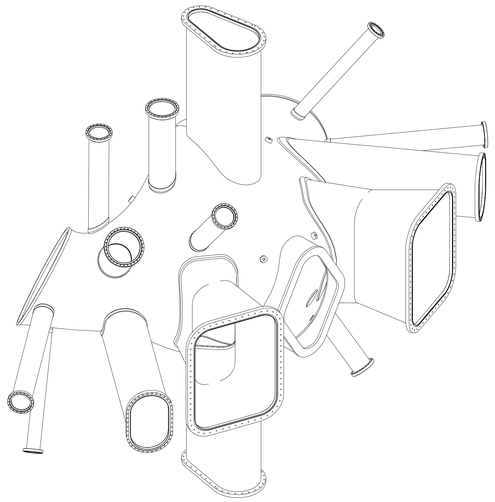
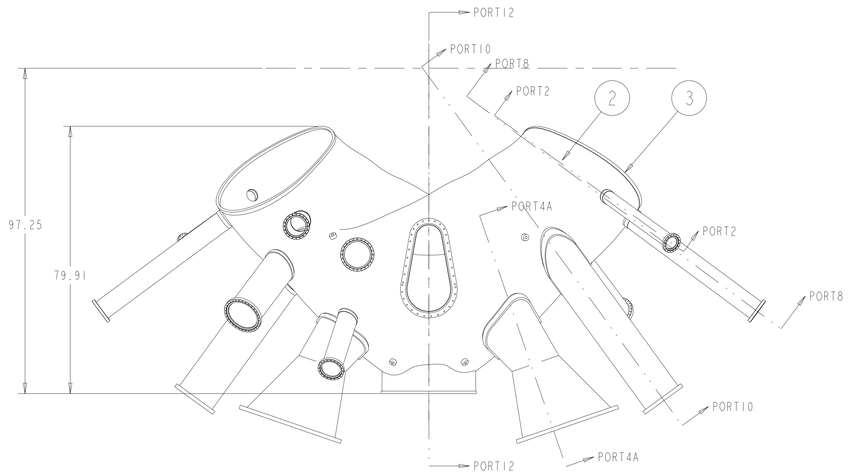
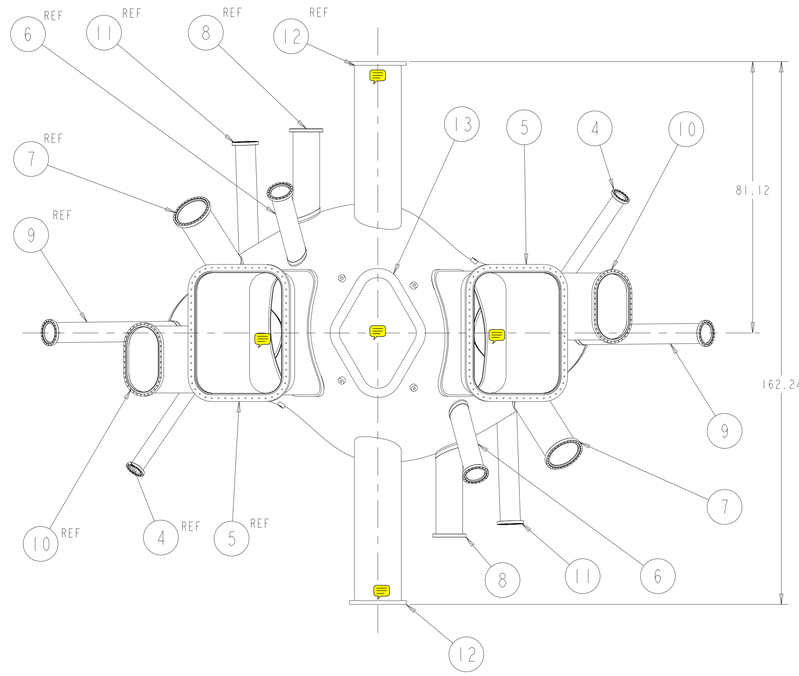
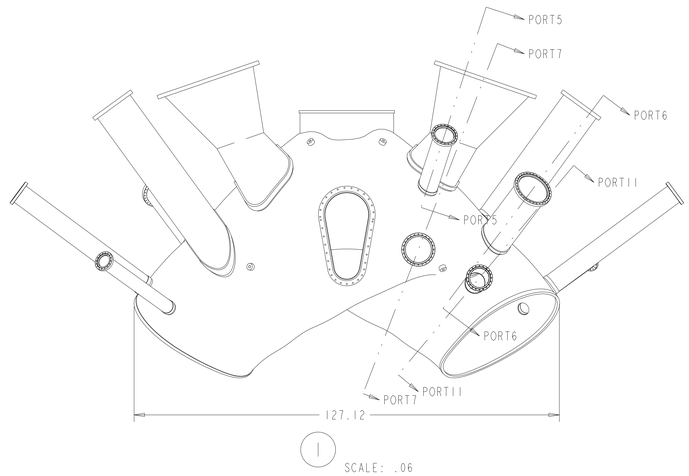


ISOMETRIC VIEW







SCALE: .06

SEGMENT 1								
FIND #	"L" APPROXIMATE	"D" TUBE O.D.	"R_1" TUBE	"R_2" TUBE	"D" TUBE	"T" TUBE THK	FLANGE TYPE	DIAGNOSTIC PORT IDENTIFICATION
4	35.5	Ø4	--	--	--	.125	Ø6" CONFLATE	1DU 1DL
5	32.0	--	--	--	--	.5	O-RING FLANGE	1BM 1FM
6	26.0	Ø6	--	--	--	.125	Ø8" CONFLATE	1BL 1FU
7	25.0	Ø10	--	--	--	.25	Ø12" CONFLATE	1CL 1EL
8	28.5	Ø8	--	--	--	.125	Ø10" CONFLATE	1BB 1FT
9	44.0	Ø6	--	--	--	.125	Ø8" CONFLATE	1DML 1DMR
10	44.0	--	6	6	8	.25	O-RING FLANGE	1CM 1EM
11	32.0	Ø6	--	--	--	.125	Ø8" CONFLATE	1CB 1ET
12	47.0	--	7.5	4	17.28	.5	O-RING FLANGE	1AT 1AB

SEGMENT 2								
FIND #	"L" APPROXIMATE	"D" TUBE O.D.	"R_1" TUBE	"R_2" 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_1" TUBE	"R_2" TUBE	"D" TUBE	"T" TUBE THK	FLANGE TYPE	DIAGNOSTIC PORT IDENTIFICATION
4	35.5	Ø4	--	--	--	.125	Ø6" CONFLATE	3PU 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 3QU
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	3OM 3QM
11	32.0	Ø6	--	--	--	.125	Ø8" CONFLATE	3OB 3QT
12	47.0	--	7.5	4	17.28	.5	O-RING FLANGE	3MT 3MB

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 1.0×10^{-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-I2-I22002-PH.

PRELIMINARY
FOR INFORMATION ONLY

		1		-13	NEUTRAL BEAM PORT WELDMENT	13
		2		-12	IAT, IAB, 2GT, 2GB, 3MT, 3MB PORT WELDMENT	12
		2		-11	ICB, IET, 21B, 2KT, 3OL, 3QB PORT WELDMENT	11
		2		-10	ICM, IEM, 21M, 2KM, 3OM, 3QT PORT WELDMENT	10
		2		-9	IDML, IDMR, 2JML, 2JMR, 3PML, 3PMR PORT WELDMENT	9
		2		-8	IBB, IFT, 2HB, 2LT, 3NB, 3RT PORT WELDMENT	8
		2		-7	ICL, IEL , 2IL, 2KU, 3OL, 2QU PORT WELDMENT	7
		2		-6	IBL, IFU, 2HL, 2LU, 3NL, 3RU PORT WELDMENT	6
		2		-5	IBM, IFM, 2HM, 2LM, 3NM, 3RM PORT WELDMENT	5
		2		-4	IDU, IDL, 2JU, 2JL, 3PU, 3PL PORT WELDMENT	4
		1		-3	VACUUM VESSEL FLANGE	3
		1		-2	VACUUM VESSEL BODY	2
	AR	X		-1	VACUUM VESSEL PERIOD ASSEMBLY	1
next assy SE120-001		1 -	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION / MATERIAL / SPECIFICATION	FIND NO
				NEXT ASSEMBLY	PARTS LIST	

QUALITY VERIFICATION
MECHANICAL AND STRUCTURAL
REFERENCE ORNL QA-G05

QV CLAUSE	DOCUMENTS REQUIRED	APPLICABLE TO PART NO *
303	MATERIAL MILL TEST REPORT	
325	MATERIAL SELLER CERT	X
326	SPECIAL MATERIAL INSPECTION REPORT	
205	MANUFACTURING, INSPECTION, AND TEST PLAN	X
312	FIELD INSPECTION AND TEST PLAN	X
321	WELD AND BRAZE INSPECTION REPORT	X
322	HEAT TREAT REPORT (VACUARC)	
310	LEAK TEST REPORT	X
315	CLEANING CERT	X
318	DEVIATION REQUEST	X
319	NONCONFORMANCE REPORT	X
323	DIMENSIONAL REPORT	X
330	FUNCTIONAL TEST REPORT	
100	DOCUMENTION	X

* SYMBOL X INDICATES APPLICABLE TO ALL PARTS OR ITEMS

QA COORDINATOR ..... DATE .....

REV				
A	GENERAL REVISION	GHJ	5-30	ORNL / QA

SCALE NOTED
TOLERANCES UNLESS OTHERWISE SPECIFIED
FRACTIONS
XX DECIMALS ±.01
XXX DECIMALS ±.005
ANGLES ±0°15'
BREAK SHARP EDGES .06 MAX
FINISH .125 UNLESS OTHERWISE SPECIFIED

DES	P. L. GORANSON	12/02
DRW	M.J.COLE & G.H.JONES	12/02
CHK		
SECT		
DEPT		
PE		
CR		
PJ		
REQ		
PPPL DRFT		

UT-BATTLELLE
Oak Ridge National Laboratory
managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-000R22725
UT-BATTELLE, LLC. Oak Ridge, Tennessee

PROJECT NAME
NATIONAL COMPACT STELLERATOR EXPERIMENT

VACUUM VESSEL PERIOD ASSEMBLY

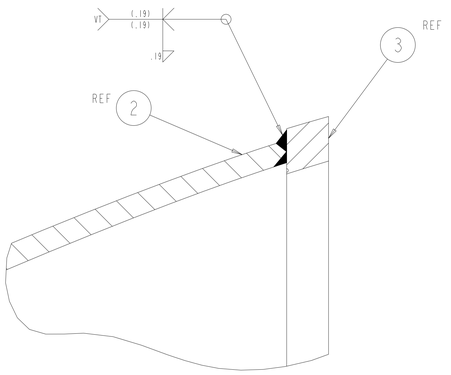
VERSION NO.	PLANT	BLDG	FL	SHT	OF	TYPE	CLASS
28+	XX	XX	XX	1	5	XX	U

RELEASE LEVEL: WIP
SE120-002
REV: A

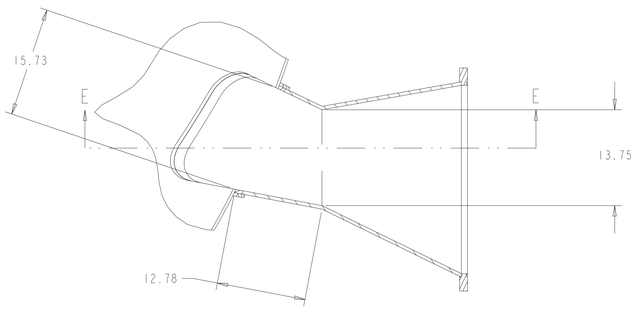
SE120-002

P THIS DRAWING PRODUCED ON PRO-ENGINEER

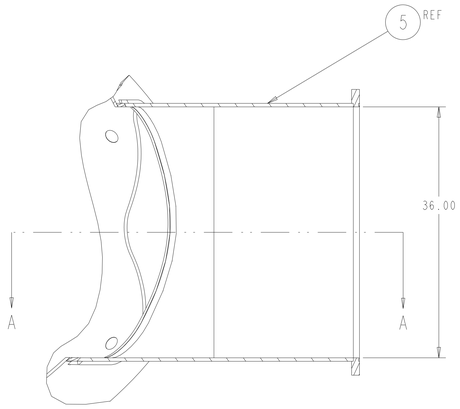
FOR NOTES AND PARTS LIST SEE SHEET 1



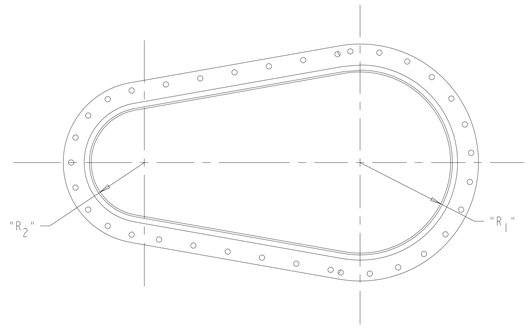
TYPICAL VACUUM VESSEL FLANGE CONFIGURATION
SCALE: 1.00



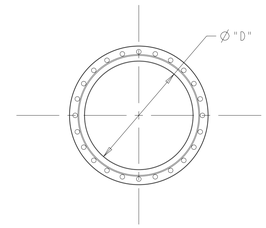
SECTION A-A



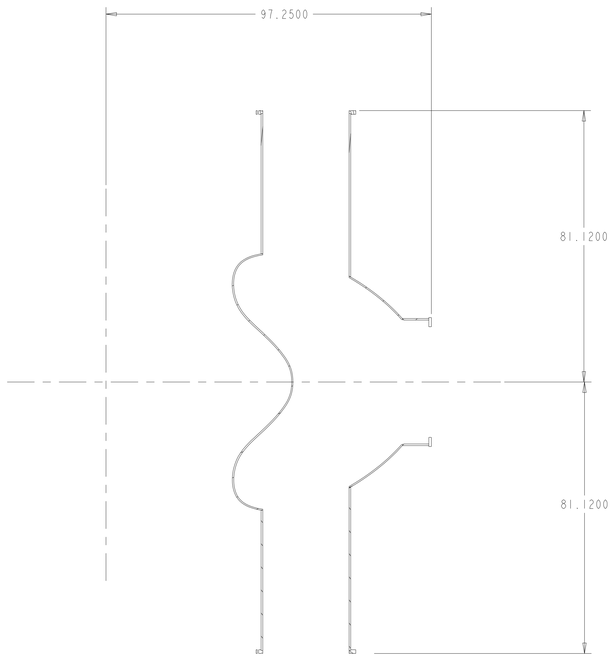
SECTION E-E
SCALE 0.13



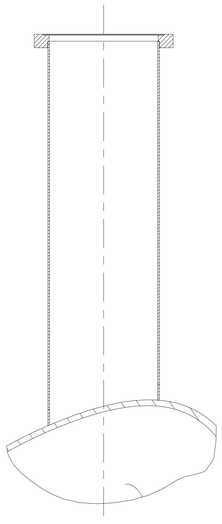
TYPICAL RACETRACK PORT
SCALE 0.25

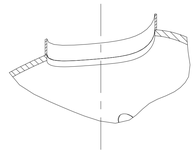


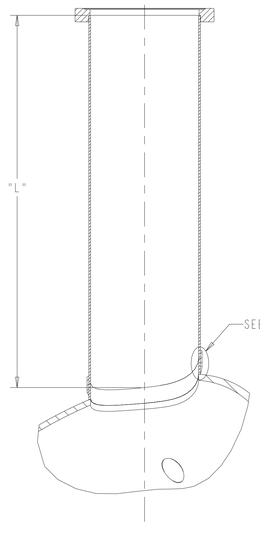
TYPICAL CONFLAT PORT
SCALE 0.25



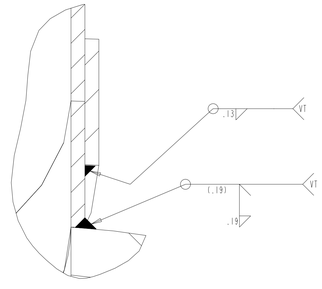
SECTION PORT12-PORT12







TYPICAL PORT CONFIGURATION
SCALE: .25



DETAIL X
SCALE 2.00

PRELIMINARY
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UT-BATTELLE, LLC. Oak Ridge, Tennessee

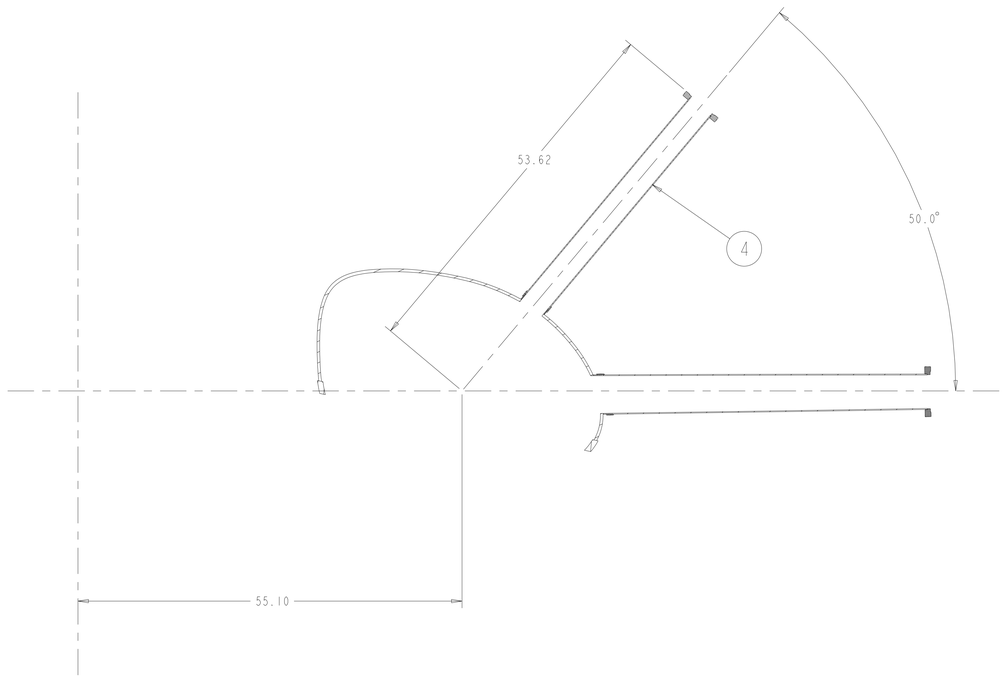
PROJECT NAME
NATIONAL COMPACT STELLERATOR EXPERIMENT

VACUUM VESSEL
PERIOD
ASSEMBLY

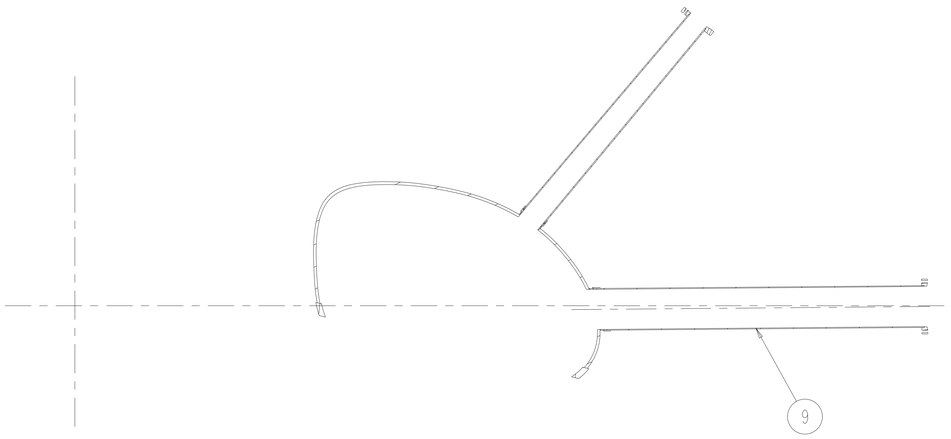
VERSION NO.	PLANT	BLDG	FL	SHT	OF	TYPE	CLASS
28+	XX	XX	XX	2	5	XX	U

RELEASE LEVEL		REV
WIP	SE120-002	A

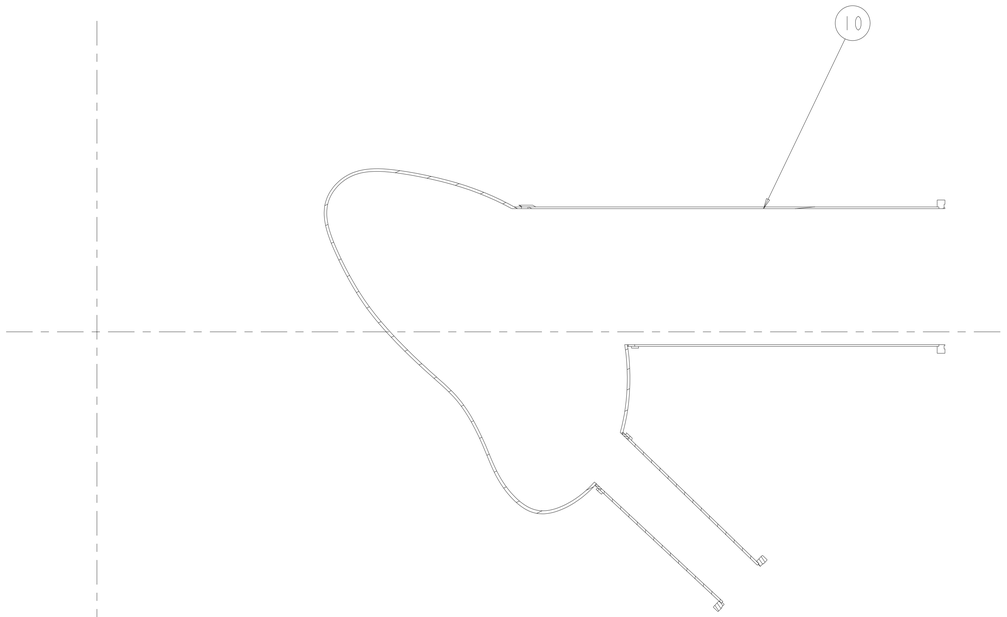
SE120-002



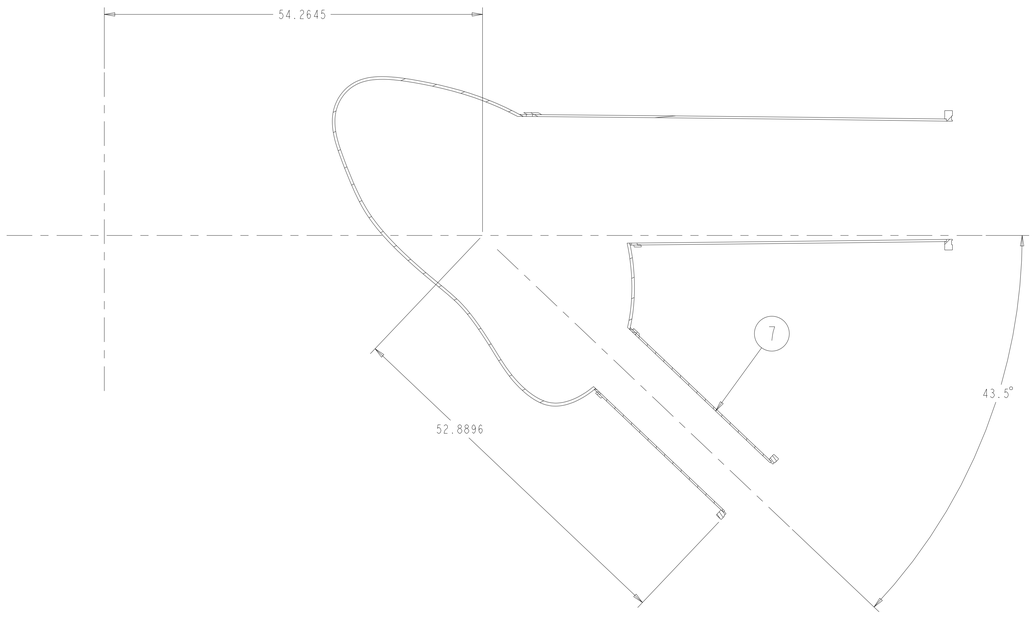
SECTION PORT2-PORT2



SECTION PORT8-PORT8



SECTION PORT10-PORT10



SECTION PORT6-PORT6

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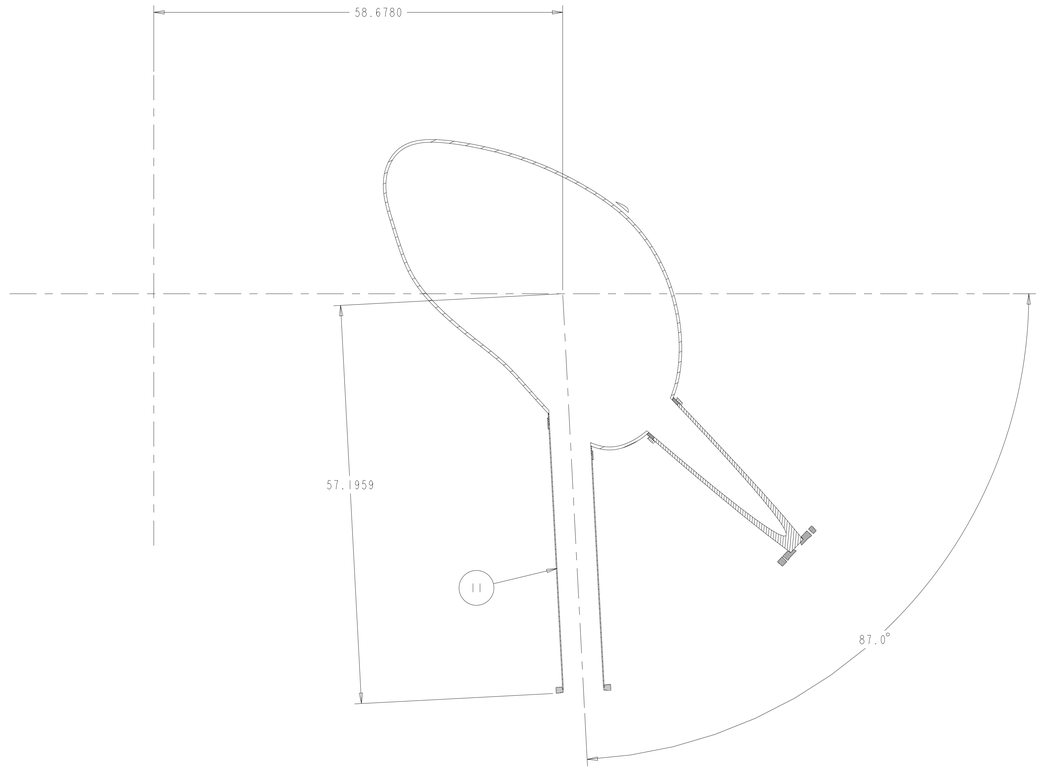
PROJECT NAME
NATIONAL COMPACT STELLERATOR EXPERIMENT

VACUUM VESSEL
PERIOD
ASSEMBLY

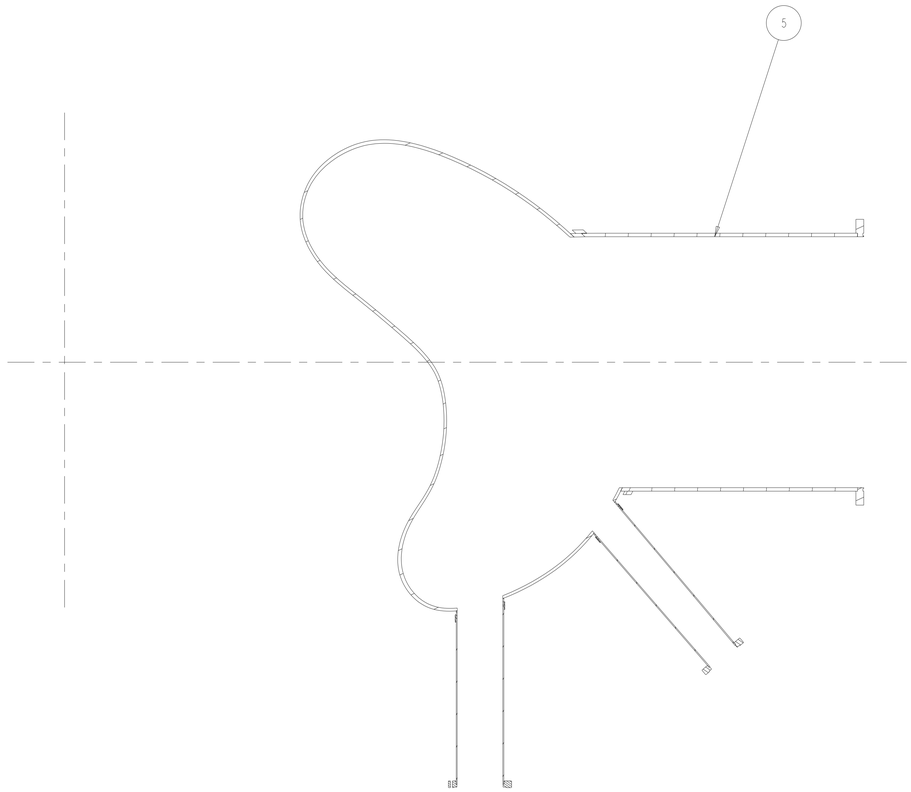
VERSION NO.	PLANT	BLDG	FL	SHT	OF	TYPE	CLASS
28+	XX	XX	XX	3	5	XX	U

RELEASE LEVEL		REV
WIP	SE120-002	A

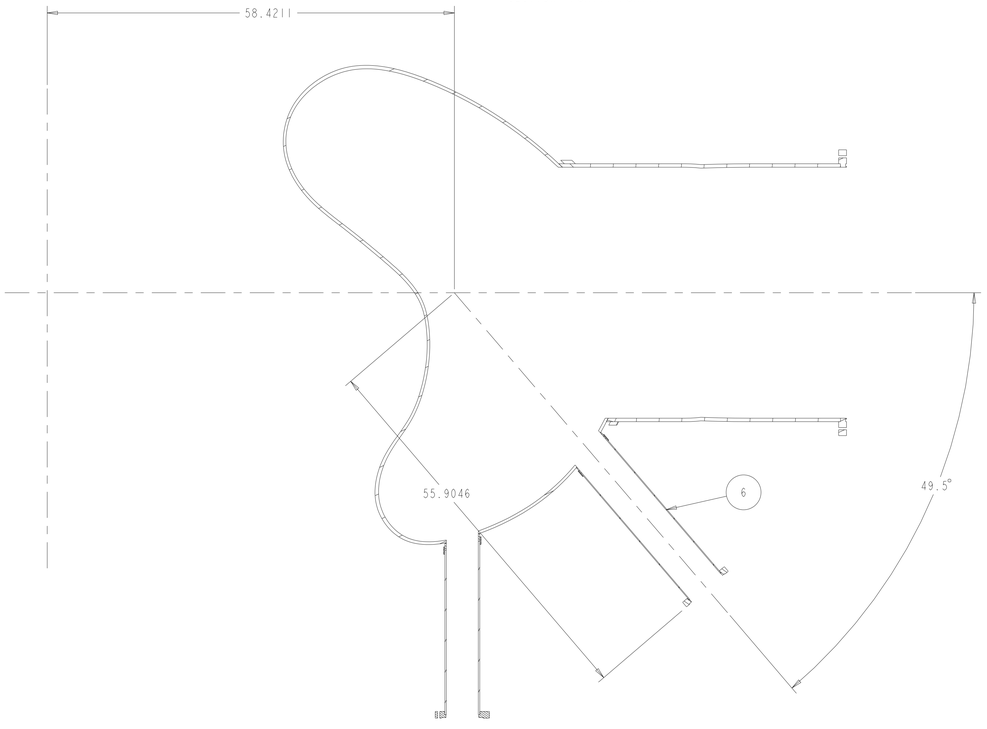
SE120-002



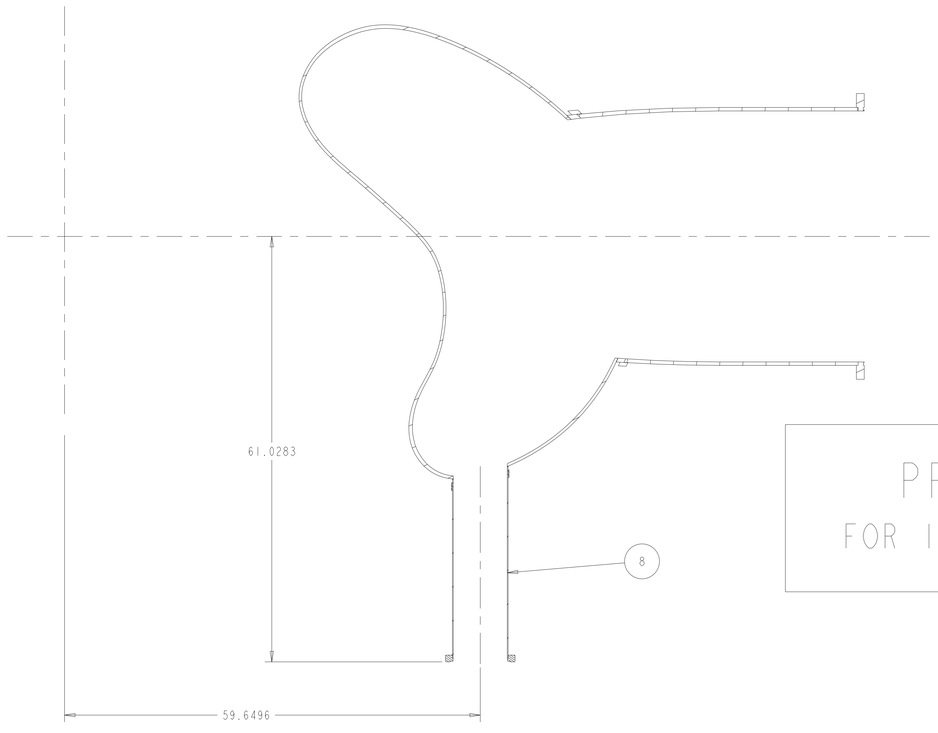
SECTION PORT11-PORT11



SECTION PORT4A-PORT4A



SECTION PORT5-PORT5



SECTION PORT7-PORT7

PRELIMINARY
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SEI20-002

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PROJECT NAME
NATIONAL COMPACT STELLERATOR EXPERIMENT

VACUUM VESSEL
PERIOD
ASSEMBLY

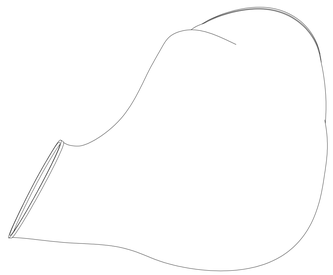
VERSION NO.	PLANT	BLDG	FL	SHT	OF	TYPE	CLASS
28+	XX	XX	XX	4	5	XX	U

RELEASE LEVEL		REV
WIP	SEI20-002	A

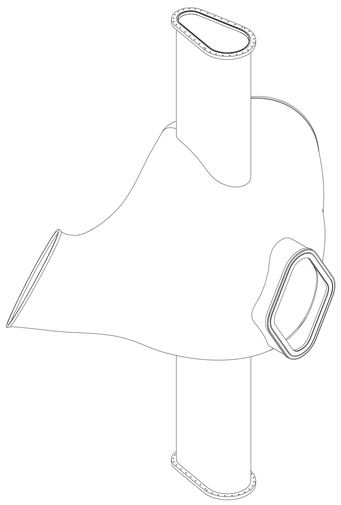
NEXT ASS'Y: FINAL ASS'Y:

FOR NOTES AND PARTS LIST SEE SHEET 1

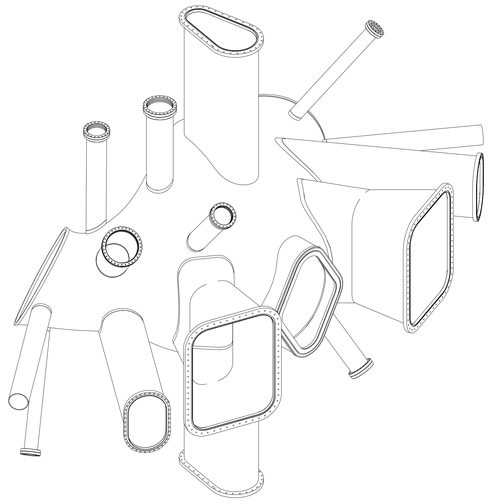
FABRICATION STEPS (VENDOR RESPONSIBLE FOR STEPS 1 THRU 6)



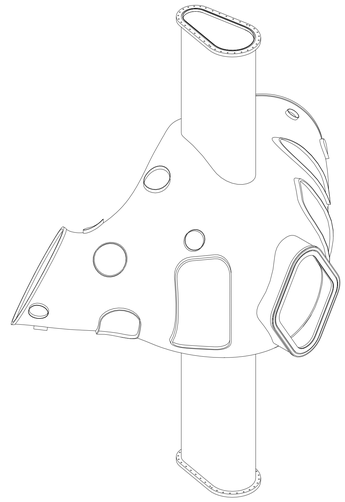
STEP 1
BASIC VESSEL
CONFIGURATION



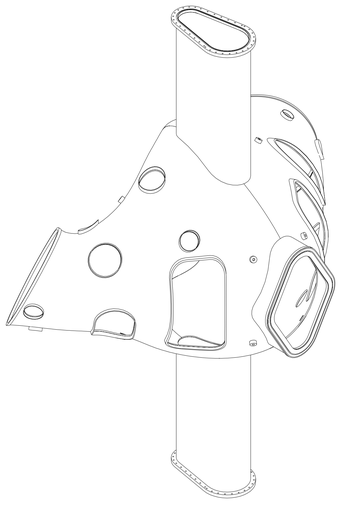
STEP 2
NB AND VERTICAL PORTS
HAVE BEEN POSITIONED AND
WELDED TO VESSEL
PORT OPENING HAVE BEEN MADE TO VESSEL



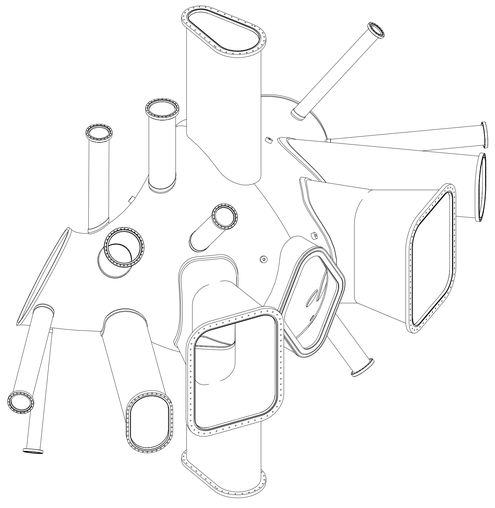
STEP 3
PORTS HAVE BEEN
POSITIONED AND
WELDED TO
VESSEL



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.

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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		REV
WIP	SE120-002	A

SE120-002