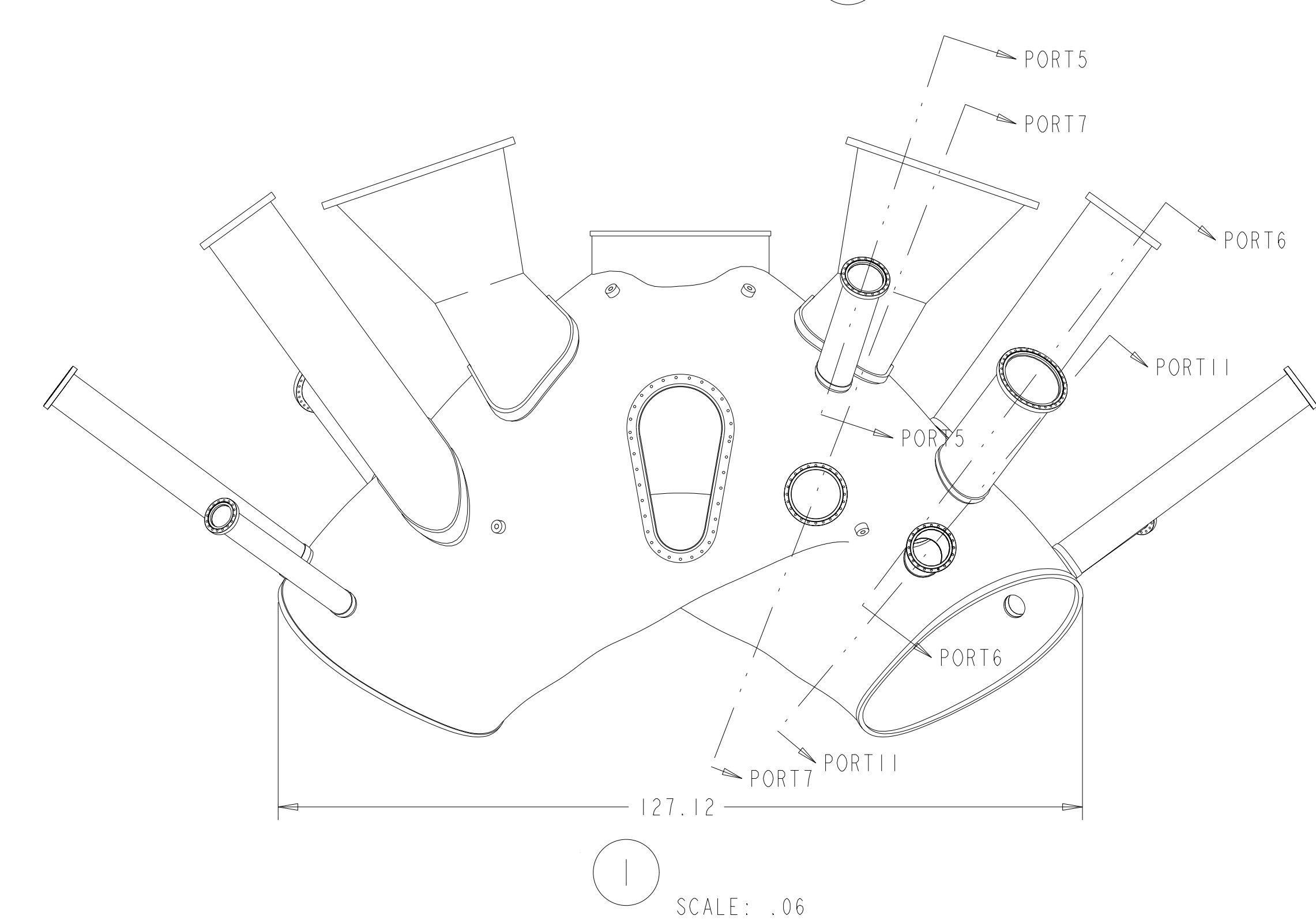
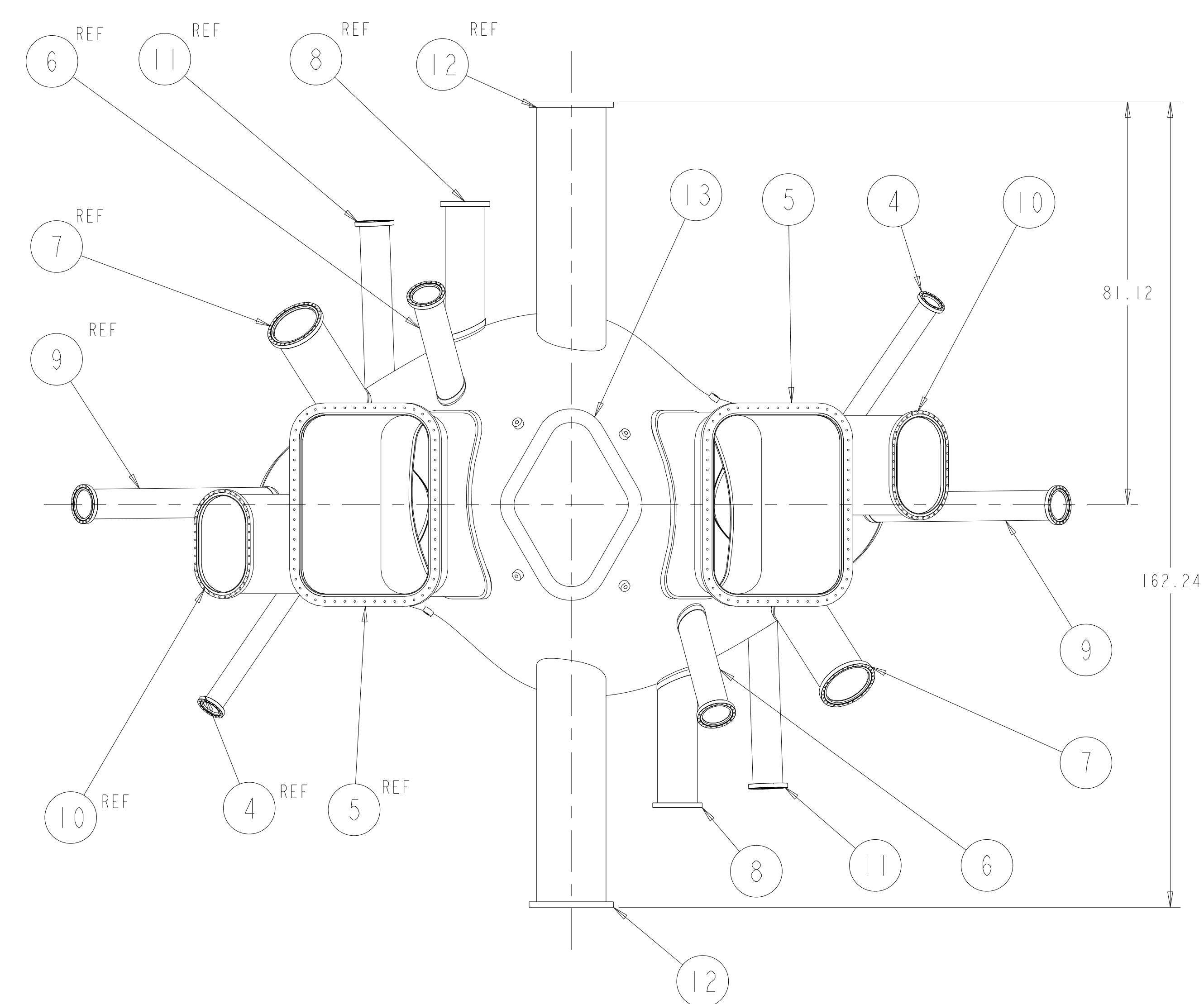
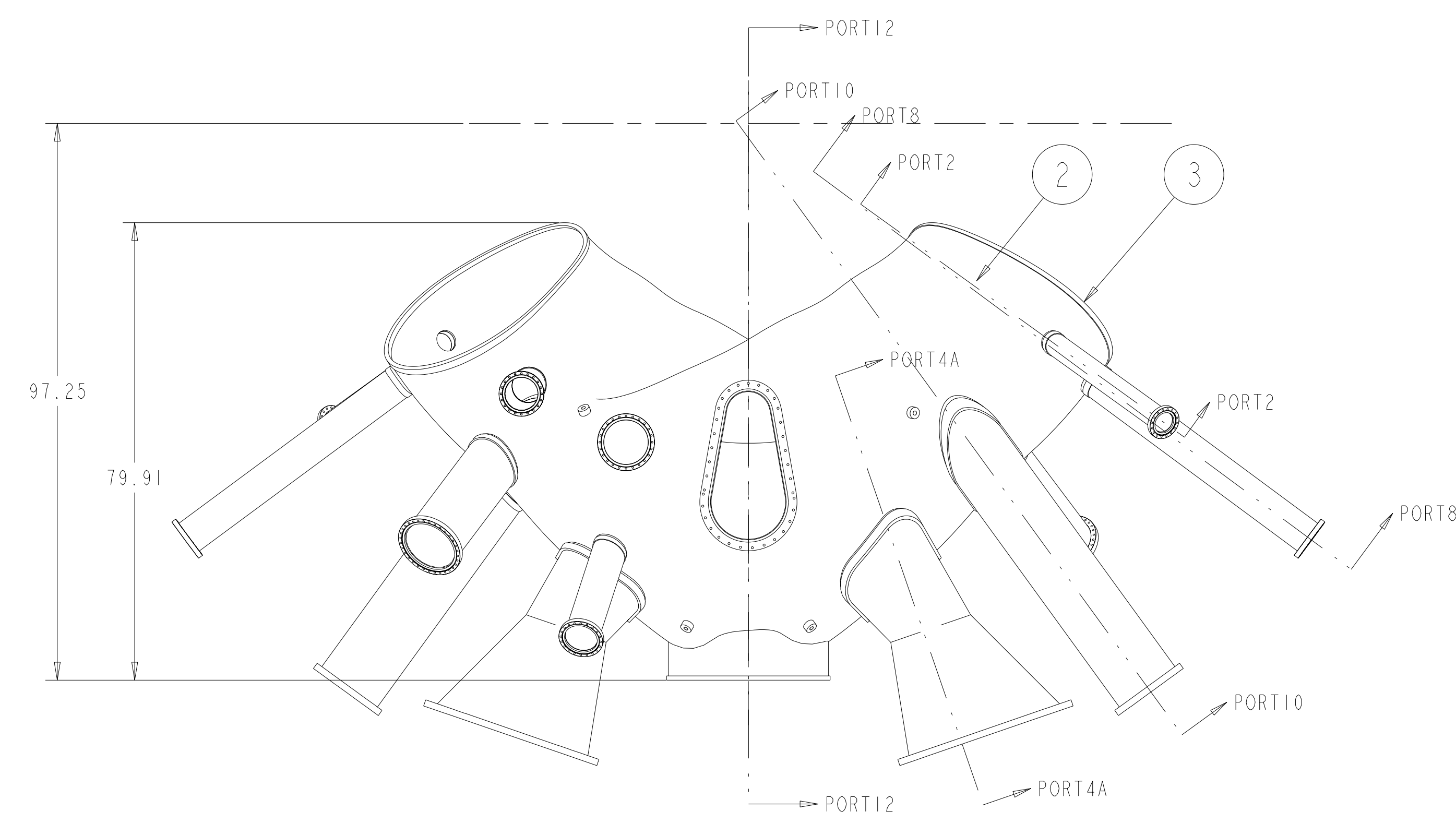
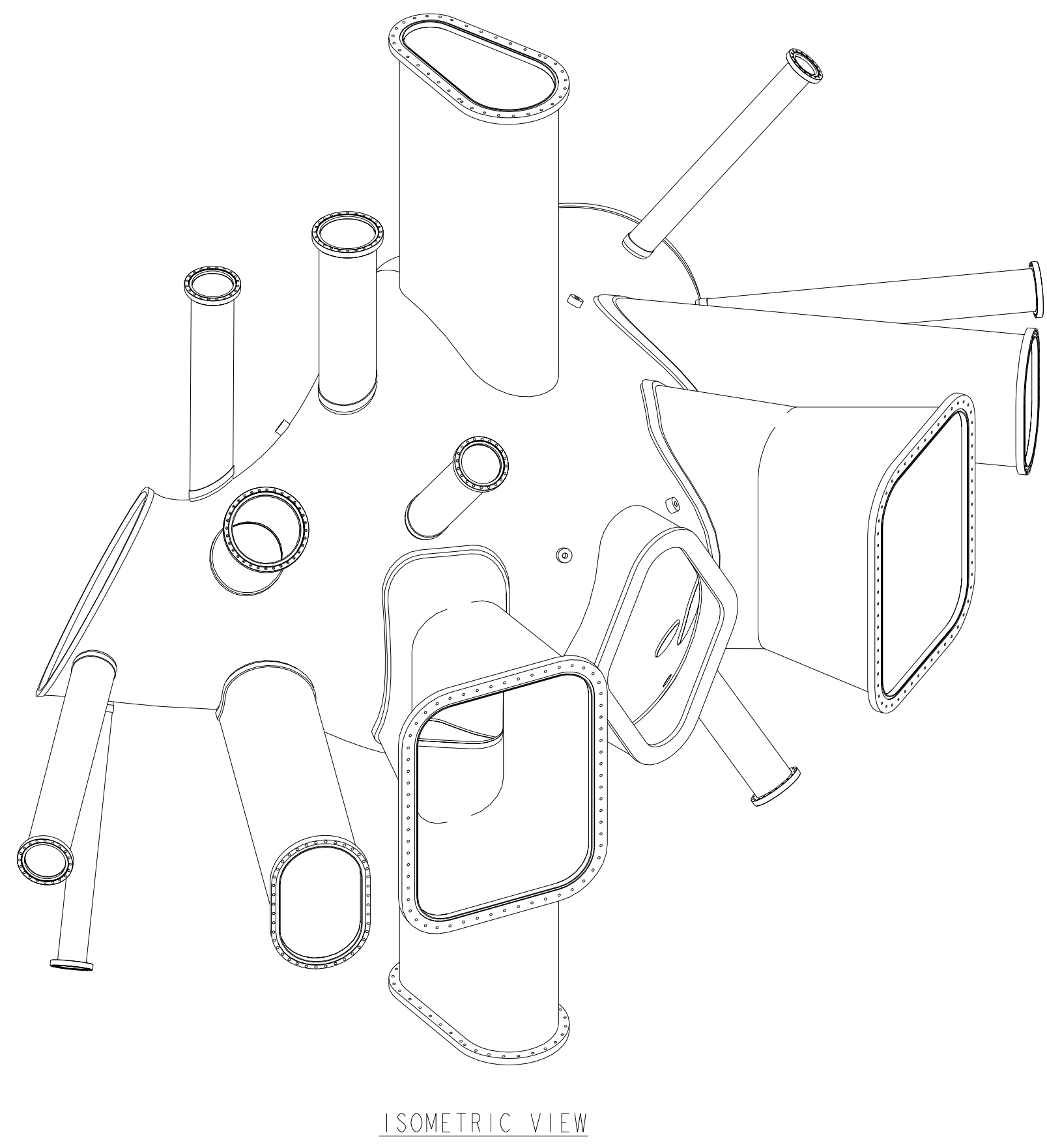


- NOTES:
1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
  2. DIMENSION ARE IN INCHES.
  3. REQUIREMENTS FOR FABRICATING THE VACUUM VESSEL ARE DEFINED IN THE DRAWINGS, MODELS, AND SPECIFICATION.
  4. GEOMETRY OF VACUUM VESSEL IS DEFINED IN CAD MODELS/FILES SE120-001.ASM, SE120-002.ASM AND SE121-019.PRT
  5. HELIUM LEAK TEST SHALL SHOW NO DETECTABLE LEAK WITH LEAK DETECTOR SENSITIVITY SET AT  $1.0 \times 10^{-9}$  STD-CC/S.
  6. ALL MATERIAL EXCEPT FOR CONFLAT FLANGES TO BE UNS N06625. CONFLAT FLANGES TO BE 304 SST.
  7. BLANK MATING FLANGES AND ASSOCIATED SEALS AND HARDWARE TO BE FURNISHED FOR ALL PORTS.
  8. ADDITIONAL TOLERANCE LIMITS ARE DEFINED IN DOCUMENT NCSX-12-122002-PH.



SEGMENT 1								
FIND #	"L" APPROXIMATE	"D" TUBE O.D.	"R <sub>1</sub> " TUBE	"R <sub>2</sub> " TUBE	"D" TUBE	"T" TUBE THK	FLANGE TYPE	DIAGNOSTIC PORT IDENTIFICATION
4	35.5	Ø4	--	--	--	.125	Ø6" CONFLATE	IDU IDL
5	32.0	--	--	--	--	.5	O-RING FLANGE	IBM IFM
6	26.0	Ø6	--	--	--	.125	Ø8" CONFLATE	IBL IFU
7	25.0	Ø10	--	--	--	.25	Ø12" CONFLATE	ICL IEL
8	28.5	Ø8	--	--	--	.125	Ø10" CONFLATE	IBB IFT
9	44.0	Ø6	--	--	--	.125	Ø8" CONFLATE	IDML IDMR
10	44.0	--	6	6	8	.25	O-RING FLANGE	ICM IEM
11	32.0	Ø6	--	--	--	.125	Ø8" CONFLATE	ICB IET
12	47.0	--	7.5	4	17.28	.5	O-RING FLANGE	IAT IAB

SEGMENT 2								
FIND #	"L" APPROXIMATE	"D" TUBE O.D.	"R <sub>1</sub> " TUBE	"R <sub>2</sub> " TUBE	"D" TUBE	"T" TUBE THK	FLANGE TYPE	DIAGNOSTIC PORT IDENTIFICATION
4	35.5	Ø4	--	--	--	.125	Ø6" CONFLATE	2JU 2JL
5	32.0	--	--	--	--	.5	O-RING FLANGE	2HM 2LM
6	26.0	Ø6	--	--	--	.125	Ø8" CONFLATE	2HL 2LU
7	25.0	Ø10	--	--	--	.25	Ø12" CONFLATE	2IL 2KU
8	28.5	Ø8	--	--	--	.125	Ø10" CONFLATE	2HB 2LT
9	44.0	Ø6	--	--	--	.125	Ø8" CONFLATE	2JML 2JMR
10	44.0	--	6	6	8	.25	O-RING FLANGE	2IM 2KM
11	32.0	Ø6	--	--	--	.125	Ø8" CONFLATE	2IB 2KT
12	47.0	--	7.5	4	17.28	.5	O-RING FLANGE	2GT 2GB

SEGMENT 3								
FIND #	"L" APPROXIMATE	"D" TUBE O.D.	"R <sub>1</sub> " TUBE	"R <sub>2</sub> " TUBE	"D" TUBE	"T" TUBE THK	FLANGE TYPE	DIAGNOSTIC PORT IDENTIFICATION
4	35.5	Ø4	--	--	--	.125	Ø6" CONFLATE	3PI 3PL
5	32.0	--	--	--	--	.5	O-RING FLANGE	3NM 3RM
6	26.0	Ø6	--	--	--	.125	Ø8" CONFLATE	3NL 3RU
7	25.0	Ø10	--	--	--	.25	Ø12" CONFLATE	3OL 3OU
8	28.5	Ø8	--	--	--	.125	Ø10" CONFLATE	3NB 3RT
9	44.0	Ø6	--	--	--	.125	Ø8" CONFLATE	3PML 3PMR
10	44.0	--	6	6	8	.25	O-RING FLANGE	3OW 3OM
11	32.0	Ø6	--	--	--	.125	Ø8" CONFLATE	3OB 3OT
12	47.0	--	7.5	4	17.28	.5	O-RING FLANGE	3MT 3MB

PRELIMINARY  
FOR INFORMATION ONLY

REV	DATE	DESCRIPTION	BY	CHKD	QTY	UNIT	MATERIAL	SPECIFICATION	FIND NO
1		-13							13
2		-12							12
2		-11							11
2		-10							10
2		-9							9
2		-8							8
2		-7							7
2		-6							6
2		-5							5
2		-4							4
1		-3							3
1		-2							2
AR		-1							1

SE120-001

REV	DATE	DESCRIPTION	BY	CHKD	QTY	UNIT	MATERIAL	SPECIFICATION	FIND NO
AR		-1							1

SE120-002

QUALITY VERIFICATION	
MECHANICAL AND STRUCTURAL	
GA CLAUSE	DOCUMENTS REQUIRED
303	MATERIAL SELLER CERT
325	SPECIAL MATERIAL INSPECTION REPORT
205	MANUFACTURING, INSPECTION AND TEST PLAN
312	FIELD INSPECTION AND TEST PLAN
321	WELD AND BRASS INSPECTION REPORT
322	HEAT TREAT REPORT (INTEGRITY)
310	CLEANING REPORT
315	CLEANING CERT
318	DEVIATION REQUEST
319	NONCONFORMANCE REPORT
323	DIMENSIONAL REPORT
330	FUNCTIONAL TEST REPORT

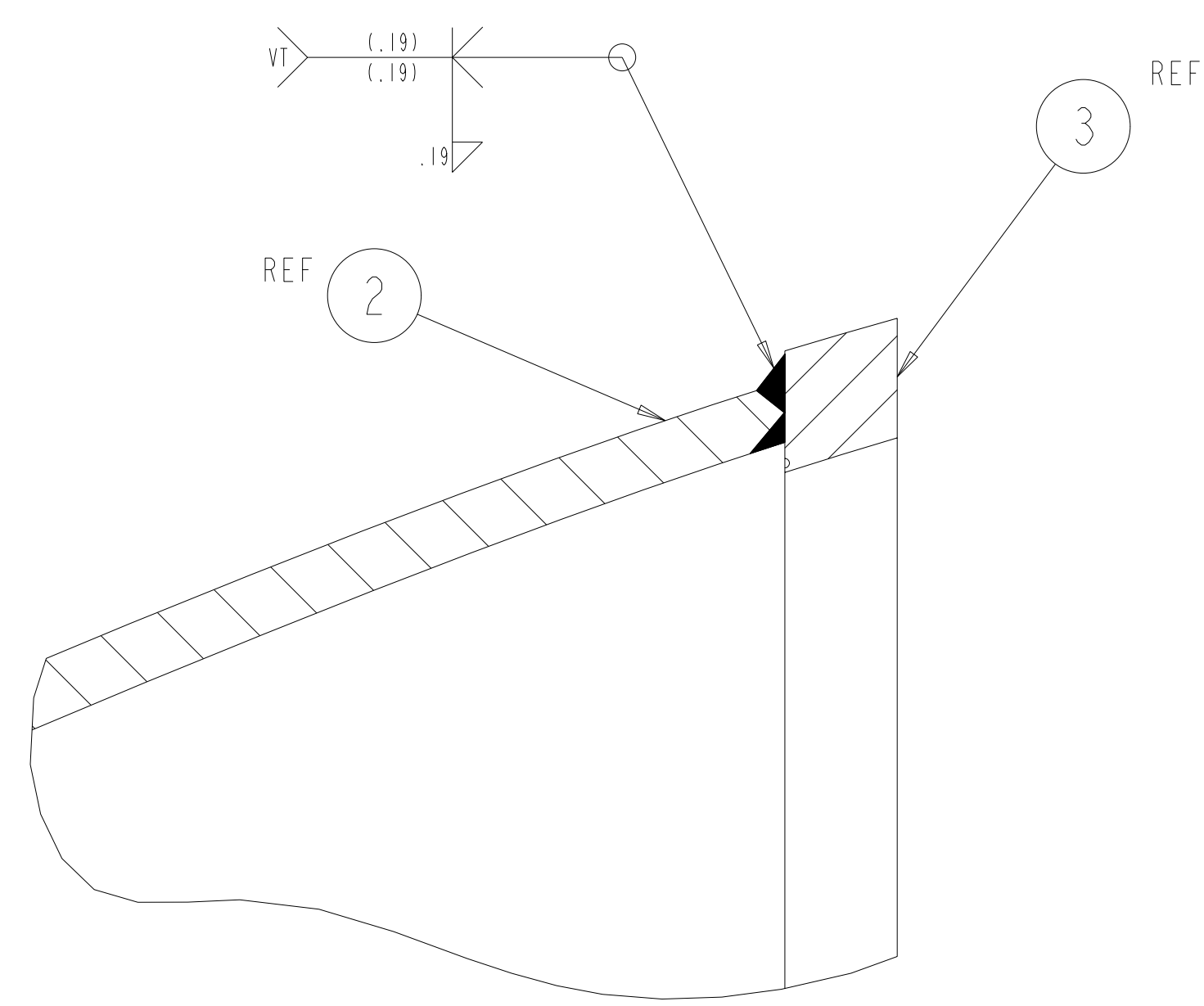
SCALE NOTED		DESIGNED		DRAWN		CHECKED		DATE	
TOLERANCES UNLESS OTHERWISE SPECIFIED		P. L. GORANSON		M. J. COLE & G. H. JONES				12/02	
FRACTIONS									
XX DECIMALS ±.01									
XXX DECIMALS ±.005									
ANGLES ±0°15'									
BREAK SHARP EDGES .06 MAX									
FINISH .125 UNLESS OTHERWISE SPECIFIED									

UT-BATTELLE		OAK RIDGE NATIONAL LABORATORY	
NATIONAL COMPACT STELLERATOR EXPERIMENT		VACUUM VESSEL PERIOD ASSEMBLY	
VERSION NO.	PLANT	BLDG	FL
28+	XX	XX	XX
RELEASE LEVEL	WIP	SE120-002	REV A

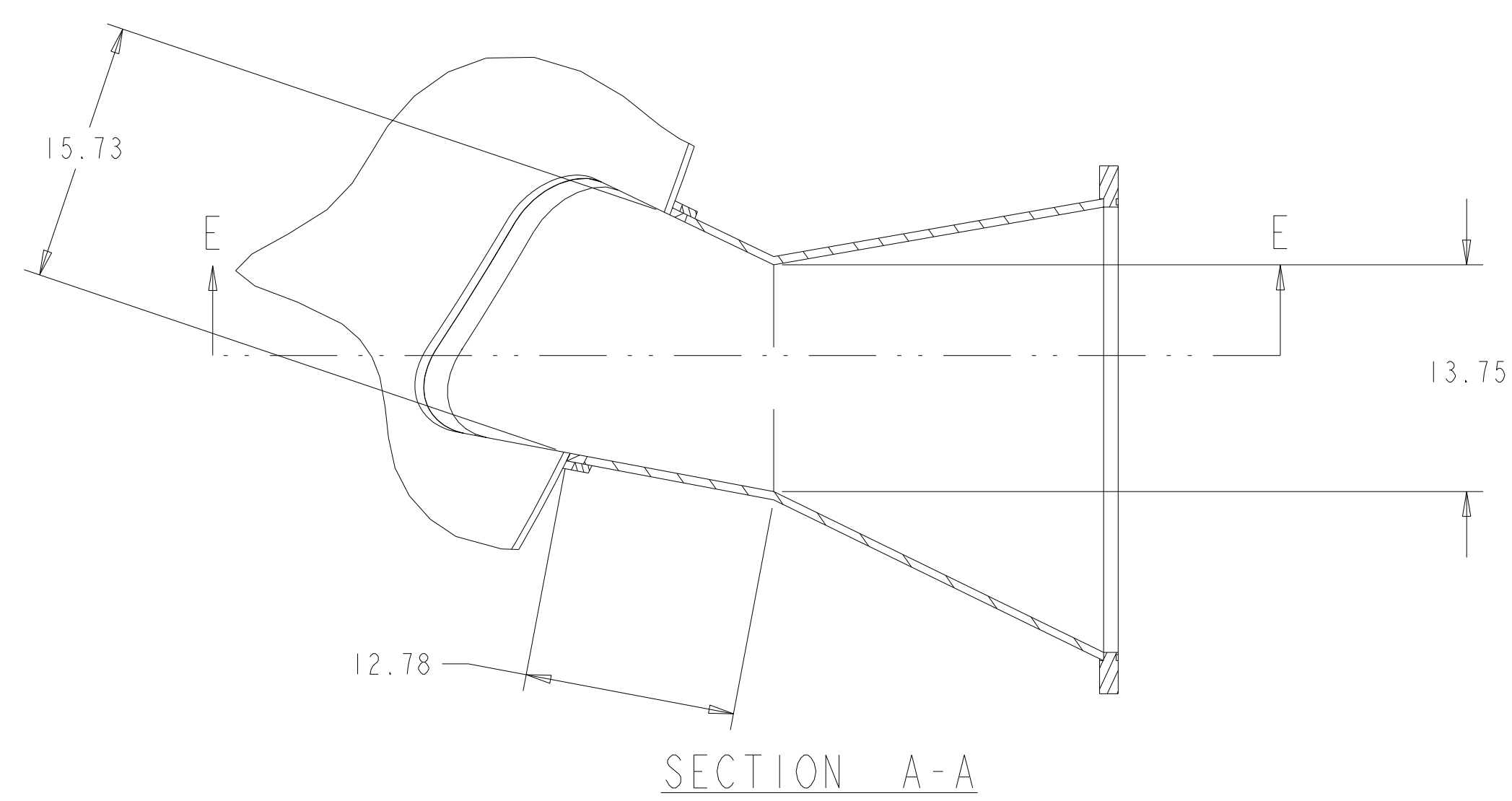
REV	DESCRIPTION	DATE	BY	CHKD
A	GENERAL REVISION	5-30	GHJ	

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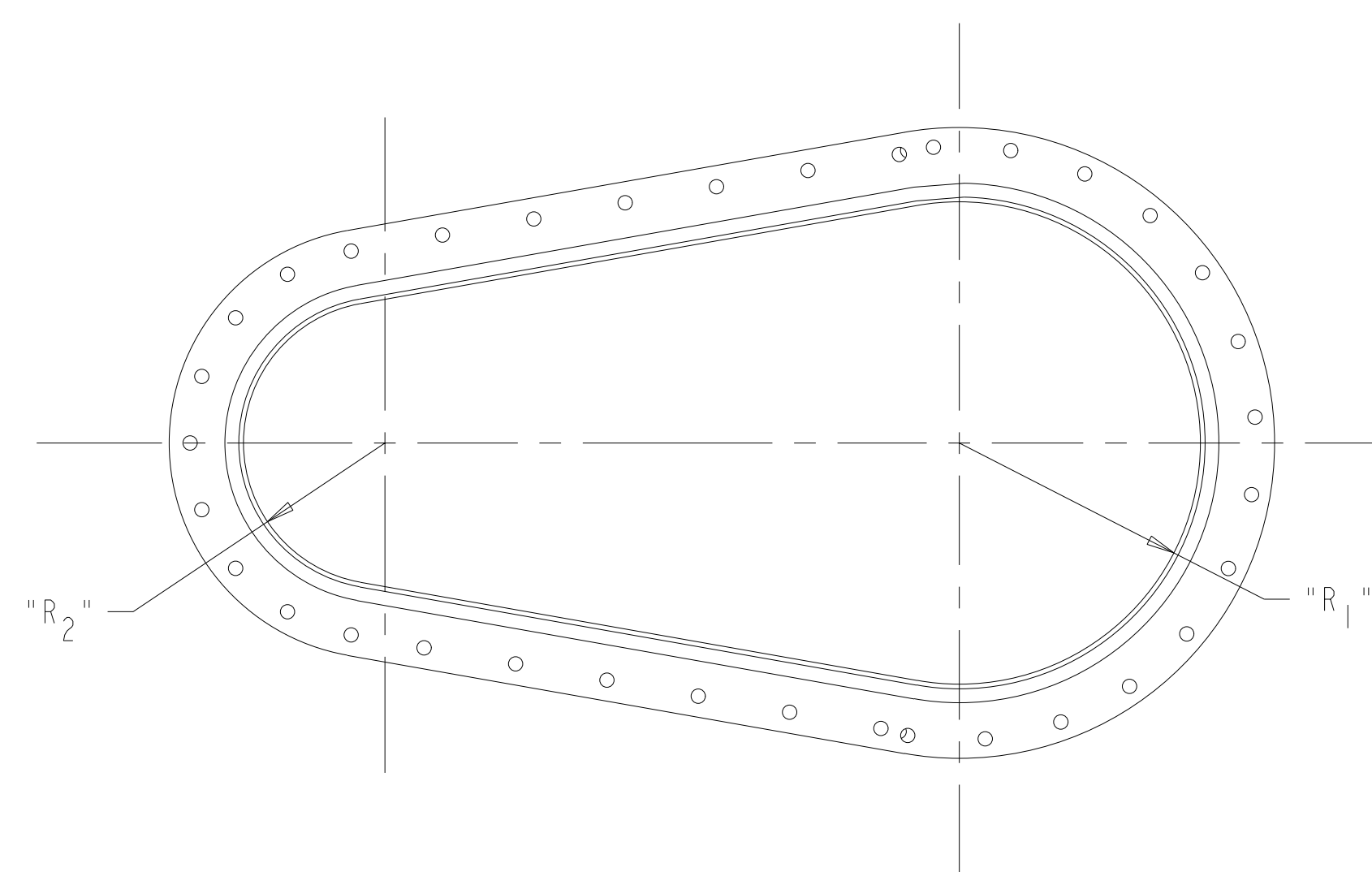
**P** THIS DRAWING PRODUCED ON PRO-ENGINEER



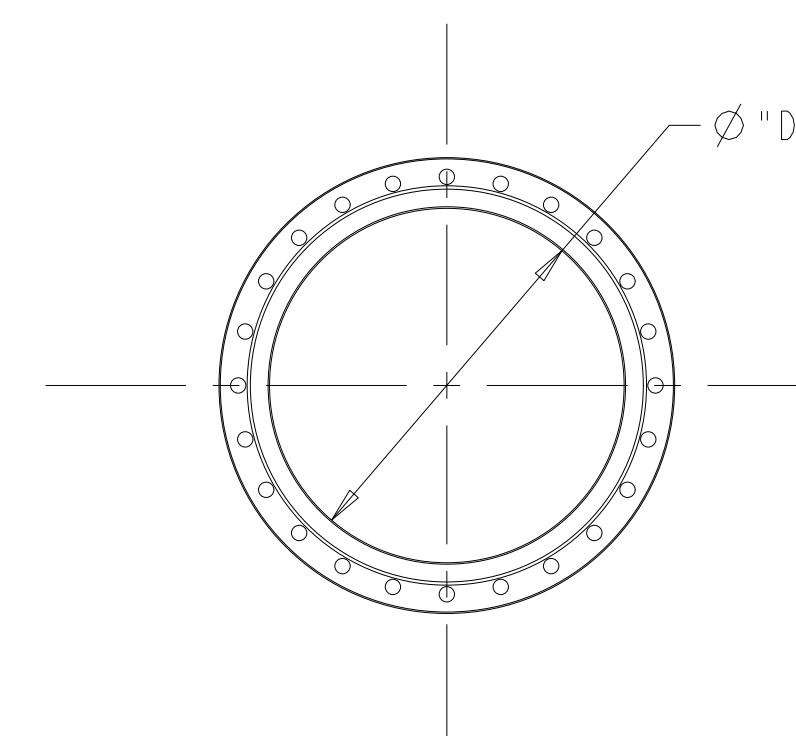
TYPICAL VACUUM VESSEL FLANGE CONFIGURATION  
SCALE: 1.00



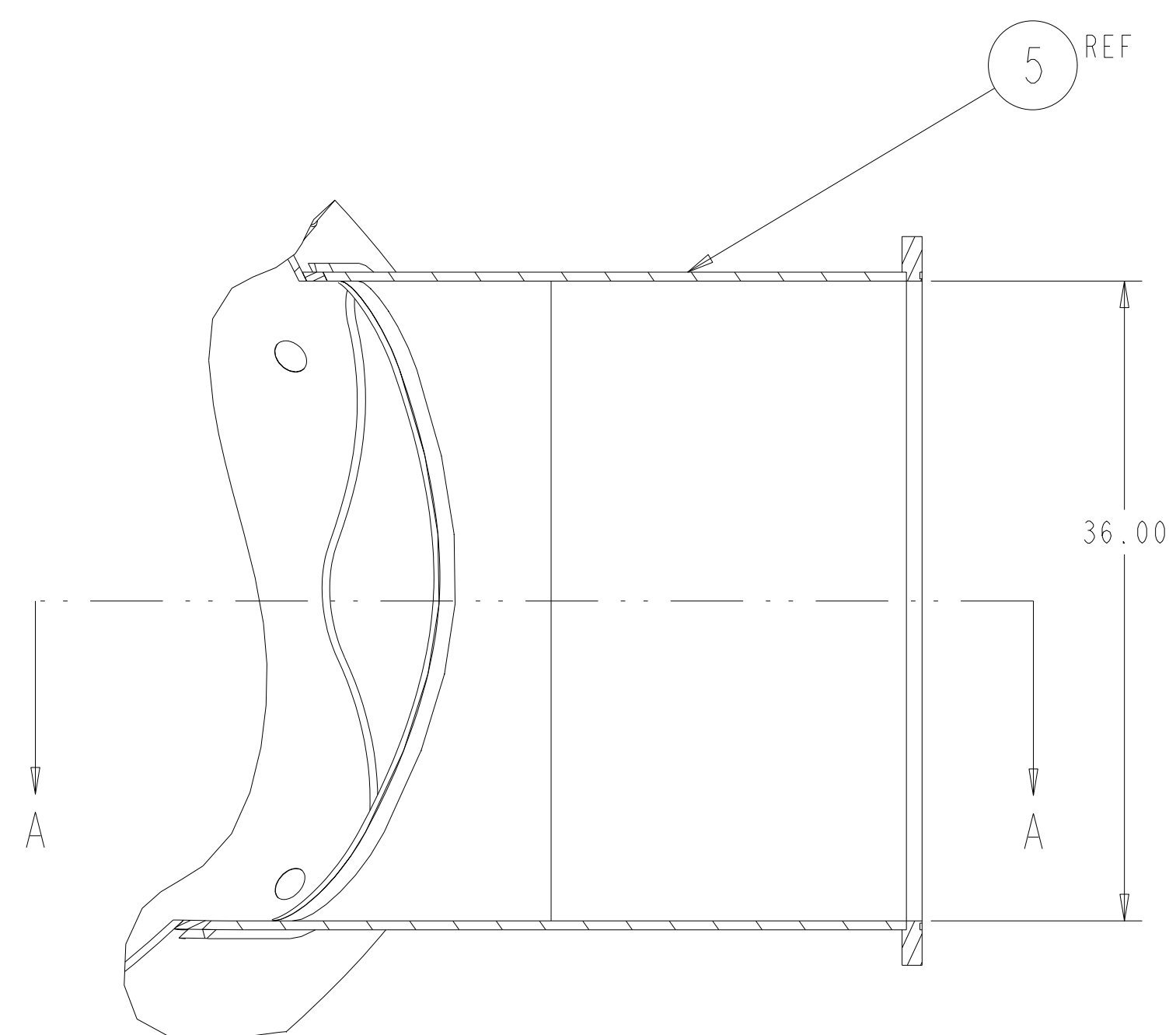
SECTION A-A



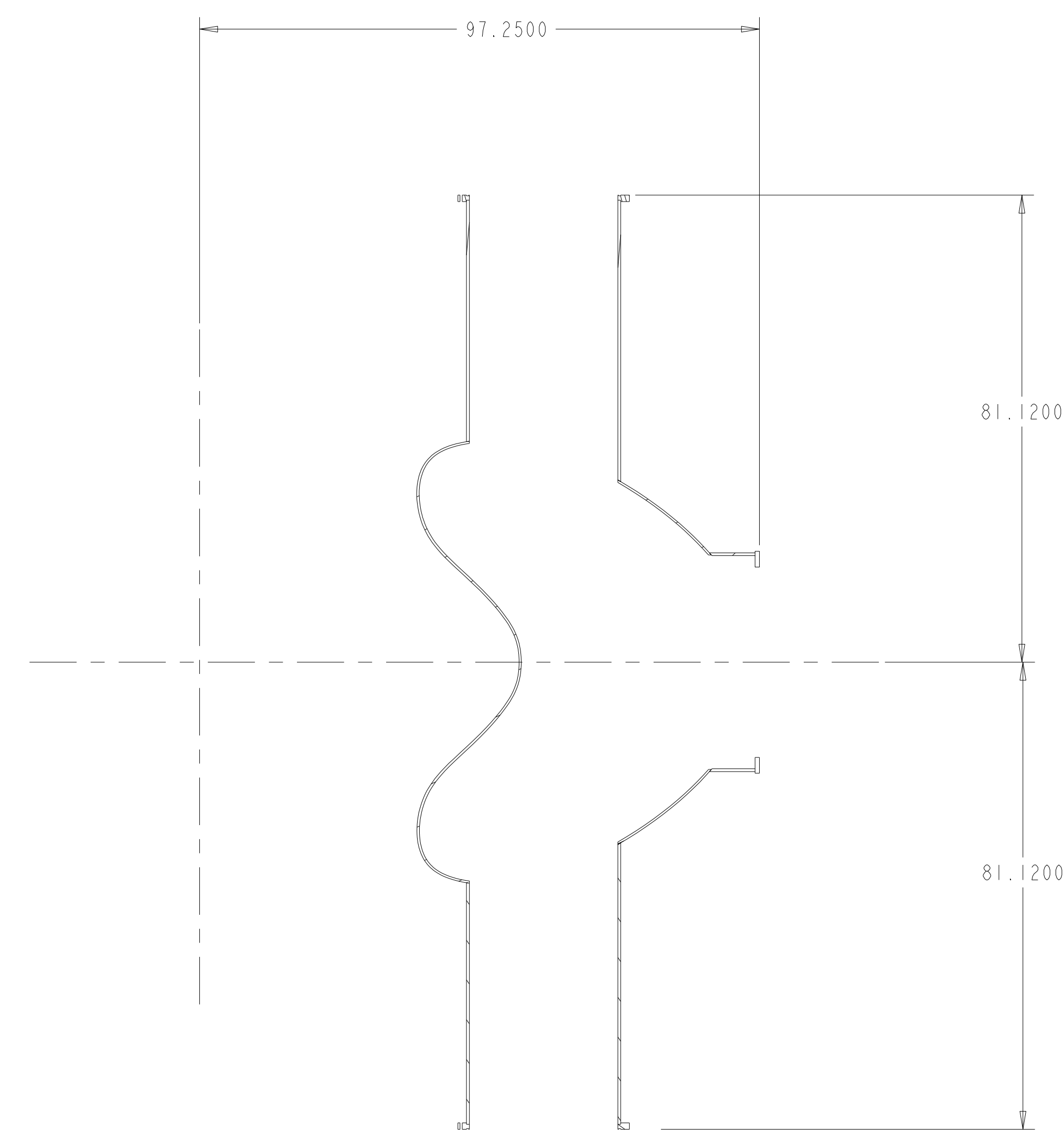
TYPICAL RACETRACK PORT  
SCALE 0.25



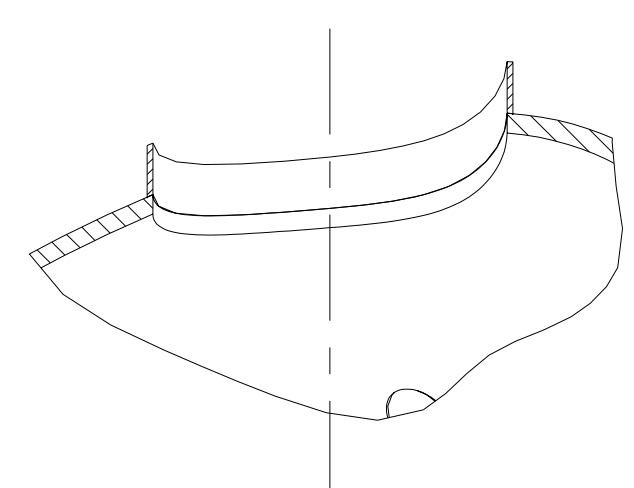
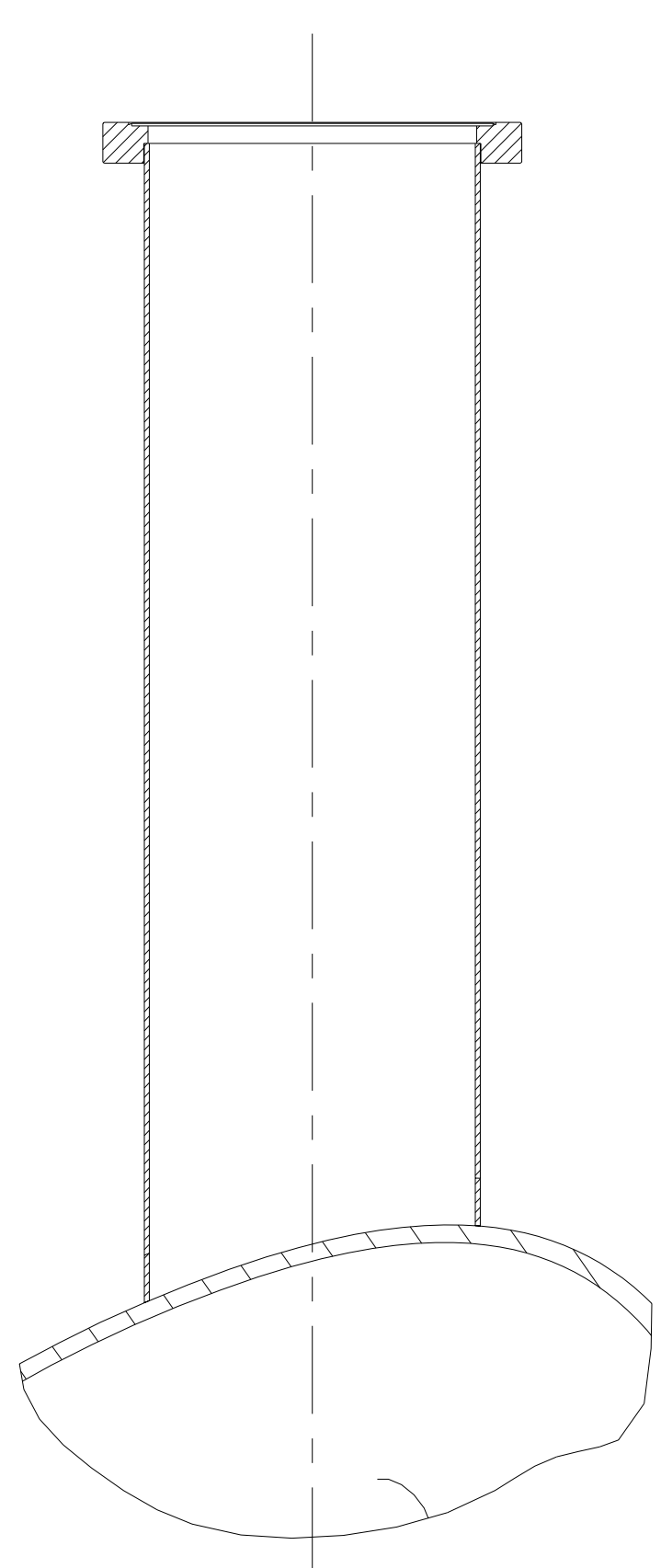
TYPICAL CONFLAT PORT  
SCALE 0.25



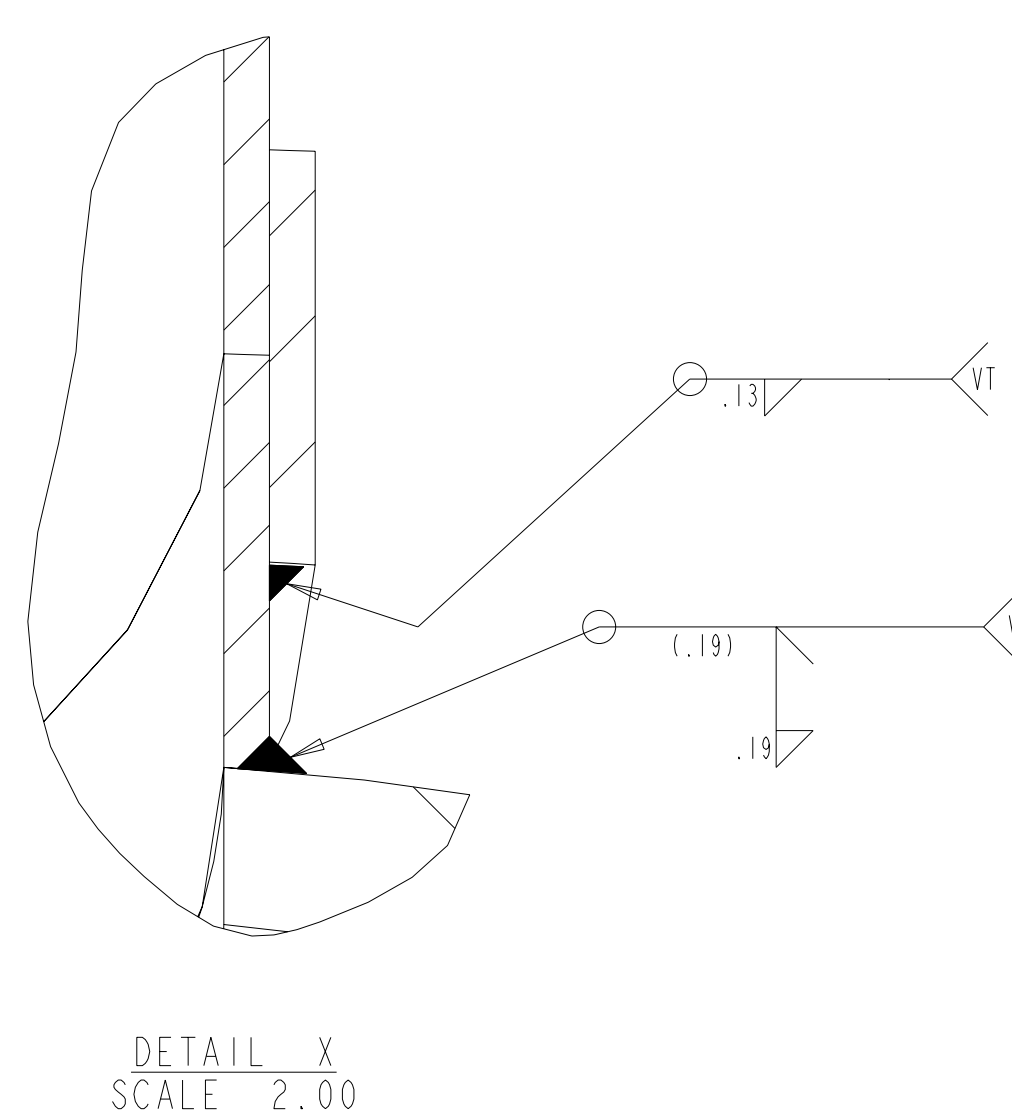
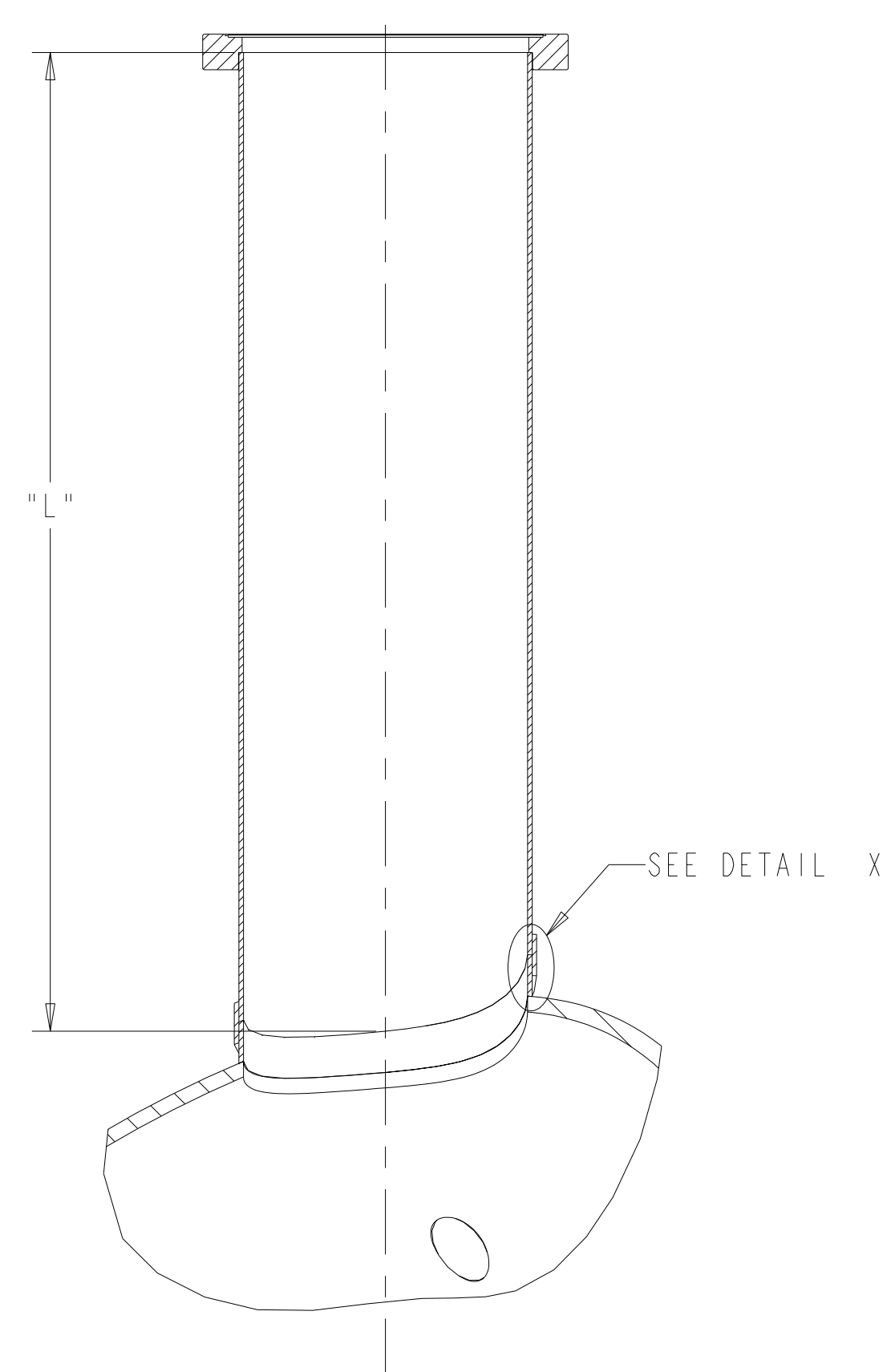
SECTION E-E  
SCALE 0.13



SECTION PORT12-PORT12



TYPICAL PORT CONFIGURATION  
SCALE: .25

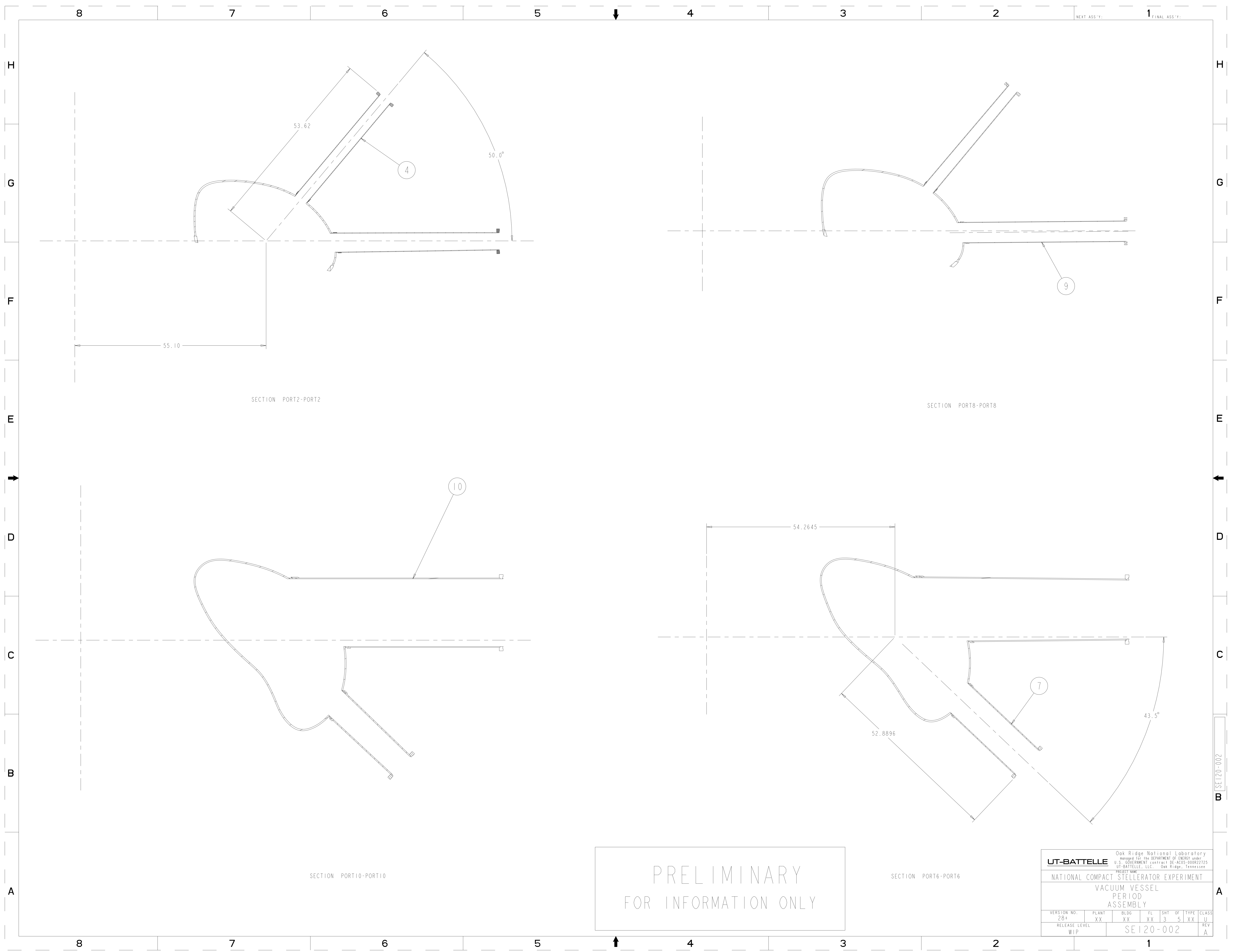


DETAIL X  
SCALE 2.00

PRELIMINARY  
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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 STELLERATOR EXPERIMENT						
VACUUM VESSEL PERIOD ASSEMBLY						
VERSION NO. 28+	PLANT XX	BLDG XX	FL XX	SHT OF 2	TYPE 51 XX	CLASS U
RELEASE LEVEL WIP		SE120-002				REV A

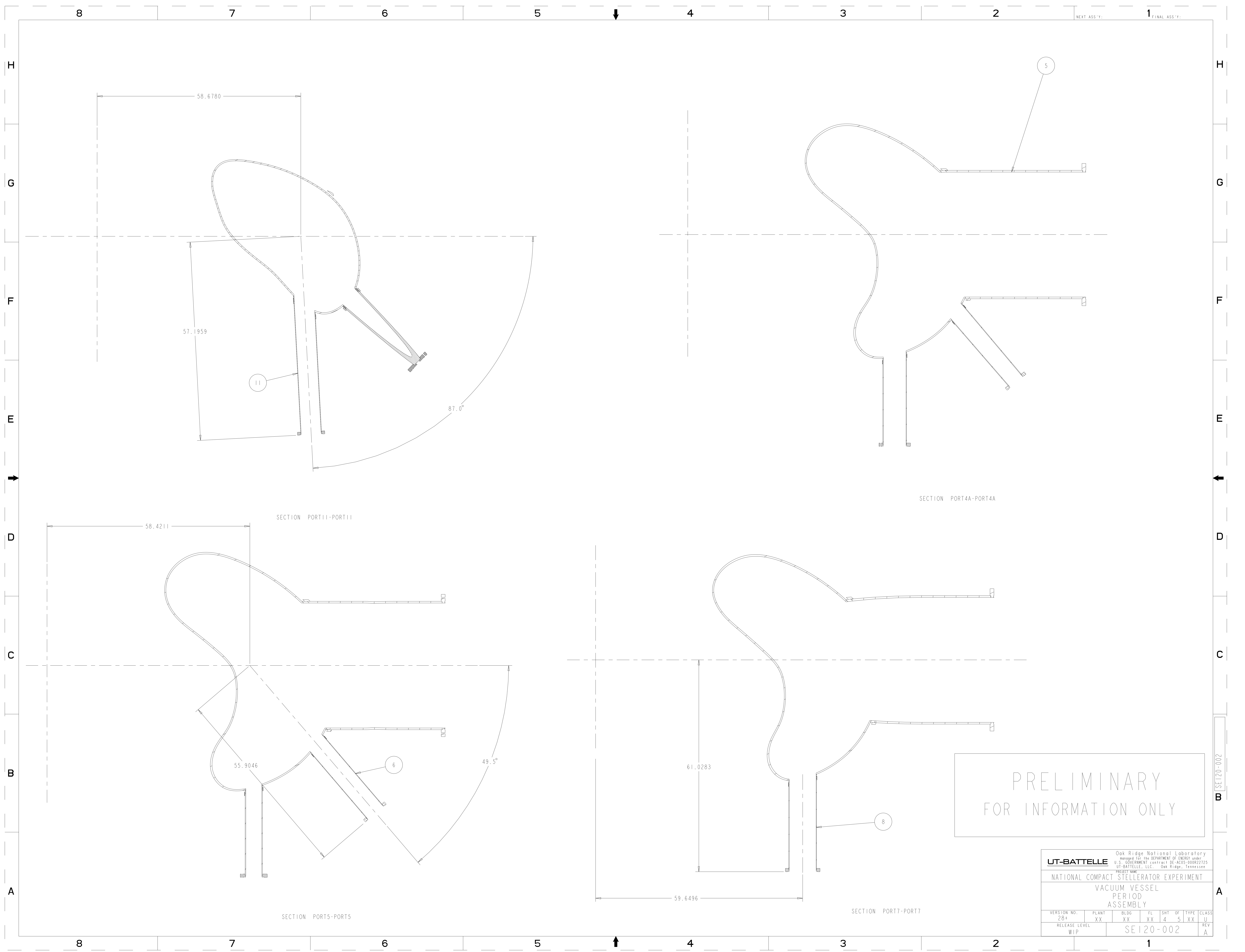
SE120-002



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UT-BATTELLE <small>Oak Ridge National Laboratory          managed for the DEPARTMENT OF ENERGY under          U.S. GOVERNMENT contract DE-AC05-00OR22725          UT-BATTELLE, LLC. Oak Ridge, Tennessee</small>										
PROJECT NAME NATIONAL COMPACT STELLERATOR EXPERIMENT										
VACUUM VESSEL PERIOD ASSEMBLY										
VERSION NO.	PLANT	BLDG	FL	SHT	OF	TYPE	CLASS			
28+	XX	XX	XX	3	5	XX	U			
RELEASE LEVEL		SEI20-002						REV		
WIP								A		

SEI20-002



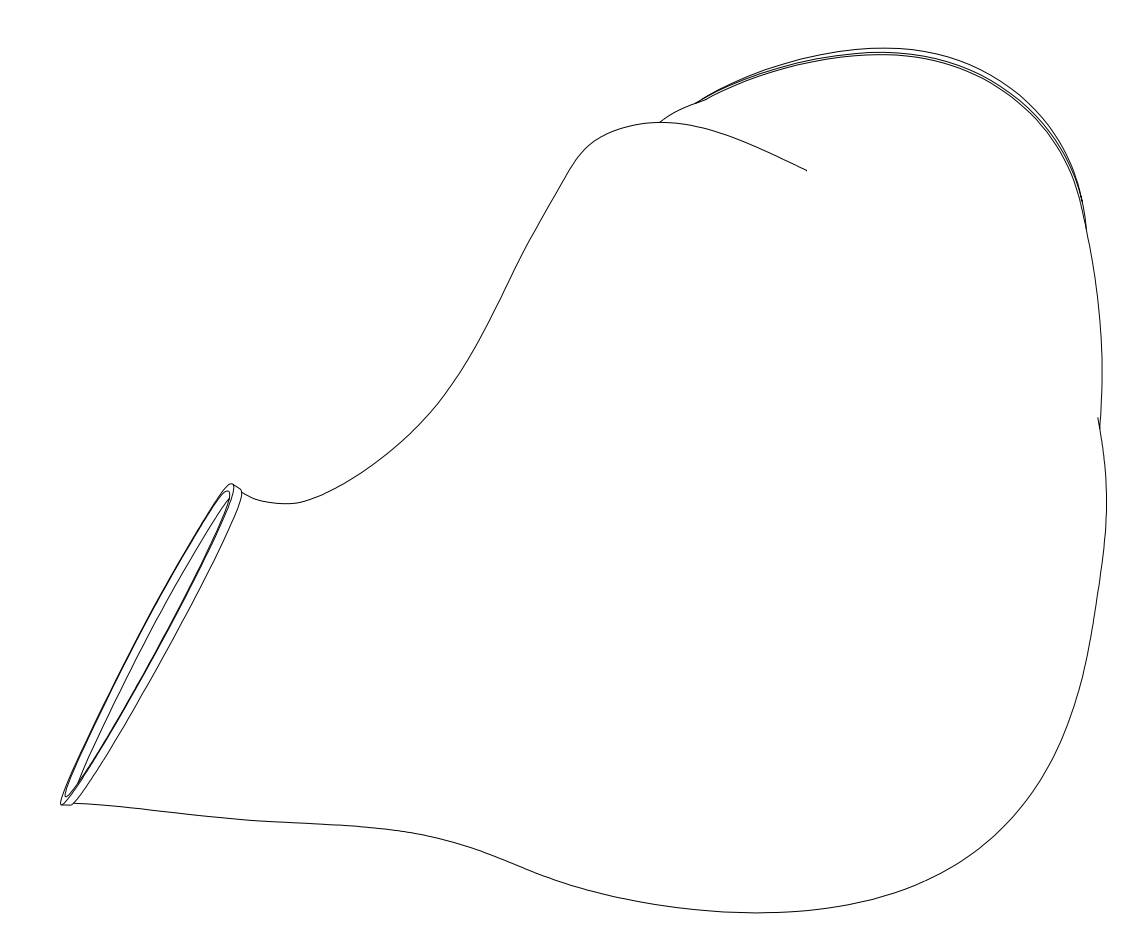
PRELIMINARY  
FOR INFORMATION ONLY

<b>UT-BATTELLE</b>		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 STELLERATOR EXPERIMENT					
VACUUM VESSEL PERIOD ASSEMBLY					
VERSION NO.	PLANT	BLDG	FL	SHT OF	TYPE CLASS
28+	XX	XX	XX	4 5	XX U
RELEASE LEVEL		WIP			REV
SEI20-002					A

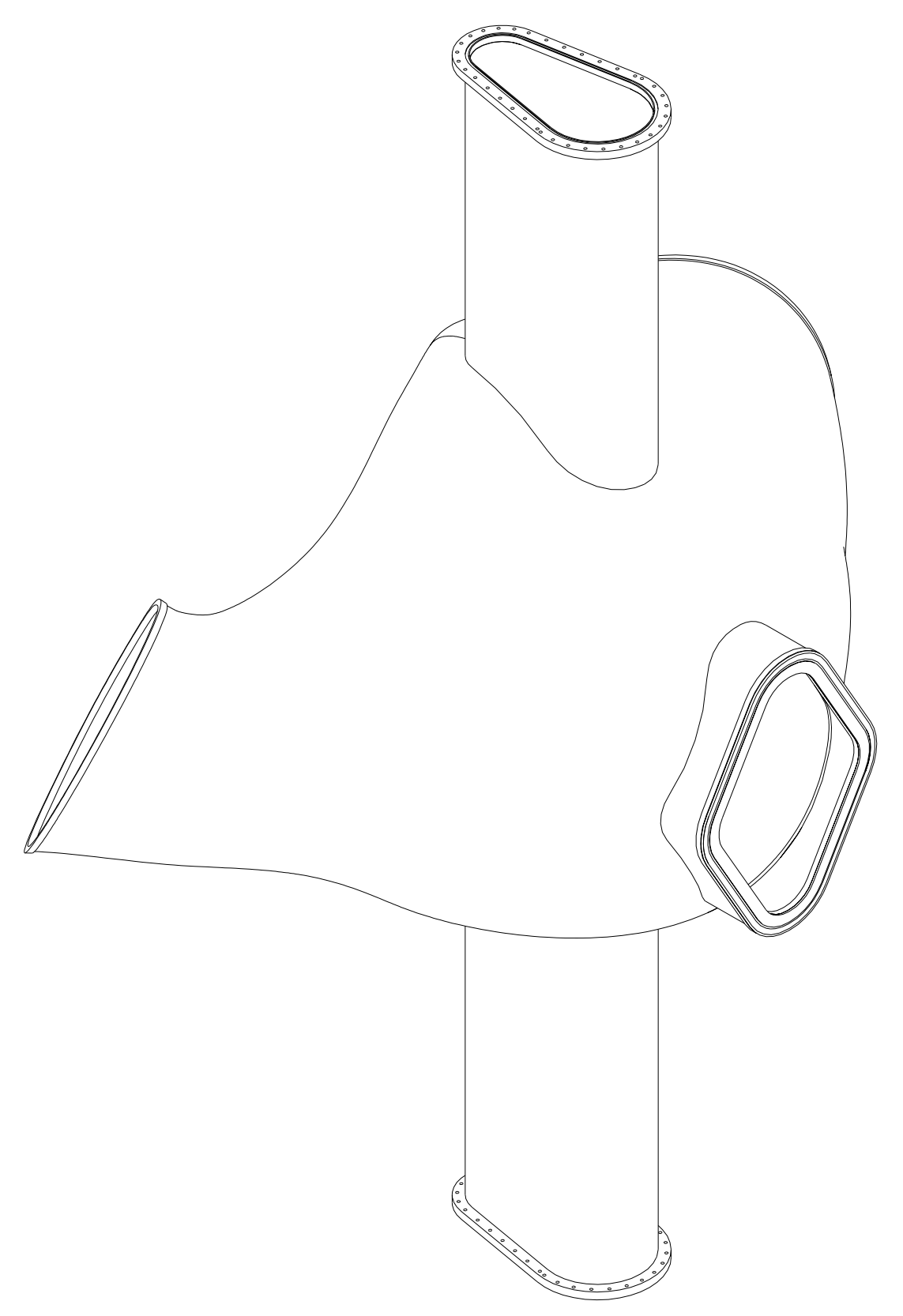
SEI20-002

FOR NOTES AND PARTS LIST SEE SHEET 1

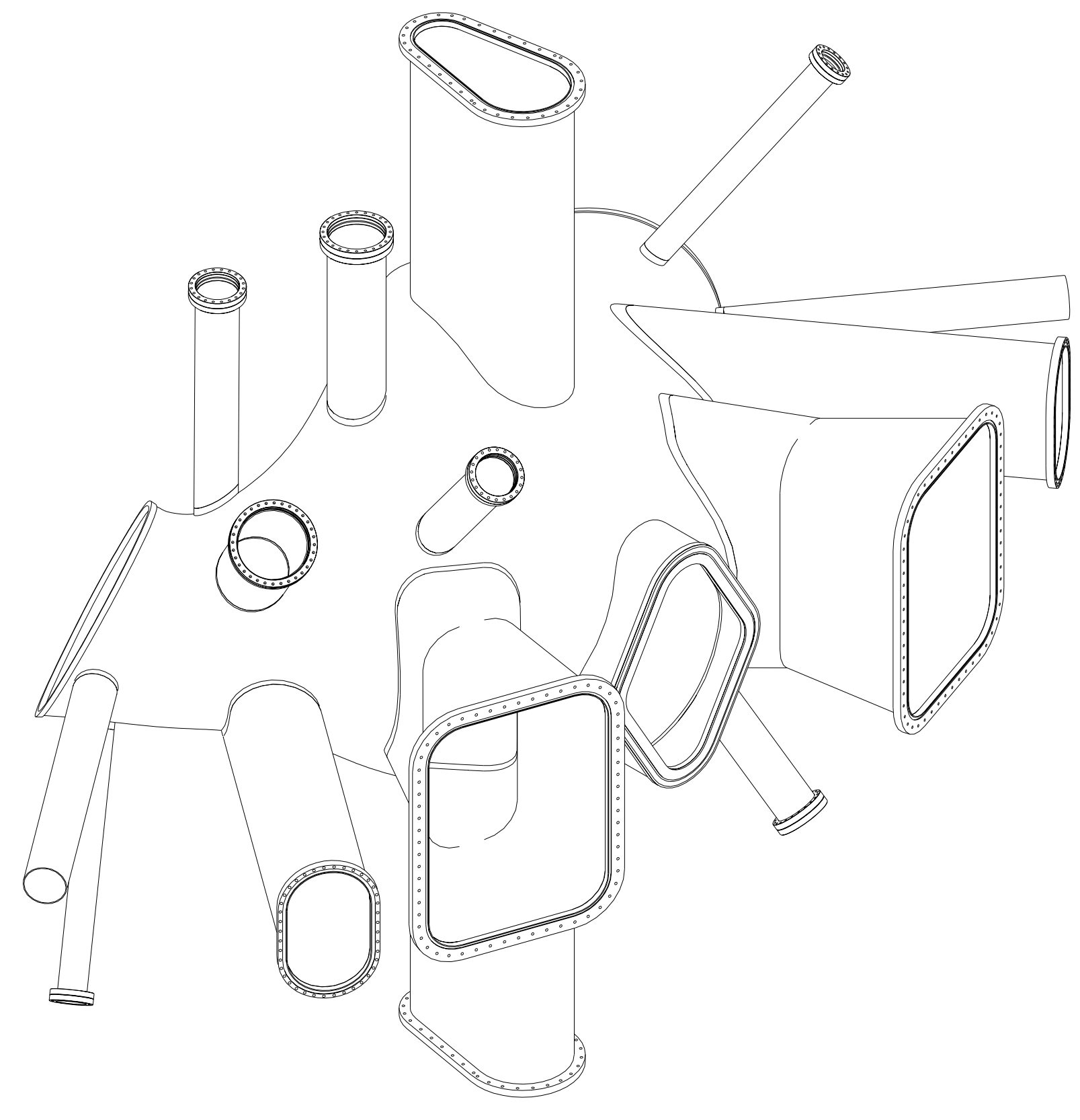
FABRICATION STEPS  
 (VENDOR RESPONSIBLE FOR  
 STEPS 1 THRU 6 )



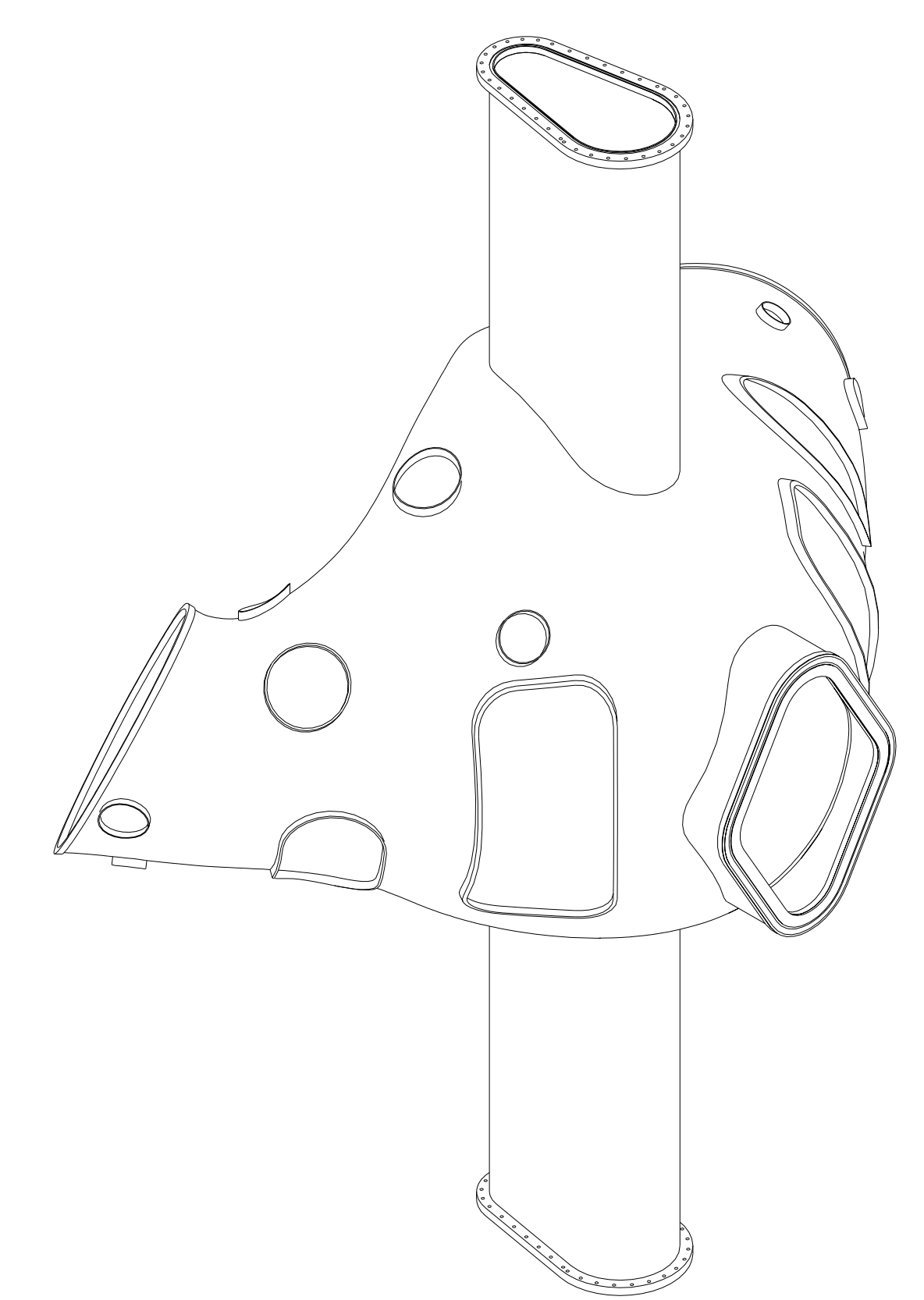
STEP 1  
 BASIC VESSEL  
 CONFIGURATION



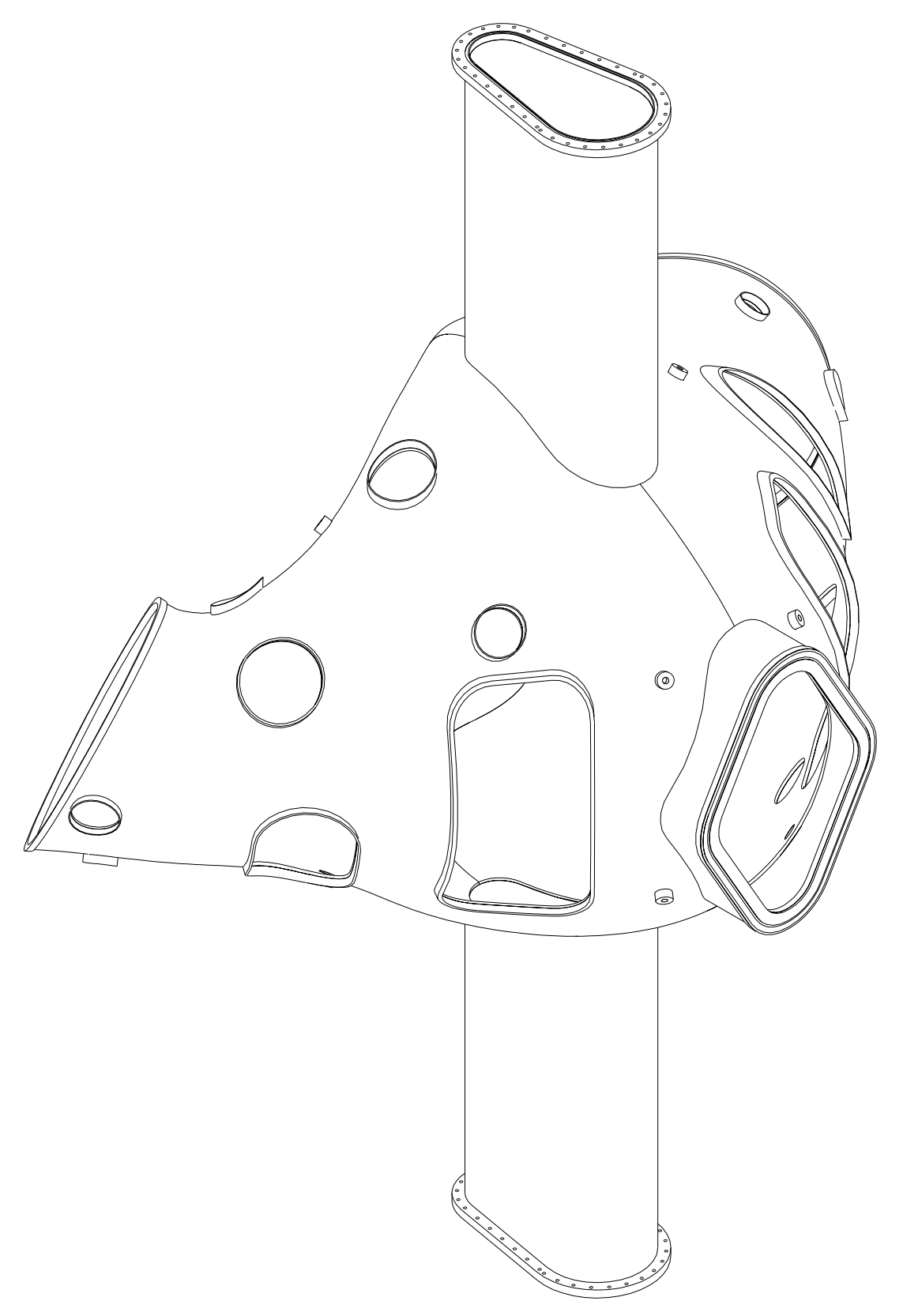
STEP 2  
 NB AND VERTICAL PORTS  
 HAVE BEEN POSITIONED AND  
 WELDED TO VESSEL  
 PORT OPENING HAVE BEEN MADE TO VESSEL



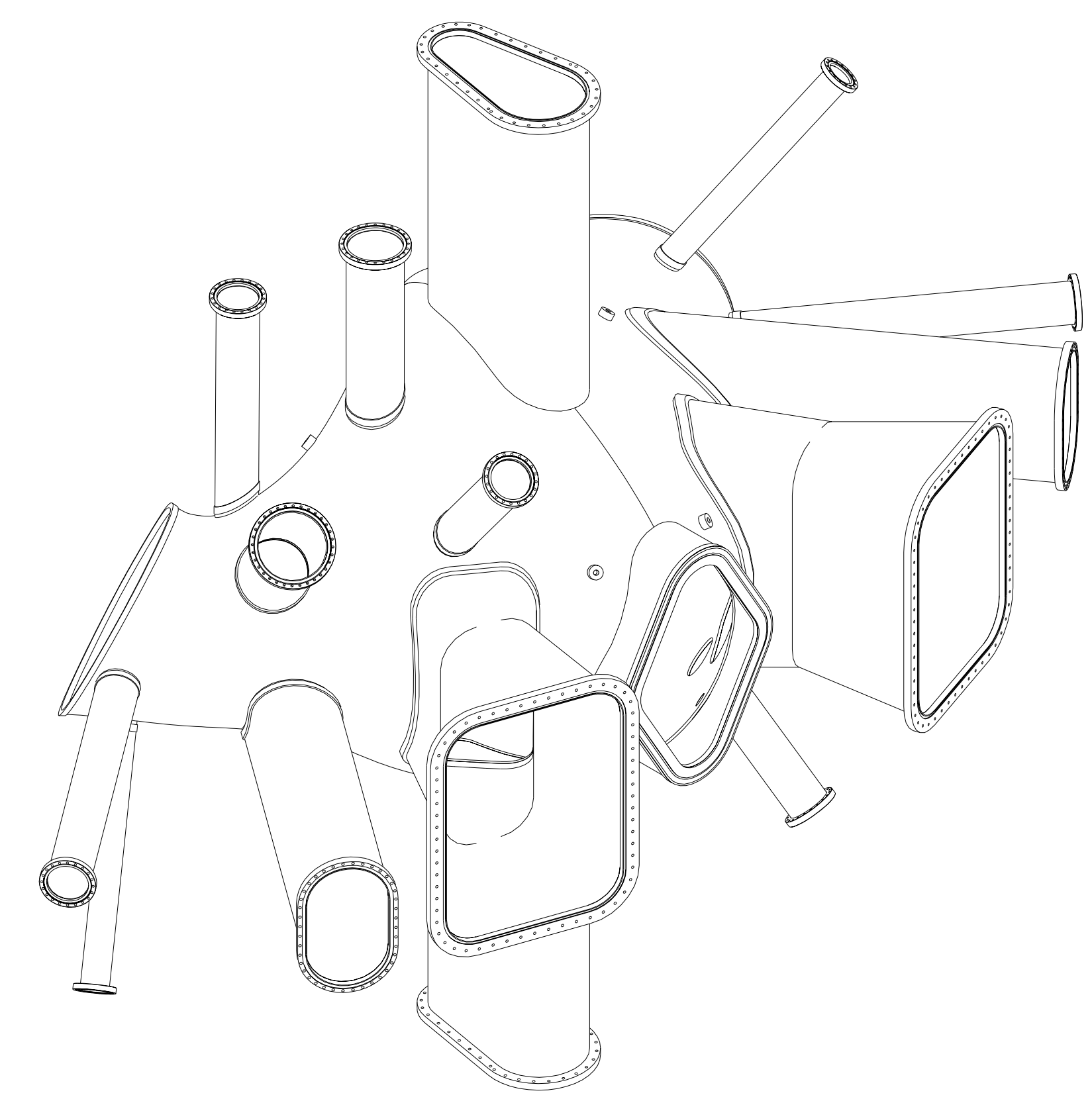
STEP 3  
 PORTS HAVE BEEN  
 POSITIONED AND  
 WELDED TO  
 VESSEL



STEP 4  
 PORTS HAVE BEEN CUT  
 LEAVING A STUB ON THE  
 VESSEL FOR REATTACHING  
 PORTS AT PPPL



STEP 5  
 PORT OPENING HAVE  
 BEEN CUT IN THE VESSEL



STEP 6  
 DURING THE DEVICE ASSEMBLY  
 AT PPPL THE PORTS WILL BE  
 REATTACHED AS SHOWN.

PRELIMINARY  
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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 STELLERATOR EXPERIMENT					
VACUUM VESSEL PERIOD ASSEMBLY					
VERSION NO.	PLANT	BLDG	FL	SHT	OF TYPE CLASS
28+	XX	XX	XX	5	5 XX U
RELEASE LEVEL		SE120-002			REV
WIP					A

H  
G  
F  
E  
D  
C  
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H  
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A