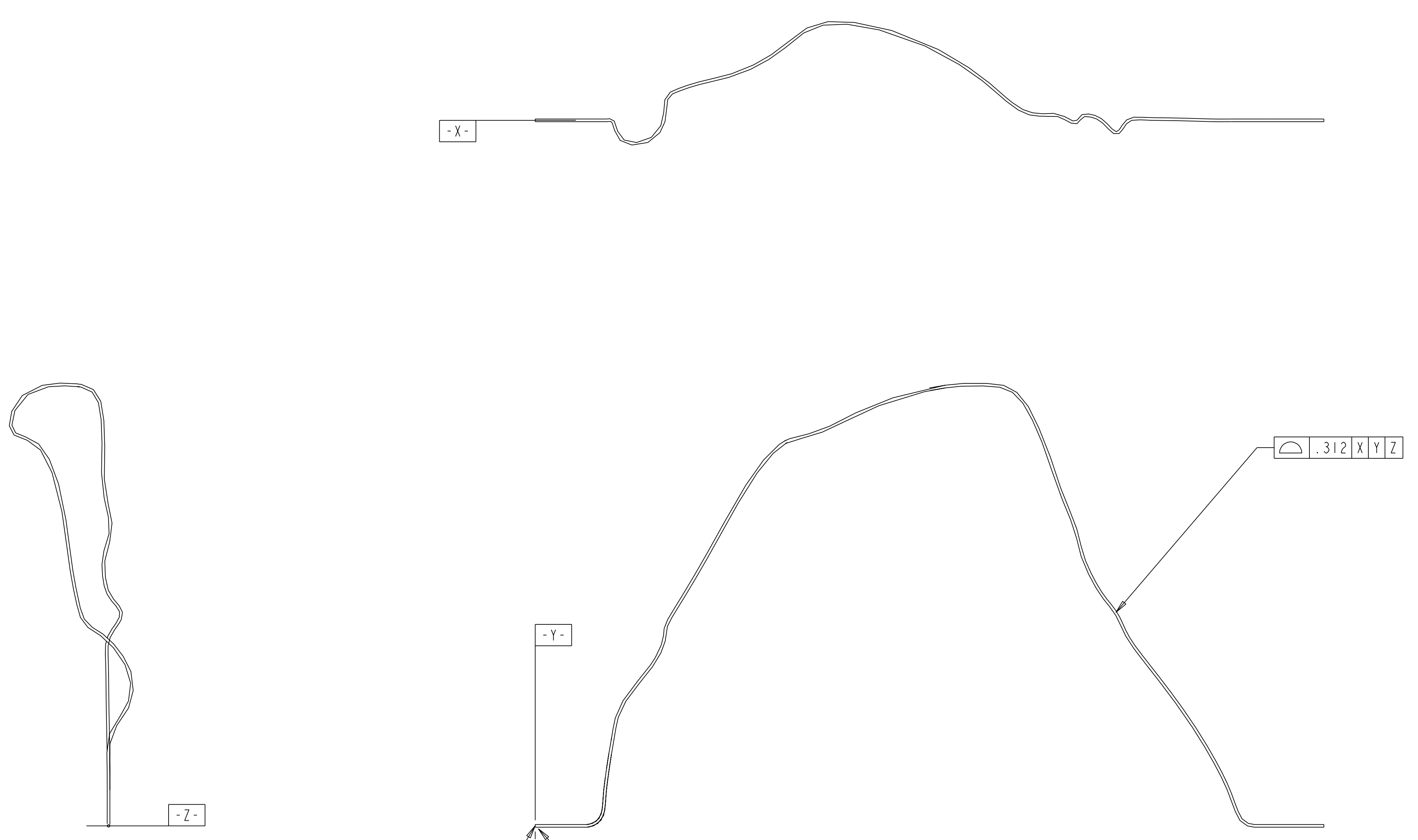


- NOTES
1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
  2. DIMENSIONS ARE IN INCHES.
  3. FABRICATION AND MATERIALS PER NCSX-CSPEC-123-01
  4. PROFILE TOLERANCE OF TUBE SURFACE IS BILATERAL, I.E. 0.156" ANY DIRECTION OFF REFERENCE SURFACE.
  5. ALL TUBE BEND RADIi ARE 5/8" TO CENTERLINE OF TUBE.
  6. DATUM POINTS ON CHART ARE THEORETICAL INTERCEPTS OF THE TUBE CENTERLINE. BEND RADIi ARE OMITTED. PROFILE TOLERANCE INCLUDES ALLOWANCES FOR THE RADIi ERRORS.

Point Name	X	Y	Z
PNT100	0.000	0.000	0.000
PNT101	5.998	0.000	0.000
PNT102	6.998	0.266	0.000
PNT103	7.722	1.003	0.000
PNT104	7.966	1.857	0.000
PNT105	8.092	3.563	0.000
PNT106	8.281	5.262	0.000
PNT107	8.433	6.413	0.000
PNT108	8.668	7.951	-0.030
PNT109	8.865	9.059	-0.060
PNT110	9.058	10.228	0.122
PNT111	9.170	10.928	0.367
PNT112	9.284	11.593	0.696
PNT113	9.411	12.216	1.095
PNT114	9.545	12.736	1.504
PNT115	9.751	13.317	1.932
PNT116	10.072	13.995	2.273
PNT117	10.354	14.492	2.457
PNT118	10.671	14.984	2.592
PNT119	11.015	15.468	2.682
PNT120	11.379	15.944	2.732
PNT121	11.804	16.468	2.742
PNT122	12.285	17.043	2.696
PNT123	12.762	17.612	2.589
PNT124	13.263	18.237	2.389
PNT125	13.733	18.920	2.041
PNT126	14.095	19.543	1.637
PNT127	14.438	20.166	1.217
PNT128	14.753	20.787	0.774
PNT129	15.011	21.399	0.283
PNT130	15.163	21.971	-0.291
PNT131	15.151	22.465	-1.040
PNT132	15.145	22.907	-1.823
PNT133	15.283	23.361	-2.403
PNT134	15.535	23.897	-2.862
PNT135	15.830	24.429	-3.154
PNT136	16.287	25.175	-3.377
PNT137	16.853	25.770	-3.529
PNT138	17.007	26.348	-3.667
PNT139	17.441	27.060	-3.824
PNT140	17.851	27.738	-3.961
PNT141	18.247	28.400	-4.085
PNT142	18.776	29.294	-4.238
PNT143	19.333	30.250	-4.386
PNT144	19.895	31.231	-4.525
PNT145	20.408	32.139	-4.646
PNT146	20.992	33.185	-4.782
PNT147	21.573	34.233	-4.919
PNT148	22.120	35.222	-5.055
PNT149	22.658	36.189	-5.201
PNT150	23.200	37.152	-5.364
PNT151	23.825	38.240	-5.577
PNT152	24.398	39.198	-5.801
PNT153	24.917	40.028	-6.028
PNT154	25.634	41.103	-6.382
PNT155	26.611	42.407	-6.931
PNT156	27.808	43.747	-7.654
PNT157	28.506	44.361	-8.141
PNT158	29.291	44.854	-8.777
PNT159	29.942	45.105	-9.347
PNT160	30.745	45.322	-9.989
PNT161	31.607	45.517	-10.556
PNT162	32.463	45.751	-10.961
PNT163	33.212	46.002	-11.201
PNT164	34.035	46.329	-11.362
PNT165	35.052	46.806	-11.433
PNT166	35.719	47.151	-11.418
PNT167	36.512	47.573	-11.355
PNT168	37.440	48.052	-11.238
PNT169	38.246	48.435	-11.111
PNT170	39.060	48.789	-10.960
PNT171	40.016	49.173	-10.750
PNT172	40.835	49.482	-10.539
PNT173	41.723	49.795	-10.280
PNT174	42.609	50.084	-9.991
PNT175	43.510	50.351	-9.667
PNT176	44.382	50.587	-9.322
PNT177	45.445	50.841	-8.864
PNT178	46.438	51.040	-8.395
PNT179	47.417	51.213	-7.888
PNT180	48.265	51.331	-7.418
PNT181	49.220	51.433	-6.849
PNT182	50.216	51.500	-6.209
PNT183	51.194	51.516	-5.538
PNT184	52.202	51.495	-4.789
PNT185	53.121	51.460	-4.040
PNT186	53.857	51.401	-3.401
PNT187	54.582	51.270	-2.760
PNT188	55.598	50.838	-1.913
PNT189	56.449	50.143	-1.316
PNT190	57.140	49.247	-0.971
PNT191	57.860	47.991	-0.756
PNT192	58.511	46.604	-0.673
PNT193	59.001	45.448	-0.647
PNT194	59.492	44.216	-0.626
PNT195	59.833	43.041	-0.605
PNT196	60.358	41.785	-0.612
PNT197	60.743	40.517	-0.652
PNT198	61.145	39.255	-0.627
PNT199	61.623	38.039	-0.409
PNT200	62.255	36.627	0.012
PNT201	62.868	35.705	0.282
PNT202	63.116	34.321	0.256
PNT203	63.410	33.075	-0.088
PNT204	63.768	31.710	-0.480
PNT205	64.246	30.411	-0.627
PNT206	64.779	29.278	-0.551
PNT207	65.541	27.896	-0.265
PNT208	66.367	26.629	0.261
PNT209	67.107	25.686	0.973
PNT210	67.782	24.773	1.484
PNT211	68.394	23.571	1.034
PNT212	68.990	22.286	0.155
PNT213	69.754	21.083	-0.161
PNT214	70.797	19.687	-0.205
PNT215	71.828	18.368	-0.179
PNT216	72.815	17.102	-0.156
PNT217	73.874	15.716	-0.134
PNT218	74.787	14.483	-0.114
PNT219	75.758	13.119	-0.092
PNT220	77.079	11.149	-0.060
PNT221	78.369	9.085	0.000
PNT222	79.200	7.605	-0.000
PNT223	80.089	5.880	-0.000
PNT224	81.073	3.730	0.000
PNT225	81.660	2.267	0.000
PNT226	82.009	1.297	-0.000
PNT227	82.464	0.575	-0.000
PNT228	83.189	0.124	0.000
PNT229	83.913	0.000	0.000
PNT230	92.000	0.000	0.000



**RELEASED FOR  
FABRICATION / INSTALLATION**  
PPPL Drafting:

APPROX TUBE LENGTH = 161.0 IN

REV	DESCRIPTION	BY	DATE	CHK	DEPT	DATE	PE	REQ	DATE	ORNL	DOE	DATE
1	PER ECN NO. 5003	MJC	6/24/05	PLG								

SEI23-105	AR	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL	SPECIFICATION	FIND NO	
			-1	COOLANT TUBE 9-2	316L SS 5/16"-.032 WALL	SEE NOTE 4	1	
				← NEXT ASSEMBLY	PARTS LIST			

**-1 COOLANT TUBE 9-2**  
SCALE .125

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

SCALE NOTED	DES: P GORANSON	4-22-05
TOLERANCES UNLESS OTHERWISE SPECIFIED	DRW: G MCGINNIS	4-22-05
FRACTIONS	CHK: G. H. JONES	05-04-05
XX DECIMALS ±.01	SECT:	
XXX DECIMALS ±.005	DEPT:	
ANGLES ±0°15'	PE:	
BREAK SHARP EDGES OR MAX FINISH .125 UNLESS OTHERWISE SPECIFIED	CR:	
	PJ:	
	REQ:	
	PPPL DRFT:	
	REVISION NO.:	0
	PLANT:	ORNL
	BLDG:	5700
	FL:	3
	SHT:	1
	OF:	1
	TYPE:	S
	CLASS:	U
	RELEASE LEVEL:	
	Fabrication	
	SEI23-107	

Oak Ridge National Laboratory  
managed for the DEPARTMENT OF ENERGY under  
U.S. GOVERNMENT CONTRACT DE-AC05-00OR22725  
BY BATTTELLE, LLC, Oak Ridge, Tennessee  
PROJECT NAME:  
**NATIONAL COMPACT STELLARATOR EXPERIMENT**  
**VACUUM VESSEL HEATING/COOLING**  
**COOLANT TUBE 9-2**  
DETAIL

SEI23-107