

NASCART-GT Output Files

Description: Surface Parameter Output File

File Name: bodytab.dat

File Type: ascii

Note: Writes out table of key solution variables (x , y , z , C_p , T , C_f , q_w) for each surface panel. Near the end of this file, this file also writes out computed force coefficients, moment coefficients and all freestream quantities used. This file is written every “nwrite” number of iterations (where “nwrite” is specified by the user in input.dat).

Description: Residual History File

File Name: resid.dat

File Type: ascii

Note: Writes out RMS residuals as a function of iteration number. This file is written at the end of every iteration.

Description: Aerodynamic Loads History File

File Name: loads.dat

File Type: ascii

Note: Writes out drag coefficient and lift coefficient as a function of iteration number. This file is updated every “nlwrite” number of iterations (where “nlwrite” is specified by the user in input.dat).

Description: Restart File

File Name: restart.dat

File Type: binary

Note: Uninterpolated values of stage vectors, grid points, areas and other parameters needed to restart iteration process from previous solution. When irestart is set to one, this file is read in so that the solution can continue from the previous point. This file is written every “nwrite” number of iterations (where “nwrite” is specified by the user in input.dat).

Description: Surface Geometry Neighbor Pointer File

File Name: bodynext.dat

File Type: ascii

Note: For each input surface panel, identifies up to 4 of its adjacent neighbors.

Description: X=Constant Plane Surface Output File

File Name: bodyx.dat

File Type: ascii

Note: Writes out table of key solution variables (x, y, z, Cp, T, Cf) for each surface panel along x=constant locations specified in xyzplanes.dat file.

Description: Y=Constant Plane Surface Output File

File Name: bodyy.dat

File Type: ascii

Note: Writes out table of key solution variables (x, y, z, Cp, T, Cf) for each surface panel along y=constant locations specified in xyzplanes.dat file.

Description: Z=Constant Plane Surface Output File

File Name: bodyz.dat

File Type: ascii

Note: Writes out table of key solution variables (x, y, z, Cp, T, Cf) for each surface panel along z=constant locations specified in xyzplanes.dat file.

Description: Original Surface Geometry Output File

File Name: bodyinc.dat

File Type: ascii

Note: Writes every node of the original geometry, but each panel is written in counter-clockwise order so that visual display is correct. Four corner points per panel are used.

Description: x,y,z values of the original surface panels in a binary file. Each panel has 4 nodes.

```
read(11,*) ncorn1
do 712 k = 1,npand
  do 710 nptt = 1,4
    read(11,*) npdum,xgrd(nnode),ygrd(nnode),zgrd(nnode),ndum
710 continue
712 continue
```

Note:

ncorn1=number of nodes for each computational surface panel. This must be four.

npand=number of original surface panel panels.

xgrd, ygrd and zgrd are the coordinates of the nodes.

npdum represents the panel number. This will be one for the first panel, two for the second, ...

After the nodes for last panel are written (panel number npand), another line appears that has a zero value for npdum, xgrd, ygrd and zgrd. This is the last line of the file.

These 4 nodes are written in clockwise order so that proper visualization of the panels will result.

Description: Cartesian Surface Geometry Output File

File Name: body.dat

File Type: ascii

Note: Writes nodes which represent the intersection of the solid bodies with the Cartesian grid. Each panel is written in counter-clockwise order with four corner points per panel.

Description: x,y,z values of the computational surface panels in a binary file. Each panel has 6 nodes.

```
read(11,*) ncorn1
do 712 k = 1,npand
  do 710 nptt = 1,6
    read(11,*) npdum,xgrd(nnode),ygrd(nnode),zgrd(nnode),ndum
710 continue
712 continue
```

Note:

ncorn1=number of nodes for each computational surface panel. This must be six.

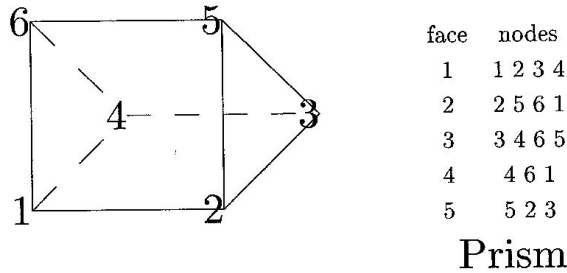
npand=number of computational surface panel panels.

xgrd, ygrd and zgrd are the coordinates of the nodes.

npdum represents the panel number. This will be one for the first panel, two for the second, ...

After the nodes for last panel are written (panel number npand), another line appears that has a zero value for npdum, xgrd, ygrd and zgrd. This is the last line of the file.

Although there are six nodes read in (suitable for "prism" or "wedge" format in visualization packages), only the first 4 nodes in body.dat are actually distinct. These first 4 nodes are written in clockwise order so that proper visualization of the panels will result. The nodes are written in the order shown below



Description: Cartesian Volume Grid Output File

File Name: grid.dat

File Type: binary

Note: Writes all nodes of the Cartesian volume grid.

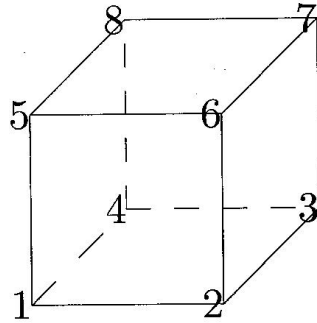
Description: x,y,z coordinates of volume grid in a binary file. Each cell has 8 nodes.

```
read(11) ncells
do 10 nc = 1, ncells
  do 9 nt = 1, 8
    read(11) xgrd(nnode), ygrd(nnode), zgrd(nnode)
  9 continue
10 continue
```

Note:

ncells=number of volume grid cells

xgrd, ygrd and zgrd are the coordinates of the nodes. The nodes are written out in the order shown below.



face	nodes
1	1 2 3 4
2	2 3 7 6
3	3 4 8 7
4	4 8 5 1
5	5 6 7 8
6	6 5 1 2

Hexahedron

Description: Original Surface Solution Output File

File Name: solbodyin.dat

File Type: binary

Note: Writes out state vector on the nodes represented by the bodyinc.dat file. Surface node state vectors are found through interpolation of the cell center values stored in the code.

Description: State vector values for the original surface panels in a binary file. Each panel has 4 nodes.

```

do 911 k = 1, nbpanel
  do 910 nptt = 1, 4
    if (iturb.ne.1) then
      read(11) q(1, nnode), q(2, nnode), q(3, nnode),
&          q(4, nnode), q(5, nnode), xicpan(nnode)
    else
      read(11) q(1, nnode), q(2, nnode), q(3, nnode),
&          q(4, nnode), q(5, nnode), q(6, nnode),
&          q(7, nnode), xicpan(nnode)
    endif
    910 continue
  911 continue

```

Note:

nbpanel=number of original surface panel panels.

q values represent the conserved state vector at the nodes.

The nodes are written out in the same order as in solbodyin.dat

Description: Cartesian Surface Solution Output File

File Name: solbody.dat

File Type: binary

Note: Writes out state vector on the nodes represented by the body.dat file. Surface node state vectors are found through interpolation of the cell center values stored in the code.

Description: State vector values for the computational surface panels in a binary file. Each panel has 6 nodes.

```
do 911 k = 1, npanel
  do 910 nptt = 1, 6
    if (iturb.ne.1) then
      read(11) q(1, nnode), q(2, nnode), q(3, nnode),
&          q(4, nnode), q(5, nnode), xicpan(nnode)
    else
      read(11) q(1, nnode), q(2, nnode), q(3, nnode),
&          q(4, nnode), q(5, nnode), q(6, nnode),
&          q(7, nnode), xicpan(nnode)
    endif
  910   continue
911  continue
```

Note:

npanel=number of computational surface panel panels.

q values represent the conserved state vector at the nodes.

The nodes are written out in the same order as in body.dat

Description: Cartesian Surface Viscous Parameter Output File

File Name: viscbody.dat

File Type: binary

Note: Writes out viscous variables at the centers of the Cartesian surface panels. Variables written include Cf, Local arc length, Local Edge Reynolds No., Displacement Thickness, Shape Factor, and vtype

Note: vtype=1 for attached laminar, 2 for separated laminar, 3 for attached turbulent, and 4 for separated turbulent.

Description: Cartesian Volume Solution Output File

File Name: sol.dat

File Type: binary

Note: Writes out state vector on the nodes represented by the grid.dat file. Nodal state vectors are found through interpolation of the cell center values stored in the code.

Description: State vector values for volume grid in a binary file. Each cell has 8 nodes.

```
do 210 nc = 1, ncells
  do 209 nt = 1, 8
    if (iturb.ne.1) then
      read(11) q(1, nnode), q(2, nnode), q(3, nnode),
&          q(4, nnode), q(5, nnode)
    else
      read(11) q(1, nnode), q(2, nnode), q(3, nnode),
&          q(4, nnode), q(5, nnode), q(6, nnode), q(7, nnode)
    endif
  209 continue
210 continue
```

Note:

ncells=number of volume grid cells

q values represent the conserved state vector at the nodes.

The nodes are written out in the same order as in grid.dat

Description: Update Flag for Visualization

File Name: timeout.dat

File Type: ascii

Note: Used to notify viscart when a new solution has been written. Also writes out drag coefficient, lift coefficient lift/drag ratio and reference area used in force coefficients. Note: viscart is a visualization package no longer supported with NASCART-GT.

Description: Hanging Node Data

File Name: hang.dat

File Type: binary

Note: Provided additional pointer information needed to improve visualization at hanging grid nodes.