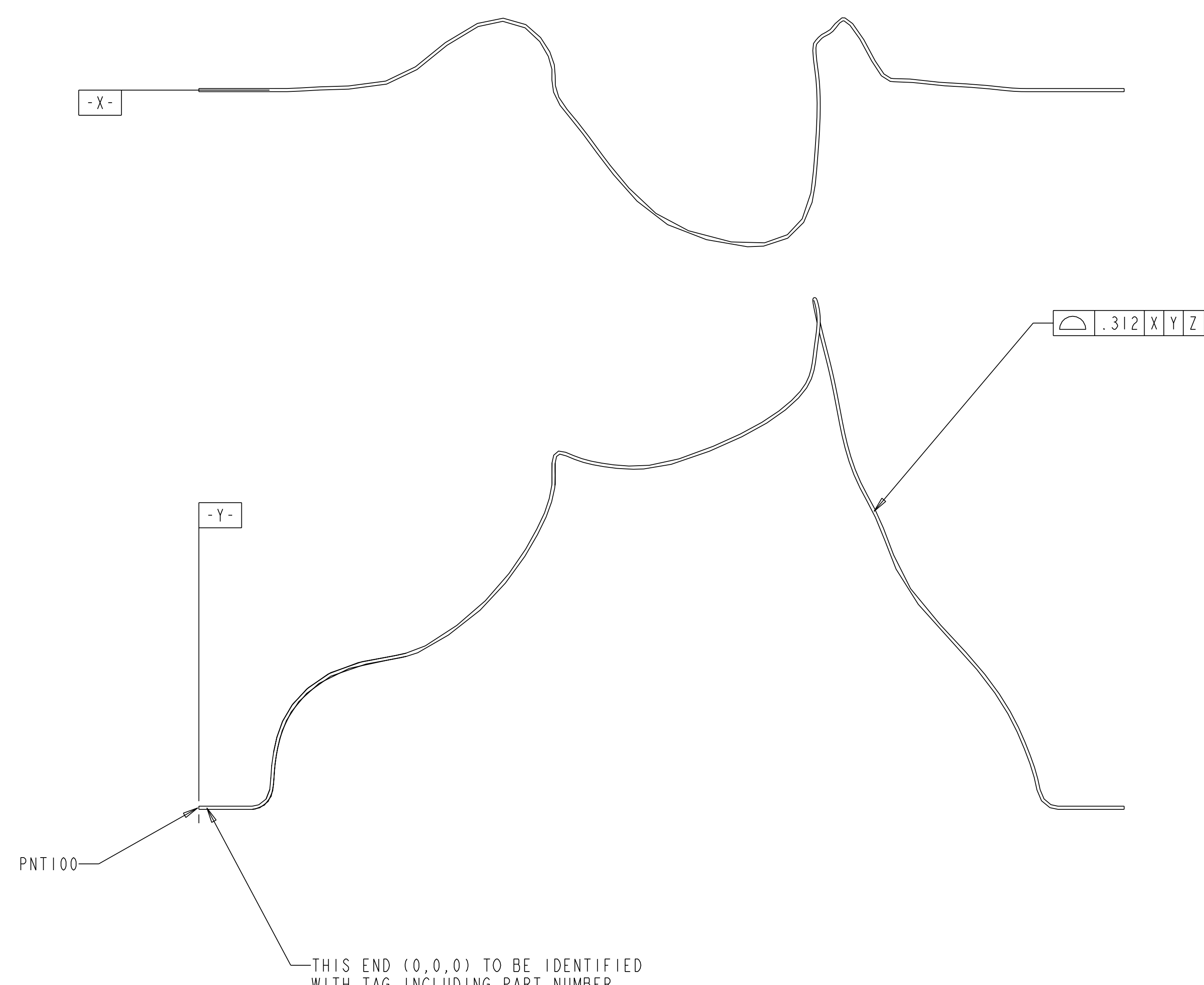


- NOTES
1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
  2. DIMENSIONS ARE IN INCHES.
  3. FABRICATION AND MATERIALS PER NCSX-CSPEC-123-01
  4. PROFILE TOLERANCE OF TUBE SURFACE IS BILATERAL, I.E. 0.156" ANY DIRECTION OFF REFERENCE SURFACE.
  5. ALL TUBE BEND RADI ARE 5/8" TO CENTERLINE OF TUBE.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

Point	X	Y	Z
PNT100	0.000	0.000	0.000
PNT101	5.294	0.000	0.000
PNT102	6.315	0.309	0.000
PNT103	7.015	1.118	0.000
PNT104	7.240	2.012	0.000
PNT105	7.358	3.151	0.000
PNT106	7.543	5.250	0.000
PNT107	7.844	6.729	-0.000
PNT108	8.308	8.166	0.000
PNT109	8.696	9.010	0.000
PNT110	9.595	10.387	-0.029
PNT111	10.900	11.746	-0.112
PNT112	11.637	12.334	-0.148
PNT113	12.286	12.779	-0.178
PNT114	12.963	13.179	-0.205
PNT115	13.667	13.529	-0.227
PNT116	14.543	13.882	-0.246
PNT117	15.292	14.122	-0.267
PNT118	16.052	14.321	-0.306
PNT119	16.818	14.487	-0.380
PNT120	17.430	14.602	-0.471
PNT121	18.189	14.735	-0.631
PNT122	18.936	14.862	-0.844
PNT123	19.664	14.995	-1.111
PNT124	20.228	15.113	-1.363
PNT125	20.904	15.287	-1.726
PNT126	21.544	15.496	-2.133
PNT127	22.122	16.027	-3.031
PNT128	22.149	15.743	-2.572
PNT129	22.722	16.027	-3.031
PNT130	23.270	16.346	-3.497
PNT131	23.808	16.689	-3.958
PNT132	24.350	17.048	-4.401
PNT133	24.903	17.418	-4.821
PNT134	25.351	17.726	-5.138
PNT135	25.914	18.132	-5.510
PNT136	26.476	18.565	-5.850
PNT137	27.037	19.026	-6.153
PNT138	27.484	19.415	-6.367
PNT139	28.038	19.925	-6.593
PNT140	28.586	20.462	-6.771
PNT141	29.125	21.021	-6.897
PNT142	29.547	21.483	-6.962
PNT143	30.063	22.076	-6.995
PNT144	30.562	22.684	-6.976
PNT145	31.043	23.303	-6.907
PNT146	31.504	23.930	-6.789
PNT147	31.942	24.563	-6.625
PNT148	32.358	25.198	-6.418
PNT149	32.673	25.707	-6.224
PNT150	33.046	26.342	-5.946
PNT151	33.463	27.099	-5.566
PNT152	33.846	27.849	-5.139
PNT153	34.143	28.455	-4.749
PNT154	34.419	29.072	-4.331
PNT155	34.725	29.787	-3.796
PNT156	34.930	30.475	-3.308
PNT157	35.128	31.241	-2.735
PNT158	35.269	32.249	-2.025
PNT159	35.296	33.335	-1.300
PNT160	35.271	34.285	-0.631
PNT161	35.309	34.993	0.017
PNT162	35.655	35.260	0.789
PNT163	36.210	35.199	1.604
PNT164	36.922	34.980	2.529
PNT165	37.721	34.684	3.521
PNT166	38.347	34.463	4.307
PNT167	39.032	34.288	5.228
PNT168	39.861	34.134	6.367
PNT169	40.709	34.002	7.494
PNT170	41.587	33.893	8.600
PNT171	42.503	33.823	9.678
PNT172	43.579	33.809	10.827
PNT173	44.497	33.860	11.687
PNT174	45.600	34.002	12.562
PNT175	46.919	34.291	13.368
PNT176	48.161	34.653	13.944
PNT177	49.427	35.092	14.401
PNT178	50.561	35.530	14.730
PNT179	51.695	36.000	15.011
PNT180	53.111	36.631	15.279
PNT181	54.238	37.179	15.402
PNT182	55.348	37.771	15.418
PNT183	56.428	38.409	15.307
PNT184	57.456	39.089	15.054
PNT185	58.287	39.714	14.694
PNT186	59.023	40.362	14.194
PNT187	59.805	41.191	13.556
PNT188	60.399	41.978	12.341
PNT189	60.867	42.941	10.984
PNT190	61.066	43.779	9.860
PNT191	61.176	44.638	8.738
PNT192	61.309	45.515	7.440
PNT193	61.626	46.620	5.084
PNT194	61.722	47.430	3.377
PNT195	61.716	48.207	1.822
PNT196	61.622	49.103	0.052
PNT197	61.445	49.962	-1.678
PNT198	61.253	50.552	-3.160
PNT199	61.205	50.323	-4.315
PNT200	61.447	49.063	-4.840
PNT201	61.804	47.455	-5.231
PNT202	62.366	45.174	-5.598
PNT203	62.835	43.313	-5.865
PNT204	63.226	41.684	-6.123
PNT205	63.738	38.837	-6.913
PNT206	64.253	36.385	-7.010
PNT207	64.708	34.749	-6.685
PNT208	65.250	33.231	-6.060
PNT209	65.856	31.890	-5.152
PNT210	66.366	30.926	-4.249
PNT211	66.867	30.006	-3.296
PNT212	67.359	29.036	-2.388
PNT213	67.846	27.938	-1.643
PNT214	68.383	26.540	-1.176
PNT215	68.978	24.919	-1.078
PNT216	69.819	23.057	-0.998
PNT217	71.263	20.816	-0.811
PNT218	72.877	18.887	-0.689
PNT219	74.271	17.393	-0.596
PNT220	75.883	15.671	-0.493
PNT221	77.433	13.893	-0.386
PNT222	78.816	12.029	-0.270
PNT223	80.181	10.066	-0.143
PNT224	81.109	8.425	-0.031
PNT225	81.905	6.709	0.000
PNT226	82.454	5.313	0.000
PNT227	82.887	4.052	0.000
PNT228	83.283	2.721	0.000
PNT229	83.600	1.484	0.000
PNT230	83.982	0.690	0.000
PNT231	84.678	0.153	0.000
PNT232	85.419	-0.000	0.000
PNT233	92.000	0.000	0.000



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

APPROX TUBE LENGTH = 175.0 IN

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

SEI23-115	AR	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL	SPECIFICATION	FIND NO
			-1	COOLANT TUBE 11-1	316L SS 5/16"-.032 WALL	SEE NOTE 4	I
				NEXT ASSEMBLY	PARTS LIST		

**-1 COOLANT TUBE 11-1**  
SCALE .125

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

SCALE NOTED		DES: P. GORANSON	4-22-05	Oak Ridge National Laboratory	
TOLERANCES UNLESS OTHERWISE SPECIFIED		DRW: G. MCGINNIS	4-22-05	managed for the DEPARTMENT OF ENERGY under U.S. GOVERNMENT contract DE-AC05-00OR22725	
FRACTIONS: : DEPT: :		CHK: G. H. JONES	05-04-05	UT-BATTELLE, LLC. Oak Ridge, Tennessee	
XX DECIMALS ±.01		SECT: :		PROJECT NAME: NATIONAL COMPACT STELLARATOR EXPERIMENT	
XXX DECIMALS ±.005		DEPT: :		VACUUM VESSEL HEATING/COOLING	
ANGLES ±0°15'		PE: :		COOLANT TUBE 11-1	
BREAK SHARP EDGES OR MAX FINISH .125 UNLESS OTHERWISE SPECIFIED		CR: :		DETAIL	
		PJ: :		VERSION NO. 0	
		RD: :		PLANT ORNL	
		PPPL DRFT: :		BLDG 5700	
		FL: :		SHT 3	
		OF: :		TYPE I	
		CLASS: :		S U	
		DATE: :		REV 1	
		DRAWING APPROVALS: :		SEI23-116	
		DATE: :		Fabrication	