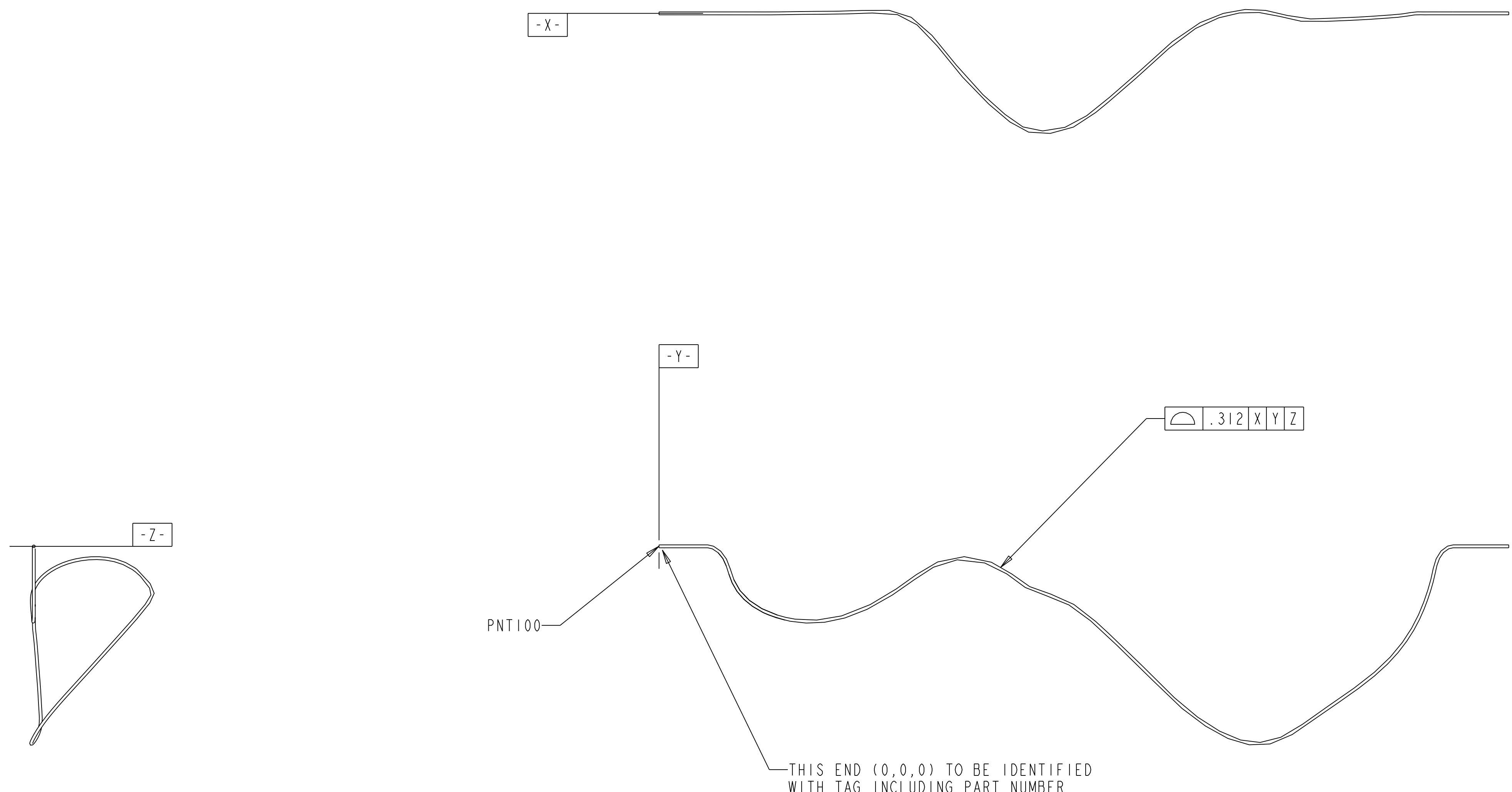


- NOTES
1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
  2. DIMENSIONS ARE IN INCHES.
  3. FABRICATION AND MATERIALS PER NCSX-CSPEC-123-01
  4. PROFILE TOLERANCE OF TUBE SURFACE IS BILATERAL, I.E. 0.156" ANY DIRECTION OFF REFERENCE SURFACE.
  5. ALL TUBE BEND RADII ARE 5/8" TO CENTERLINE OF 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	5.276	-0.000	0.000
PNT102	6.252	-0.369	-0.000
PNT103	7.024	-1.202	0.000
PNT104	7.483	-2.240	0.000
PNT105	8.036	-3.846	0.000
PNT106	8.672	-4.917	-0.000
PNT107	9.517	-5.832	0.000
PNT108	10.330	-6.448	-0.000
PNT109	11.625	-7.150	0.000
PNT110	12.789	-7.586	0.000
PNT111	14.254	-7.958	-0.048
PNT112	15.472	-8.118	-0.043
PNT113	16.700	-8.151	-0.049
PNT114	17.925	-8.059	-0.064
PNT115	19.234	-7.823	-0.083
PNT116	20.515	-7.463	-0.103
PNT117	21.948	-6.912	-0.149
PNT118	23.416	-6.189	-0.205
PNT119	24.655	-5.468	-0.196
PNT120	25.760	-4.747	-0.035
PNT121	26.727	-4.069	0.302
PNT122	27.556	-3.471	0.772
PNT123	28.331	-2.925	1.380
PNT124	29.064	-2.449	2.089
PNT125	29.771	-2.052	2.870
PNT126	30.338	-1.789	3.547
PNT127	31.027	-1.545	4.404
PNT128	31.658	-1.392	5.196
PNT129	32.432	-1.290	6.144
PNT130	33.095	-1.274	6.925
PNT131	33.845	-1.330	7.763
PNT132	34.617	-1.466	8.571
PNT133	35.482	-1.708	9.409
PNT134	36.360	-2.052	10.196
PNT135	37.232	-2.510	10.930
PNT136	38.069	-3.092	11.615
PNT137	38.981	-3.815	12.259
PNT138	40.038	-4.486	12.699
PNT139	41.164	-4.943	12.862
PNT140	42.433	-5.341	12.825
PNT141	43.750	-5.836	12.566
PNT142	44.776	-6.388	12.178
PNT143	45.770	-7.075	11.621
PNT144	46.681	-7.814	10.992
PNT145	47.543	-8.576	10.324
PNT146	48.376	-9.350	9.631
PNT147	49.133	-10.069	8.983
PNT148	49.888	-10.790	8.354
PNT149	50.640	-11.512	7.684
PNT150	51.451	-12.296	6.977
PNT151	52.131	-12.962	6.375
PNT152	52.804	-13.631	5.768
PNT153	53.594	-14.423	5.046
PNT154	54.322	-15.153	4.378
PNT155	55.057	-15.882	3.715
PNT156	55.812	-16.604	3.068
PNT157	56.532	-17.255	2.497
PNT158	57.359	-17.947	1.910
PNT159	58.164	-18.781	1.245
PNT160	59.570	-19.520	0.710
PNT161	60.576	-20.112	0.328
PNT162	61.551	-20.600	0.046
PNT163	62.484	-20.972	-0.148
PNT164	63.364	-21.221	-0.257
PNT165	64.376	-21.371	-0.284
PNT166	65.395	-21.357	-0.203
PNT167	66.287	-21.192	-0.047
PNT168	67.231	-20.869	0.178
PNT169	68.301	-20.336	0.459
PNT170	69.155	-19.802	0.644
PNT171	69.907	-19.278	0.736
PNT172	70.738	-18.680	0.761
PNT173	71.404	-18.204	0.745
PNT174	72.160	-17.677	0.709
PNT175	73.004	-17.099	0.670
PNT176	74.017	-16.405	0.636
PNT177	74.773	-15.878	0.609
PNT178	75.686	-15.220	0.563
PNT179	76.502	-14.603	0.515
PNT180	77.377	-13.896	0.460
PNT181	78.296	-13.083	0.398
PNT182	79.026	-12.367	0.343
PNT183	79.880	-11.300	0.261
PNT184	80.665	-10.410	0.192
PNT185	81.451	-9.215	0.099
PNT186	81.906	-8.418	-0.000
PNT187	82.357	-7.502	0.000
PNT188	82.630	-6.879	0.000
PNT189	82.923	-6.141	0.000
PNT190	83.224	-5.285	-0.000
PNT191	83.586	-4.091	-0.000
PNT192	83.839	-3.102	0.000
PNT193	84.056	-2.104	0.000
PNT194	84.400	-1.166	0.000
PNT195	85.139	-0.282	0.000
PNT196	85.977	0.000	0.000
PNT197	92.000	0.000	0.000



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

APPROX TUBE LENGTH = 122.9 IN

AR	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL	SPECIFICATION	FIND NO
SE123-130			COOLANT TUBE 14-2	316L SS	SEE NOTE 4	I
				5/16"-.032 WALL		

PARTS LIST

**-1 COOLANT TUBE 14-2**  
SCALE .125

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

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'	FE :	
BREAK SHARP EDGES OR MAX FINISH .125 UNLESS OTHERWISE SPECIFIED	CR :	
	PJ :	
	RD :	
	PPPL DRFT :	
	VERSION NO. 0	
	PLANT ORNL	BLDG 5700
	FL 3	SHT 1
	TYPE I	CLASS S
	RELEASE LEVEL Fabrication	
	DRAWING APPROVALS	DATE

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	
VACUUM VESSEL HEATING/COOLING COOLANT TUBE 14-2	
DETAIL	
SE123-132	REV I