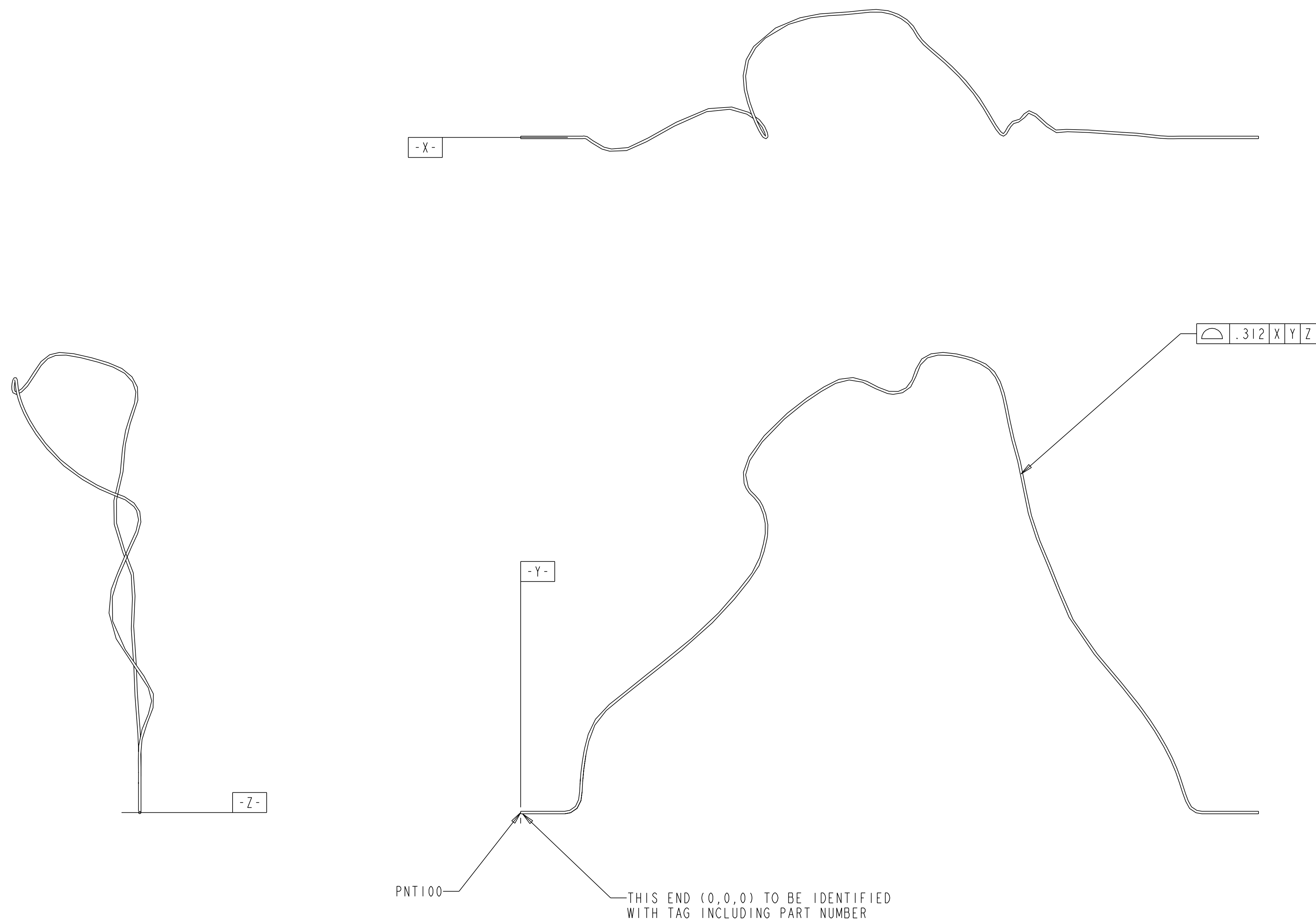


- NOTES
1. INTERPRET DIMENSIONS AND TOLERANCES PER ANSI Y14.5M.
 2. DIMENSIONS ARE IN INCHES.
 3. FABRICATION AND MATERIALS PER NCSX-CSPEC-123-01
 4. PROFILE TOLERANCE OF TUBE SURFACE IS BILATERAL, I.E. 0.156" ANY DIRECTION OFF REFERENCE SURFACE.
 5. ALL TUBE BEND RADII ARE 5/8" TO CENTERLINE OF TUBE.
 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	X	Y	Z
PNT100	0.000	0.000	0.000
PNT101	5.487	-0.000	-0.000
PNT102	6.488	0.280	0.000
PNT103	7.197	1.039	0.000
PNT104	7.433	1.902	0.000
PNT105	7.589	4.261	0.000
PNT106	7.735	5.554	-0.000
PNT107	7.860	6.491	-0.000
PNT108	8.039	7.534	-0.025
PNT109	8.390	9.087	0.071
PNT110	8.753	10.209	0.396
PNT111	9.126	11.014	0.709
PNT112	9.655	11.833	1.054
PNT113	10.241	12.518	1.324
PNT114	10.906	13.153	1.522
PNT115	11.695	13.814	1.634
PNT116	12.362	14.335	1.630
PNT117	13.174	14.963	1.495
PNT118	14.097	15.698	1.172
PNT119	14.981	16.423	0.737
PNT120	15.792	17.078	0.301
PNT121	16.881	17.929	-0.297
PNT122	17.695	18.564	-0.758
PNT123	18.437	19.149	-1.181
PNT124	19.313	19.849	-1.671
PNT125	20.123	20.508	-2.103
PNT126	20.932	21.185	-2.506
PNT127	21.742	21.885	-2.867
PNT128	22.687	22.734	-3.220
PNT129	23.492	23.491	-3.452
PNT130	24.222	24.210	-3.600
PNT131	24.938	24.954	-3.682
PNT132	25.513	25.576	-3.697
PNT133	26.078	26.206	-3.666
PNT134	26.630	26.844	-3.589
PNT135	27.161	27.493	-3.469
PNT136	27.720	28.229	-3.289
PNT137	28.208	28.888	-3.077
PNT138	28.758	29.590	-2.775
PNT139	29.283	30.286	-2.420
PNT140	29.726	31.137	-2.035
PNT141	30.039	32.222	-1.633
PNT142	30.385	33.350	-1.198
PNT143	30.579	34.133	-0.704
PNT144	30.693	35.064	-0.300
PNT145	30.649	36.049	-0.042
PNT146	30.449	37.070	-0.028
PNT147	30.184	37.904	-0.296
PNT148	29.798	38.647	-0.984
PNT149	29.182	39.375	-2.365
PNT150	28.602	39.971	-3.854
PNT151	28.356	40.297	-4.597
PNT152	28.163	40.677	-5.329
PNT153	28.016	41.080	-6.059
PNT154	27.915	41.554	-6.866
PNT155	27.887	41.956	-7.503
PNT156	27.921	42.433	-8.201
PNT157	28.011	42.882	-8.799
PNT158	28.206	43.470	-9.507
PNT159	28.453	44.019	-10.104
PNT160	28.759	44.579	-10.660
PNT161	29.075	45.083	-11.123
PNT162	29.473	45.651	-11.609
PNT163	29.860	46.155	-12.013
PNT164	30.327	46.719	-12.439
PNT165	30.824	47.280	-12.835
PNT166	31.288	47.773	-13.163
PNT167	32.086	48.564	-13.649
PNT168	32.936	49.337	-14.071
PNT169	33.618	49.921	-14.354
PNT170	34.393	50.551	-14.628
PNT171	35.269	51.218	-14.880
PNT172	36.100	51.806	-15.067
PNT173	37.034	52.423	-15.224
PNT174	38.070	53.065	-15.323
PNT175	39.052	53.623	-15.356
PNT176	40.202	54.019	-15.443
PNT177	41.227	54.099	-15.552
PNT178	42.428	53.913	-15.665
PNT179	43.388	53.536	-15.747
PNT180	44.455	52.940	-15.806
PNT181	45.387	52.499	-15.743
PNT182	46.369	52.318	-15.486
PNT183	47.469	52.460	-14.984
PNT184	48.400	53.063	-14.294
PNT185	48.937	53.945	-13.645
PNT186	49.300	54.936	-13.026
PNT187	49.638	55.752	-12.466
PNT188	50.109	56.460	-11.899
PNT189	50.970	57.024	-11.088
PNT190	51.970	57.210	-10.256
PNT191	53.256	57.155	-9.155
PNT192	54.332	57.048	-8.106
PNT193	55.712	56.782	-6.575
PNT194	57.397	56.091	-4.380
PNT195	58.541	55.320	-2.546
PNT196	59.504	54.015	-0.910
PNT197	60.156	52.232	-0.312
PNT198	60.611	50.139	-0.793
PNT199	61.151	47.610	-1.545
PNT200	61.539	45.928	-1.948
PNT201	62.317	43.070	-2.153
PNT202	62.805	40.648	-2.672
PNT203	63.220	38.270	-3.150
PNT204	63.941	35.401	-3.078
PNT205	64.768	33.171	-2.460
PNT206	65.530	31.591	-1.594
PNT207	66.288	29.844	-0.955
PNT208	66.893	28.119	-0.966
PNT209	67.726	26.008	-1.036
PNT210	68.539	24.372	-0.907
PNT211	69.531	22.687	-0.823
PNT212	70.695	21.037	-0.734
PNT213	71.831	19.603	-0.659
PNT214	73.133	18.059	-0.591
PNT215	74.485	16.474	-0.520
PNT216	76.163	14.422	-0.429
PNT217	77.821	12.194	-0.329
PNT218	80.449	8.045	-0.000
PNT219	81.378	6.107	-0.000
PNT220	81.950	4.749	-0.000
PNT221	82.566	3.078	-0.000
PNT222	83.095	1.378	0.000
PNT223	83.509	0.624	0.000
PNT224	84.216	0.136	0.000
PNT225	84.943	0.000	0.000
PNT226	92.000	0.000	0.000



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

APPROX TUBE LENGTH = 178.8 IN

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

AR	CAGE CODE	PART OR IDENTIFYING NO	NOMENCLATURE OR DESCRIPTION	MATERIAL	SPECIFICATION	FIND NO
3	AR	-1	COOLANT TUBE 10-1	316L SS 5/16"-.032 WALL	SEE NOTE 4	1

-1 COOLANT TUBE 10-1
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 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 10-1 DETAIL
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 :	PPPL DRFT
ANGLES ±0°15'	PE :	VERSION NO. 0
BREAK SHARP EDGES OR MAX FINISH .125 UNLESS OTHERWISE SPECIFIED	CR :	PLANT ORNL
	PJ :	BLDG 5700
	RD :	FL 3
	RE :	SHT 1
		OF 1
		TYPE S
		CLASS U
		REV 1
		RELEASE LEVEL Fabrication
		SEI23-111