

TUBE CONFIGURATION (External Pressure)

Inner Diameter : 5.2500 in
 Outer Diameter : 6.5000 in
 Wall Thickness : 0.62500 in
 Tube Length : 16.000 in

Weight in air : 8.2045 kg
 Weight in water: -0.71572 kg

Failure Mode: Shell failure at 7024.7 psi (Thick wall eq's)

Thin Wall Buckling at 34527 psi by 2 nodes
 Seat failure N/A
 Shear failure N/A

ALUMINUM, 6061-T6 Properties:

Yield Strength : 35 Ksi
 Elastic Modulus : 9.9 Mpsi
 Density : 0.098 lb/cu in
 Poisson's Ratio : 0.33

Comments :

Compressive Young's Modulus = 10.1 Mpsi Compressive
 Yield Strength = 34 Ksi Minimum Welded Yield Strength
 = 15 kpsi

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	-2876.6	-5753.2	4982.4	-0.0064707
0.13790	1368.8	-5753.2	-11506	9964.8	-0.012941
0.20684	2050.1	-8629.8	-17260	14947	-0.019412
0.27579	2729.4	-11506	-23013	19930	-0.025883
0.34474	3406.7	-14383	-28766	24912	-0.032354
0.41369	4082.0	-17260	-34519	29894	-0.038824
0.48263	4755.3	-20136	-40272	34877	-0.045295
0.48434*	4771.9	-20207	-40415	35000	-0.045455
0.55158*	5426.6	-23013	-46026	39859	-0.051766
0.62053*	6096.0	-25889	-51779	44842	-0.058237
0.68948*	6763.5	-28766	-57532	49824	-0.064707
0.75842*	7429.0	-31643	-63285	54807	-0.071178
0.82737*	8092.7	-34519	-69038	59789	-0.077649
0.89632*	8754.4	-37396	-74791	64771	-0.084119
0.96527*	9414.3	-40272	-80545	69754	-0.090590
1.0342*	10072	-43149	-86298	74736	-0.097061
1.1032*	10729	-46026	-92051	79719	-0.10353
1.1721*	11383	-48902	-97804	84701	-0.11000
1.2411*	12036	-51779	-103560	89683	-0.11647
1.3100*	12686	-54655	-109310	94666	-0.12294
1.3790*	13336	-57532	-115060	99648	-0.12941

* = after housing failure

Tube distortion values:

d OD cm	d Length cm
-0.0057934	-0.0040149
-0.011587	-0.0080298
-0.017380	-0.012045
-0.023173	-0.016060
-0.028967	-0.020075
-0.034760	-0.024089
-0.040554	-0.028104
-0.040697	-0.028204
-0.046347	-0.032119
-0.052140	-0.036134
-0.057934	-0.040149
-0.063727	-0.044164
-0.069520	-0.048179
-0.075314	-0.052194
-0.081107	-0.056209
-0.086901	-0.060224
-0.092694	-0.064239
-0.098487	-0.068254
-0.10428	-0.072268
-0.11007	-0.076283
-0.11587	-0.080298

* = after housing failure