TOTAL LOSS	10.05 SQ IN.
45°	CCW	= TOTAL LOSS	10.05 SQ. IN.
0°	$\frac{.1 \times .6}{2} = .03$	10.05 - .03 =	10.02 SQ. IN.

Station OCONEE Unit 3 Rev. ____ File No. 3PER-WP26-1 Sheet ____ Of ____

Subject LIMITED EXAM DATA

By Larry Mauldin Date 1-28-94

Prob No. 303.110.009 Checked By ____ Date PAGE 6 OF 10

ZONE 2 (CONT.)

TOTAL AREA of LOSS 94.82 SQ IN.

ZONE 3

AREA of LOSS:

35°	1 TO 2	$\frac{1.4 \times 2.0}{2} = 1.4$ (OVERLAP)		
		27.7 − 1.4 =	26.3	SQ IN.
35°	2 TO 1	TOTAL LOSS	27.7	SQ. IN.
45°	1 TO 2	$\frac{3.1 \times 3.35}{2} = 5.19$		
		27.7 − 5.19 =	22.5	SQ IN.
45°	2 TO 1	TOTAL LOSS	27.7	SQ IN.
60°	1 TO 2	$\frac{4.8 \times 3.1}{2} + \frac{5.7 \times 2.5}{2} = 14.565$		
		27.7 − 14.565 =	13.14	SQ IN.
35°	CW	TOTAL LOSS	27.7	SQ IN
35°	CCW	"	27.7	SQ. IN.
45°	CW	"	27.7	SQ. IN.
45°	CCW	"	27.7	SQ. IN.
0°		"	27.7	SQ. IN.
		TOTAL AREA of LOSS	255.84	SQ. IN.

PRESSURIZER SAMPLING NOZZLE

ITEM # B03.110.009
I.D. # 3PER-WP264

ER. SIDE

DL

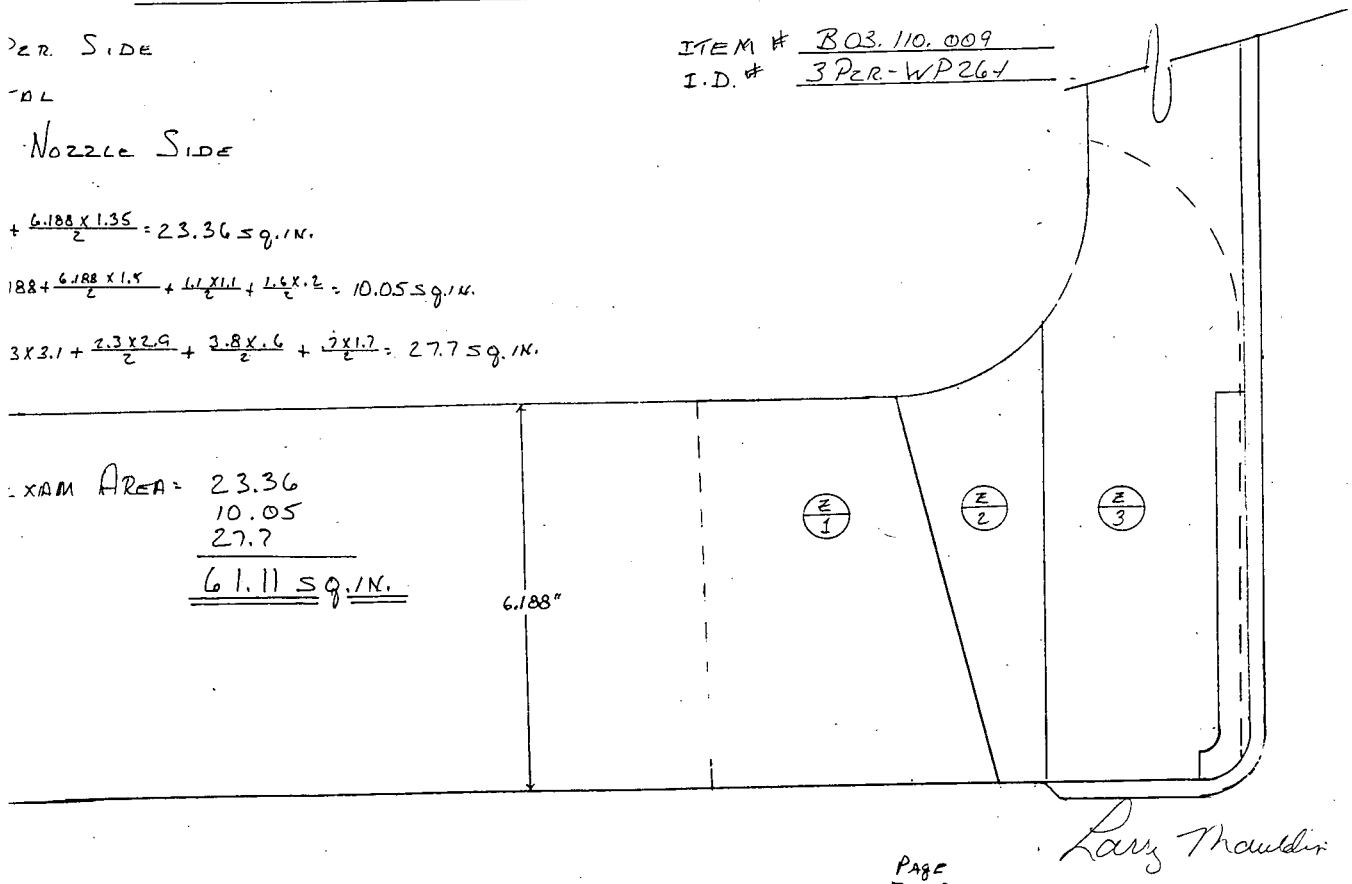
NOZZLE SIDE

$+\frac{6.188 \times 1.35}{2} = 23.36$ SQ. IN.

$188 + \frac{6.188 \times 1.5}{2} + \frac{6.1 \times 1.1}{2} + \frac{1.6 \times .2}{2} = 10.05$ SQ. IN.

$3 \times 3.1 + \frac{2.3 \times 2.9}{2} + \frac{3.8 \times .6}{2} + \frac{3 \times 1.7}{2} = 27.7$ SQ. IN.

XAM AREA = 23.36
10.05
27.7
61.11 SQ. IN.



Larry Mauldin

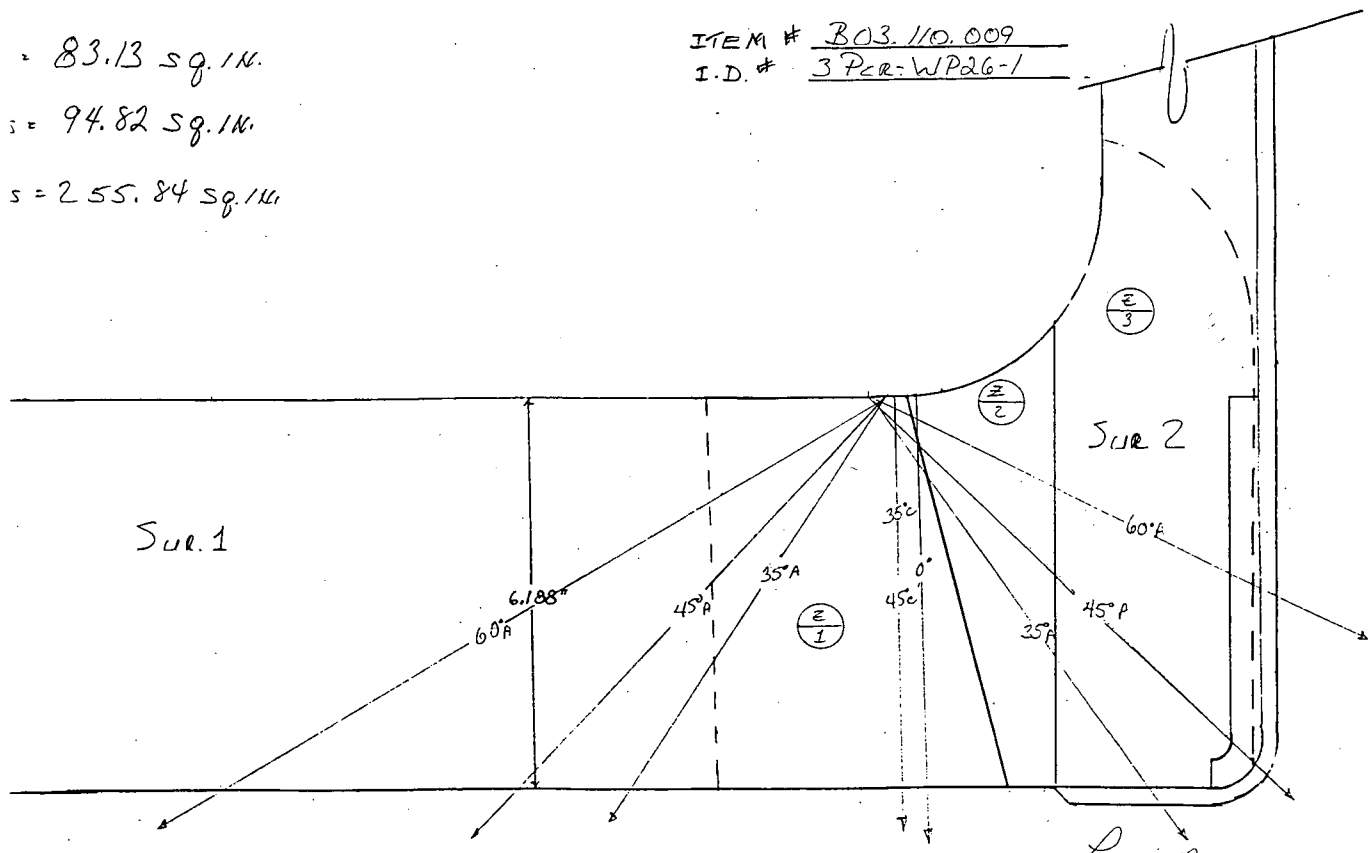
PRESSURIZER SAMPLING NOZZLE

= 83.13 sq. in.

= 94.82 sq. in.

s = 255.84 sq. in.

ITEM # B03.110.009
I.D. # 3 PCR-WP26-1

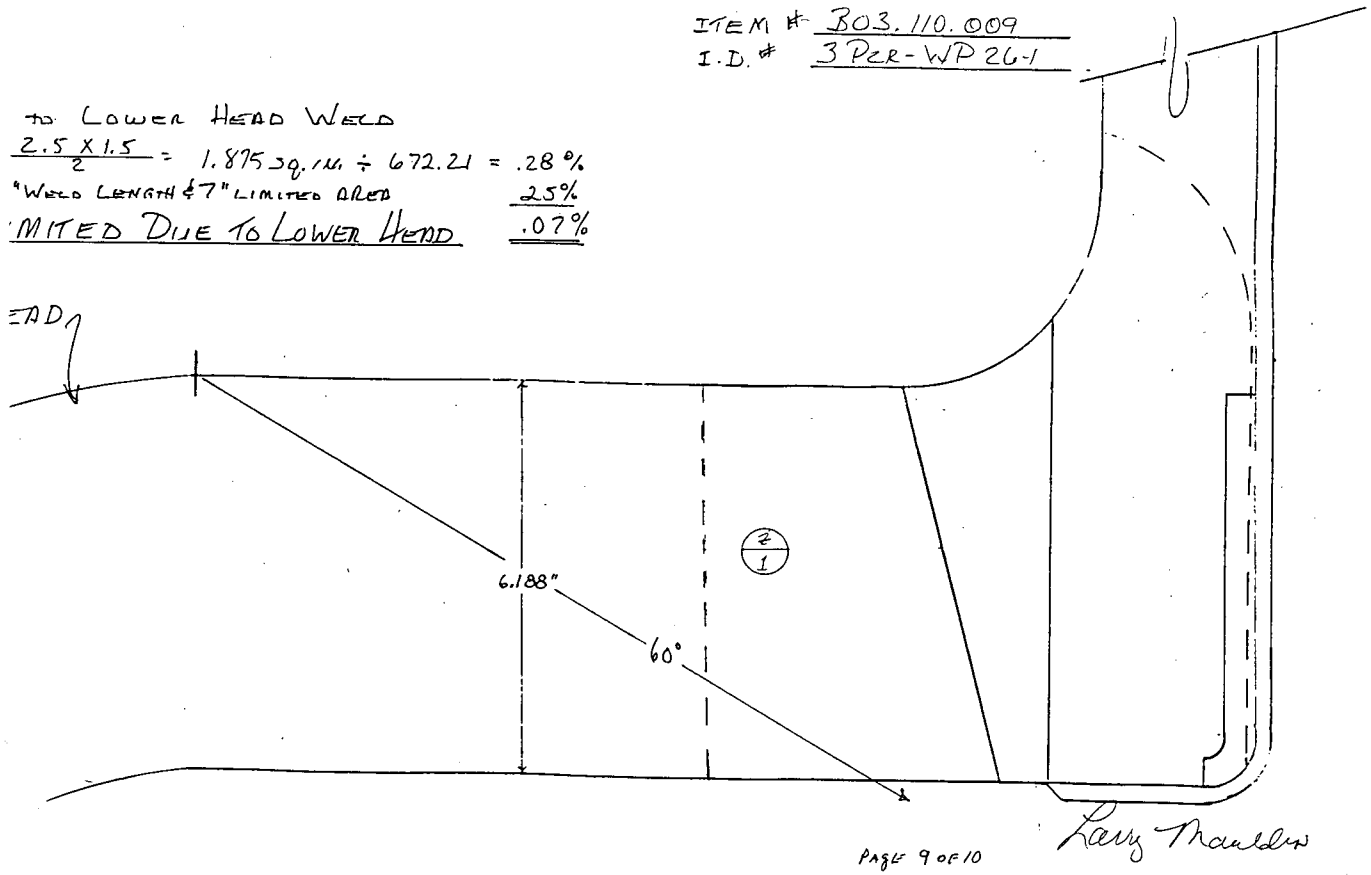


Larry Mandin

PRESSURIZER SAMPLING NOZZLE

ITEM # B03.110.009
I.D. # 3 PZR-WP 26-1

TO LOWER HEAD WELD
$\frac{2.5 \times 1.5}{2}$ = 1.875 SQ. IN. ÷ 672.21 = .28 %
"WELD LENGTH & 7" LIMITED AREA 25%
LIMITED DUE TO LOWER HEAD .07%



Larry Maulden

PRESSURIZER SAMPLING NOZZLE

ITEM # B03.110.009
I.D. # 3 PER-WP261

LOSS DUE TO HEATER BUNDLE

33.35 sq. in. ÷ 672.21 x 100 = 4.96

LENGTH of WELD 28" & 6" LIMITED AREA = 21% of WELD

1.04 ADDITIONAL LOSS

+ $\frac{6.5 \times .5}{2}$ = 6.455 − .375 = 6.08 sq. in. (35°)

= 2.4 − .22 = 2.18 sq. in. (45°)

= 1.125 − .075 = 1.05 sq. in. (60°)

9.31 sq. in

ADDITIONAL LOSS FOR HEATER BUNDLE

7.01 = 3.04 sq. in. (35°)

= .91

91 = 9.14 − 4.65 = 4.49 sq in (45°)

$\frac{3.2 \times .8}{2}$ = 6.03

.03 = 4.02 − 2.79 = 1.23 sq in (60°)

8.76 sq. in

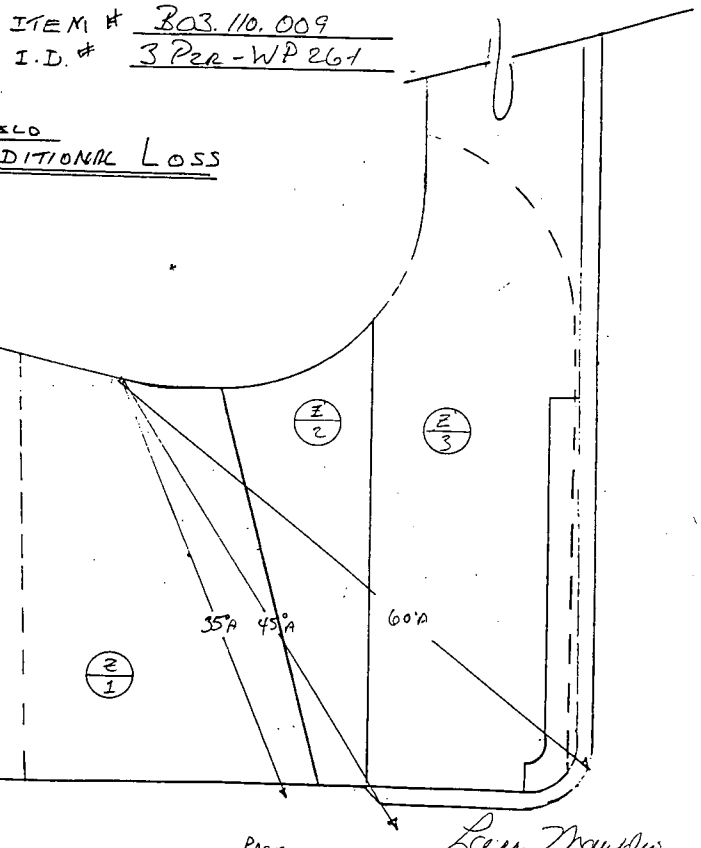
$\frac{4.3 \times .5}{2}$ = 5.88

5.88 = 21.82 − 13.14 = 8.68 sq. in. (60°)

6.3 = 1.4 sq. in. (35°)

22.5 = 5.2 sq. in. (45°)

15.28 sq in



Larry Mauldin

Form 00184 (R4-88)

DUKE POWER COMPANY

Station OCONEE Unit 3 Rev. ____ File No. 3PCR-WP26.3 Sheet ____ Of ____

Subject LIMITED EXAM DATA

By Larry Chandler Date 2-2-94

Prob No. B 03.110.011 Checked By ____ Date Page 3 of 7

SUMMARY:

TO DETERMINE % FACTOR,

TOTAL EXAM AREA X NUMBER OF SCANS

61.11 sq in. X 11 SCANS = 672.21 FACTOR

AREA of LOSSES:

DUE TO NOZZLE CONFIGURATION

ZONE 1	83.13	sq in.
ZONE 2	94.82	sq in.
ZONE 3	255.84	sq. in.
	433.79	sq. in

433.79 ÷ 672.21 x 100 = 64.5 % Loss

100 - 64.5 = 35.5% COVERAGE

Station OCONEE Unit 3 Rev. ____ File No. 3PER-WP26.3 Sheet ____ Of ____

Subject LIMITED EXAM DATA

By Larry Thaulder Date 2.2.94

Prob No. B03.110.011 Checked By ____ Date PAGE 4 OF 7

ZONE 2 (CONT.)

TOTAL AREA of LOSS 94.82 SQ IN.

ZONE 3

AREA of LOSS:

35°	1 TO 2	$\frac{1.4 \times 2.0}{2} = 1.4$ (COVERAGE)		
		27.7 − 1.4 =	26.3	SQ IN.
35°	2 TO 1	TOTAL LOSS	27.7	SQ. IN.
45°	1 TO 2	$\frac{3.1 \times 3.35}{2} = 5.19$		
		27.7 − 5.19 =	22.5	SQ IN.
45°	2 TO 1	TOTAL LOSS	27.7	SQ IN.
60°	1 TO 2	$\frac{4.8 \times 3.1}{2} + \frac{5.7 \times 2.5}{2} = 14.565$		
		27.7 − 14.565 =	13.14	SQ IN.
35°	CW	TOTAL LOSS	27.7	SQ IN
35°	CCW	"	27.7	SQ. IN.
45°	CW	"	27.7	SQ. IN.
45°	CCW	"	27.7	SQ. IN.
0°		"	27.7	SQ. IN.
		TOTAL AREA of LOSS	255.84	SQ. IN.

Station OCONEE Unit 3 Rev. ____ File No. 3PER-WP26-3 Sheet ____ Of ____

Subject LIMITED EXAM DATA

By Larry Maulden Date 2.2.96

Prob No. B03.110.011 Checked By ____ Date PAGE 5 OF 7

ZONE 1

AREA of LOSS:

35°	1 TO 2	$= \frac{1.5 \times .4}{2} =$	.375 SQ IN.
35°	2 TO 1	$= \frac{6.8 \times .8}{2} + \frac{4.1 \times 6.8}{2} =$	16.66 SQ IN.
45°	1 TO 2	$= \frac{.4 \times 1.1}{2} =$	.22 SQ IN.
45°	2 TO 1	$= \frac{6.8 \times 1.4}{2} + \frac{4.1 \times 6.8}{2} =$	18.7 SQ IN.
60°	1 TO 2	$= \frac{.6 \times .25}{2} =$	.075 SQ IN.
60°	2 TO 1	$= \frac{4.1 \times 6.8}{2} + \frac{6.8 \times 1.9}{2} =$	20.4 SQ IN.
35°	CW	$= \frac{6.5 \times .2}{2} + \frac{6.5 \times 1.6}{2} =$	5.85 SQ IN.
35°	CCW		5.85 SQ. IN.
45°	CW		5.85 SQ IN.
45°	CCW		5.85 SQ IN.
0°		$\frac{5.5 \times 1.2}{2} =$	3.3 SQ IN.

TOTAL AREA of LOSS 83.13 SQ IN.

ZONE 2

AREA of LOSS:

35°	1 TO 2	$= \frac{4.7 \times .3}{2} + \frac{4.7 \times 2.3}{2} + \frac{1.8 \times 1}{2} =$	7.01 SQ IN.
35°	2 TO 1	= TOTAL LOSS	10.05 SQ IN.
45°	1 TO 2	$= \frac{3.7 \times .35}{2} + \frac{2.3 \times 2.7}{2} + \frac{1.8 \times 1}{2} =$	4.65 SQ IN.
45°	2 TO 1	= TOTAL LOSS	10.05 SQ IN.
60°	1 TO 2	$= \frac{2.8 \times .2}{2} + \frac{2.3 \times 1.4}{2} + \frac{1.8 \times 1}{2} =$	2.79 SQ IN.
60°	2 TO 1	TOTAL LOSS	10.05 SQ IN.
35°	CW	TOTAL LOSS	10.05 SQ IN
35°	CCW	TOTAL LOSS	10.05 SQ IN
45°	CW	TOTAL LOSS	10.05 SQ IN.
45°	CCW	TOTAL LOSS	10.05 SQ. IN.
0°	$\frac{.1 \times .6}{2} = .03$	10.05 - .03 =	10.02 SQ. IN.

PRESSURIZER SAMPLING NOZZLE

PZR. SIDE

ETAL

AL NOZZLE SIDE

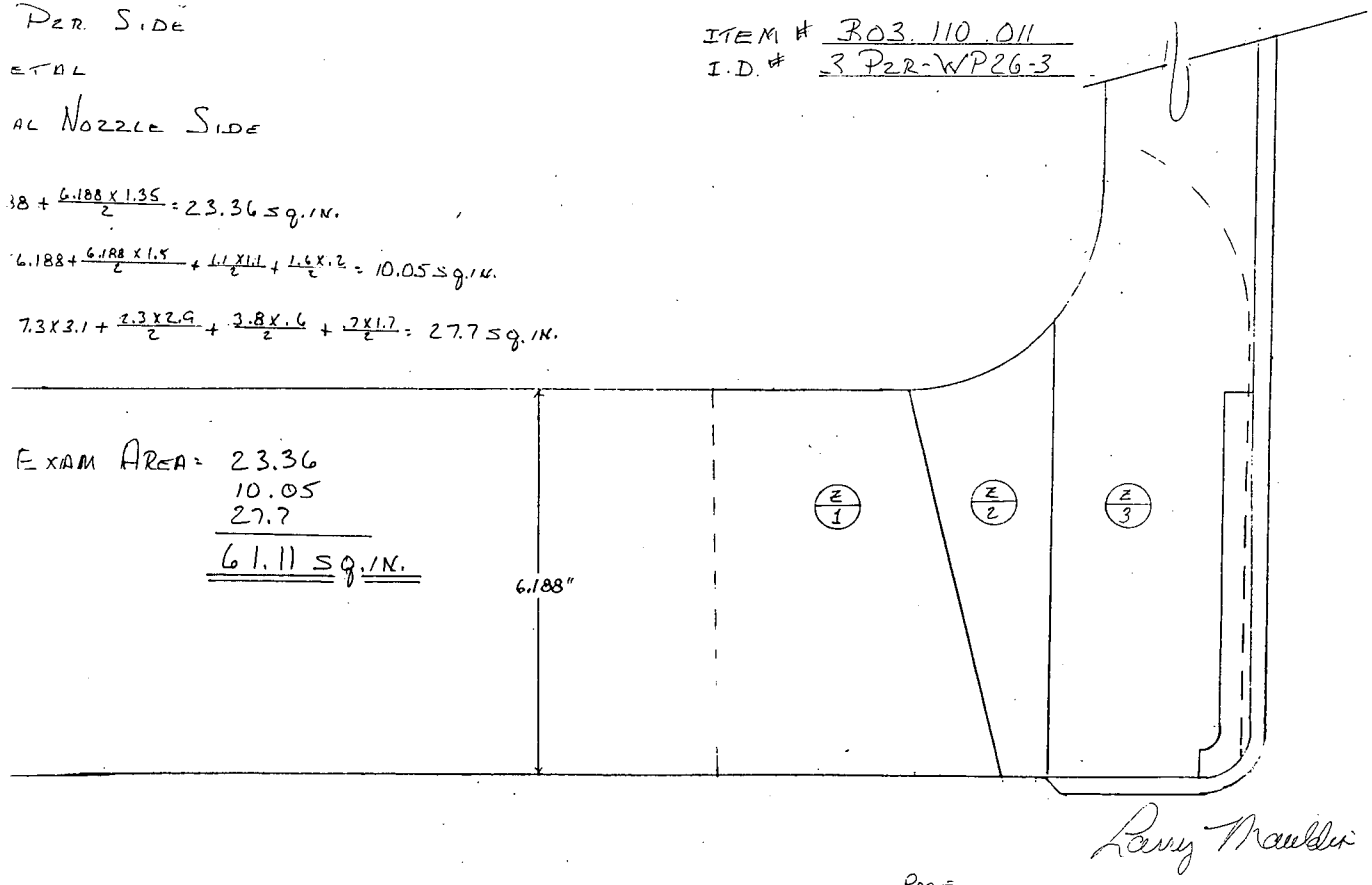
ITEM # R03.110.011
I.D. # 3 PZR-WP26-3

$.88 + \frac{6.188 \times 1.35}{2} = 23.36$ sq. in.

$6.188 + \frac{6.188 \times 1.5}{2} + \frac{1.1 \times 1.1}{2} + \frac{1.6 \times .2}{2} = 10.05$ sq. in.

$7.3 \times 3.1 + \frac{2.3 \times 2.6}{2} + \frac{3.8 \times .6}{2} + \frac{.7 \times 1.7}{2} = 27.7$ sq. in.

EXAM AREA = 23.36
10.05
27.7
61.11 sq. in.



Larry Maulden

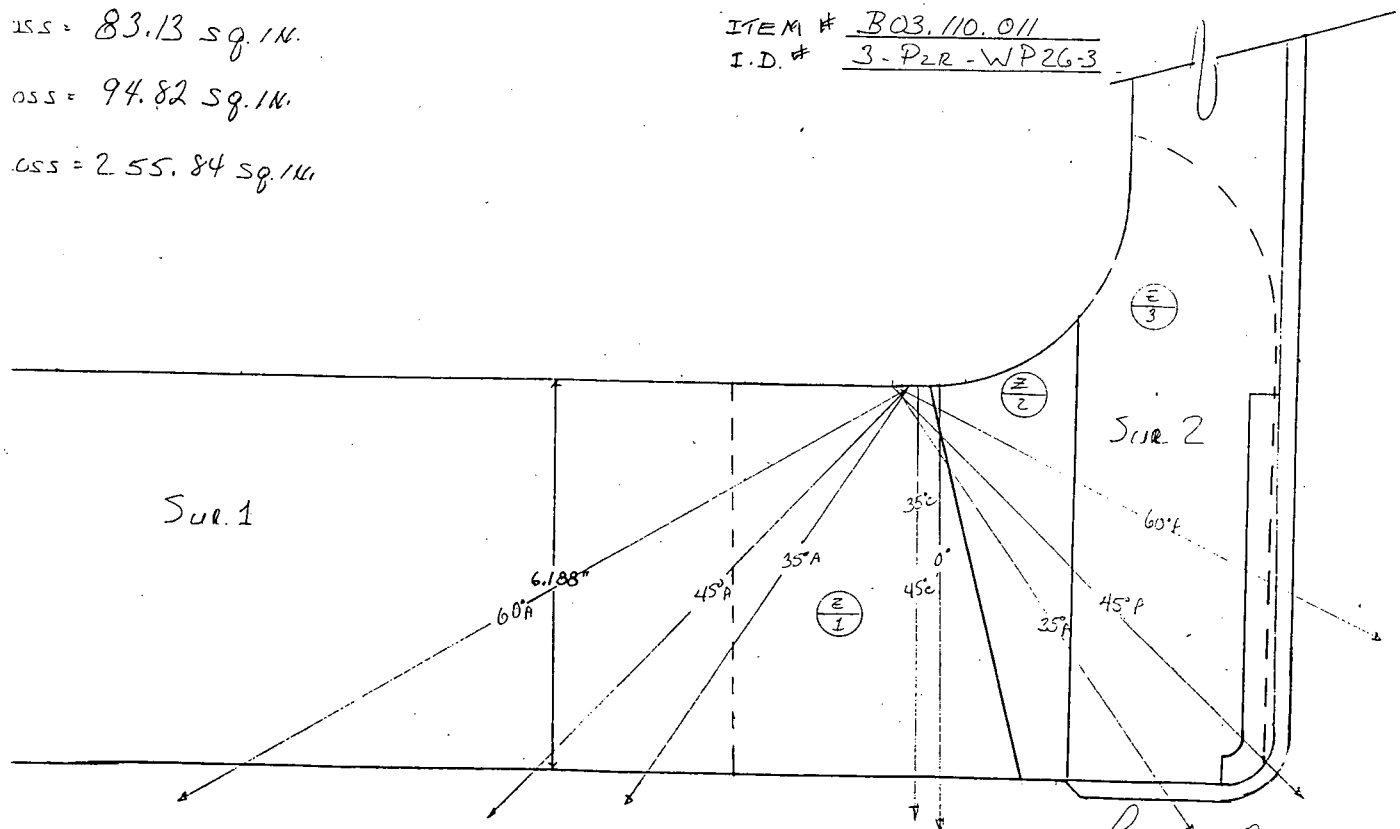
PRESSURIZER SAMPLING NOZZLE

ITEM # B03.110.011
I.D. # 3-P2R-WP26-3

ISS = 83.13 SQ. IN.

OSS = 94.82 SQ. IN.

OSS = 255.84 SQ. IN.



Larry Moulder

Limited Exam Data Sheet

Station OCONEE Unit 3 I.D. # 3P2R-WP26-7

Larry Maulden Date 1-28-94 Item # B03.110.012

Checked By _____ Date _____ Page 3 Of 10

DETERMINING THE CUMULATIVE TOTAL OF WELD VOLUME INSPECTED
(in percentage)

Total Cross Sectional Area 6.11 x (Number of Scans) 11 = 67.21 (% Factor)

Vessels:

Area Loss : Zone #1 83.13
Zone #2 94.82
Zone #3 255.84

Total Zone Loss 433.79 /(% Factor) 67.21 x 100 = 64.5 % of Loss

Lump Sum Loss From Other Limitations ± 1.11 %

Total Loss 65.61 %

100% - (Total Loss) 65.61 = 34.39 % of Coverage

(Additional 0 % of Partial Coverage)

Qualifies for Request for Relief ☒ Yes ☐ No

Piping:

Axial Scan _____ (Loss) ____ / ____ (% Factor) x 100 = ____ % of Loss

Circumferential Scan Over Root Area ☐ Yes ☐ No ____ % of Loss

Axial Loss _____ + Circ. Loss _____ = _____ /2 = _____ % Loss

Additional Losses (Due to hangers, restraints, etc.) + _____ % Loss

Explain: _____ _____ Total % Loss

_____

_____

100% - (Total Loss) _____ = _____ % of Coverage

Qualifies for Request for Relief ☐ Yes ☐ No

Disposition: _____

_____

_____

_____

_____

_____

_____

By: _____ Date: _____

Form 00184 (R4-88) DUKE POWER COMPANY

Station: OCONEE Unit: 3 Rev.: File No.: 3PER-WP26-7 Sheet: Of:

Subject: LIMITED EXAM DATA

By: Larry Maulden Date: 1-28-94

Prob No.: B03.110.012 Checked By: Date: PAGE 4 OF 10

SUMMARY:

TO DETERMINE % FACTOR TOTAL EXAM AREA X NUMBER of SCANS

61.1 Sq in. X 11 SCANS = 672.21 % FACTOR

AREA Losses: Due to Nozzle Configuration

AREA for ZONE 1	83.13	Sq in.
ZONE 2	94.82	Sq in.
ZONE 3	255.84	Sq in.
	433.79	Sq in.

433.79 ÷ 672.21 X 100 = 64.5 % Loss

Loss Due to Limitations:

Due to Heater Bundle	1.04%
Due to Lower Head	.07%
	1.11%

64.5 + 1.11 = 65.61% Loss

100% 65.61% = 34.39% COVERAGE

Form 00184 (R4-88) DUKE POWER COMPANY

Station OCONEE Unit 3 Rev. ____ File No. 3PERWP26-7 Sheet ____ Of ____

Subject LIMITED EXAM DATA

By Larry Maulden Date 1-28-94

Prob No. B03.110.012 Checked By ____ Date PAGE 5 OF 10

ZONE 1

AREA of LOSS:

35°	1 TO 2	$= \frac{1.5 \times .9}{2} =$	.375	SQ IN.
35°	2 TO 1	$= \frac{6.8 \times .8}{2} + \frac{4.1 \times 6.8}{2} =$	16.66	SQ IN.
45°	1 TO 2	$= \frac{.4 \times 1.1}{2} =$	.22	SQ IN.
45°	2 TO 1	$= \frac{6.8 \times 1.4}{2} + \frac{4.1 \times 6.8}{2} =$	18.7	SQ IN.
60°	1 TO 2	$= \frac{.6 \times .25}{2} =$	.075	SQ IN.
60°	2 TO 1	$= \frac{4.1 \times 6.8}{2} + \frac{6.8 \times 1.9}{2} =$	20.4	SQ IN.
35°	CW	$= \frac{6.5 \times .2}{2} + \frac{6.5 \times 1.6}{2} =$	5.85	SQ IN.
35°	CCW		5.85	SQ. IN.
45°	CW		5.85	SQ IN.
45°	CCW		5.85	SQ IN.
0°		$\frac{5.5 \times 1.2}{2} =$	3.3	SQ IN.

TOTAL AREA of LOSS 83.13 SQ IN.

ZONE 2

AREA of LOSS:

35°	1 TO 2	$= \frac{4.7 \times .3}{2} + \frac{4.7 \times 2.3}{2} + \frac{1.8 \times 1}{2} =$	7.01	SQ IN.
35°	2 TO 1	= TOTAL LOSS	10.05	SQ IN.
45°	1 TO 2	$= \frac{3.7 \times 1.35}{2} + \frac{2.3 \times 2.7}{2} + \frac{1.8 \times 1}{2} =$	4.65	SQ IN.
45°	2 TO 1	= TOTAL LOSS	10.05	SQ IN.
60°	1 TO 2	$= \frac{2.8 \times .2}{2} + \frac{2.3 \times 1.4}{2} + \frac{1.8 \times 1}{2} =$	2.79	SQ IN.
60°	2 TO 1	TOTAL LOSS	10.05	SQ IN.
35°	CW	TOTAL LOSS	10.05	SQ IN
35°	CCW	TOTAL LOSS	10.05	SQ IN.
45°	CW	TOTAL LOSS	10.05	SQ IN.
45°	CCW	TOTAL LOSS	10.05	SQ. IN.
0°	$\frac{.1 \times .6}{2} = .03$	10.05 - .03 =	10.02	SQ IN.

Form 00184 (R4-88) DUKE POWER COMPANY

Station OCONEE Unit 3 Rev. ____ File No. 94ER-WP26-7 Sheet ____ Of ____

Subject LIMITED EXAM DATA

By Larry Mauldin Date 1-28-94

Prob No. 303.110.012 Checked By ____ Date Page 6 OF 10

ZONE 2 (CONT.)

TOTAL AREA of LOSS 94.82 SQ IN.

ZONE 3

AREA of LOSS:

35°	1 TO 2	$\frac{1.4 \times 2.0}{2} = 1.4$ (COVERAGE)		
		27.7 − 1.4 =	26.3	SQ IN.
35°	2 TO 1	TOTAL LOSS	27.7	SQ. IN.
45°	1 TO 2	$\frac{3.1 \times 3.35}{2} = 5.19$		
		27.7 − 5.19 =	22.5	SQ IN.
45°	2 TO 1	TOTAL LOSS	27.7	SQ IN.
60°	1 TO 2	$\frac{4.8 \times 3.1}{2} + \frac{5.7 \times 2.5}{2} = 14.565$		
		27.7 − 14.565 =	13.14	SQ IN.
35°	CW	TOTAL LOSS	27.7	SQ IN.
35°	CCW	"	27.7	SQ. IN.
45°	CW	"	27.7	SQ. IN.
45°	CCW	"	27.7	SQ. IN.
0°		"	27.7	SQ. IN.
		TOTAL AREA of LOSS	255.84	SQ. IN.

PRESSURIZER SAMPLING NOZZLE

ITEM # B03.110.012
I.D. # 3PZR-WP26.7

PZR. SIDE

TOL

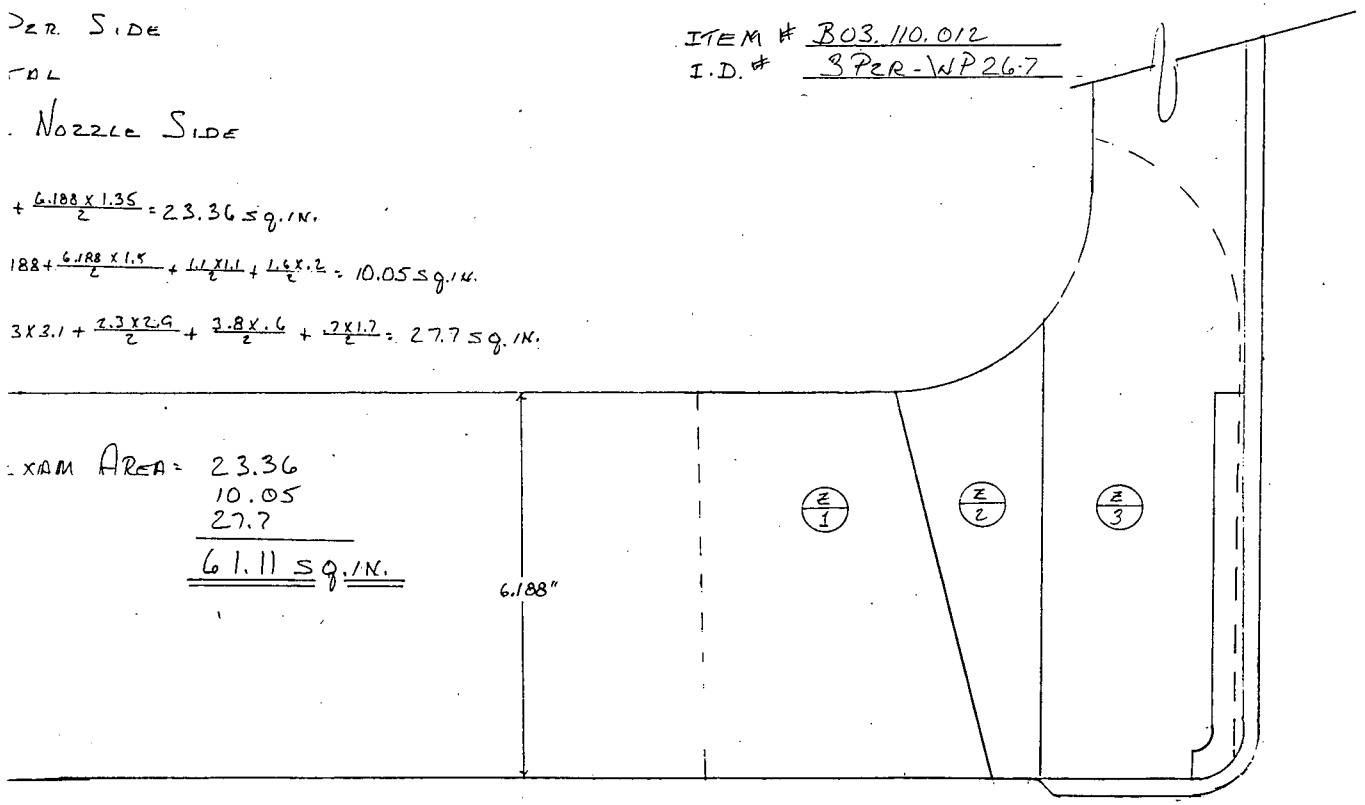
NOZZLE SIDE

$+\frac{6.188 \times 1.35}{2} = 23.36$ sq. in.

$188+\frac{6.188 \times 1.5}{2}+\frac{1.1 \times 1.1}{2}+\frac{1.6 \times .2}{2} = 10.05$ sq. in.

$3 \times 3.1+\frac{2.3 \times 2.9}{2}+\frac{3.8 \times .6}{2}+\frac{.7 \times 1.2}{2} = 27.7$ sq. in.

MAX AREA = 23.36
10.05
27.7
61.11 sq. in.



Larry Maneely

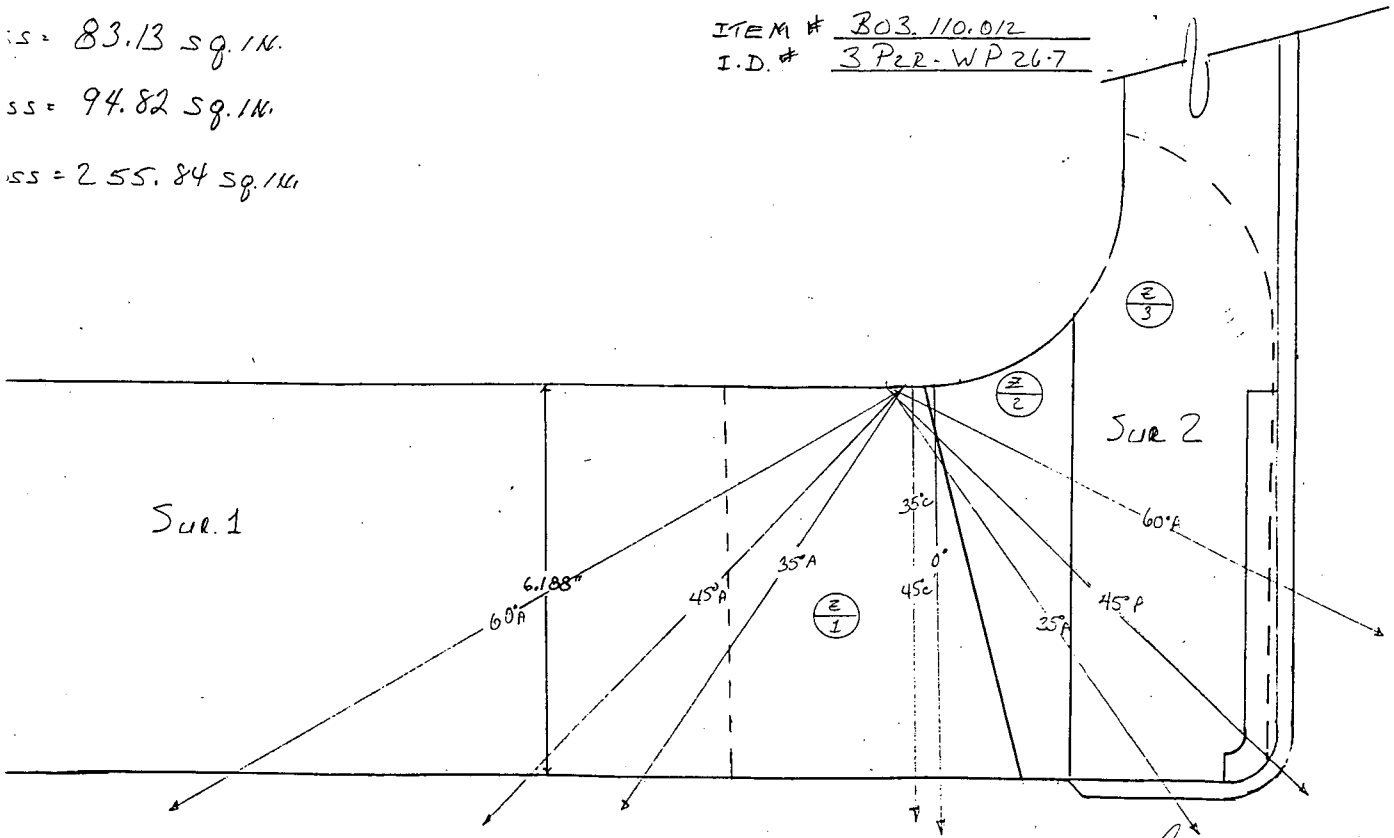
PRESSURIZER SAMPLING NOZZLE

ITEM # B03.110.012
I.D. # 3PSR-WP26-7

:s = 83.13 sq. IN.

ss = 94.82 sq. IN.

ss = 255.84 sq. IN.

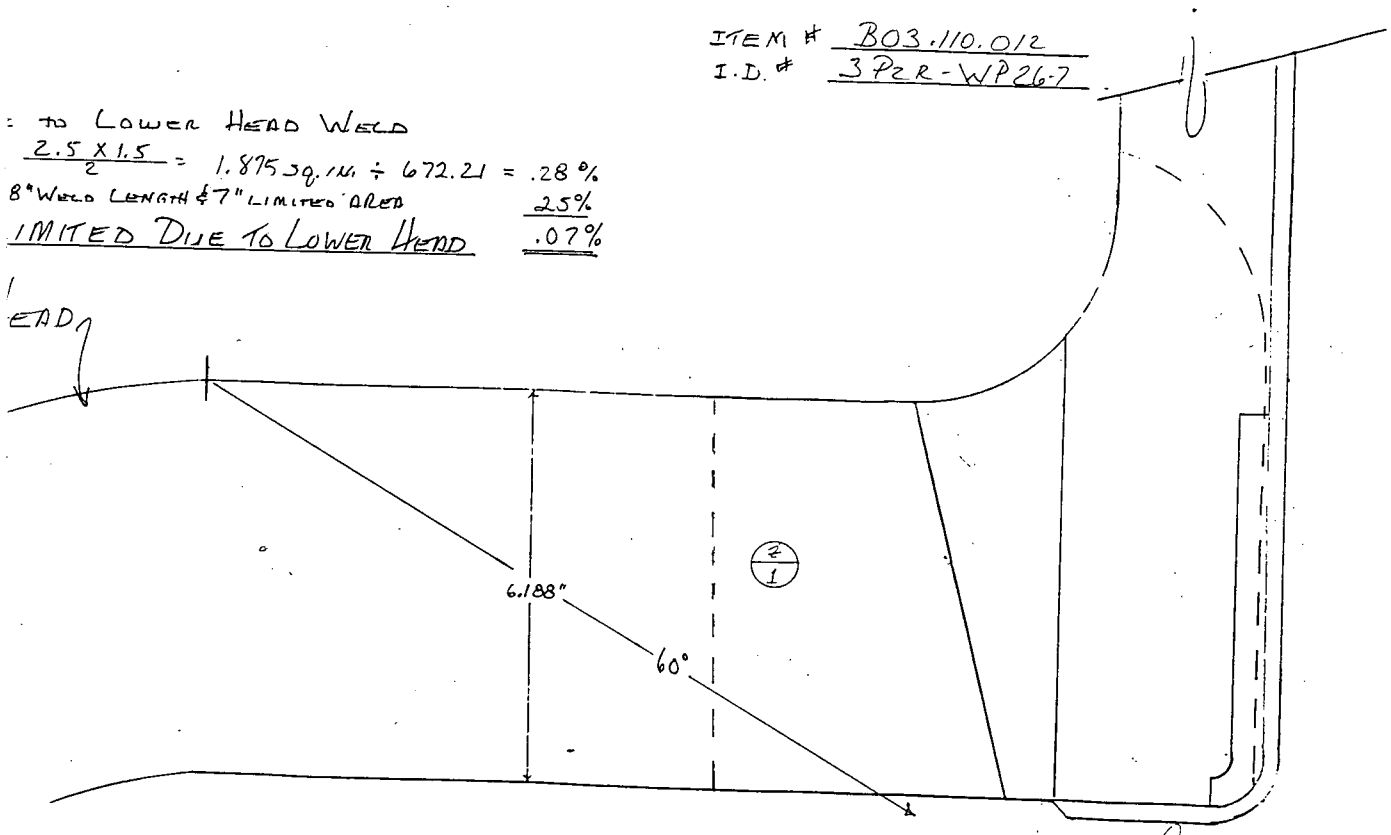


Larry Maulder

PRESSURIZER SAMPLING NOZZLE

ITEM # B03.110.012
I.D. # 3PZR-WP26-7

: TO LOWER HEAD WELD
$\frac{2.5 \times 1.5}{2}$ = 1.875 SQ. IN. ÷ 672.21 = .28 %
8" WELD LENGTH & 7" LIMITED AREA .25%
LIMITED DIST TO LOWER HEAD .07%



Larry Marden

PRESSURIZER SAMPLING NOZZLE

ITEM # B03.110.012
I.D. # 3PSR-WP2C-7

LOSS DUE TO HEATER BUNDLE

33.35 sq. in. ÷ 672.21 x 100 = 4.96

LENGTH of WELD 28" & 6" LIMITED AREA = 21% of WELD

1.04 ADDITIONAL LOSS

+ $\frac{6.5 \times .5}{2}$ = 6.455 − .375 = 6.08 sq in. (35°)

= 2.4 − .22 = 2.18 sq in. (45°)

= 1.125 − .075 = 1.05 sq in. (60°)

9.31 sq. in

ADDITIONAL LOSS FOR HEATER BUNDLE

7.01 = 3.04 sq in. (35°)

= .91

91 = 9.14 − 4.65 = 4.49 sq in (45°)

$\frac{3.2 \times .8}{2}$ = 6.03

6.03 = 4.02 − 2.79 = 1.23 sq in (60°)

8.76 sq. in

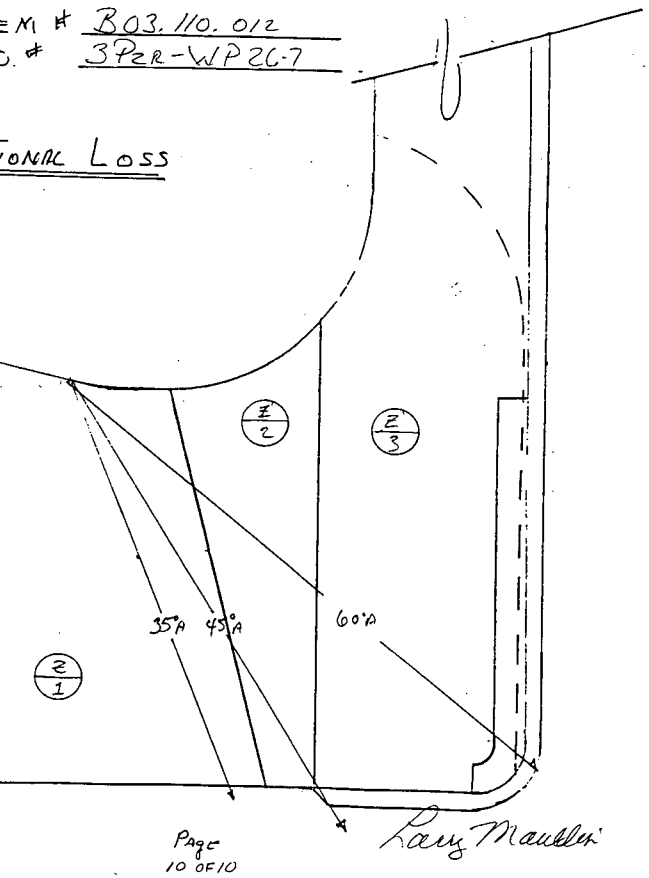
$\frac{4.3 \times .5}{2}$ = 5.88

5.88 = 21.82 − 13.14 = 8.68 sq. in. (60°)

6.3 = 1.4 sq. in. (35°)

22.5 = 5.2 sq. in. (45°)

15.28 sq in



Larry Mauldin

Limited Exam Data Sheet

Station ODONEE Unit 3 I.D. # 3PER-WP26-1

By Larry Rawlins Date 1-28-94 Item # 303.120.009

Checked By _____ Date _____ Page 3 Of 6

DETERMINING THE CUMULATIVE TOTAL OF WELD VOLUME INSPECTED
(in percentage)

Total Cross Sectional Area 4.47 x (Number of Scans) N/A = 4.47 (% Factor)

Vessels:

Area Loss : Zone #1 N/A
Zone #2 N/A
Zone #3 N/A .. (INNER RADIUS INSPECTION)

Total Zone Loss N/A /(% Factor) 4.47 x 100 = 33.33 % of Loss

Lump Sum Loss From Other Limitations + 6.04 %

Total Loss 39.4 % (ROUNDED UP)

100% - (Total Loss) 39.4 = 60.6 % of Coverage

(Additional 0 % of Partial Coverage)

Qualifies for Request for Relief ☒ Yes ☐ No

Piping:

Axial Scan _____ (Loss) ____ / ____ (% Factor) x 100 = ____ % of Loss

Circumferential Scan Over Root Area ☐ Yes ☐ No ____ % of Loss

Axial Loss _____ + Circ. Loss _____ = _____ /2 = _____ % Loss

Additional Losses (Due to hangers, restraints, etc.) + _____ % Loss

Explain: _____ _____ Total % Loss

100% - (Total Loss) _____ = _____ % of Coverage

Qualifies for Request for Relief ☐ Yes ☐ No

Disposition: _____

By: _____ Date: _____

Form 00184 (H4-88)

Station OCONEE Unit 3 Rev. ____ File No. 3PER-WP26-1 Sheet ____ Of ____

Subject LIMITED EXAM DATA

By Larry Moulder Date 1-28-94

Prob No. B03.120.009 Checked By ____ Date ____

Serial No. 94-01
Attachment 6
Page 2 of 4

SUMMARY:

EXAM AREA	4.47 sq. in.	
AREA of LOSS	1.49 sq. in.	(33.33%)
ADDITIONAL LOSS DUE TO HEATER RUNBACK	.27 sq. in.	(6.04%)
TOTAL AREA of LOSS	1.76	

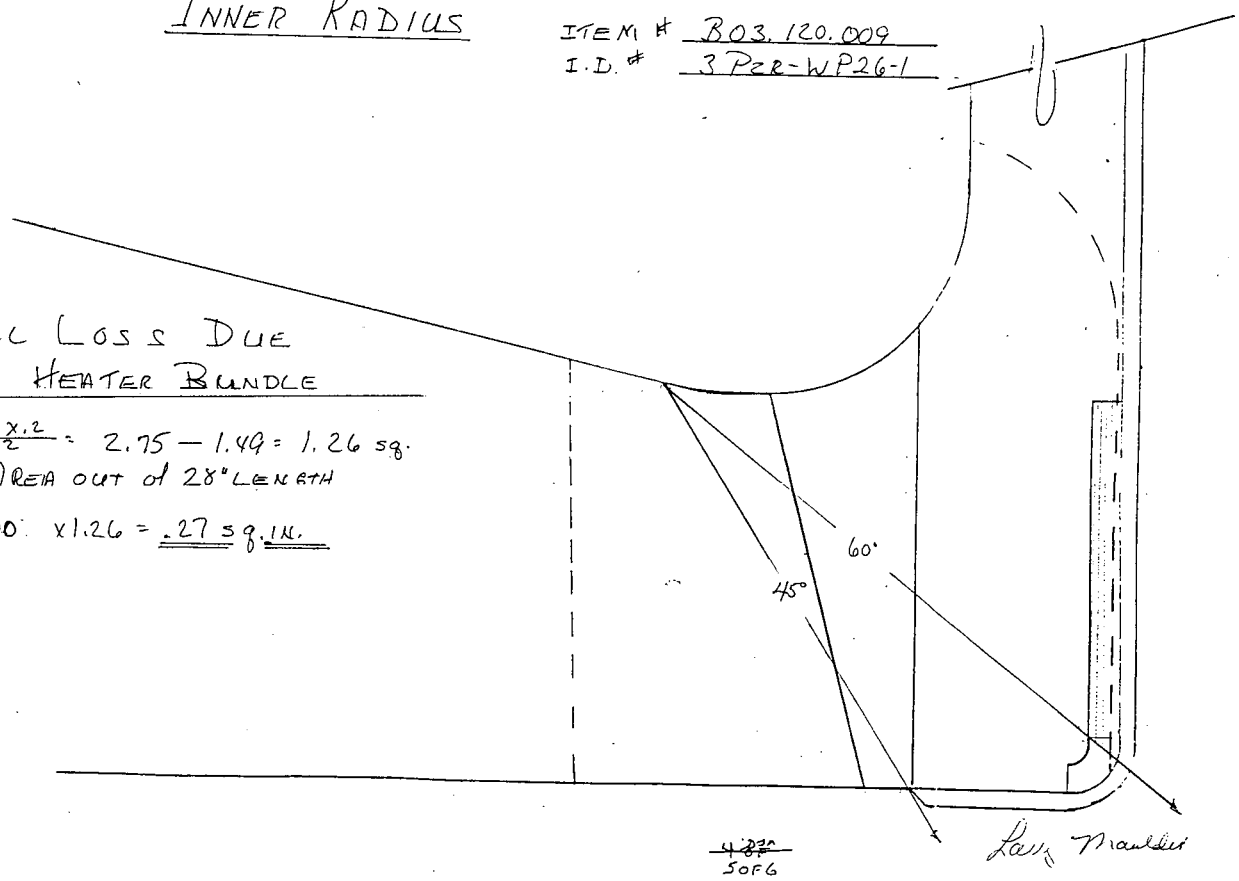
1.76 ÷ 4.47 X 100 = 39.4% LOSS

100 - 39.4 = 60.6% COVERAGE

PRESSURIZER SAMPLING NOZZLE

INNER RADIUS

ITEM # B03.120.009
I.D. # 3 PZR-WP26-1



DITIONAL LOSS DUE
TO HEATER BUNDLE

$4 X .5 + \frac{.5 X .2}{2} = 2.75 - 1.49 = 1.26$ sq.
"LIMITED AREA OUT of 28" LENGTH

$\frac{1}{2} = 28 \times 100 \times 1.26 = .27$ sq. in.

~~4 87~~
5 OF 6

Lars Mauldin

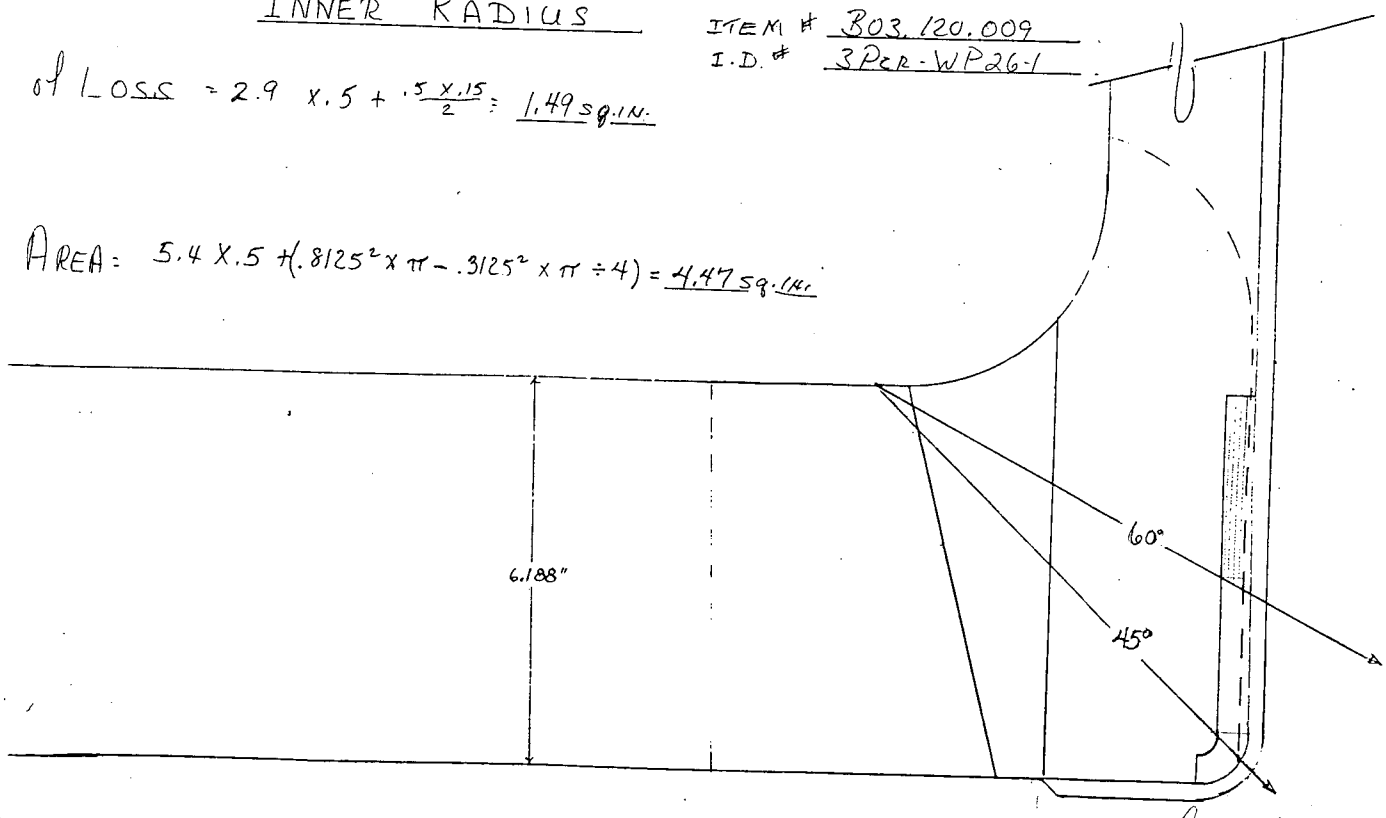
Pressurizer Sampling Nozzle

Inner Radius

ITEM # B03.120.009
I.D. # 3PSR-WP26-1

of Loss = $2.9 \times .5 + .5 \frac{\times .15}{2} = 1.49$ sq.in.

AREA: $5.4 \times .5 + (.8125^2 \times \pi - .3125^2 \times \pi \div 4) = 4.47$ sq.in.



Larry Mauldin

Form 00184 (R4-88)

DUKE POWER COMPANY

Station OCONEE Unit 3 Rev. ____ File No. 3 PER-WP-26-3 Sheet ____ Of ____

Subject LIMITED EXAM DATA

By Larry Maulden Date 2-2-94

Job No. B03.120.011 Checked By ____ Date PAGE 3 OF 4

Serial No. 94-01
Attachment 7
Page 1 of 2

SUMMARY:

EXAM AREA 4.47 sq. in.

AREA of LOSS 1.49 sq. in.

1.49 ÷ 4.47 X100 = 33.3 %

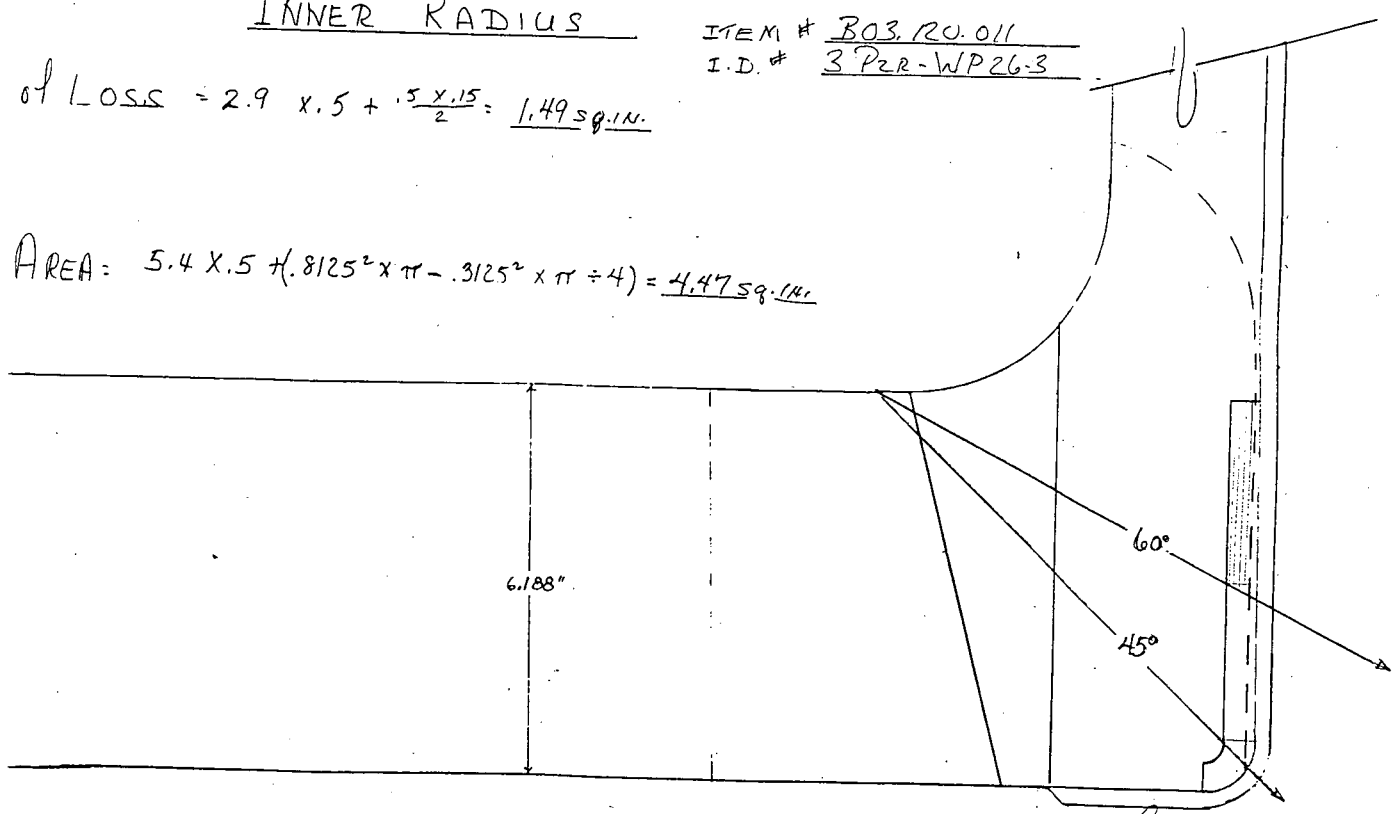
100 - 33.3 = 66.7% COVERAGE

PRESSURIZER SAMPLING NOZZLE
INNER RADIUS

ITEM # B03.R0.011
I.D. # 3 PZR-WP26-3

of Loss = 2.9 x .5 + $\frac{.5 \times .15}{2}$ = 1.49 sq.in.

AREA: 5.4 x .5 + (.8125² x π - .3125² x π ÷ 4) = 4.47 sq.in.



Larry Rawls

Limited Exam Data Sheet

Station OCONEE Unit 3 I.D. # 3PZR-WP26-7
By Larry Maulden Date 1-28-94 Item # B03.120.012
Checked By _____ Date _____ Page 3 Of 6

DETERMINING THE CUMULATIVE TOTAL OF WELD VOLUME INSPECTED
(in percentage)

Total Cross Sectional Area 4.47 x (Number of Scans) N/A = 4.47 (% Factor)

Vessels:

Area Loss : Zone #1 N/A
Zone #2 N/A
Zone #3 N/A (INNER RADIUS INSPECTION)
Total Zone Loss N/A /(% Factor) 4.47 x 100 = 33.33 % of Loss
Lump Sum Loss From Other Limitations + 6.04 % (ROUNDED 6.1)
Total Loss 39.4 %

100% - (Total Loss) 39.4 = 60.6 % of Coverage
(Additional 0 % of Partial Coverage)
Qualifies for Request for Relief ☒ Yes ☐ No

Piping:

Axial Scan _____ (Loss) ____ / ____ (% Factor) x 100 = ____ % of Loss
Circumferential Scan Over Root Area ☐ Yes ☐ No ____ % of Loss
Axial Loss _____ + Circ. Loss _____ = _____ /2 = _____ % Loss
Additional Losses (Due to hangers, restraints, etc.) + _____ % Loss
Explain: _____ _____ Total % Loss

100% - (Total Loss) _____ = _____ % of Coverage
Qualifies for Request for Relief ☐ Yes ☐ No

Disposition: _____

By: _____ Date: _____

Form W184 (R4-88)

Station OCONEE Unit 3 Rev. ____ File No. 3PER-WP26-7 Sheet ____ Of ____

Subject LIMITED EXAM DATA

By Larry Maulden Date 1-28-94

Prob No. B 03.120.012 Checked By ____ Date 4 OF 6

Serial No. 94-01
Attachment 8
Page 2 of 4

SUMMARY:

EXAM AREA	4.47 sq. in.	
AREA of LOSS	1.49 sq. in.	(33.33%)
ADDITIONAL LOSS DUE TO HEATER RUNBACK	.27 sq. in.	(6.04%)
TOTAL AREA of LOSS	1.76	

1.76 ÷ 4.47 x 100 = 39.4% Loss

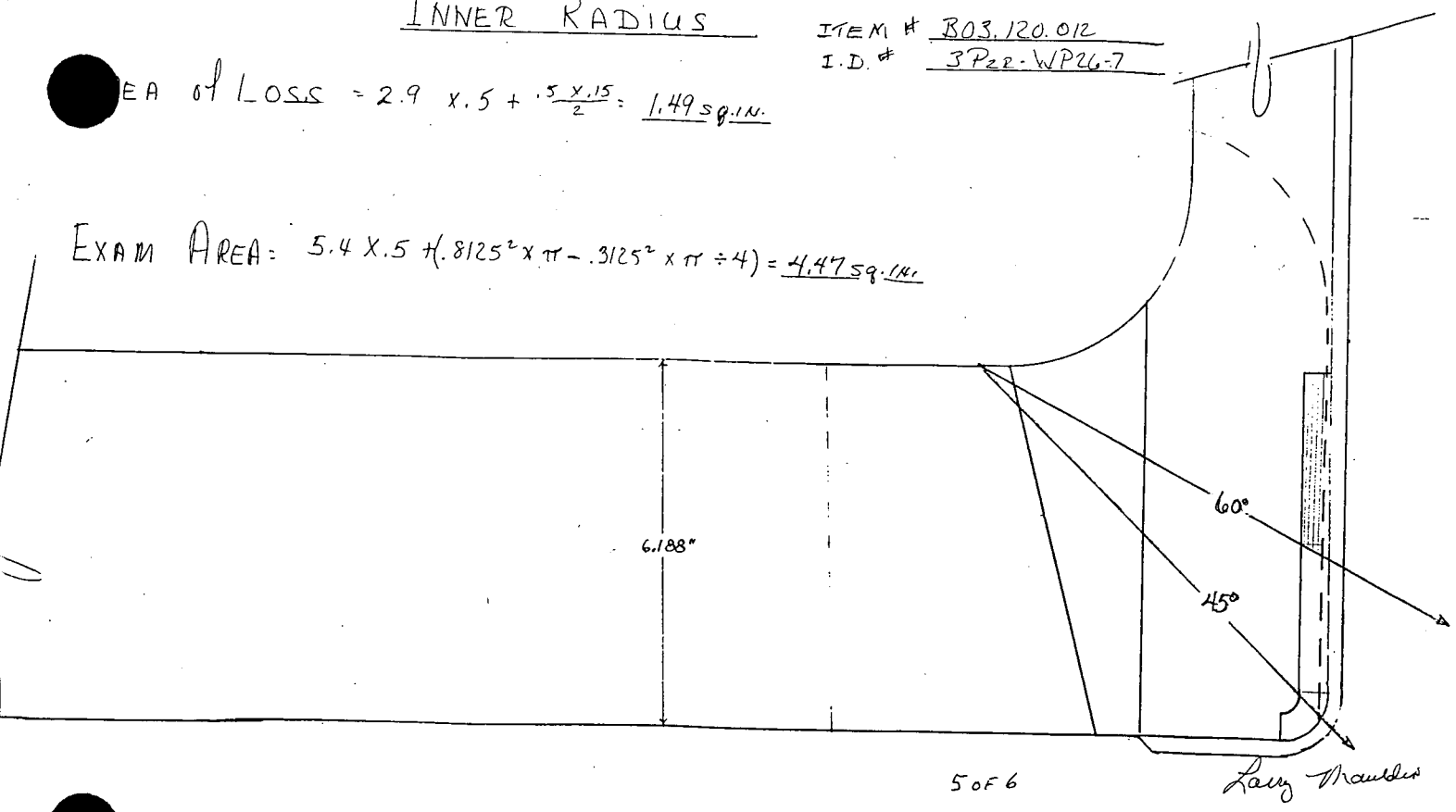
100 - 39.4 = 60.6% COVERAGE

PRESSURIZER SAMPLING NOZZLE
INNER RADIUS

ITEM # B03.120.012
I.D. # 3PZR-WP26-7

AREA of LOSS = 2.9 X .5 + $\frac{.5 \times .15}{2}$ = 1.49 sq. in.

EXAM AREA: 5.4 X .5 + (.8125² x π − .3125² x π ÷ 4) = 4.47 sq. in.

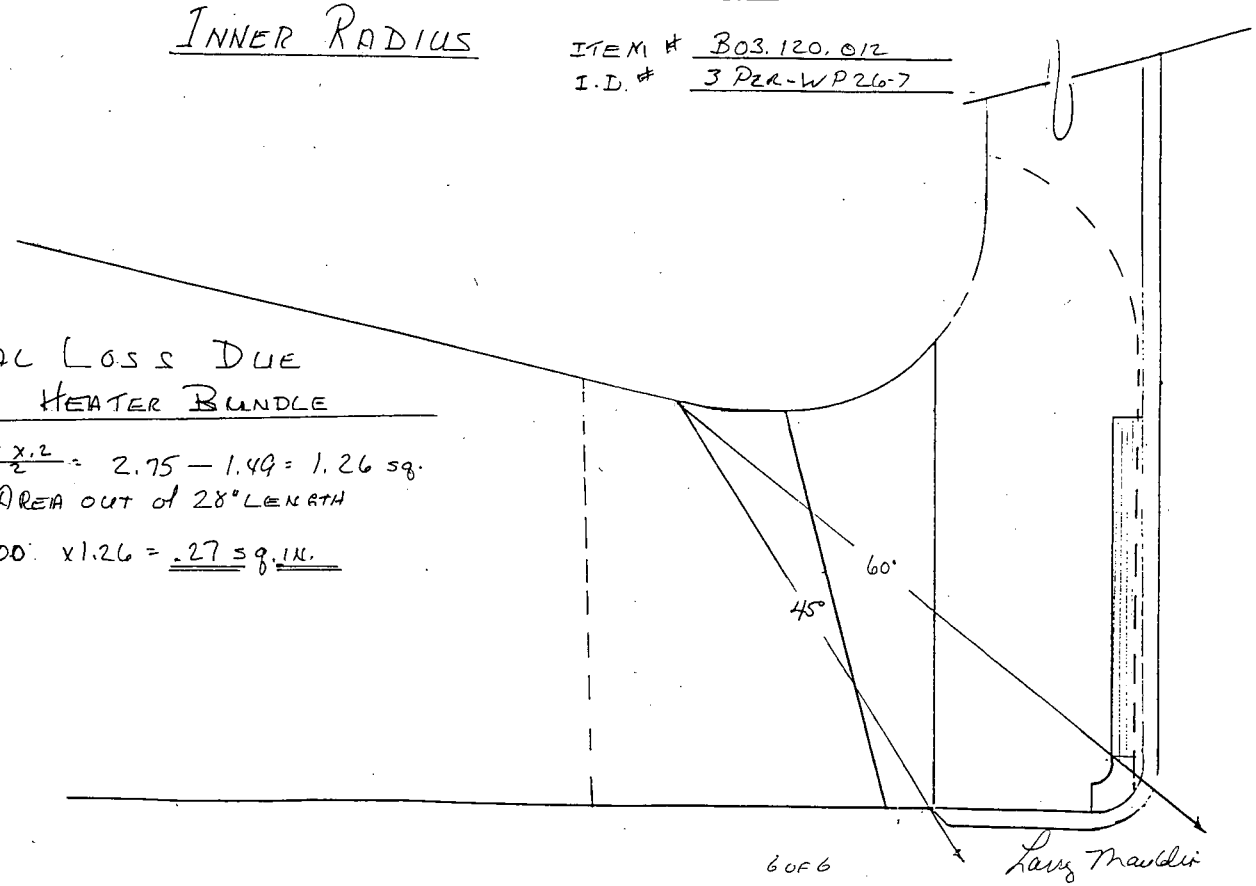


Larry Maulden

PRESSURIZER SAMPLING NOZZLE

INNER RADIUS

ITEM # B03.120.012
I.D. # 3 PZR-WP26-7



DITIONAL LOSS DUE
TO HEATER BUNDLE

X.5 + $\frac{.5 \times .2}{2}$ = 2.75 − 1.49 = 1.26 sq.
LIMITED AREA OUT of 28° LENGTH
÷28 X 100 X1.26 = .27 sq.in.

Limited Exam Data Sheet

Station OCONEE Unit 3 I.D. # 3SGA-WG50-1

By Larry Mauldin Date 1-10-94 Item # B03.140.002

Checked By _____ Date _____ Page 4 Of 4

DETERMINING THE CUMULATIVE TOTAL OF WELD VOLUME INSPECTED
(in percentage)

Total Cross Sectional Area 4.98 x (Number of Scans) N/A = N/A (% Factor)

Vessels:

Area Loss : Zone #1 N/A
Zone #2 N/A
Zone #3 N/A

Total Zone Loss N/A /(% Factor) N/A x 100 = N/A % of Loss

Lump Sum Loss From Other Limitations + 20 %

Total Loss 20 %

100% - (Total Loss) 20 = 80 % of Coverage

(Additional 0 % of Partial Coverage)

Qualifies for Request for Relief ☒ Yes ☐ No

Piping:

Axial Scan _____ (Loss) ____ / ____ (% Factor) x 100 = ____ % of Loss

Circumferential Scan Over Root Area ☐ Yes ☐ No ____ % of Loss

Axial Loss _____ + Circ. Loss _____ = _____ /2 = _____ % Loss

Additional Losses (Due to hangers, restraints, etc.) + _____ % Loss

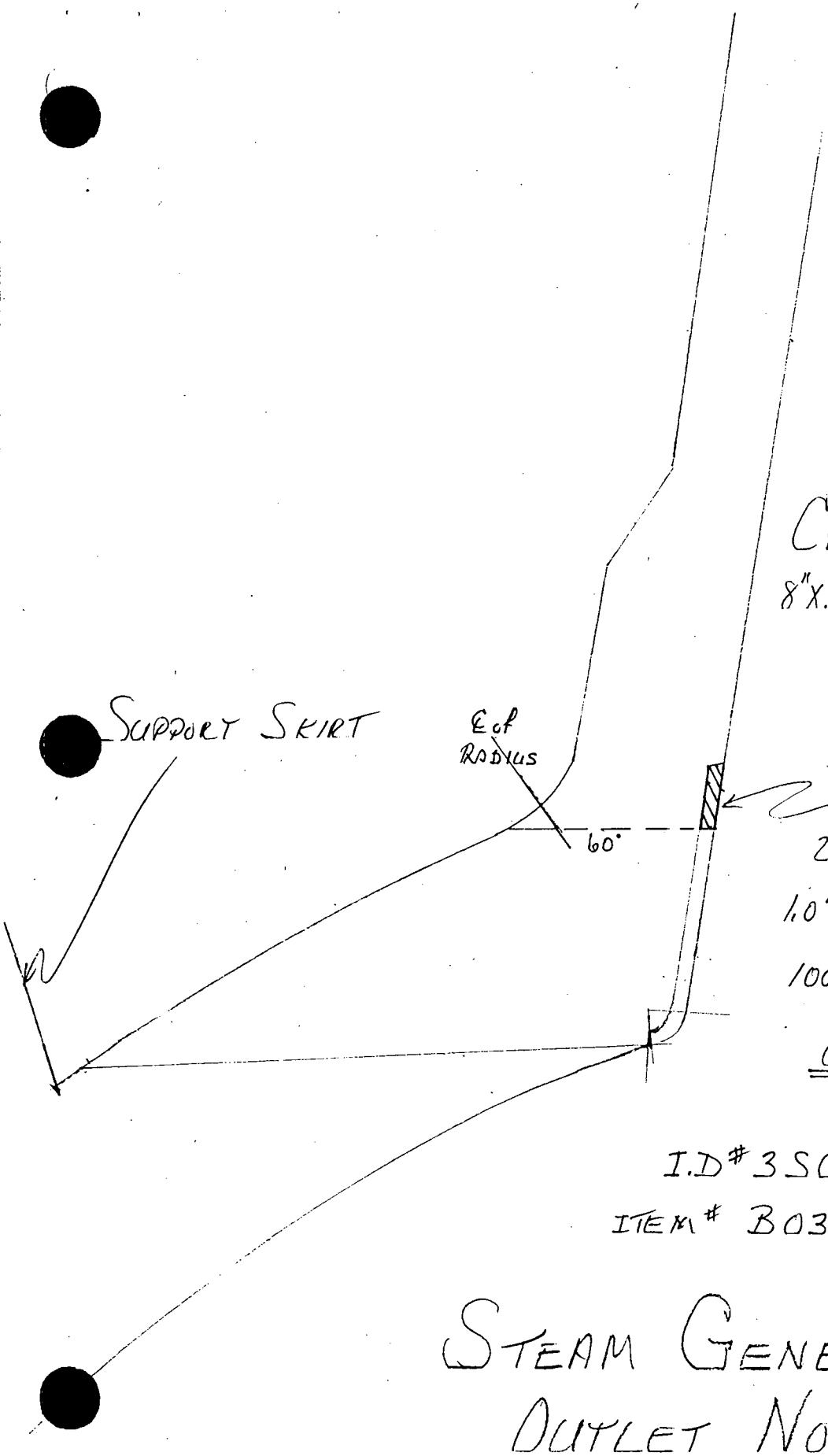
Explain: _____ _____ Total % Loss

100% - (Total Loss) _____ = _____ % of Coverage

Qualifies for Request for Relief ☐ Yes ☐ No

Disposition: _____

By: _____ Date: _____



CROSS SECTIONAL AREA =

$8" X .5" + 1.5^{"2} X \pi - 1.0^{"2} X \pi \div 4 =$

4.98 sq. in.

AREA NOT SCANNED

$2" X .5" = 1.0$ sq. in.

$1.0" \div 4.98" X 100 = 20\%$

$100 - 20 = 80\%$

80% COVERAGE

I.D # 3SGA-WG50-1

ITEM # B03.140.002

Larry Mcwilliams
1-10-94

STEAM GENERATOR OUTLET NOZZLE

Limited Exam Data Sheet

Station OCONEE Unit 3 I.D. # 3SGA-WG25

By Larry Mayfield Date 1.6.94 Item # B03.140.005

Checked By Gary Moss Date 1-10-94 Page ___ Of ___

DETERMINING THE CUMULATIVE TOTAL OF WELD VOLUME INSPECTED
(in percentage)

Total Cross Sectional Area N/A x (Number of Scans) N/A = N/A (% Factor)

Vessels:

Area Loss : Zone #1 N/A
Zone #2 N/A
Zone #3 N/A

Total Zone Loss N/A /(% Factor) N/A x 100 = N/A % of Loss

Lump Sum Loss From Other Limitations ± 26 %

Total Loss 26 %

100% - (Total Loss) 26 = 74 % of Coverage

(Additional 0 % of Partial Coverage)

Qualifies for Request for Relief ☑ Yes ☐ No

Piping:

Axial Scan _____ (Loss) ____ / ____ (% Factor) x 100 = ____ % of Loss

Circumferential Scan Over Root Area ☐ Yes ☐ No ____ % of Loss

Axial Loss _____ + Circ. Loss _____ = _____ /2 = _____ % Loss

Additional Losses (Due to hangers, restraints, etc.) + _____ % Loss

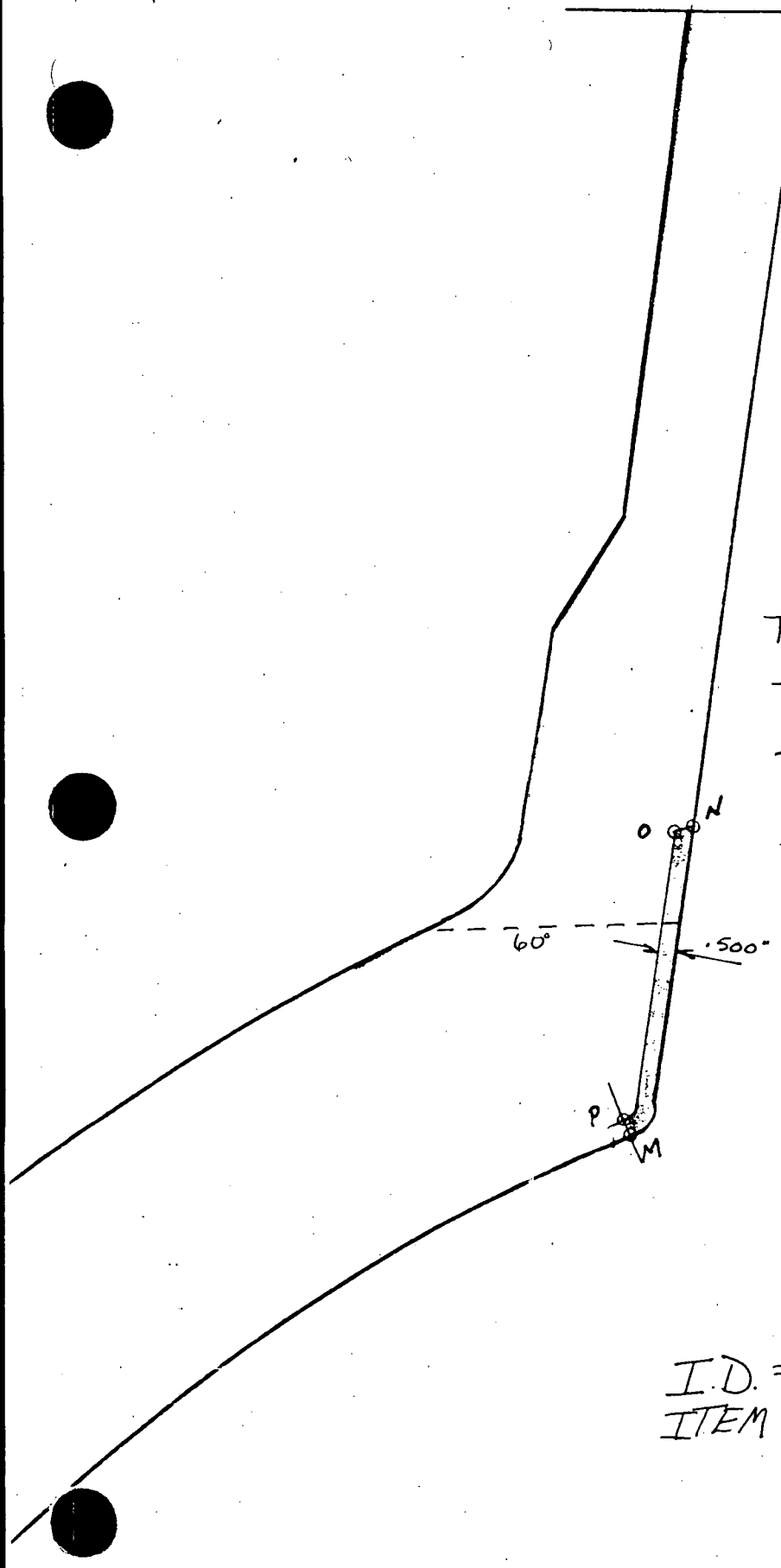
Explain: _____ _____ Total % Loss

100% - (Total Loss) _____ = _____ % of Coverage

Qualifies for Request for Relief ☐ Yes ☐ No

Disposition: _____

By: _____ Date: _____



TOTAL EXAM AREA - 9.5X.5 = 4.75 IN²

TOTAL AREA NOT SCANNED - .5X2.5 = 1.25IN²

TOTAL PERCENT OF LOSS

1.25 ÷ 4.75 = .263 X 100 = 26%

TOTAL Loss of 26%

By: Larry Thawley
1-6-94

I.D. # 3SGA-WG25
ITEM # B03.140.005

INLET NOZZLE
INNER RADIUS EXAM VOLUME

Limited Exam Data Sheet

Station OCONEE Unit 3 I.D. # 3SGB-WG25

By Larry Maybee Date 1.6.94 Item # B03.140.006

Checked By Gary Moss Date 1-10-94 Page 4 Of 4

DETERMINING THE CUMULATIVE TOTAL OF WELD VOLUME INSPECTED
(in percentage)

Total Cross Sectional Area N/A x (Number of Scans) N/A = N/A (% Factor)

Vessels:

Area Loss : Zone #1 N/A
Zone #2 N/A
Zone #3 N/A

Total Zone Loss N/A /(% Factor) N/A x 100 = N/A % of Loss

Lump Sum Loss From Other Limitations + 26 %

Total Loss 26 %

100% - (Total Loss) 26 = 74 % of Coverage

(Additional 0 % of Partial Coverage)

Qualifies for Request for Relief ☒ Yes ☐ No

Piping:

Axial Scan _____ (Loss) ____ / ____ (% Factor) x 100= ____ % of Loss

Circumferential Scan Over Root Area ☐ Yes ☐ No ____ % of Loss

Axial Loss _____ + Circ. Loss _____ = _____ /2= _____ % Loss

Additional Losses (Due to hangers, restraints, etc.) +_____ % Loss

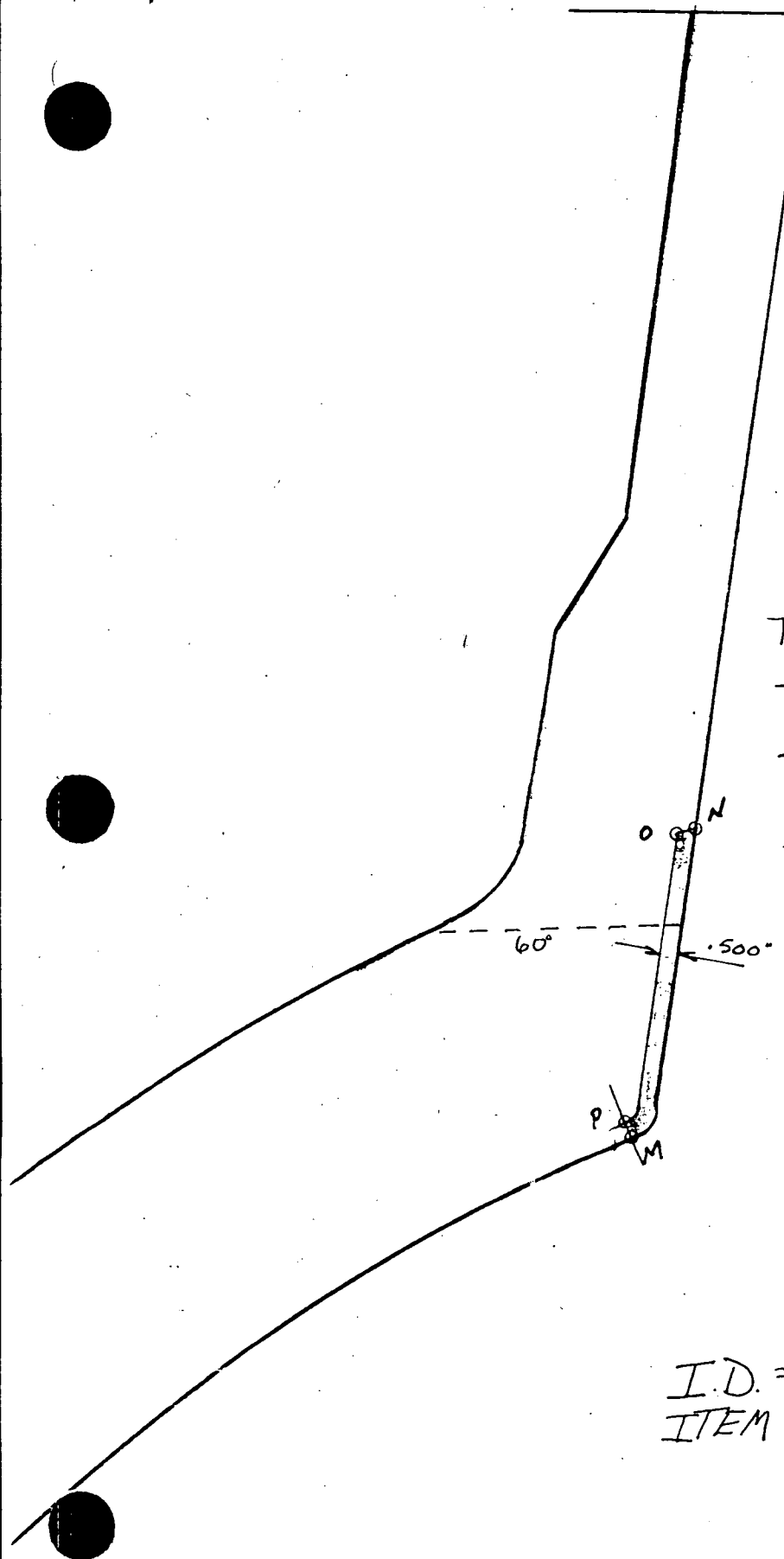
Explain: _____ _____ Total % Loss

100% - (Total Loss) _____ = _____ % of Coverage

Qualifies for Request for Relief ☐ Yes ☐ No

Disposition: _____

By: _____ Date: _____



TOTAL EXAM AREA - 9.5X.5 = 4.75 IN²

TOTAL AREA NOT SCANNED - .5X2.5 = 1.25 IN²

TOTAL PERCENT OF LOSS

1.25 ÷ 4.75 = .263 X 100 = 26%

TOTAL Loss of 26%

By: Larry Marsden
1-6-94

I.D. # 3SGB-WG25
ITEM # B03.140.006

INLET NOZZLE
INNER RADIUS EXAM VOLUME

Limited Exam Data Sheet

Station Oconee Unit 3 I.D. # 3CFTB-OUTLET

By [signature] Date 1-13-94 Item # C02.022.06

Checked By _____ Date _____ Page 3 Of 4

DETERMINING THE CUMULATIVE TOTAL OF WELD VOLUME INSPECTED
(in percentage)

Total Cross Sectional Area n/a x (Number of Scans) n/a = _____ (% Factor)

Vessels:

Area Loss : Zone #1 _____
Zone #2 n/a
Zone #3 _____

Total Zone Loss _____ /(% Factor) _____ x 100 = _____ % of Loss

Lump Sum Loss From Other Limitations + 28 %

Total Loss 28 %

100% - (Total Loss) 28 = 72 % of Coverage

(Additional n/a % of Partial Coverage)

Qualifies for Request for Relief ☒ Yes ☐ No

Piping:

Axial Scan _____ (Loss) _____ / _____ (% Factor) x 100 = _____ % of Loss

Circumferential Scan Over Root Area ☐ Yes ☐ No _____ % of Loss

Axial Loss _____ + Circ. Loss _____ = _____ /2 = _____ % Loss

Additional Losses (Due to hangers, restraints, etc.) + _____ % Loss

Explain: n/a _____ Total % Loss

100% - (Total Loss) _____ = _____ % of Coverage

Qualifies for Request for Relief ☐ Yes ☐ No

Disposition: _____

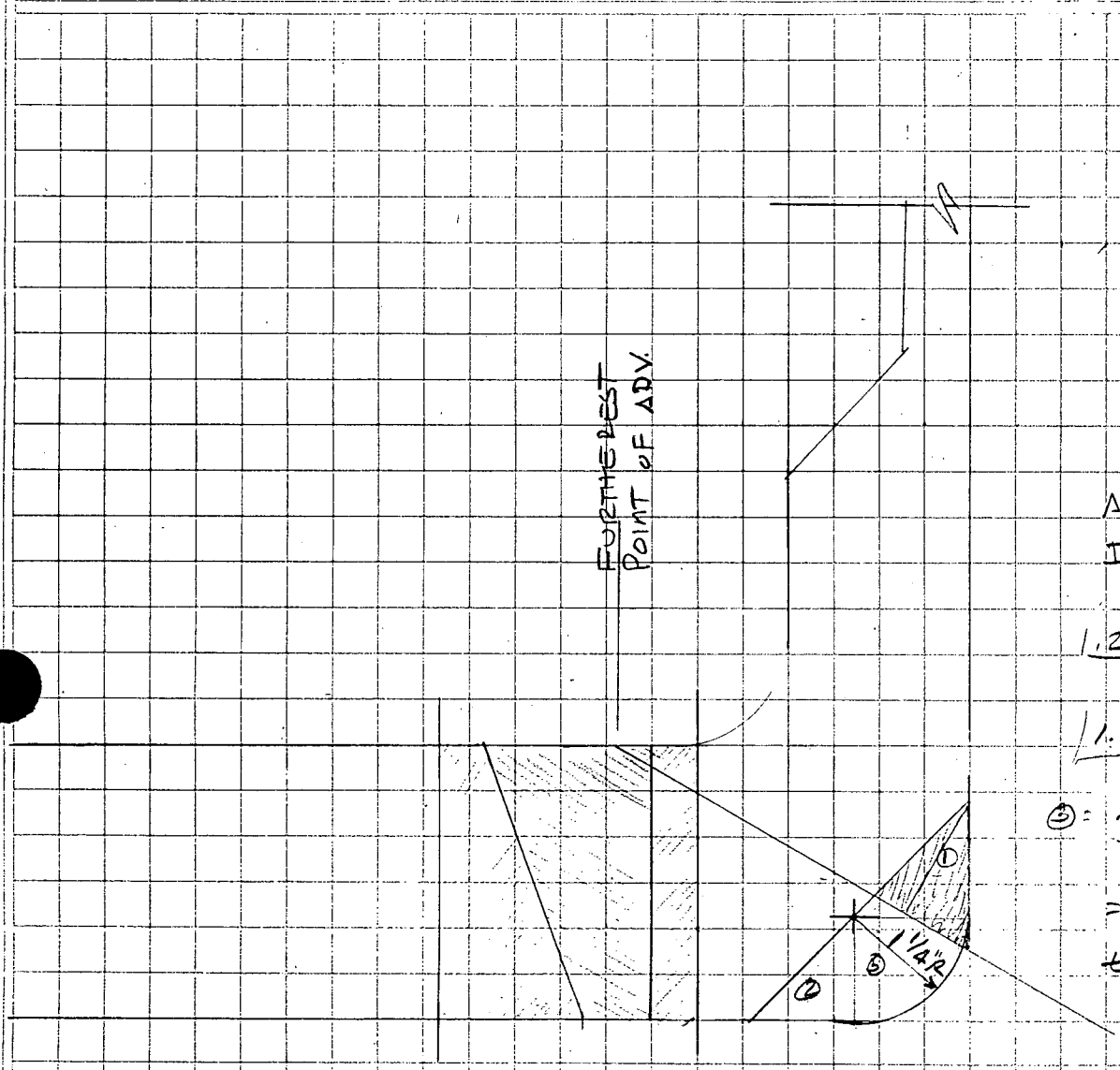
By: _____ Date: _____

Station ONS Unit 3 Rev. File No. Sheet Of

Subject LIMITATION OF CFTB DISCHARGE NOZZLE / IR

C02.022.006 I.R. By James W Date 1-17-94

Prob No. C02.021.006 Checked By Date PAGE 4 OF 4



AREA OF IR

① ②

$\frac{1.25 \times 1.25}{2} \times 2 = 1.5$

1.5 Sq in

③: $\frac{\pi R^2}{4} = \frac{\pi \times 1.25^2}{4}$

= 1.227

total AREA = 1.2 + 1.5

2.7 IN²

AREA Loss =

$\frac{1.375 \times .375}{2} + \frac{1.375 \times .75}{2}$

= .77 Sq IN loss.

DEFINITIONS APPLICABLE TO THE REACTOR VESSEL EXAMINATION

AGGREGATE - Combined coverage using different transducers and different directions due to problems scanning the welds.

PARTIAL AGGREGATE COVERAGE - The amount of coverage obtained had there been no physical interferences. This includes but is not limited to configuration, surface condition (i.e. clad patches), etc.

ACTUAL AGGREGATE COVERAGE - The amount of coverage obtained due to the physical interferences.

Serial No. 94-01
Attachment 13
Page 2 of 8

Formula:

Aggregate Coverage =

[(% 70° Axial + % 70° Circ) x in^2 NS

+ (% 60° Circ + % 45° Circ + % 0°) x Total Area

+ (% 60° + % 45°) Axial x (in^2 Weld x 2 + in^2 T/2)] /

[in^2 NS x 2 + in^2 Total Area x 3 + (in^2 Weld x 2 + in^2 T/2) x 2]

Notes:

Weld volumes do not include the clad region.

The Near Surface Area extends 1" into the base metal.

Angle requirements are as follows:

0° 100 % of Total Volume,

45° & 60° 100 % of Weld from 4 directions, 100 % of T/2 from 2 Circ directions, 100 % of T/2 from 1 Axial direction,

70° 100 % of Near Surface from 1 Axial & 1 Circ directions,

70° 100 % of Inside Radius from 1 Axial & 1 Circ directions.

The 45° is used from the Nozzle Bore to examine the Near Surface of the Nozzle-to-Shell Weld in the Axial direction. Additionally only one direction is possible from the Nozzle Bore, and the 0° (or 15°) replaces the 60°.

Serial No. 94-01
Attachment 13
Page 3 of 8

WR19

(B01.030.001)

Total Exam Area = 184.56 in^2 (Near Surface + Weld + T/2)

Near Surface Area = 15.40 in^2 (Cross-Section)

Weld Area = 24.14 in^2 (Cross-Section)

T/2 Area = 160.42 in^2 (Cross-Section)

CIRC 0° Gets 101.06 in^2 of Total Exam Area (54.8 %)

60° & 45° Get 138.27 in^2 of Weld & T/2 Areas (74.9 %)

70° Gets 11.52 in^2 of Near Surface Area (74.8 %)

AXIAL 70° Gets 13.14 in^2 of Near Surface Area (85.3 %)

45° Gets 122.43 in^2 of T/2 Area

45°-UP Gets 22.02 in^2 of Weld Area

45°-DOWN Gets 2.44 in^2 of Weld Area

$$45° \text{ Coverage} = \frac{22.02 + 2.44 + 122.43}{24.14 + 24.14 + 160.42} = 70.4\ \%$$

60° Gets 135.74 in^2 of T/2 Area

60°-UP Gets 23.12 in^2 of Weld Area

60°-DOWN Gets 5.75 in^2 of Weld Area

$$60° \text{ Coverage} = \frac{23.12 + 5.75 + 135.74}{24.14 + 24.14 + 160.42} = 78.9\ \%$$

Serial No. 94-01
Attachment 13
Page 4 of 8

WR19
(B01.030.001)

AXIAL			CIRC			
70	60	45	70	60	45	0
85.3	78.9	70.4	74.8	74.9	74.9	54.8

Aggregate Coverage =

[(85.3 + 74.8) x 15.40 + (74.9 + 74.9 + 54.8) x 184.56

+ (78.9 + 70.4) x (24.14 x 2 + 160.42)] /

[14.50 x 2 + 184.56 x 3 + (24.14 x 2 + 160.42) x 2]

Partial Aggregate Coverage = 71.4 %

(MAXIMUM COVERAGE SCANNING OVER CLAD PATCHES)

Serial No. 94-01
Attachment 13
Page 5 of 8

WR19
(B01.030.001)

Due to Clad Patches, the entire circumference of the vessel could not be scanned. One side of the vessel was completly scanned, however. On the other side, only 1/2 of an Axial scan was performed over a clad patch. The circumferential distance lost due to each patch was 8 degrees. The partial Axial scan resulted in a loss of only 4 degrees. There are 3 clad patches on each side of the vessel, one over each nozzle.

The 70° Axial, the 0° and the 45° & 60° Axial-UP lost 20 degrees of circumference (5.6 %). The Circ Scans lost 24 degrees (6.7 %). Axial-DOWN scans (from the Taper) were not affected. In the area of the clad patches, the following coverages were obtained:

AXIAL 70° Gets 3.07 in^2 of Near Surface Area (19.9 %)

45° Gets 49.73 in^2 of T/2 Area

45°-UP Gets 0.61 in^2 of Weld Area

45°-DOWN Gets 2.44 in^2 of Weld Area

$$45° \text{ Coverage} = \frac{0.61 + 2.44 + 49.73}{24.14 + 24.14 + 160.42} = 25.3\ \%$$

60° Gets 73.85 in^2 of T/2 Area

60°-UP Gets 13.42 in^2 of Weld Area

60°-DOWN Gets 5.75 in^2 of Weld Area

$$60° \text{ Coverage} = \frac{13.42 + 5.75 + 73.85}{24.14 + 24.14 + 160.42} = 44.6\ \%$$

70° Axial Coverage = 340 x 85.3 + 20 x 19.9 / 360 = 81.7 %

60° Axial Coverage = 340 x 78.9 + 20 x 44.6 / 360 = 77.0 %

45° Axial Coverage = 340 x 70.4 + 20 x 25.3 / 360 = 67.9 %

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WR19

(B01.030.001)

AXIAL			CIRC			
70	60	45	70	60	45	0
81.7	77.0	67.9	70.6	69.8	69.8	51.8

Aggregate Coverage =

[(81.7 + 70.6) x 15.40 + (69.8 + 69.8 + 51.8) x 184.56

+ (77.0 + 67.9) x (24.14 x 2 + 160.42)] /

[14.50 x 2 + 184.56 x 3 + (24.14 x 2 + 160.42) x 2]

Actual Aggregate Coverage = 67.9 %

(ACTUAL COVERAGE OBTAINED DUE TO CLAD PATCHES)

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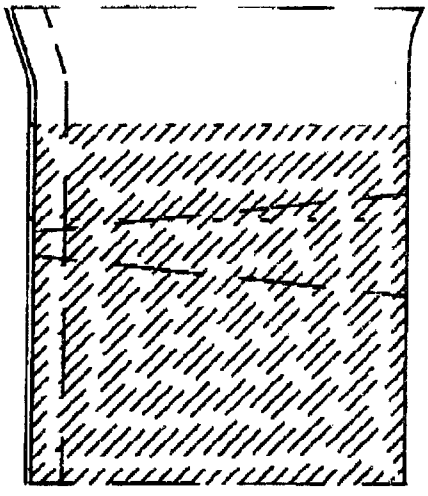
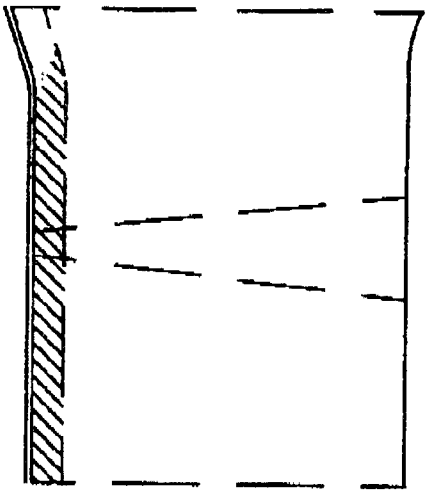
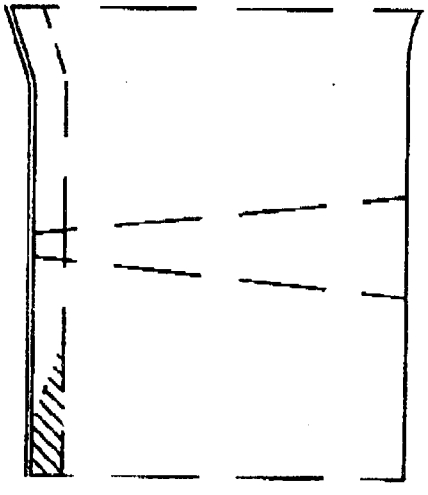


CIRC SCAN
BELOW TAPER



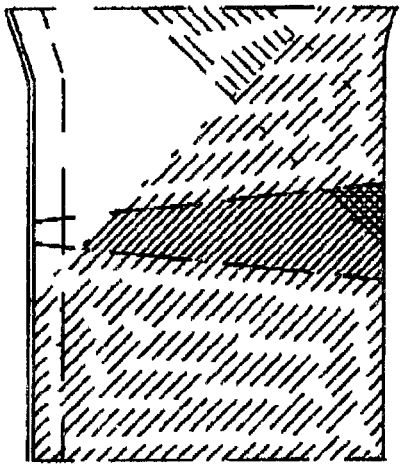
NEAR SURFACE
AXIAL SCAN

NEAR SURFACE
AXIAL SCAN BELOW
CLAD PATCHES

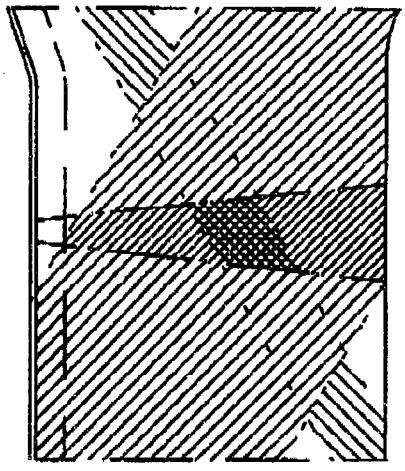


FLANGE TO SHELL WELD

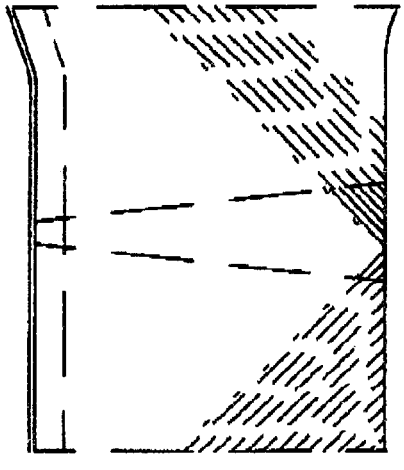
(B01.030.001)



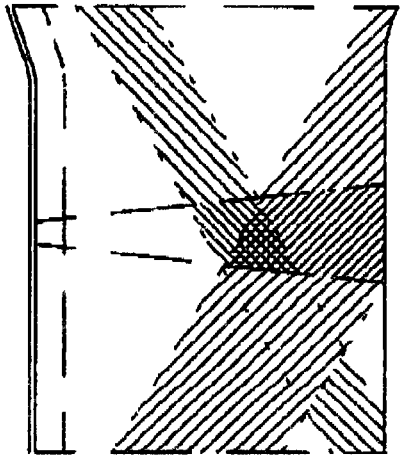
45° SCANS OUTSIDE
CLAD PATCH AREAS



60° SCANS OUTSIDE
CLAD PATCH AREAS



45° SCAN IN
CLAD PATCH AREAS



60° SCAN IN
CLAD PATCH AREAS

FLANGE TO SHELL WELD AXIAL SCAN

(B01.030.001)

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WR34
(B01.021.002)

Total Exam Area = 53.27 in^2 (Near Surface + Weld + T/2)

Near Surface Area = 8.31 in^2 (Cross-Section)

Weld Area = 7.59 in^2 (Cross-Section)

T/2 Area = 45.68 in^2 (Cross-Section)

CIRC 0° Gets 16.89 in^2 of Total Exam Area (31.7 %)

60° & 45° Get 35.69 in^2 of Weld & T/2 Areas (67.0 %)

70° Gets 5.58 in^2 of Near Surface Area (67.1 %)

AXIAL 70° Gets 7.24 in^2 of Near Surface Area (87.1 %)

45° Gets 100 % Coverage of T/2 Area

45°-UP Gets 100 % Coverage of Weld Area

45°-DOWN Gets 7.55 in^2 of Weld Area

45° Coverage = $\frac{7.59 + 7.55 + 45.68}{7.59 + 7.59 + 45.68}$ = 99.9 %

60° Gets 45.59 in^2 of T/2 Area

60°-UP Gets 100 % of Weld Area

60°-DOWN Gets 6.28 in^2 of Weld Area

60° Coverage = $\frac{7.59 + 6.28 + 45.59}{7.59 + 7.59 + 45.68}$ = 97.7 %

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WR34

(B01.021.002)

AXIAL			CIRC			
70	60	45	70	60	45	0
87.1	97.7	99.9	67.1	67.0	67.0	31.7

Aggregate Coverage =

[(87.1 + 67.1) x 8.31 + (67.0 + 67.0 + 31.7) x 53.27

+ (97.7 + 99.9) x (7.59 x 2 + 45.68)] /

[8.31 x 2 + 53.27 x 3 + (7.59 x 2 + 45.68) x 2]

Partial Aggregate Coverage = 74.2 %

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WR34

(B01.021.002)

Due to the Core Catcher Lugs the entire circumference of the vessel could not be scanned. Scanning was conducted between each of the 12 lugs. Based on the configuration of the alternate head, the 0°, 70° Axial and all Circ scans obtained 15.3 degrees out of 30 (51 %). The 45° & 60° Axial scans obtained 19.5 degrees out of 30 (65 %).

Actual Coverage was as follows:

WR34

AXIAL			CIRC			
70	60	45	70	60	45	0
44.4	63.4	64.8	34.2	34.2	34.2	16.2

Aggregate Coverage =

$$[\ (44.4 + 34.2) \times 8.31 + (34.2 + 34.2 + 16.2) \times 53.27$$

$$+ (63.4 + 64.8) \times (7.59 \times 2 + 45.68)\ ]\ /$$

$$[\ 8.31 \times 2 + 53.27 \times 3 + (7.59 \times 2 + 45.68) \times 2\ ]$$

Actual Aggregate Coverage = 43.5 %

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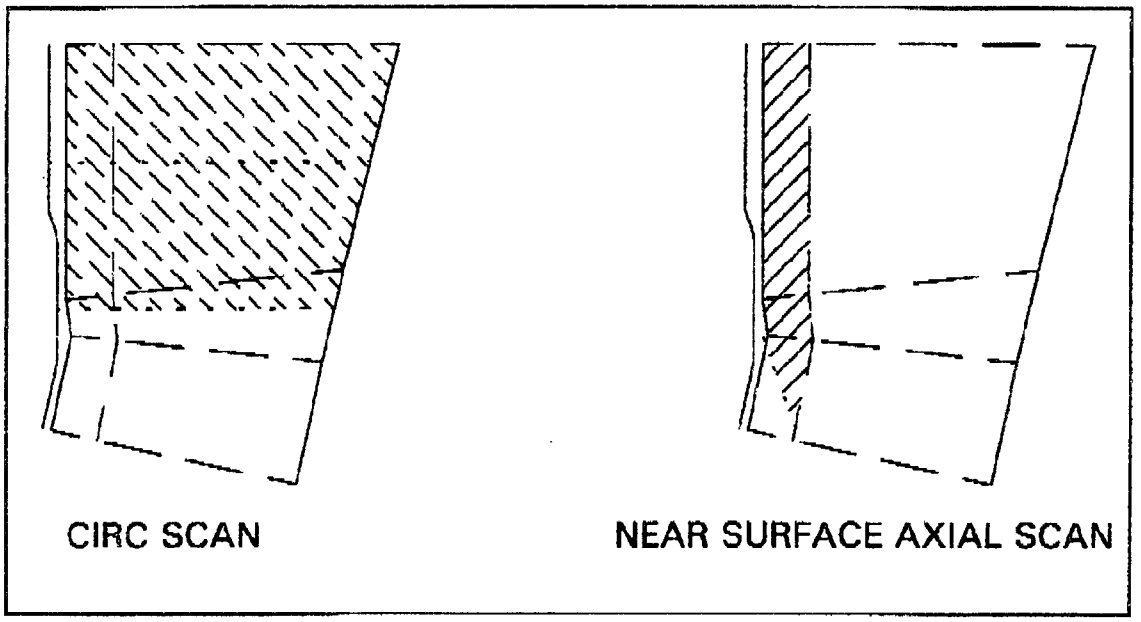

LOWER HEAD TO SHELL

(B01.021.002)

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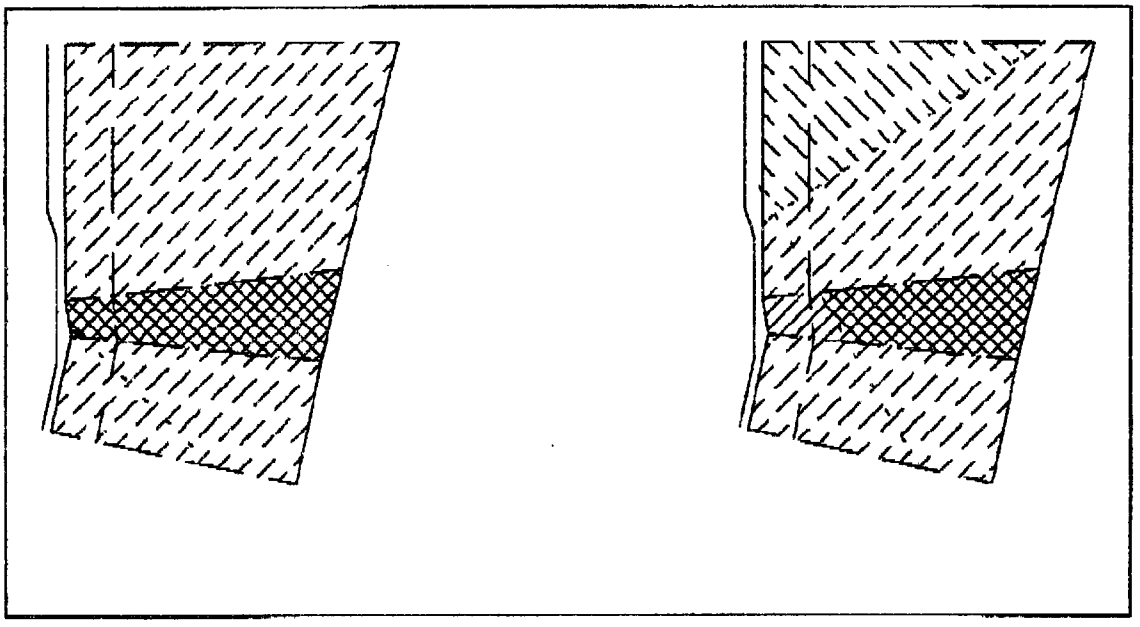

LOWER HEAD TO SHELL WELD AXIAL SCAN

(B01.021.002)

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Attachment 15
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WR18
(BD1.011.003)

Total Exam Area = 183.27 in^2 (Near Surface + Weld + T/2)

Near Surface Area = 15.27 in^2 (Cross-Section)

Weld Area = 24.14 in^2 (Cross-Section)

T/2 Area = 159.13 in^2 (Cross-Section)

CIRC 70° Gets 100 % Coverage of Near Surface Area

60° & 45° Get 100 % Coverage of Weld & T/2 Areas

0° Gets 100 % Coverage of Total Exam Area

AXIAL 70° Gets 100 % Coverage of Near Surface Area

45° Gets 100 % Coverage of Weld & T/2 Areas

60° Gets 100 % Coverage of Weld & T/2 Areas

WR18

AXIAL			CIRC			
70	60	45	70	60	45	0
100	100	100	100	100	100	100

Aggregate Coverage =

[(100 + 100) x 15.27 + (100 + 100 + 100) x 159.13

+ (100 + 100) x (24.14 x 2 + 159.13)] /

[15.27 x 2 + 159.13 x 3 + (24.14 x 2 + 159.13) x 2]

Partial Aggregate Coverage = 100 %

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WR18
(B01.011.003)

This weld is located between nozzles, 13" below the nozzle centerline. The nozzles themselves form obstructions to 100 % coverage.

Between Inlet Nozzles, below the Core Flood Nozzle (2 regions), 25.7 degrees out of 32.5 degrees was scanned. The weld extends out on either side of this region intersecting the Inlet Nozzle-to-Shell welds.

Between each Inlet Nozzle and Outlet Nozzle (4 regions) 19.6 degrees out of 27.8 degrees was scanned. The weld extends out on either side of this region intersecting the Inlet and Outlet Nozzle-to-Shell welds. Extra coverage was lost in these regions due to the Outlet Nozzle lip.

Actual Aggregate Coverage=[25.7 / 32.5 x 2 + 19.6/27.8 x 4]/6

= 73.4 %

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Nozzle Formula:

Aggregate Coverage =

[% 70° Circ x in^2 NS + (% 0°/15°/45° Axial

+ % 60° Circ + % 45° Circ + % 0°) x Total Area] /

[in^2 NS + in^2 Total Area x 4]

Nozzle Notes:

Weld volumes do not include the clad region.

The Near Surface Area extends 1" into the base metal.

The Inside Radius Area extends 1/2" into the base metal.

Angle requirements are as follows:

0° 100 % of Total Volume,

45° & 60° 100 % of Weld from 4 directions, 100 % of T/2 from 2 Circ directions, 100 % of T/2 from 1 Axial direction,

70° 100 % of Near Surface from 1 Axial & 1 Circ directions,

70° 100 % of Inside Radius from 1 Axial & 1 Circ directions.

Only one angle direction is required from the Nozzle Bore, and coverage is estimated based on the combined extent of the 0°, 15° & 45°. Additionally, there is no near surface requirement from the Vessel ID for the Axial direction.

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3RPV-WR12 (B03.090.003 & 003A)
3RPV-WR12A (B03.090.004 & 004A)
3RPV-WR12B (B03.090.005 & 005A) WRIN
3RPV-WR12C (B03.090.006 & 006A)

VERTICAL SECTION

Total Exam Area =	292.94 in^2	(Near Surface + Weld + T/2)
Near Surface Area =	15.06 in^2	(Cross-Section)
Weld Area =	24.34 in^2	(Cross-Section)
T/2 Area =	268.60 in^2	(Cross-Section)
Inside Radius Area =	6.83 in^2	(Cross-Section)

CIRC	0° Gets 219.74 in^2 of Total Exam Area	(75.0 %)
	60° & 45° Get 219.74 in^2 of Weld & T/2 Areas	(75.0 %)
	70° Gets 100 % Coverage of Near Surface Area	
	70° Gets 5.03 in^2 of Inside Radius Area	(73.6 %)
AXIAL	0°, 15° & 45° Get 281.98 in^2 of Weld & T/2 Area	(96.3 %)
	70° Gets 100 % Coverage of Inside Radius Area	

3RPV-WR12 (B03.100.003)
3RPV-WR12A (B03.100.004)
3RPV-WR12B (B03.100.005)
3RPV-WR12C (B03.100.006)

3RPV-WR12 (B03.090.003 & 003A)
3RPV-WR12A (B03.090.004 & 004A)
3RPV-WR12B (B03.090.005 & 005A)
3RPV-WR12C (B03.090.006 & 006A)

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WRIN

HORIZONTAL SECTION

Total Exam Area =	269.15 in²	(Near Surface + Weld + T/2)
Near Surface Area =	13.97 in²	(Cross-Section)
Weld Area =	22.72 in²	(Cross-Section)
T/2 Area =	246.43 in²	(Cross-Section)
Inside Radius Area =	7.20 in²	(Cross-Section)

CIRC	0° Gets 153.64 in² of Total Exam Area	(57.1 %)
	60° & 45° Get 153.64 in² of Weld & T/2 Areas	(57.1 %)
	70° Gets 100 % Coverage of Near Surface Area	
	70° Gets 0 % Coverage of Inside Radius Area	
AXIAL	0°, 15° & 45° Get 210.63 in² of Weld & T/2 Area	(78.3 %)
	70° Gets 100 % Coverage of Inside Radius Area	

3RPV-WR12 (B03.100.003)
3RPV-WR12A (B03.100.004)
3RPV-WR12B (B03.100.005)
3RPV-WR12C (B03.100.006)

3RPV-WR12 (B03.090.003 & 003A)
3RPV-WR12A (B03.090.004 & 004A)
3RPV-WR12B (B03.090.005 & 005A)
3RPV-WR12C (B03.090.006 & 006A)
3RPV-WR12 (B03.100.003)
3RPV-WR12A (B03.100.004)
3RPV-WR12B (B03.100.005)
3RPV-WR12C (B03.100.006)

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WRIN

VERTICAL SECTION

AXIAL	CIRC			
0/15/45	70	60	45	0
96.3	100	75.0	75.0	75.0

Aggregate Coverage =

[100 x 15.06 + (96.3 + 75.0 + 75.0 + 75.0) x 292.94] /

[15.06 + 292.94 x 4]

Actual Aggregate Coverage = 80.6 %

HORIZONTAL SECTION

AXIAL	CIRC			
0/15/45	70	60	45	0
78.3	100	57.1	57.1	57.1

Aggregate Coverage =

[100 x 13.97 + (78.3 + 57.1 + 57.1 + 57.1) x 269.15] /

[13.97 + 269.15 x 4]

Actual Aggregate Coverage = 62.9 %

3RPV-WR12 (B03.090.003 & 003A)
3RPV-WR12A (B03.090.004 & 004A)
3RPV-WR12B (B03.090.005 & 005A)
3R[redacted]WR12C (B03.090.006 & 006A)
3R[redacted]WR12 (B03.100.003)
3RPV-WR12A (B03.100.004)
3RPV-WR12B (B03.100.005)
3RPV-WR12C (B03.100.006)

WRIN

Nozzle-to-Shell Weld

Actual Average Coverage = [80.6 + 62.9] / 2 = **71.7 %**

Additionally, Coverage of the **Inside Radius** is as follows:

Axial Coverage = [100 + 100] / 2 = 100 %

Circ Coverage = [73.6 + 0] / 2 = 36.8 %

Actual Average Coverage = **68.4 %**

Coverage of the **Nozzle-to-Pipe Weld** is 100 %

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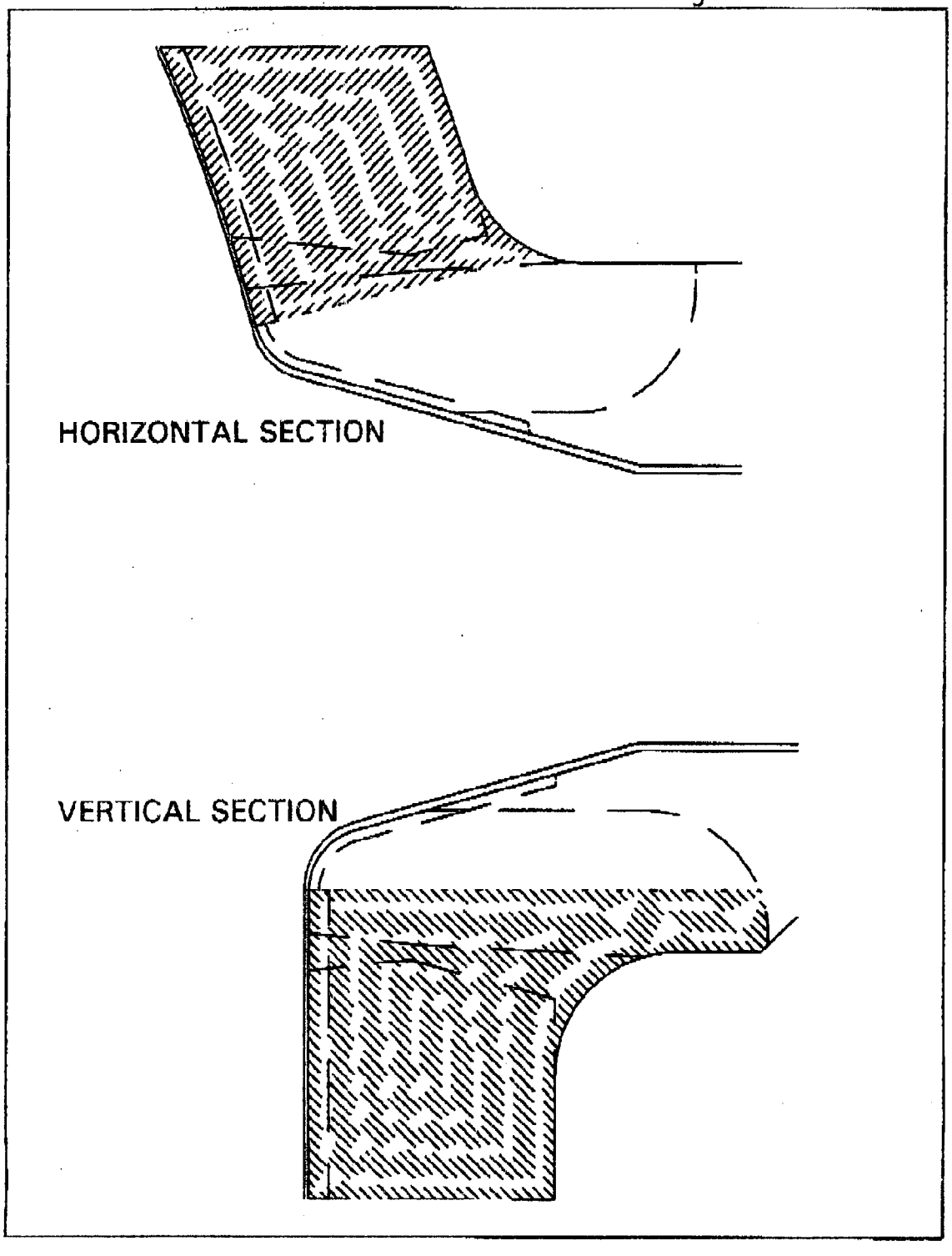

INLET NOZZLE TO SHELL WELD
CIRC SCAN FROM VESSEL ID

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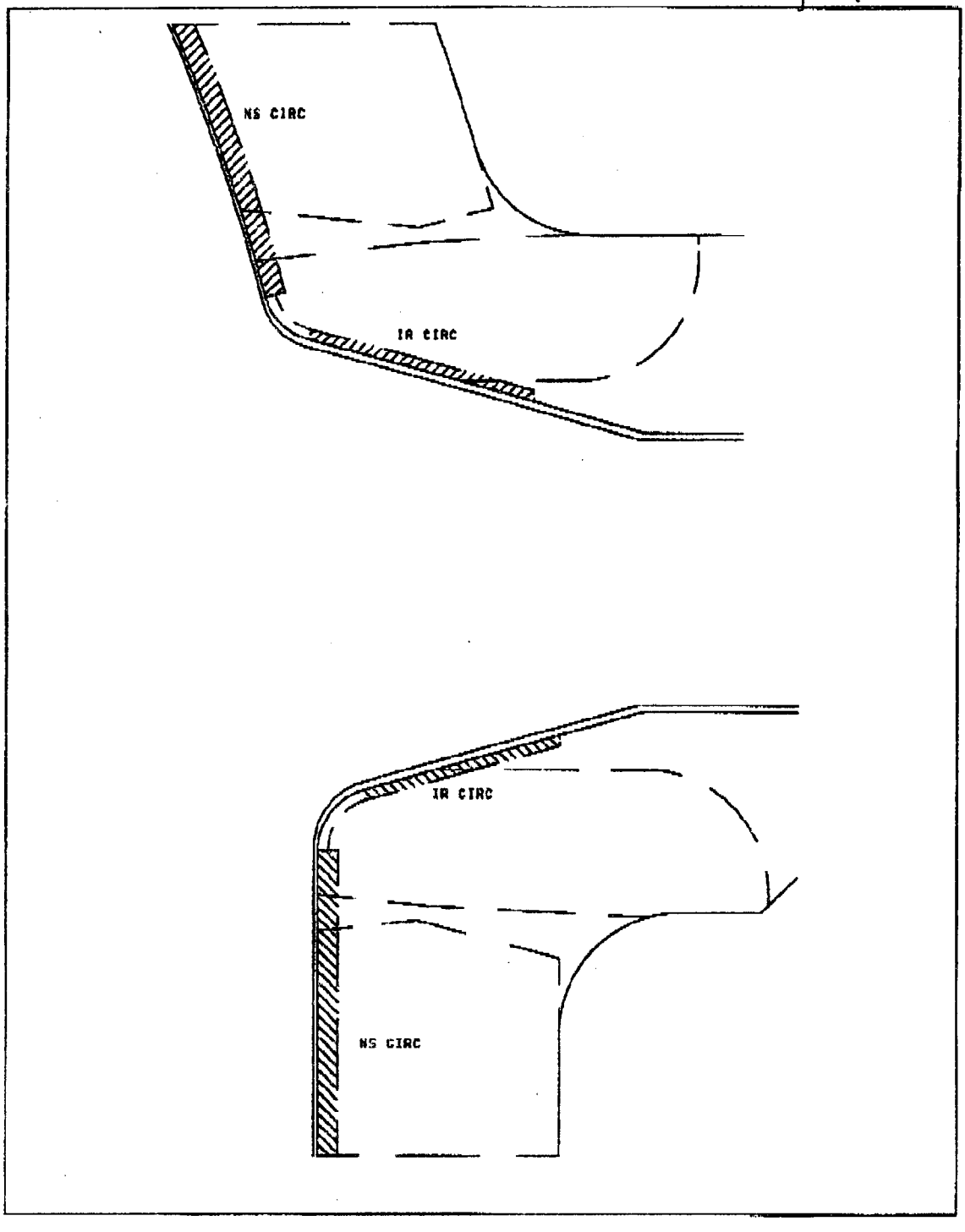
3RPV-WR12A (B03.090.004 & 004A)
3RPV-WR12B (B03.090.005 & 005A)
3RPV-WR12C (B03.090.006 & 006A)

3RPV-WR12 (B03.100.003)
3RPV-WR12A (B03.100.004)
3RPV-WR12B (B03.100.005)
3RPV-WR12C (B03.100.006)



INLET NOZZLE TO SHELL WELD NEAR SURFACE FROM VESSEL ID AND INNER RADIUS CIRC SCAN FROM NOZZLE ID

3RPV-WR12 (B03.090.003 & 003A)
3RPV-WR12A (B03.090.004 & 004A)
3RPV-WR12B (B03.090.005 & 005A)
3RPV-WR12C (B03.090.006 & 006A)

3RPV-WR12 (B03.100.003)
3RPV-WR12A (B03.100.004)
3RPV-WR12B (B03.100.005)
3RPV-WR12C (B03.100.006)

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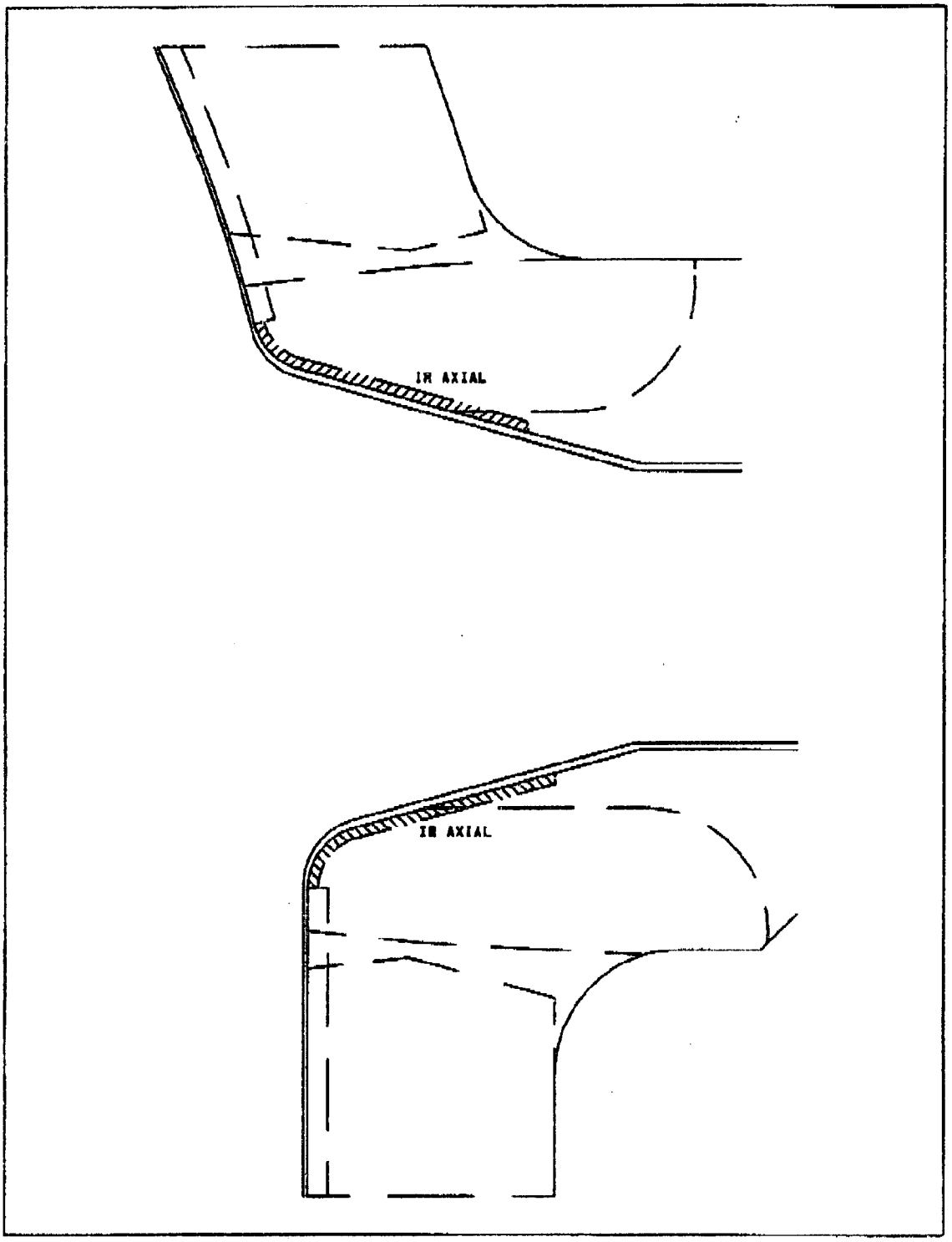

INLET NOZZLE INNER RADIUS AXIAL SCAN FROM NOZZLE ID

WR12 (B03.090.003 & 003A)	3RPV-WR12 (B03.100.003)
3RPV-WR12A (B03.090.004 & 004A)	3RPV-WR12A (B03.100.004)
3RPV-WR12B (B03.090.005 & 005A)	3RPV-WR12B (B03.100.005)
3RPV-WR12C (B03.090.006 & 006A)	3RPV-WR12C (B03.100.006)

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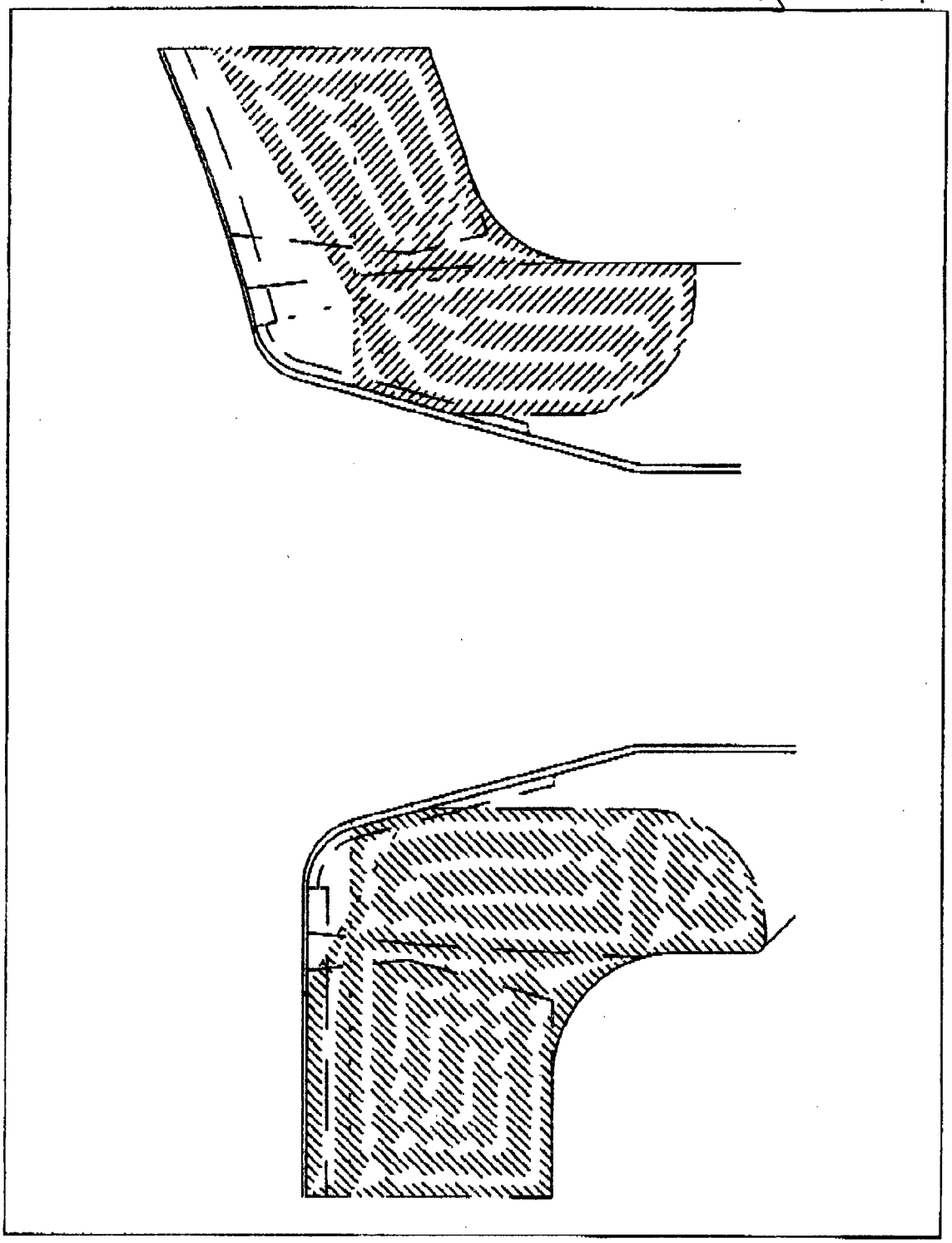

INLET NOZZLE TO SHELL WELD
SCAN FROM NOZZLE ID

3RPV-WR12 (B03.090.003 & 003A) 3RPV-WR12 (B03.100.003)
3RPV-WR12A (B03.090.004 & 004A) 3RPV-WR12A (B03.100.004)
3RPV-WR12B (B03.090.005 & 005A) 3RPV-WR12B (B03.100.005)
3RPV-WR12C (B03.090.006 & 006A) 3RPV-WR12C (B03.100.006)

3RPV-WR13 (B03.090.001 & 001A)
3RPV-WR13A (B03.090.002 & 002A)
3RPV-WR13 (B03.100.001)
3RPV-WR13A (B03.100.002)

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WROUT

VERTICAL SECTION

Total Exam Area =	301.06 in²	(Near Surface + Weld + T/2)
Near Surface Area =	14.02 in²	(Cross-Section)
Weld Area =	25.52 in²	(Cross-Section)
T/2 Area =	275.54 in²	(Cross-Section)
Inside Radius Area =	7.26 in²	(Cross-Section)

CIRC	0° Gets 95.16 in² of Total Exam Area	(31.6 %)
	60° & 45° Get 136.87 in² of Weld & T/2 Areas	(45.5 %)
	70° Gets 11.03 in² of Near Surface Area	(78.7 %)
	70° Gets 100 % Coverage of Inside Radius Area	
AXIAL	0°, 15° & 45° Get 295.92 in² of Weld & T/2 Area	(98.3 %)
	70° Gets 100 % Coverage of Inside Radius Area	

3RPV-WR13 (B03.090.001 & 001A)
3RPV-WR13A (B03.090.002 & 002A)
3RPV-WR13 (B03.100.001)
3RPV-WR13A (B03.100.002)

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WROUT

HORIZONTAL SECTION

Total Exam Area =	298.71 in²	(Near Surface + Weld + T/2)
Near Surface Area =	13.62 in²	(Cross-Section)
Weld Area =	23.45 in²	(Cross-Section)
T/2 Area =	275.26 in²	(Cross-Section)
Inside Radius Area =	8.02 in²	(Cross-Section)

CIRC	0° Gets 47.69 in² of Total Exam Area	(16.0 %)
	60° & 45° Get 87.46 in² of Weld & T/2 Areas	(29.3 %)
	70° Gets 11.33 in² of Near Surface Area	(83.2 %)
	70° Gets 6.88 in² of Inside Radius Area	(85.8 %)
AXIAL	0°, 15° & 45° Get 247.16 in² of Weld & T/2 Area	(82.7 %)
	70° Gets 7.74 in² of Inside Radius Area	(96.5 %)

3RPV-WR13 (B03.090.001 & 001A)
3RPV-WR13A (B03.090.002 & 002A)
3RPV-WR13 (B03.100.001)
3RPV-WR13A (B03.100.002)

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WROUT

VERTICAL SECTION

AXIAL	CIRC			
0/15/45	70	60	45	0
98.3	78.7	45.5	45.5	31.6

Aggregate Coverage =

[78.7 x 14.02 + (98.3 + 45.5 + 45.5 + 31.6) x 301.06] /

[14.02 + 301.06 x 4]

Actual Aggregate Coverage = 55.5 %

HORIZONTAL SECTION

AXIAL	CIRC			
0/15/45	70	60	45	0
82.7	83.2	29.3	29.3	16.0

Aggregate Coverage =

[83.2 x 13.62 + (82.7 + 29.3 + 29.3 + 16.0) x 298.71] /

[13.62 + 298.71 x 4]

Actual Aggregate Coverage = 39.8 %

3RPV-WR13 (B03.090.001 & 001A)

3RPV-WR13A (B03.090.002 & 002A)

3R[redacted]R13 (B03.100.001)

3RPV-WR13A (B03.100.002)

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WROUT

Nozzle-to-Shell Weld

Actual Average Coverage = [55.5 + 39.8] / 2 = **47.6 %**

Additionally, Coverage of the **Inside Radius** is as follows:

Axial Coverage = [100 + 96.5] / 2 = 98.2 %

Circ Coverage = [100 + 85.8] / 2 = 92.9 %

Actual Average Coverage = **95.6 %**

Coverage of the **Nozzle-to-Pipe Weld** is 100 %

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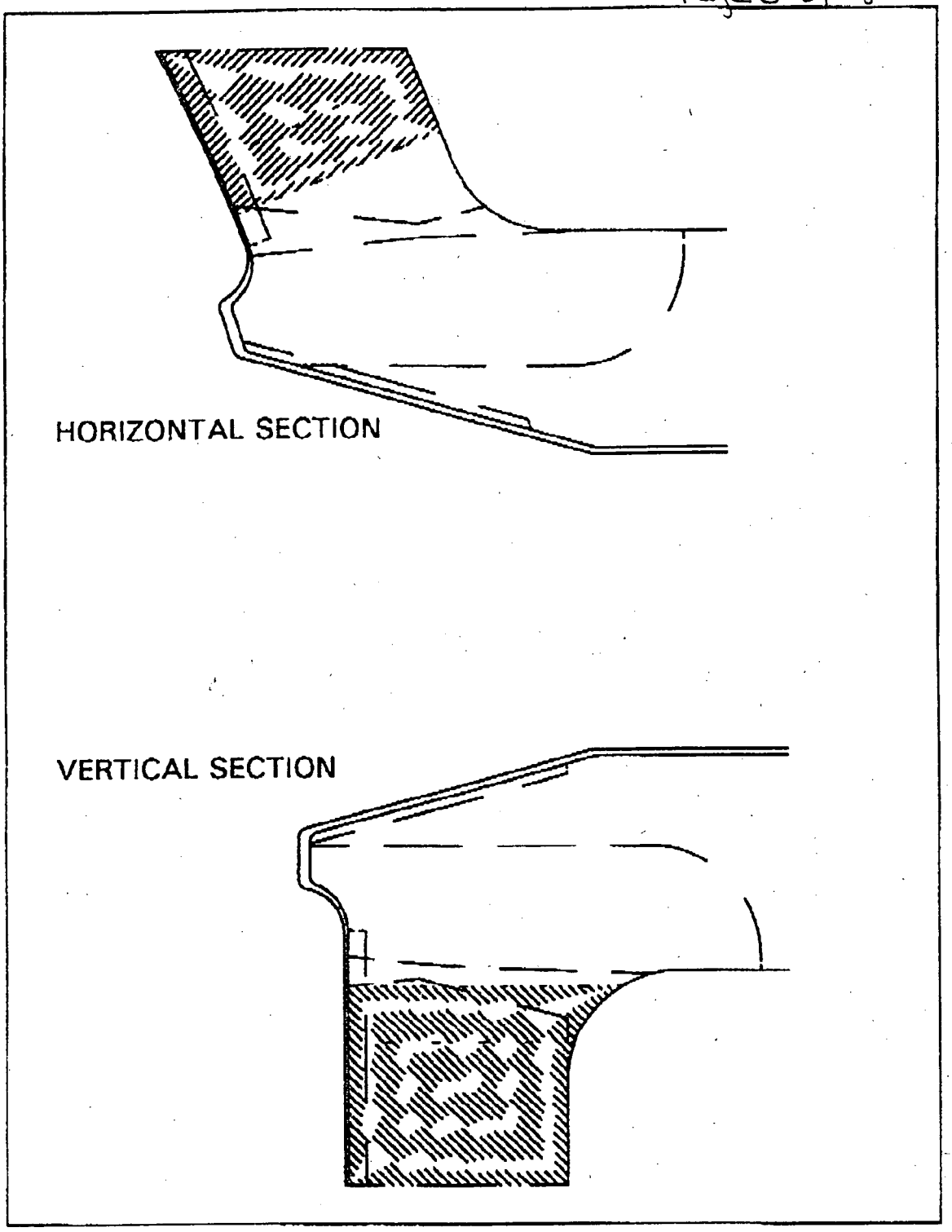

OUTLET NOZZLE TO SHELL WELD CIRC SCAN FROM VESSEL ID

3RPV-WR13 (B03.090.001 & 001A)
3RPV-WR13A (B03.090.002 & 002A)
3RPV-WR13 (B03.100.001)
3RPV-WR13A (B03.100.002)

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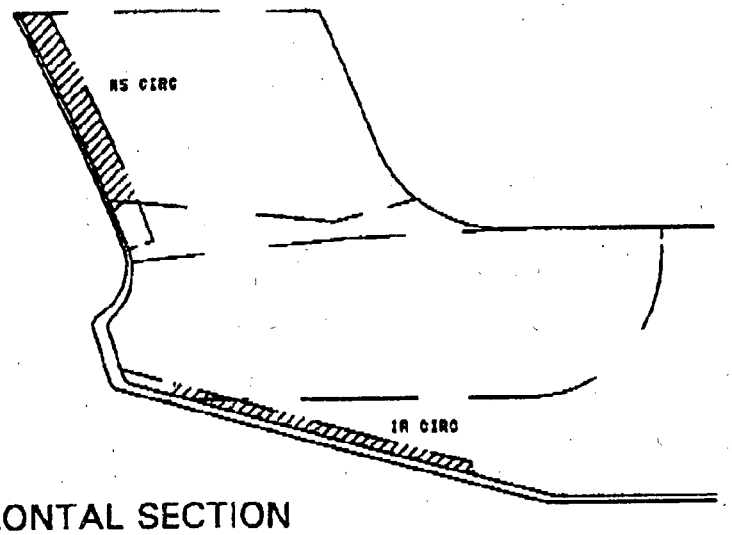
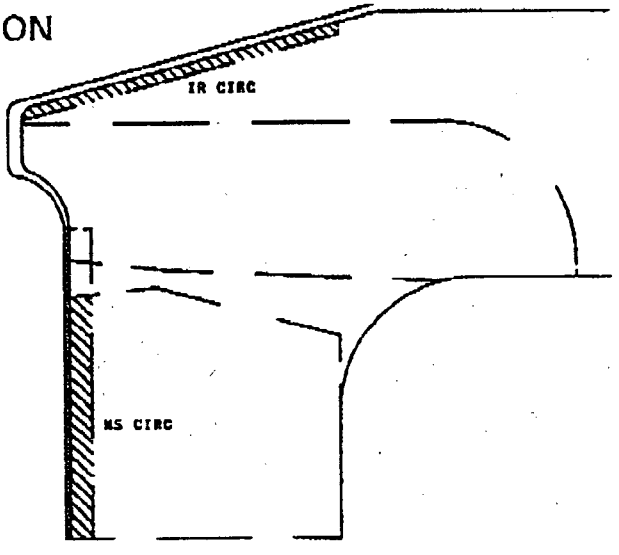


HORIZONTAL SECTION

VERTICAL SECTION



OUTLET NOZZLE TO SHELL WELD NEAR SURFACE FROM VESSEL ID AND INNER RADIUS CIRC SCAN FROM NOZZLE ID

RV-WR13 (B03.090.001 & 001A)

3RPV-WR13A (B03.090.002 & 002A)

3RPV-WR13 (B03.100.001)

3RPV-WR13A (B03.100.002)

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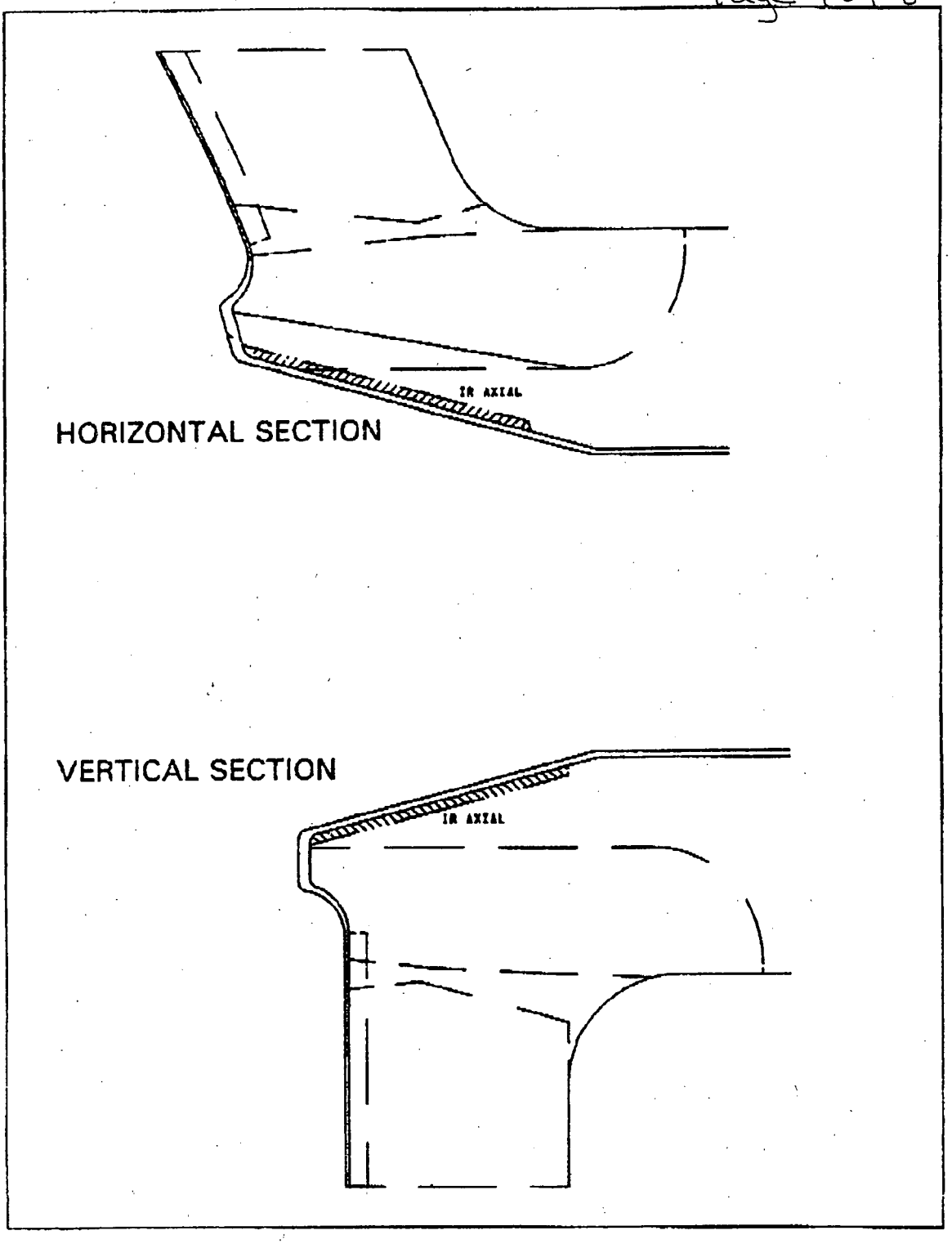

OUTLET NOZZLE INNER RADIUS
AXIAL SCAN FROM NOZZLE ID

3RPV-WR13 (B03.090.001 & 001A)

3RPV-WR13A (B03.090.002 & 002A)

3RPV-WR13 (B03.100.001)

3RPV-WR13A (B03.100.002)

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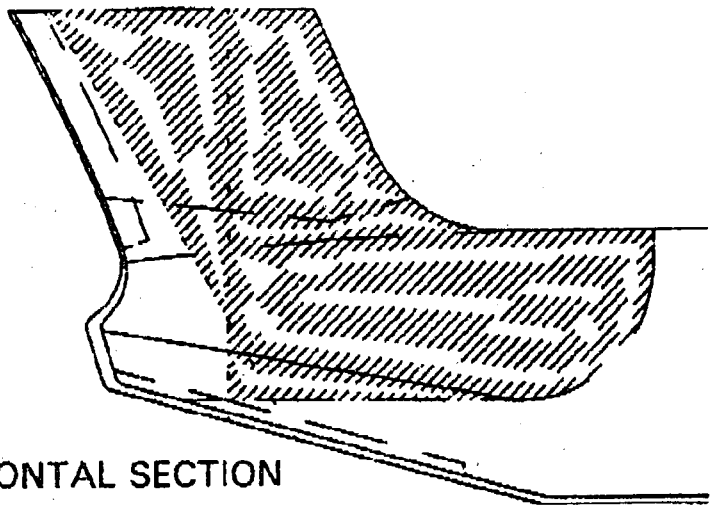
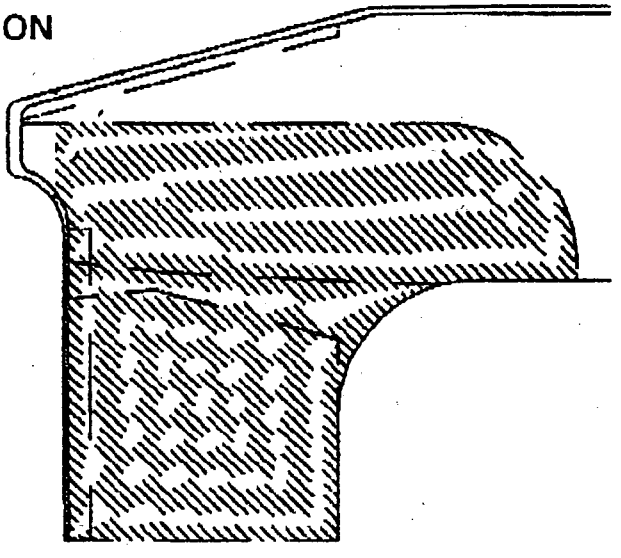


HORIZONTAL SECTION

VERTICAL SECTION



OUTLET NOZZLE TO SHELL WELD
SCAN FROM NOZZLE ID

3RPV-WR13 (B03.090.001 & 001A)
3RPV-WR13A (B03.090.002 & 002A)
3RPV-WR13 (B03.100.001)
3RPV-WR13A (B03.100.002)

3RPV-WR54 (B03.090.007 & 007A)
3RPV-WR54A (B03.090.008 & 008A)
3RPV-WR54 (B03.100.007 & 007A)
3RPV-WR54A (B03.100.008 & 008A)

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WRCF

VERTICAL SECTION

Total Exam Area = 189.61 in^2 (Near Surface + Weld + T/2)

Near Surface Area = 12.98 in^2 (Cross-Section)

Weld Area = 19.01 in^2 (Cross-Section)

T/2 Area = 170.60 in^2 (Cross-Section)

CIRC 0° Gets 170.69 in^2 of Total Exam Area (90.0 %)

60° & 45° Get 170.69 in^2 of Weld & T/2 Areas (90.0 %)

70° Gets 100 % Coverage of Near Surface Area

AXIAL 70° Gets 100 % Coverage of Near Surface Area

45° Gets 162.44 in^2 of T/2 Area

45°-IN Gets 100 % Coverage of Weld Area

45°-OUT Gets 7.92 in^2 of Weld Area

$$45° \text{ Coverage} = \frac{19.01 + 7.92 + 162.44}{19.01 + 19.01 + 170.60} = 90.8\ \%$$

60° Gets 161.18 in^2 of T/2 Area

60°-IN Gets 100 % Coverage of Weld Area

60°-OUT Gets 5.02 in^2 of Weld Area

$$60° \text{ Coverage} = \frac{19.01 + 5.02 + 161.18}{19.01 + 19.01 + 170.60} = 88.8\ \%$$

3RPV-WR54 (B03.090.007 & 007A)
3RPV-WR54A (B03.090.008 & 008A)
3[redacted]WR54 (B03.100.007 & 007A)
3RPV-WR54A (B03.100.008 & 008A)

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WRCF

HORIZONTAL SECTION

Total Exam Area = 222.71 in^2 (Near Surface + Weld + T/2)

Near Surface Area = 15.50 in^2 (Cross-Section)

Weld Area = 21.32 in^2 (Cross-Section)

T/2 Area = 201.39 in^2 (Cross-Section)

CIRC 0° Gets 191.77 in^2 of Total Exam Area (86.1 %)

60° & 45° Get 191.77 in^2 of Weld & T/2 Areas (86.1 %)

70° Gets 100 % Coverage of Near Surface Area

AXIAL 70° Gets 100 % Coverage of Near Surface Area

45° Gets 199.35 in^2 of T/2 Area

45°-IN Gets 100 % Coverage of Weld Area

45°-OUT Gets 8.72 in^2 of Weld Area

$$45° \text{ Coverage} = \frac{21.32 + 8.72 + 199.35}{21.32 + 21.32 + 201.39} = 94.0\ \%$$

60° Gets 198.96 in^2 of T/2 Area

60°-IN Gets 100 % Coverage of Weld Area

60°-OUT Gets 5.74 in^2 of Weld Area

$$60° \text{ Coverage} = \frac{23.12 + 5.74 + 198.96}{23.12 + 23.12 + 201.39} = 93.4\ \%$$

3RPV-WR54 (B03.090.007 & 007A)

3RPV-WR54A (B03.090.008 & 008A) WRCF

3RPV-WR54 (B03.100.007 & 007A)

3RPV-WR54A (B03.100.008 & 008A)

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VERTICAL SECTION

AXIAL			CIRC			
70	60	45	70	60	45	0
100	88.8	90.8	100	90.0	90.0	90.0

Aggregate Coverage =

[(100 + 100) x 12.98 + (90.0 + 90.0 + 90.0) x 189.61

+ (88.8 + 90.8) x (19.01 x 2 + 170.60)] /

[12.98 x 2 + 189.61 x 3 + (19.01 x 2 + 170.60) x 2]

Partial Aggregate Coverage = 90.2 %

HORIZONTAL SECTION

AXIAL			CIRC			
70	60	45	70	60	45	0
100	93.4	94.0	100	86.1	86.1	86.1

Aggregate Coverage =

[(100 + 100) x 15.50 + (86.1 + 86.1 + 86.1) x 222.71

+ (93.4 + 94.0) x (21.32 x 2 + 201.39)] /

[15.50 x 2 + 222.71 x 3 + (21.32 x 2 + 201.39) x 2]

Partial Aggregate Coverage = 89.6 %

3RPV-WR54 (B03.090.007 & 007A)
3RPV-WR54A (B03.090.008 & 008A)
3[redacted]WR54 (B03.100.007 & 007A)
3RPV-WR54A (B03.100.008 & 008A)

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WRCF

Coverage of the Core Flood Nozzle is blocked by the flange taper on the top side. 114 degrees of coverage is reduced. Coverage is also blocked on both sides by the adjacent inlet nozzles. 60 degrees of coverage is reduced on each side. Reduction in the top coverage affects the vertical section only. Reduction in the side coverage affects both the horizontal and vertical coverage.

REDUCED VERTICAL SECTION

AXIAL 60° Gets 132.28 in^2 of T/2 Area

60°-IN Gets 16.16 in^2 of Weld Area

60°-OUT Gets 5.02 in^2 of Weld Area

$$60° \text{ Coverage} = \frac{16.16 + 5.02 + 132.28}{19.01 + 19.01 + 170.60} = 73.6\ \%$$

AXIAL			CIRC			
70	60	45	70	60	45	0
100	73.6	90.8	100	90.0	90.0	90.0

Aggregate Coverage =

$$[\ (100 + 100) \times 12.98 + (90.0 + 90.0 + 90.0) \times 189.61$$
$$+ (73.6 + 90.8) \times (19.01 \times 2 + 170.60)\ ]\ /$$
$$[\ 12.98 \times 2 + 189.61 \times 3 + (19.01 \times 2 + 170.60) \times 2\ ]$$

Actual Aggregate Coverage = 87.0 %

3RPV-WR 54 (B03.090.007 & 007A)

3RPV-WR 54A (B03.090.008 & 008A)

3RPV-WR 54 (B03.100.007 & 007A)

3RPV-WR 54A (B03.100.008 & 008A)

REDUCED HORIZONTAL SECTION

AXIAL 70° Gets 11.93 in² of Near Surface Area (77.0 %)

60° Gets 166.86 in² of T/2 Area

60°-IN Gets 19.83 in² of Weld Area

60°-OUT Gets 5.74 in² of Weld Area

$$60° \text{ Coverage} = \frac{19.83 + 5.74 + 166.86}{23.12 + 23.12 + 201.39} = 78.9\ \%$$

AXIAL			CIRC			
70	60	45	70	60	45	0
77.0	78.9	94.0	100	86.1	86.1	86.1

Aggregate Coverage =

[(77.0 + 100) x 15.50 + (86.1 + 86.1 + 86.1) x 222.71

+ (78.9 + 94.0) x (21.32 x 2 + 201.39)] /

[15.50 x 2 + 222.71 x 3 + (21.32 x 2 + 201.39) x 2]

Actual Aggregate Coverage = 86.3 %

Actual Coverage is as follows:

[Reduced Vertical (A) x 94° + Vertical (B) x 48° + Horizontal (C) x 98°

+ Reduced (Vertical + Horizontal)(D) / 2 x 120°] / 360 =

= 87.0 x 94° + 90.2 x 48° + 89.6 x 98° + (87.0 + 86.3) x 60°/360

Total Actual Coverage = 88.0 %

Total Actual Coverage = 88.0%

3RPV-WR S4 (B03.090.007 & 007A)
3RPV-WR S4A (B03.090.008 & 008A)
3RPV-WR S4 (B03.100.007 & 007A)
3RPV-WR S4A (B03.100.008 & 008A)

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WRCF

Additionally, Coverage of the **Inside Radius** is as follows:

Axial Coverage = 100 %

Circ Coverage = 0 %

Actual Average Coverage = 50 %

Additionally, Coverage of the **Nozzle-to-Safe End Weld** is limited by the counterbore. Coverage is as follows:

Circ Coverage

Inner T/3 1.804 in^2 out of 2.587 in^2 (69.7 %)

Outer T/3 .986 in^2 out of 1.343 in^2 (73.4 %)

Axial Coverage

Inner T/3 2.428 in^2 out of 2.587 in^2 (93.9 %)
(Limited in OUT direction only)

Actual Average Coverage = [69.7 + 69.7 + 73.4 + 73.4
+ 93.9 + 100 + 100 + 100] / 8
= 85.0 %

Additionally Coverage of the **Safe End-to-Pipe Weld** is 100 %

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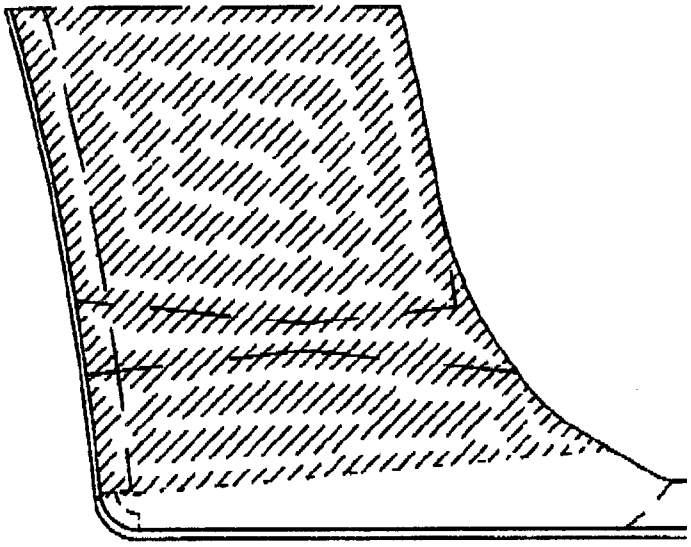
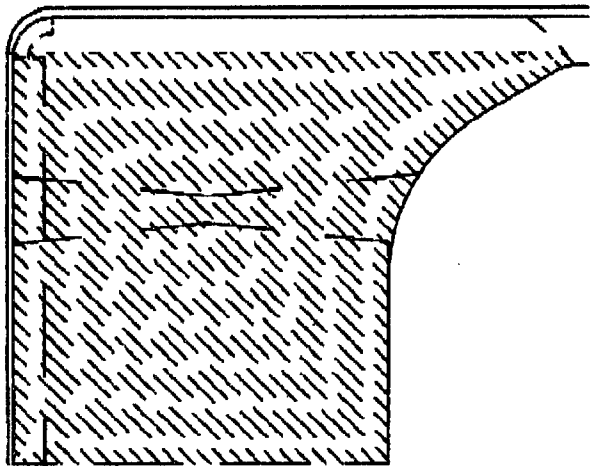


HORIZONTAL SECTION

VERTICAL SECTION



CORE FLOOD NOZZLE TO SHELL WELD
CIRC SCAN FROM VESSEL ID

3RPV-WRS4 (B03.090.007 & 007A)

3RPV-WRS4A (B03.090.008 & 008A)

3RPV-WRS4 (B03.100.007 & 007A)

3RPV-WRS4A (B03.100.008 & 008A)

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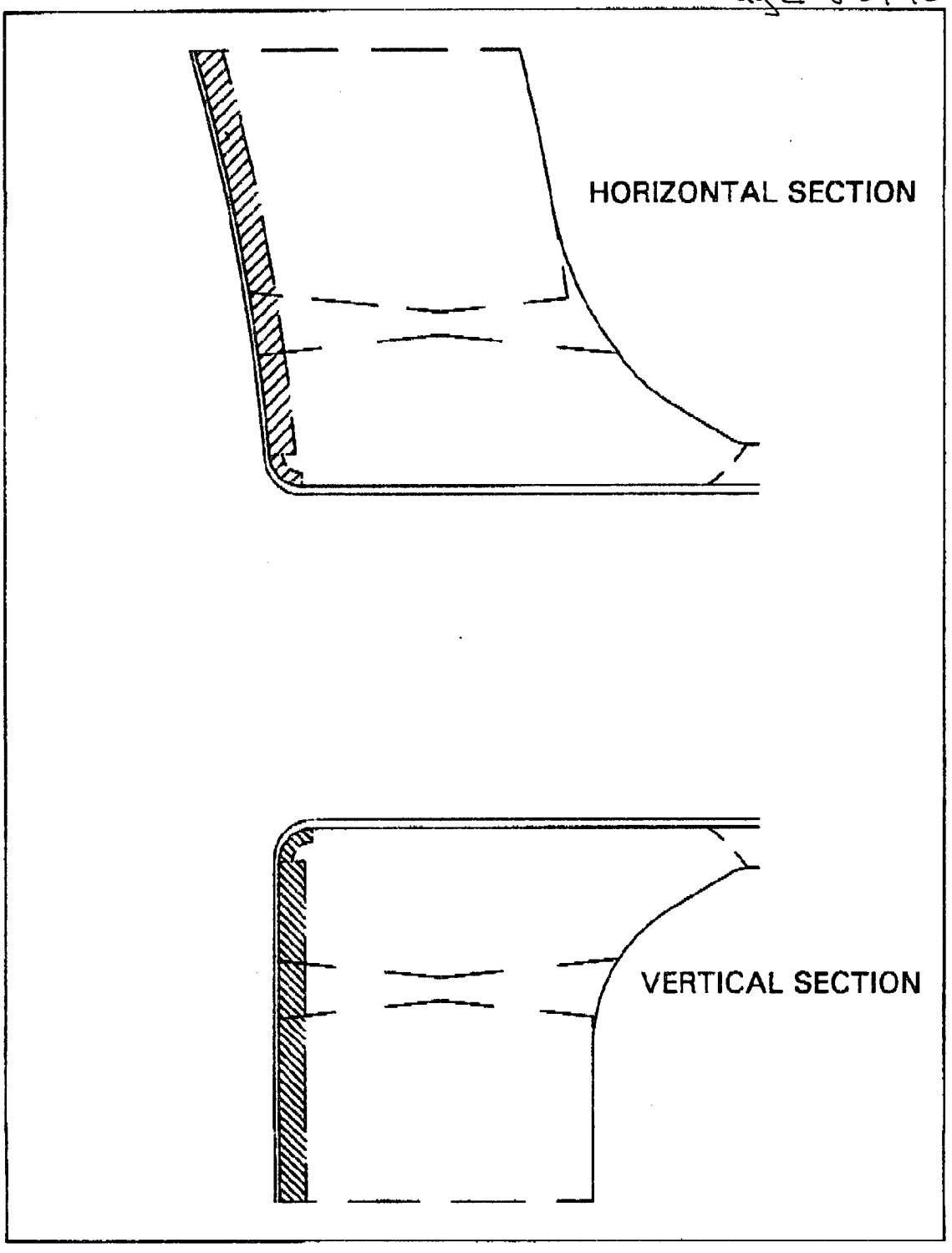

CORE FLOOD NOZZLE TO SHELL WELD NEAR SURFACE AND INNER RADIUS FROM VESSEL ID

3RPV-WR54 (B03.090.007 & 007A)

3RPV-WR54A (B03.090.008 & 008A)
3RPV-WR54 (B03.100.007 & 007A)
3RPV-WR54A (B03.100.008 & 008A)

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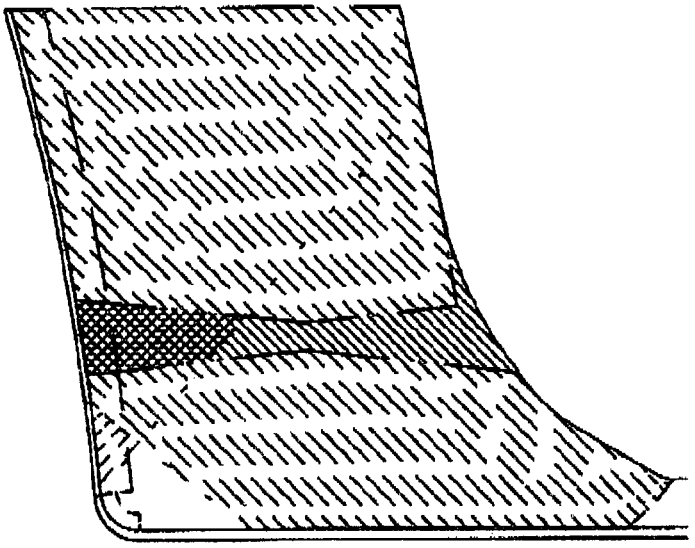
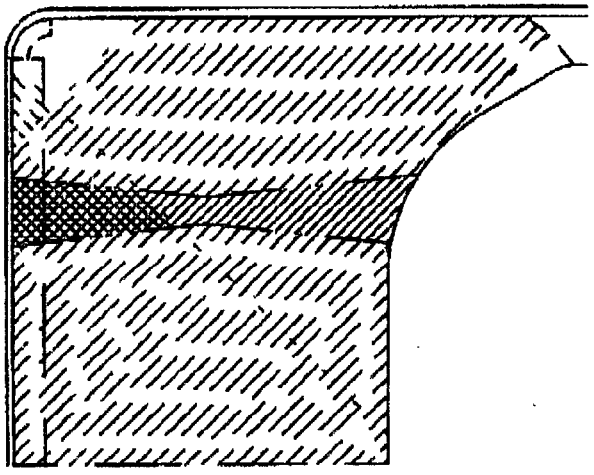


HORIZONTAL SECTION

VERTICAL SECTION



CORE FLOOD NOZZLE TO SHELL WELD
45° AXIAL SCAN FROM VESSEL ID

3RPV-WR54 (B03.090.007 & 007A)

3RPV-WR54A (B03.090.008 & 008A)
3RPV-WR54 (B03.100.007 & 007A)
3RPV-WR54A (B03.100.008 & 008A)

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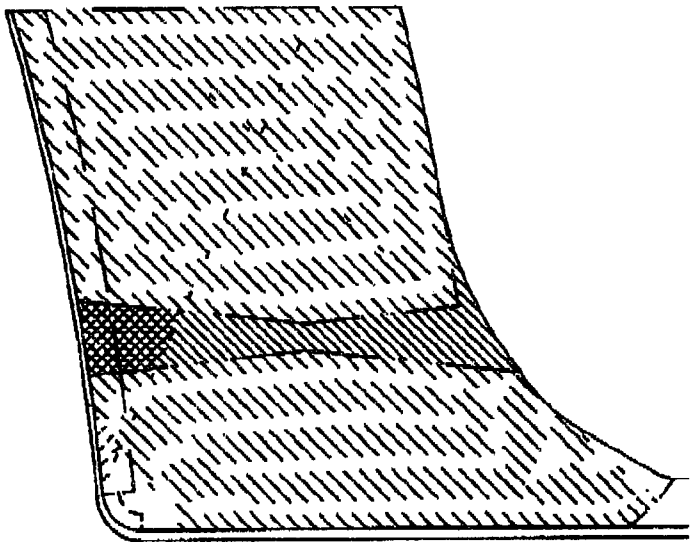
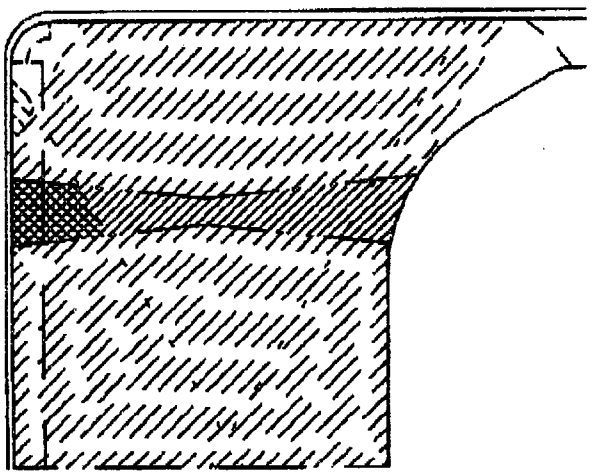


HORIZONTAL SECTION

VERTICAL SECTION



CORE FLOOD NOZZLE TO SHELL WELD
60° AXIAL SCAN FROM VESSEL ID

3RPV-WR54 (B03.090.007 & 007A)

3RPV-WR54A (B03.090.008 & 008A)

3RPV-WR54 (B03.100.007 & 007A)

3RPV-WR54A (B03.100.008 & 008A)

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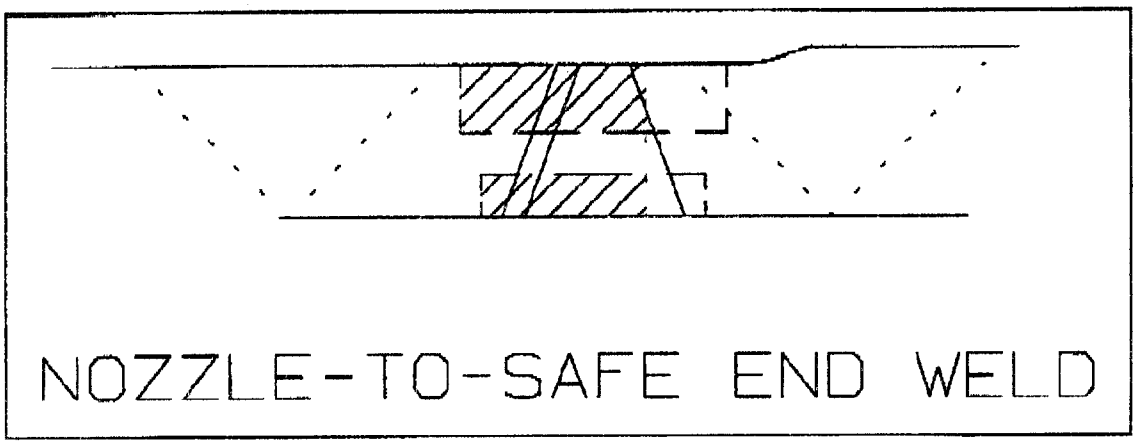

CORE FLOOD NOZZLE TO SAFE END WELDS FROM ID

3RPV-WR 54 (B03.090.007 & 007A)

3RPV-WR 54A (B03.090.008 & 008A)

3RPV-WR 54 (B03.100.007 & 007A)

3RPV-WR 54A (B03.100.008 & 008A)

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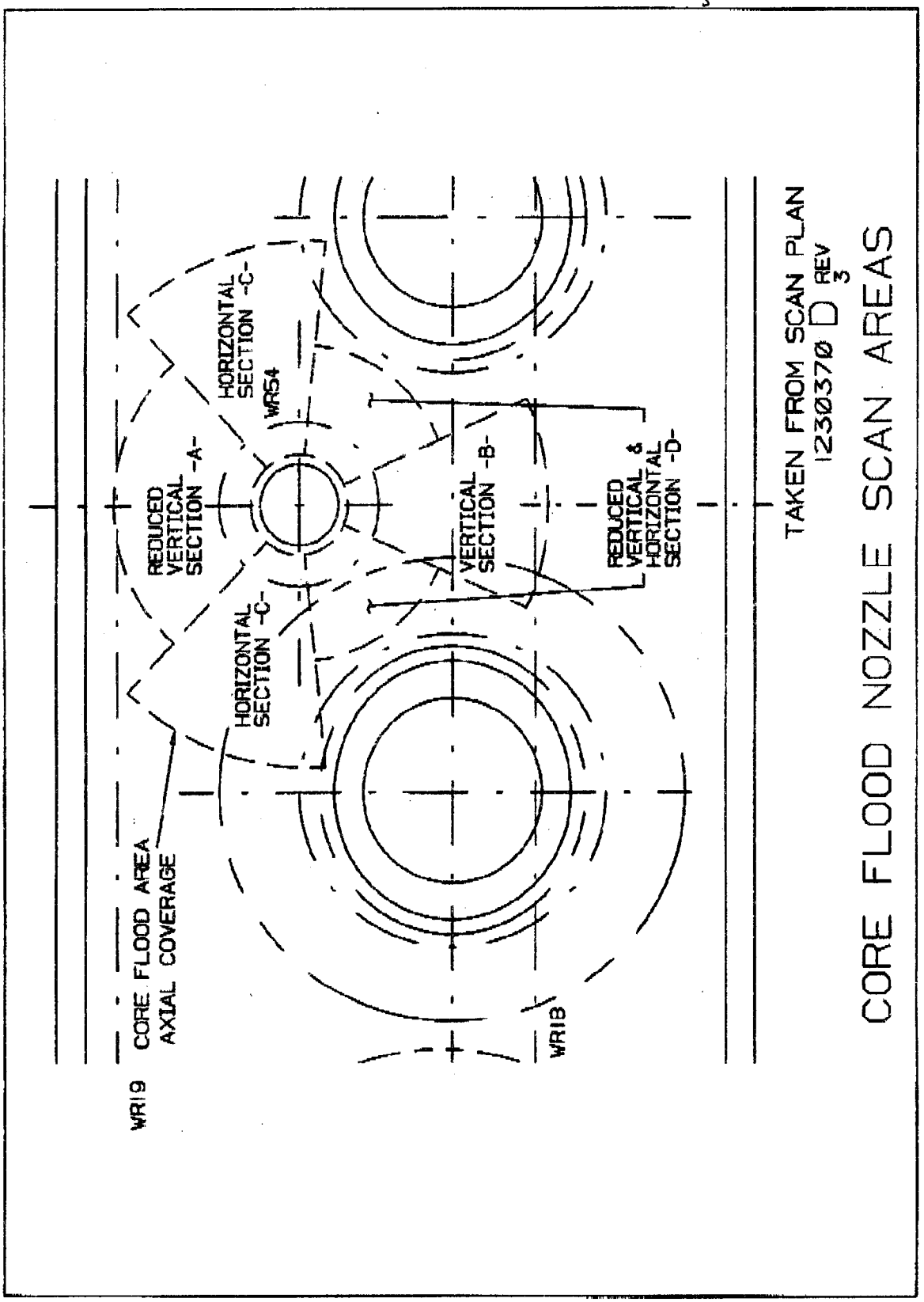

3RPV-WR S4 (B03.090.007 & 007A) 3RPV-WRS4 (B03.100.007 & 007A)

3RPV-WR S4A (B03.090.008 & 008A) 3RPV-WRS4A (B03.100.008 & 008A)