

TUBE CONFIGURATION (External Pressure)

Inner Diameter : 5.2500 in
 Outer Diameter : 5.8750 in
 Wall Thickness : 0.31250 in
 Tube Length : 16.000 in

Weight in air : 6.3413 kg
 Weight in water: -0.94597 kg

Failure Mode: Thin Wall Buckling at 9122.2 psi by 2 nodes

Shell failure at 13840 psi (Thick wall eq's)
 Seat failure N/A
 Shear failure N/A

TITANIUM, Ti-6Al-4V Properties:

Yield Strength : 119 Ksi
 Elastic Modulus : 16 Mpsi
 Density : 0.16 lb/cu in
 Poisson's Ratio : 0.31
 Comments :
 Annealed Condition Compressive Young's Modulus =
 16.4 Mpsi

Tube distortion values:

Pressure Kbar	Depth m (sea)	Max Axial Stress, psi	Max Hoop Stress, psi	Max Equiv Stress, psi	d ID cm
0.068948	685.44	-4964.0	-9928.1	8598.0	-0.0069919
0.13790	1368.8	-9928.1	-19856	17196	-0.013984
0.20684	2050.1	-14892	-29784	25794	-0.020976
0.27579	2729.4	-19856	-39712	34392	-0.027968
0.34474	3406.7	-24820	-49640	42990	-0.034960
0.41369	4082.0	-29784	-59569	51588	-0.041951
0.48263	4755.3	-34748	-69497	60186	-0.048943
0.55158	5426.6	-39712	-79425	68784	-0.055935
0.62053	6096.0	-44676	-89353	77382	-0.062927
0.62895*	6177.6	-45283	-90566	78432	-0.063781
0.68948*	6763.5	-49640	-99281	85980	-0.069919
0.75842*	7429.0	-54604	-109210	94578	-0.076911
0.82737*	8092.7	-59569	-119140	103180	-0.083903
0.89632*	8754.4	-64533	-129070	111770	-0.090895
0.96527*	9414.3	-69497	-138990	120370	-0.097887
1.0342*	10072	-74461	-148920	128970	-0.10488
1.1032*	10729	-79425	-158850	137570	-0.11187
1.1721*	11383	-84389	-168780	146170	-0.11886
1.2411*	12036	-89353	-178710	154760	-0.12585
1.3100*	12686	-94317	-188630	163360	-0.13285
1.3790*	13336	-99281	-198560	171960	-0.13984

* = after housing failure

Tube distortion values:

d OD cm	d Length cm
-0.0066025	-0.0047913
-0.013205	-0.0095826
-0.019807	-0.014374
-0.026410	-0.019165
-0.033012	-0.023956
-0.039615	-0.028748
-0.046217	-0.033539
-0.052820	-0.038330
-0.059422	-0.043122
-0.060229	-0.043707
-0.066025	-0.047913
-0.072627	-0.052704
-0.079230	-0.057496
-0.085832	-0.062287
-0.092435	-0.067078
-0.099037	-0.071869
-0.10564	-0.076661
-0.11224	-0.081452
-0.11884	-0.086243
-0.12545	-0.091035
-0.13205	-0.095826

* = after housing failure