Table 35 Input file, ***.BEG**, for the "**BEGIN**" processor for an **imperfect isogrid-stiffened equivalent ellipsoidal shell** in which there are two load sets:
Load set 1=+mode 1 and +mode 2 axisymmetric imperfections, one at a time
Load set 2=-mode 1 and -mode 2 axisymmetric imperfections, one at a time
In the directory, /home/progs/genopt/case/torisph, the input file name is "eqellipse.stiffened.BEG". Copy this file to /home/progs/genoptcase and change the case name from "eqellipse.stiffened" to "eqellipse" before processing. The shell has an initial imperfection with amplitude, Wimp= (+ or -) 0.2 inch. **(/home/progs = the directory where the GENOPT system is stored on the writer's computer).**

```
==========================================================================
     n       $ Do you want a tutorial session and tutorial output?
       13    $ number of x-coordinates: npoint
       13    $ Number Ixinpu  of rows in the array  xinput: Ixinpu
  0.000000   $ x-coordinates for ends of segments: xinput( 1)
  2.554500   $ x-coordinates for ends of segments: xinput( 2)
  5.666450   $ x-coordinates for ends of segments: xinput( 3)
  8.753630   $ x-coordinates for ends of segments: xinput( 4)
  11.79770   $ x-coordinates for ends of segments: xinput( 5)
  14.77232   $ x-coordinates for ends of segments: xinput( 6)
  17.63477   $ x-coordinates for ends of segments: xinput( 7)
  19.63631   $ x-coordinates for ends of segments: xinput( 8)
  21.26065   $ x-coordinates for ends of segments: xinput( 9)
  22.70426   $ x-coordinates for ends of segments: xinput(10)
  23.86535   $ x-coordinates for ends of segments: xinput(11)
  24.54286   $ x-coordinates for ends of segments: xinput(12)
  24.75000   $ x-coordinates for ends of segments: xinput(13)
  24.75000   $ length of semi-major axis: ainput
  12.37500   $ length of semi-minor axis of ellipse: binput
       11    $ number of nodal points per segment: nodes
  17.63477   $ max. x-coordinate for x-coordinate callouts: xlimit
 0.4000000   $ skin thickness at xinput: THKSKN( 1)
 0.4000000   $ skin thickness at xinput: THKSKN( 2)
 0.4000000   $ skin thickness at xinput: THKSKN( 3)
 0.4000000   $ skin thickness at xinput: THKSKN( 4)
 0.4000000   $ skin thickness at xinput: THKSKN( 5)
 0.4000000   $ skin thickness at xinput: THKSKN( 6)
 0.4000000   $ skin thickness at xinput: THKSKN( 7)
 0.4000000   $ skin thickness at xinput: THKSKN( 8)
 0.4000000   $ skin thickness at xinput: THKSKN( 9)
 0.4000000   $ skin thickness at xinput: THKSKN(10)
 0.4000000   $ skin thickness at xinput: THKSKN(11)
 0.4000000   $ skin thickness at xinput: THKSKN(12)
 0.4000000   $ skin thickness at xinput: THKSKN(13)
  1.000000   $ height of isogrid members at xinput: HIGHST( 1)
  1.000000   $ height of isogrid members at xinput: HIGHST( 2)
  1.000000   $ height of isogrid members at xinput: HIGHST( 3)
  1.000000   $ height of isogrid members at xinput: HIGHST( 4)
  1.000000   $ height of isogrid members at xinput: HIGHST( 5)
  1.000000   $ height of isogrid members at xinput: HIGHST( 6)
  1.000000   $ height of isogrid members at xinput: HIGHST( 7)
  1.000000   $ height of isogrid members at xinput: HIGHST( 8)
  1.000000   $ height of isogrid members at xinput: HIGHST( 9)
```

```
 1.000000  $ height of isogrid members at xinput: HIGHST(10)
 1.000000  $ height of isogrid members at xinput: HIGHST(11)
 1.000000  $ height of isogrid members at xinput: HIGHST(12)
 1.000000  $ height of isogrid members at xinput: HIGHST(13)
 3.000000  $ spacing of the isogrid members: SPACNG
0.1000000  $ thickness of an isogrid stiffening member: THSTIF
0.2000000  $ thickness of the cylindrical shell: THKCYL
 24.75000  $ radius of the cylindrical shell: RADCYL
 0.000000  $ length of the cylindrical segment: LENCYL
0.2000000  $ amplitude of the axisymmetric imperfection: WIMP
0.1600E+08 $ elastic modulus: EMATL
0.2500     $ Poisson ratio of material: NUMATL
0.4155E-03 $ mass density of material: DNMATL
       2   $ strategy control for imperfection shapes: IMODE
       2   $ Number NCASES  of load cases (environments): NCASES
 460.0000  $ uniform external pressure: PRESS( 1)
 460.0000  $ uniform external pressure: PRESS( 2)
 550.0000  $ allowable pressure for axisymmetric collapse: CLAPS1A(1)
 550.0000  $ allowable pressure for axisymmetric collapse: CLAPS1A(2)
 1.000000  $ factor of safety for axisymmetric collapse: CLAPS1F(1)
 1.000000  $ factor of safety for axisymmetric collapse: CLAPS1F(2)
 1.000000  $ allowable general buckling load factor (use 1.0):GENBK1A(1)
 1.000000  $ allowable general buckling load factor (use 1.0):GENBK1A(2)
 1.000000  $ factor of safety for general buckling: GENBK1F( 1)
 1.000000  $ factor of safety for general buckling: GENBK1F( 2)
       2   $ Number JSKNBK1 of columns in the array, SKNBK1: JSKNBK1
 1.000000  $ allowable buckling load factor: SKNBK1A( 1, 1)
 1.000000  $ allowable buckling load factor: SKNBK1A( 2, 1)
 1.000000  $ allowable buckling load factor: SKNBK1A( 1, 2)
 1.000000  $ allowable buckling load factor: SKNBK1A( 2, 2)
 1.000000  $ factor of safety for skin buckling: SKNBK1F( 1, 1)
 1.000000  $ factor of safety for skin buckling: SKNBK1F( 2, 1)
 1.000000  $ factor of safety for skin buckling: SKNBK1F( 1, 2)
 1.000000  $ factor of safety for skin buckling: SKNBK1F( 2, 2)
 1.000000  $ allowable for isogrid stiffener buckling: STFBK1A( 1, 1)
 1.000000  $ allowable for isogrid stiffener buckling: STFBK1A( 2, 1)
 1.000000  $ allowable for isogrid stiffener buckling: STFBK1A( 1, 2)
 1.000000  $ allowable for isogrid stiffener buckling: STFBK1A( 2, 2)
 1.000000  $ factor of safety, isogrid stiffener buckling: STFBK1F(1,1)
 1.000000  $ factor of safety, isogrid stiffener buckling: STFBK1F(2,1)
 1.000000  $ factor of safety, isogrid stiffener buckling: STFBK1F(1,2)
 1.000000  $ factor of safety, isogrid stiffener buckling: STFBK1F(2,2)
 120000.0  $ allowable stress for the shell skin: SKNST1A( 1, 1)
 120000.0  $ allowable stress for the shell skin: SKNST1A( 2, 1)
 120000.0  $ allowable stress for the shell skin: SKNST1A( 1, 2)
 120000.0  $ allowable stress for the shell skin: SKNST1A( 2, 2)
 1.000000  $ factor of safety for skin stress: SKNST1F( 1, 1)
 1.000000  $ factor of safety for skin stress: SKNST1F( 2, 1)
 1.000000  $ factor of safety for skin stress: SKNST1F( 1, 2)
 1.000000  $ factor of safety for skin stress: SKNST1F( 2, 2)
 120000.0  $ allowable stress in isogrid stiffeners: STFST1A( 1, 1)
 120000.0  $ allowable stress in isogrid stiffeners: STFST1A( 2, 1)
 120000.0  $ allowable stress in isogrid stiffeners: STFST1A( 1, 2)
 120000.0  $ allowable stress in isogrid stiffeners: STFST1A( 2, 2)
```

```
 1.000000  $ factor of safety for stress in isogrid member: STFST1F(1,1)
 1.000000  $ factor of safety for stress in isogrid member: STFST1F(2,1)
 1.000000  $ factor of safety for stress in isogrid member: STFST1F(1,2)
 1.000000  $ factor of safety for stress in isogrid member: STFST1F(2,2)
0.7000000  $ allowable normal (axial) displacement at apex: WAPEX1A( 1)
0.7000000  $ allowable normal (axial) displacement at apex: WAPEX1A( 2)
 1.000000  $ factor of safety for WAPEX: WAPEX1F( 1)
 1.000000  $ factor of safety for WAPEX: WAPEX1F( 2)
 550.0000  $ allowable pressure for axisymmetric collapse: CLAPS2A( 1)
 550.0000  $ allowable pressure for axisymmetric collapse: CLAPS2A( 2)
 1.000000  $ factor of safety for axisymmetric collapse: CLAPS2F( 1)
 1.000000  $ factor of safety for axisymmetric collapse: CLAPS2F( 2)
 1.000000  $ allowable general buckling load factor (use 1.0):GENBK2A(1)
 1.000000  $ allowable general buckling load factor (use 1.0):GENBK2A(2)
 1.000000  $ factor of safety for general buckling: GENBK2F( 1)
 1.000000  $ factor of safety for general buckling: GENBK2F( 2)
       2   $ Number JSKNBK2 of columns in the array, SKNBK2: JSKNBK2
 1.000000  $ allowable skin buckling load factor (use 1.0):SKNBK2A(1,1)
 1.000000  $ allowable skin buckling load factor (use 1.0):SKNBK2A(2,1)
 1.000000  $ allowable skin buckling load factor (use 1.0):SKNBK2A(1,2)
 1.000000  $ allowable skin buckling load factor (use 1.0):SKNBK2A(2,2)
 1.000000  $ factor of safety for local skin buckling: SKNBK2F( 1, 1)
 1.000000  $ factor of safety for local skin buckling: SKNBK2F( 2, 1)
 1.000000  $ factor of safety for local skin buckling: SKNBK2F( 1, 2)
 1.000000  $ factor of safety for local skin buckling: SKNBK2F( 2, 2)
 1.000000  $ allowable for isogrid stiffener buckling: STFBK2A(1,1)
 1.000000  $ allowable for isogrid stiffener buckling: STFBK2A(2,1)
 1.000000  $ allowable for isogrid stiffener buckling: STFBK2A(1,2)
 1.000000  $ allowable for isogrid stiffener buckling: STFBK2A(2,2)
 1.000000  $ factor of safety, isogrid stiffener buckling: STFBK2F(1,1)
 1.000000  $ factor of safety, isogrid stiffener buckling: STFBK2F(2,1)
 1.000000  $ factor of safety, isogrid stiffener buckling: STFBK2F(1,2)
 1.000000  $ factor of safety, isogrid stiffener buckling: STFBK2F(2,2)
 120000.0  $ allowable stress for the shell skin: SKNST2A( 1, 1)
 120000.0  $ allowable stress for the shell skin: SKNST2A( 2, 1)
 120000.0  $ allowable stress for the shell skin: SKNST2A( 1, 2)
 120000.0  $ allowable stress for the shell skin: SKNST2A( 2, 2)
 1.000000  $ factor of safety for skin stress: SKNST2F( 1, 1)
 1.000000  $ factor of safety for skin stress: SKNST2F( 2, 1)
 1.000000  $ factor of safety for skin stress: SKNST2F( 1, 2)
 1.000000  $ factor of safety for skin stress: SKNST2F( 2, 2)
 120000.0  $ allowable stress in isogrid stiffeners: STFST2A( 1, 1)
 120000.0  $ allowable stress in isogrid stiffeners: STFST2A( 2, 1)
 120000.0  $ allowable stress in isogrid stiffeners: STFST2A( 1, 2)
 120000.0  $ allowable stress in isogrid stiffeners: STFST2A( 2, 2)
 1.000000  $ factor of safety for stress in isogrid member: STFST2F(1,1)
 1.000000  $ factor of safety for stress in isogrid member: STFST2F(2,1)
 1.000000  $ factor of safety for stress in isogrid member: STFST2F(1,2)
 1.000000  $ factor of safety for stress in isogrid member: STFST2F(2,2)
0.7000000  $ allowable normal (axial) displacement at apex: WAPEX2A( 1)
0.7000000  $ allowable normal (axial) displacement at apex: WAPEX2A( 2)
 1.000000  $ factor of safety for WAPEX: WAPEX2F( 1)
 1.000000  $ factor of safety for WAPEX: WAPEX2F( 2)
```