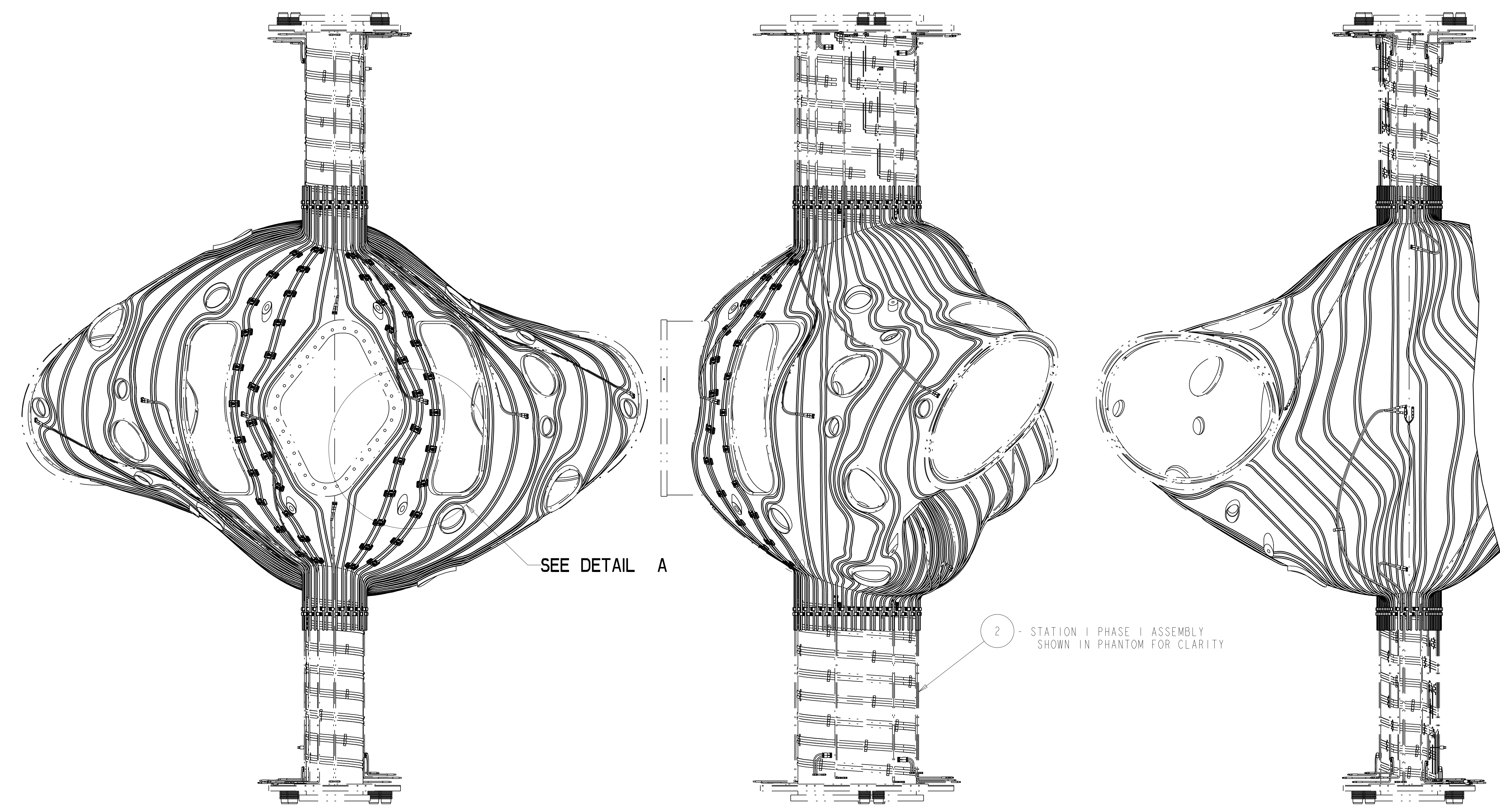


SECTION F-F
 TYPICAL ALL TUBE CLIPS
 SCALE 2.00

- NOTES
- INTERPRET DRAWING PER MECHANICAL ENGINEERING DRAFTING STANDARD ES-3.1-2.
 - INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
 - DIMENSIONS ARE IN INCHES.
 - MAGNETIC PERMEABILITY NOT TO EXCEED 1.02 AS TESTED BY A SEVERN INDICATOR, AVAILABLE FROM: SEVERN ENGINEERING, AUBURN, ALABAMA 36830, WWW.SEVERENGINEERING.COM
 - WELDING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF PPPL PROCEDURE ENG-037.
 - ASSEMBLE PER THIS DRAWING AND SPECIFICATION NCSX-CSPEC-185-01.
 - RECTANGULAR WASHER, F/N 21, SHALL BE USED IN THE CLAMP ASSEMBLY WHEREVER PRACTICAL; NUT, F/N 30, SHALL BE TORQUED TO 55-65 IN.-LBS. IF THE CONTOUR DOES NOT PERMIT INSTALLATION OF THE WASHER IT IS PERMITTED TO DELETE IT. IN THIS CONFIGURATION THE NUT TORQUE SHALL BE REDUCED TO 40-50 IN.-LBS.
 - THE CONTACT AREA BETWEEN THE COPPER CONDUCTOR ASSEMBLY AND THE GASKET SHALL NOT BE LESS THAN 50%. THE SE123-052-1 GASKET, F/N 17, SHALL BE INSTALLED WHEREVER POSSIBLE. IF A GOOD CONFORMAL FIT TO THE VACUUM VESSEL SURFACE IS NOT POSSIBLE USE THE SE123-052-2 GASKET, F/N 18.

Rev 1-a: RFD-12-023 approved field rearrangement of selected cooling tubes on VV1. Field rearrangement of VV2 and VV3 will require a new RFD.

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 PPPL Drafting:



-1,-2,-3 VVSA ASSEMBLY STATION 1 PHASE 2
 SCALE .028

WELDING ENGINEER
 APPROVED G. GETTELFINGER DATE: 10/06/2006

REV	DESCRIPTION	BY	DATE	CHK	DEPT	DATE	PE	REQ	DATE	ORNL	DOE	DATE
0	ORIGINAL ISSUE	MTB	10/06									
1	HOSE GASKET, F/N 22, QTY 1460 WAS 2920.	GM	03/01									
1	NOTE 8, REVISED NOTE 7, DELETED UPPER											
1	ADDED GROUPS -1, -2 TO SE123-052, ADDED											
1	ECN NO. 5225, SE123-046 WAS SE123-056.											

REV	DESCRIPTION	BY	DATE	CHK	DEPT	DATE	PE	REQ	DATE	ORNL	DOE	DATE
0	ORIGINAL ISSUE	MTB	10/06									
1	HOSE GASKET, F/N 22, QTY 1460 WAS 2920.	GM	03/01									
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1	ADDED GROUPS -1, -2 TO SE123-052, ADDED											
1	ECN NO. 5225, SE123-046 WAS SE123-056.											

QTY	DESCRIPTION	MATERIAL	SPECIFICATION	FIND NO	
738	738	738	95878A310	HEX NUT 5/16-18 UNC - ASME B18.2.2 316L SST	30
128	128	128	91950A027	FLAT WASHER .50 OD X .219 ID X .0.036 THK 316 STAINLESS STL	29
8	8	8	91950A030	FLAT WASHER .688 OD X .344 ID X .064 THK 316 STAINLESS STL	28
128	128	128	92446A240	SLOTTED PAN HEAD SCREW #10-24UNC X .38 LG BRASS	27
738	738	738	NCSX-PRL-12-002	5/16-18UNC X .75 LG CD INCONEL WELD STUD	26
128	128	128	SE123-172-3	TUBE MOUNT STRAP	25
2	2	2	SE123-171	SUPPORT BRKT B WELDMENT	24
2	2	2	SE123-170	SUPPORT BRKT A WELDMENT	23
1460	1460	1460	SE123-059	HOSE GASKET	22
730	730	730	SE123-046	TUBE RETAINER WASHER	21
730	730	730	SE123-054	STRAP	20
730	730	730	SE123-058	CONDUCTOR ASSEMBLY	19
AR	AR	AR	SE123-052-2	CONDUCTOR GASKET	18
730	730	730	SE123-052-1	CONDUCTOR GASKET	17
4	4	4	SE123-145-14	HEATING/COOLING TUBE WELDMENT	16
4	4	4	SE123-145-13	HEATING/COOLING TUBE WELDMENT	15
4	4	4	SE123-145-12	HEATING/COOLING TUBE WELDMENT	14
4	4	4	SE123-145-11	HEATING/COOLING TUBE WELDMENT	13
8	8	8	SE123-145-10	HEATING/COOLING TUBE WELDMENT	12
4	4	4	SE123-145-9	HEATING/COOLING TUBE WELDMENT	11
4	4	4	SE123-145-8	HEATING/COOLING TUBE WELDMENT	10
4	4	4	SE123-145-7	HEATING/COOLING TUBE WELDMENT	9
4	4	4	SE123-145-6	HEATING/COOLING TUBE WELDMENT	8
8	8	8	SE123-145-5	HEATING/COOLING TUBE WELDMENT	7
4	4	4	SE123-145-4	HEATING/COOLING TUBE WELDMENT	6
4	4	4	SE123-145-3	HEATING/COOLING TUBE WELDMENT	5
4	4	4	SE123-145-2	HEATING/COOLING TUBE WELDMENT	4
4	4	4	SE123-145-1	HEATING/COOLING TUBE WELDMENT	3
1	1	1	SE121-004-3	VVSA ASSEMBLY STATION 1, PHASE 1 - VVSA 3	2
1	1	1	SE121-004-2	VVSA ASSEMBLY STATION 1, PHASE 1 - VVSA 2	2
AR	AR	AR	SE121-004-1	VVSA ASSEMBLY STATION 1, PHASE 1 - VVSA 1	2
AR	AR	AR	-3	VVSA ASSEMBLY STATION 1, PHASE 2 - VVSA 3	1
AR	AR	AR	-2	VVSA ASSEMBLY STATION 1, PHASE 2 - VVSA 2	1
AR	AR	AR	-1	VVSA ASSEMBLY STATION 1, PHASE 2 - VVSA 1	1

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P THIS DRAWING PRODUCED ON PRO-ENGINEER

REV	DESCRIPTION	BY	DATE	CHK	DEPT	DATE	PE	REQ	DATE	ORNL	DOE	DATE
0	ORIGINAL ISSUE	MTB	10/06									
1	HOSE GASKET, F/N 22, QTY 1460 WAS 2920.	GM	03/01									
1	NOTE 8, REVISED NOTE 7, DELETED UPPER											
1	ADDED GROUPS -1, -2 TO SE123-052, ADDED											
1	ECN NO. 5225, SE123-046 WAS SE123-056.											

SCALE	NOTED	DES	DATE
	TOLERANCES UNLESS OTHERWISE SPECIFIED	P GORANSON	10/06
	FRACTIONS	MT BROWN	10/06
	XX DECIMALS ± .01	M COLE	10/06
	XXX DECIMALS ± .005		
	ANGLES ±0'15"		
	BREAK SHARP EDGES .06 MAX		
	FINISH .125 UNLESS OTHERWISE SPECIFIED		

UT-BATTELLE
 Oak Ridge National Laboratory
 managed for the DEPARTMENT OF ENERGY under
 U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725
 UT-BATTELLE, LLC, Oak Ridge, Tennessee

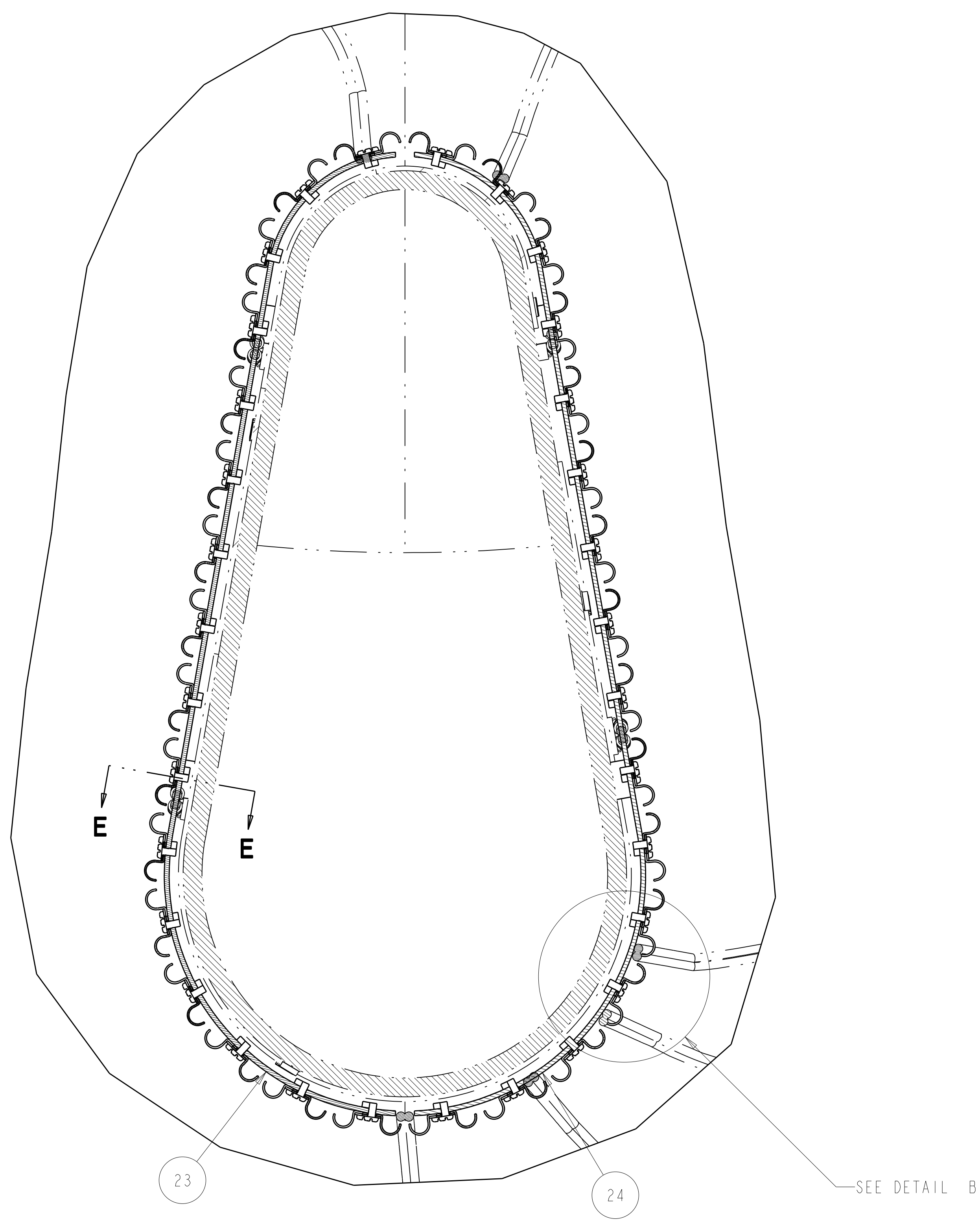
NATIONAL COMPACT STELLARATOR EXPERIMENT

VVSA ASSEMBLY STATION 1, PHASE 2

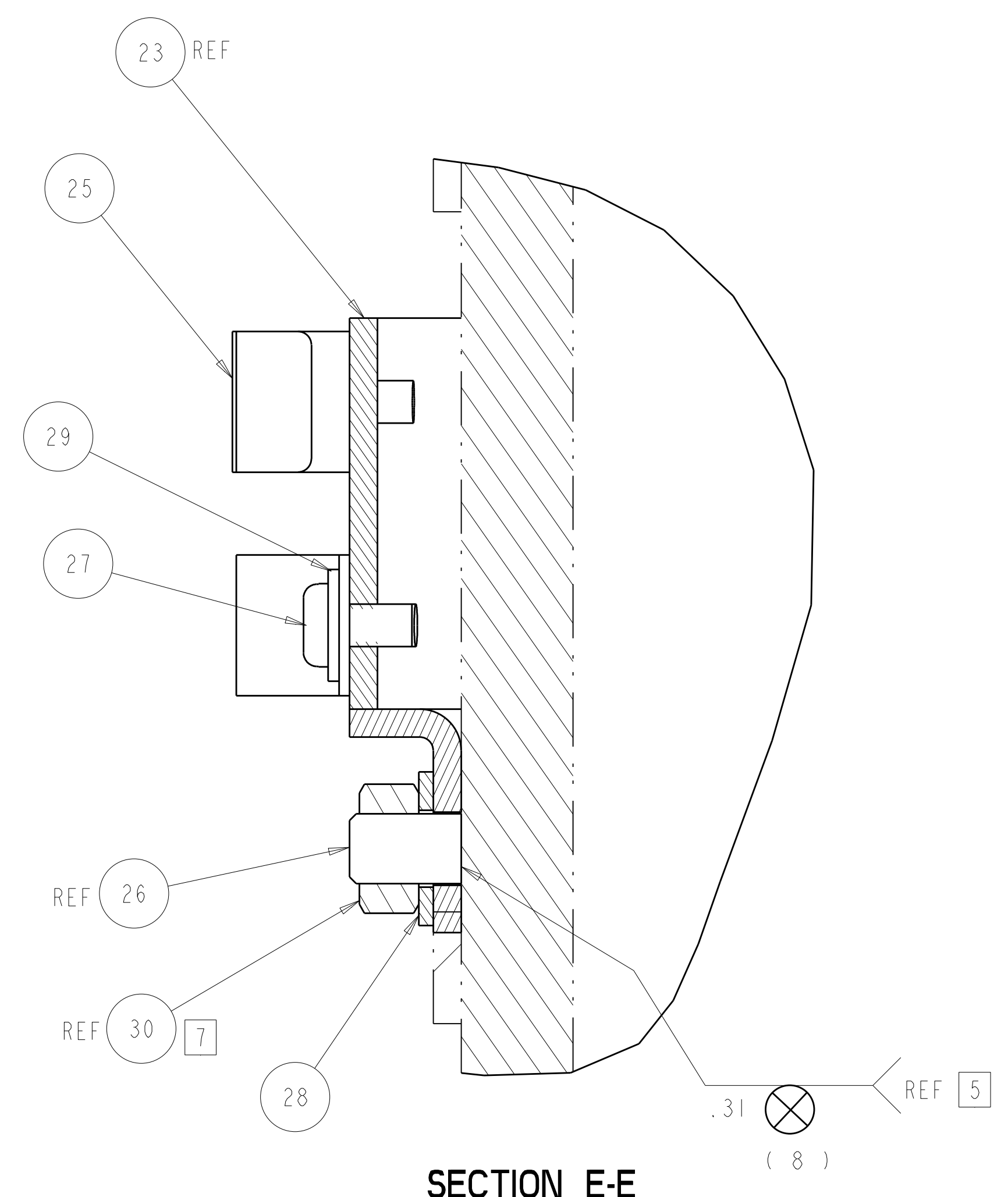
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SEI21-008	ORNL	5700	3	1	5	A

RELEASE LEVEL: Fabrication

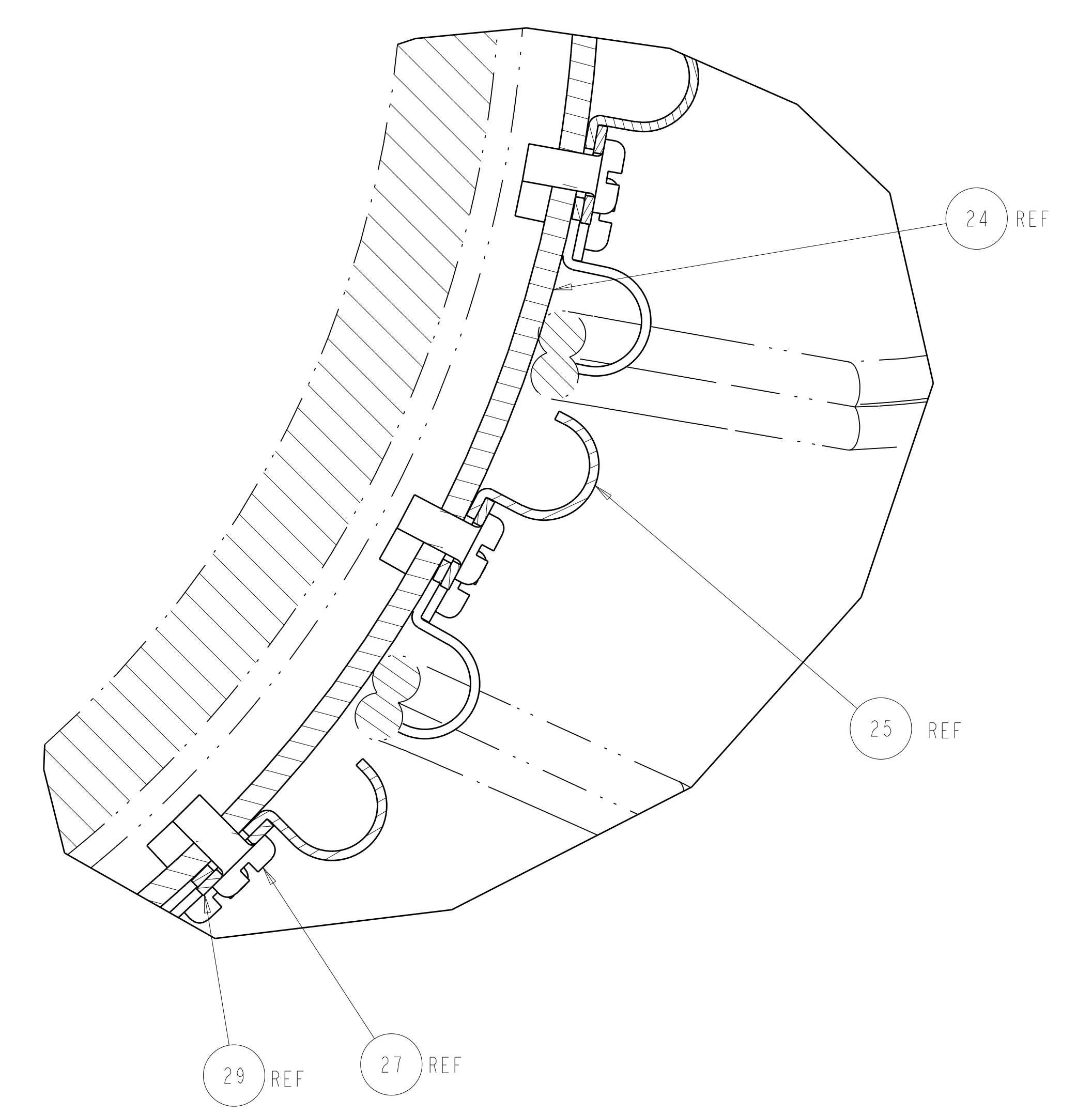
SEI21-008



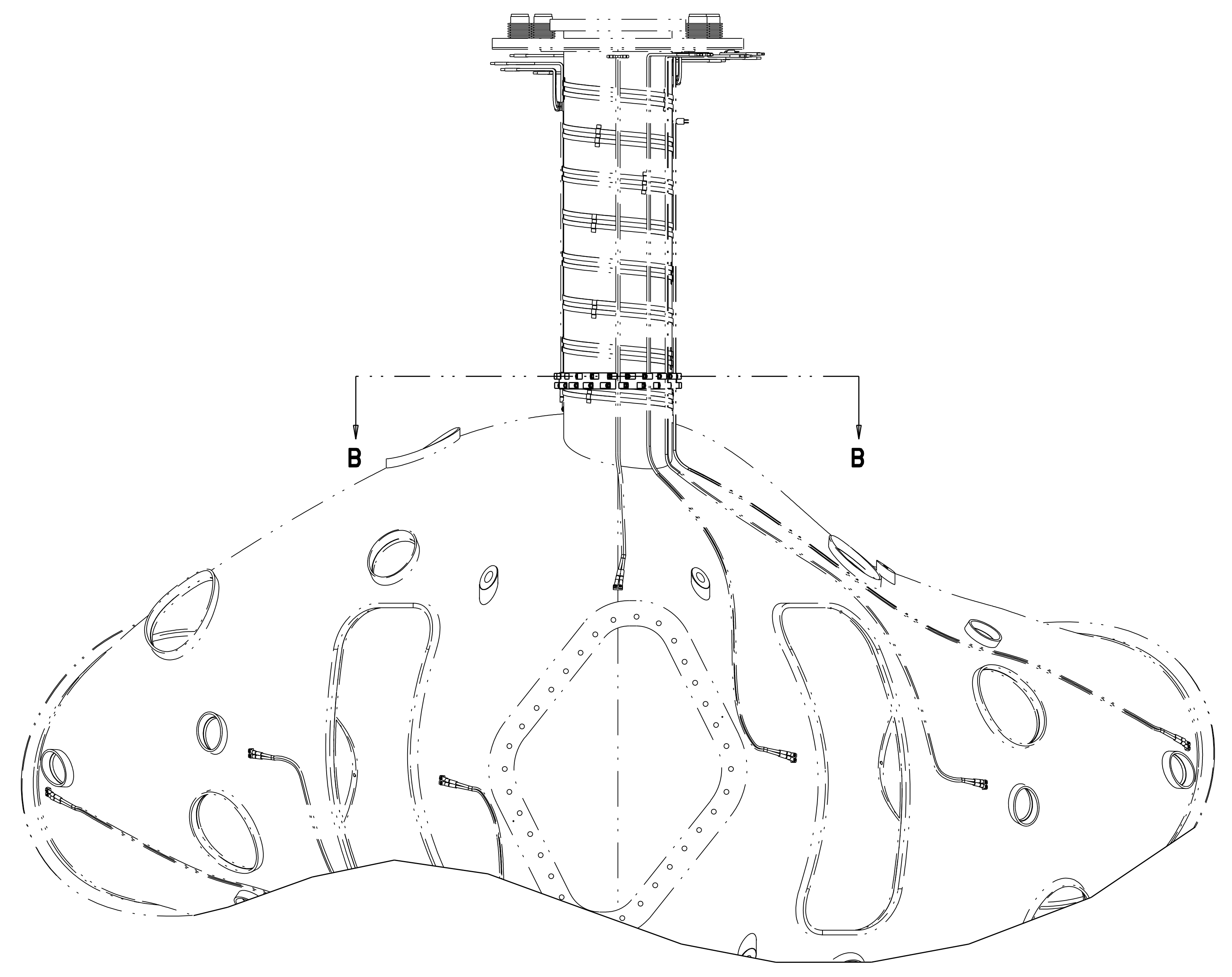
SECTION B-B
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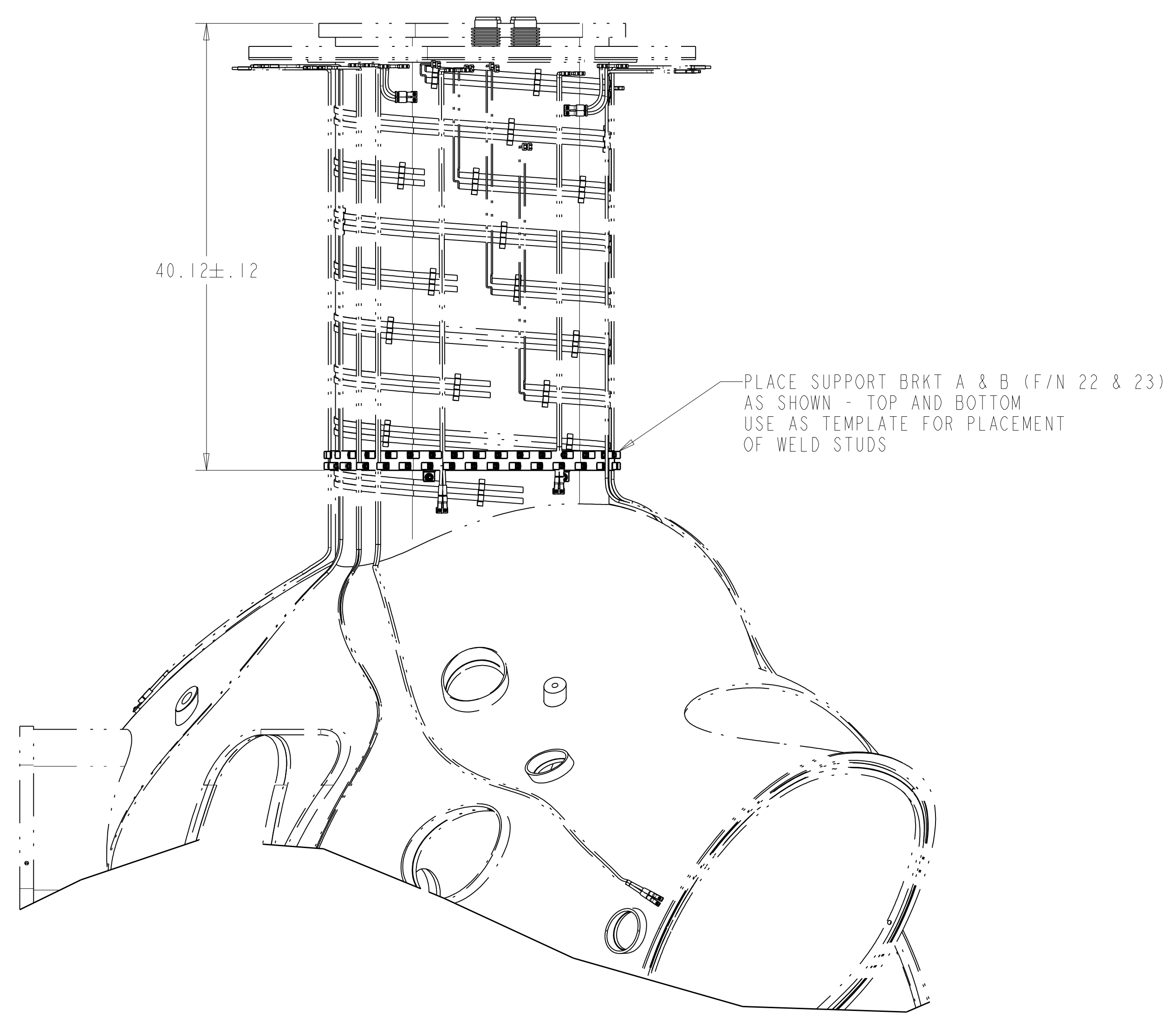
SECTION E-E
 SCALE 2.00



DETAIL B
 SCALE 2.00



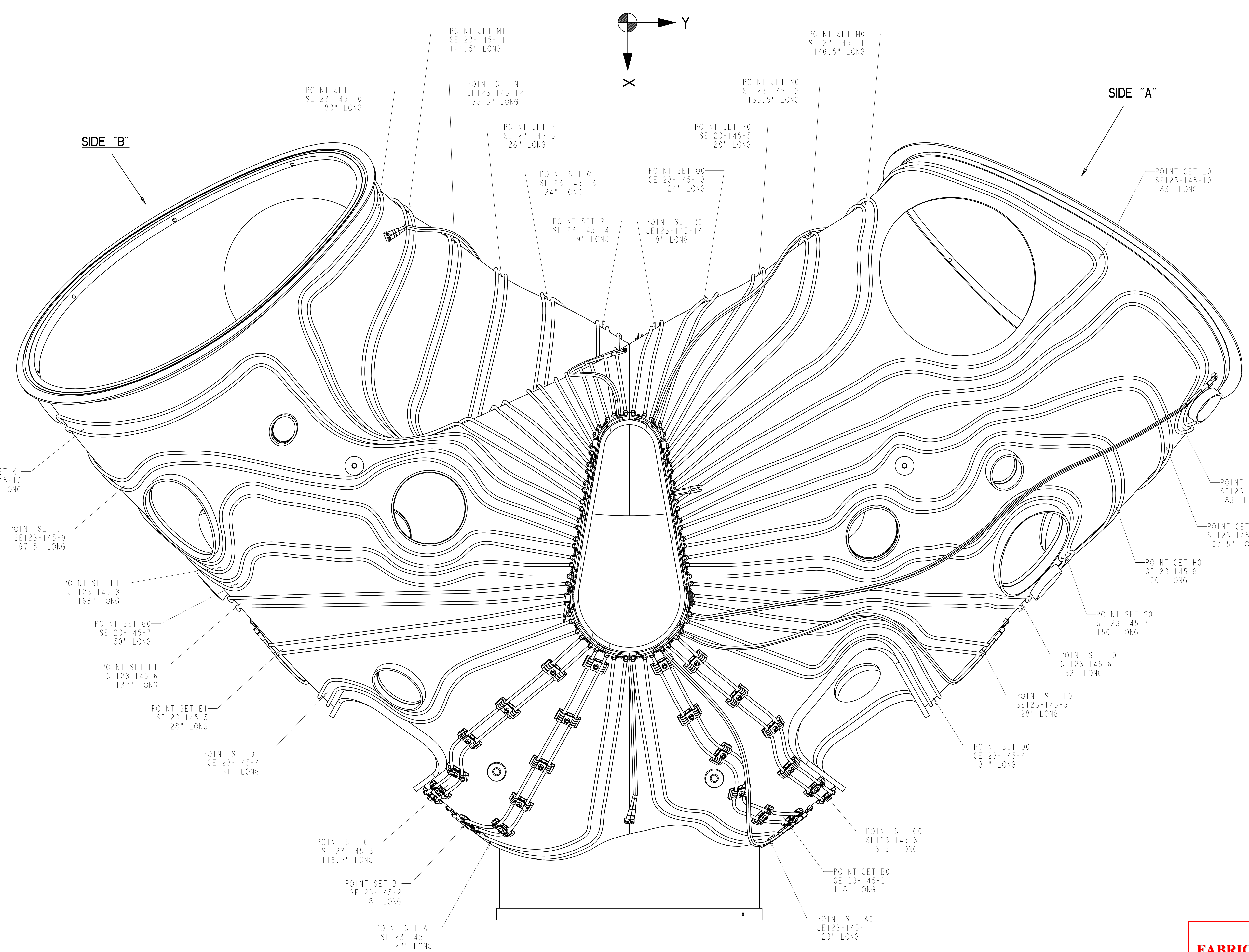
SCALE 0.13



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 PPPL Drafting:

Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC, Oak Ridge, Tennessee PROJECT NAME						
UT-BATTELLE NATIONAL COMPACT STELLARATOR EXPERIMENT						
VVSA ASSEMBLY STATION 1, PHASE 2						
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS
1	ORNL	5700	3	2	5	A
RELEASE LEVEL		REV				
Fabrication		SEI21-008				

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SCALE .25

HEATING / COOLING TUBE PATHS
ARE DEFINED BY POINT CHART ON
NEXT SHEETS

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PPPL Drafting:

Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725 UT-BATTELLE, LLC. Oak Ridge, Tennessee						
UT-BATTELLE						
NATIONAL COMPACT STELLARATOR EXPERIMENT						
VVSA ASSEMBLY STATION 1, PHASE 2						
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE	CLASS
1	ORNL	5700	3	3 5	A	U
RELEASE LEVEL		Fabrication				
		SE121-008				
		REV I				

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SIDE B POINT SET AI

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SIDE A POINT SET AO

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Table with 4 columns: PT #, X, Y, Z. Rows D001 to D020.

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UT-BATTELLE Oak Ridge National Laboratory managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725 UT-BATTELLE, LLC. Oak Ridge, Tennessee PROJECT NAME NATIONAL COMPACT STELLARATOR EXPERIMENT VVSA ASSEMBLY STATION 1, PHASE 2 VERSION NO. 1 PLANT ORNL BLDG 5700 FL 3 SHT OF 4 TYPE A CLASS U RELEASE LEVEL Fabrication SEI21-008 REV 1

H G F E D C B A

H G F E D C B A

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SIDE B POINT SET LI

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SIDE B POINT SET PI

Table with 5 columns: PT #, X, Y, Z. Rows P001 to P021.

SIDE A POINT SET PO

Table with 5 columns: PT #, X, Y, Z. Rows P001 to P021.

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UT-BATTELLE logo, Oak Ridge National Laboratory, NATIONAL COMPACT STELLARATOR EXPERIMENT, VVSA ASSEMBLY STATION 1, PHASE 2, VERSION NO. 1, PLANT ORNL, BLDG 5700, FL 3, SHT OF 5, TYPE A, CLASS U, RELEASE LEVEL Fabrication, SEI21-008, REV 1