Table 1 Glossary of the variables for the generic case, “balloon”. These variables and their definitions, roles, etc. are established by the GENOPT user during the interactive session, GENTEXT. This table is part of the balloon.DEF file generated automatically by GENTEXT.

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ARRAY NUMBER OF PROMPT VARIABLE

? (ROWS,COLS) ROLE NUMBER NAME DEFINITION OF VARIABLE

(balloon.PRO)

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n ( 0, 0) 2 10 LENGTH = length of the cylindrical shell

n ( 0, 0) 2 15 RADIUS = inner radius of the cylindrical balloon

n ( 0, 0) 2 20 NMODUL = number of modules over 90 degrees

n ( 0, 0) 2 30 IEMOD1 = material number in EMOD1(IEMOD1)

y ( 10, 0) 2 35 EMOD1 = elastic modulus, meridional direction

y ( 10, 0) 2 40 EMOD2 = elastic modulus, circumferential direction

y ( 10, 0) 2 45 G12 = in-plane shear modulus

y ( 10, 0) 2 50 G13 = out-of-plane (s,z) shear modulus

y ( 10, 0) 2 55 G23 = out-of-plane (y,z) shear modulus

y ( 10, 0) 2 60 NU = Poisson ratio

y ( 10, 0) 2 65 ALPHA1 = meridional coef. thermal expansion

y ( 10, 0) 2 70 ALPHA2 = circumf.coef.thermal expansion

y ( 10, 0) 2 75 TEMPER = delta-T from fabrication temperature

y ( 10, 0) 2 80 DENSTY = weight density of material

n ( 0, 0) 1 90 HEIGHT = height from inner to outer membranes

n ( 0, 0) 1 95 RINNER = radius of curvature of inner membrane

n ( 0, 0) 1 100 ROUTER = radius of curvature of outer membrane

n ( 0, 0) 1 105 TINNER = thickness of the inner curved membrane

n ( 0, 0) 1 110 TOUTER = thickness of the outer curved membrane

n ( 0, 0) 1 115 TFINNR = thickness of inner truss-core segment

n ( 0, 0) 1 120 TFOUTR = thickness of the outer truss segment

n ( 0, 0) 1 125 TFWEBS = thickness of each truss-core web

n ( 0, 0) 2 135 NCASES = Number of load cases (number of environments)

y ( 20, 0) 3 140 PINNER = pressure inside the inner membrane

y ( 20, 0) 3 145 PMIDDL = pressure between inner and outer membranes

y ( 20, 0) 3 150 POUTER = pressure outside the outer membrane

y ( 20, 0) 4 160 GENBUK = general buckling load factor

y ( 20, 0) 5 165 GENBUKA= allowable for general buckling load factor

y ( 20, 0) 6 170 GENBUKF= general buckling factor of safety

n ( 0, 0) 2 175 JSTRM1 = stress component number in STRM1(NCASES,JSTRM1)

y ( 20, 5) 4 180 STRM1 = stress component in material 1

y ( 20, 5) 5 185 STRM1A = allowable stress in material 1

y ( 20, 5) 6 190 STRM1F = factor of safety for stress in material 1

y ( 20, 5) 4 195 STRM2 = stress component in material 2

y ( 20, 5) 5 200 STRM2A = allowable for stress in material 2

y ( 20, 5) 6 205 STRM2F = factor of safety for stress in material 2

y ( 20, 5) 4 210 STRM3 = stress component in material 3

y ( 20, 5) 5 215 STRM3A = allowable for stress in material 3

y ( 20, 5) 6 220 STRM3F = factor of safety for stress in material 3

n ( 0, 0) 7 230 WEIGHT = weight/length of the balloon

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