

Summary of format for STARS CFD surface geometry file (*case.sur*)

case.sur contains the definition of the curve components, surface components, curve segments, and surface regions required for the geometrical description of the boundary of the computational domain to be discretized. This data is generated by the user either manually or with the help of a CAD system. It forms input for the module SURFACE. The curves and surfaces in this file can be visualized with the module XPLT. (Formatted)

This file is divided into two major sections. The top section of the file, shown below, defines the curve and surface components, which are also known as boundary curves and support surfaces. This section of the file contains the actual *xyz*-coordinates for all of the curves and surfaces needed to define the surface geometry of the problem.

```

%% Geometry Definition File – case.dat
# curve components → ncv          nsf ← # surface components
% Curve Components
curve ID # → idcv          itcv ← curve type #
# of points defining curve → nu
x11  y11  z11
      ⋮
xnu1 ynu1 znu1 ← nu points defining curve 1
      ⋮
idcv          itcv
nu
x1ncv y1ncv z1ncv ← nu points defining curve ncv
      ⋮
xnuncv ynuncv znuncv
surface ID # → % Surface Components
idsf          itsf ← surface type #
# of points in v-direction → nv          nw ← # of points in w-direction
x11  y11  z11
      ⋮
xnv1 ynv1 znv1 ← nv*nw points defining surface 1
      ⋮
x(nv*nw)1 y(nv*nw)1 z(nv*nw)1
      ⋮
idsf          itsf
nv          nw
x1nsf y1nsf z1nsf
      ⋮
xnvnsf ynvnsf znvnsf ← nv*nw points defining surface ncf
      ⋮
x(nv*nw)nsf y(nv*nw)nsf z(nv*nw)nsf

```

The bottom section of the file, shown below, defines the curve segments and surface regions, which are also known as curved edges and support regions. This section of the file is a set of integers which define the numbering scheme for the curve segments using the defined boundary curves and the surface regions using the defined surface components and curve segments.

