

Section-cut first steps

| Tutorial | |
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| Name: | Section-cut first steps |
| Description: | Introductory tutorial for using section cuts. |
| Program: | SAP2000 |
| Version: | all |
| Model ID: | na |
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Section cuts are useful for obtaining the resultant forces which act within a specified section-cut plane.

[Section cuts](#) may be defined using any of the following methods:

1. Define a quadrilateral cutting plane
2. Define a group
3. Draw the section cut within the graphical user interface

Each of these section-cut types may be implemented through the procedures described in the following sections:

On this page:

1. Define a quadrilateral cutting plane

Section-cut forces are the sum of [joint](#) forces for all joints which are:

- Included in the section-cut group;
- Within structural objects entirely cut by the quadrilateral plane; and
- Located on the specified side of the section cut.

Joint forces are then summed about the location specified as the Results Reported at the Location parameter.

The procedure for defining a quadrilateral cutting plane is as follows:

- Launch the Section Cut Data form by selecting Define > Section Cuts > Add Section Cut.
- Select Quadrilateral Cutting Planes, then define the plane by specifying its joint coordinates, as shown in Figure 1:

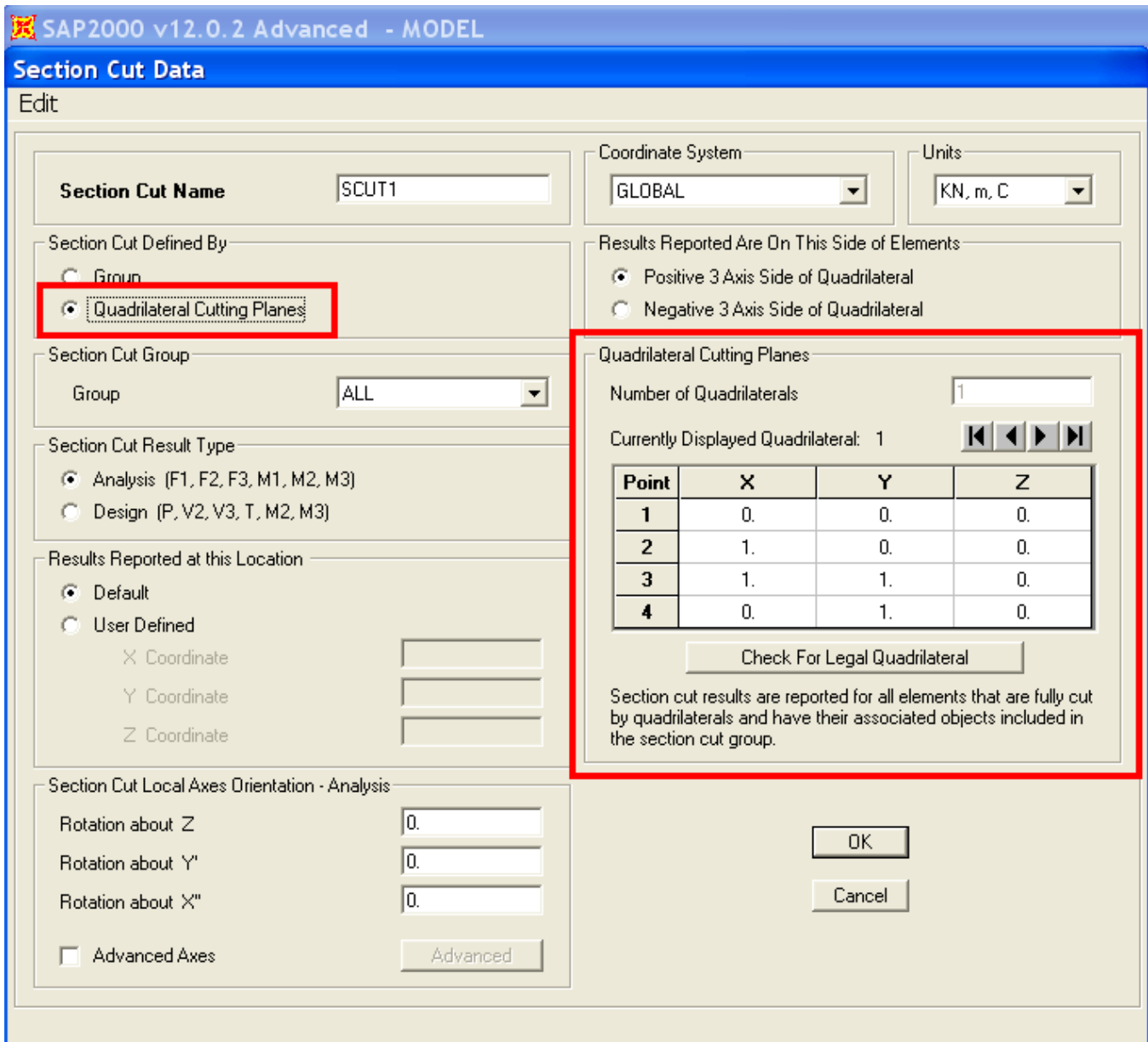


Figure 1 - Define a quadrilateral cutting plane

- For assistance with additional fields on this form, press F1 to access [Context Help](#).
- Once analysis is run, section-cut forces are available in tabular format by selecting Display > Show Tables > Analysis Results > Structure Output > Other Output Items > Table: Section Cut Forces - Analysis, as shown in Figure 2:

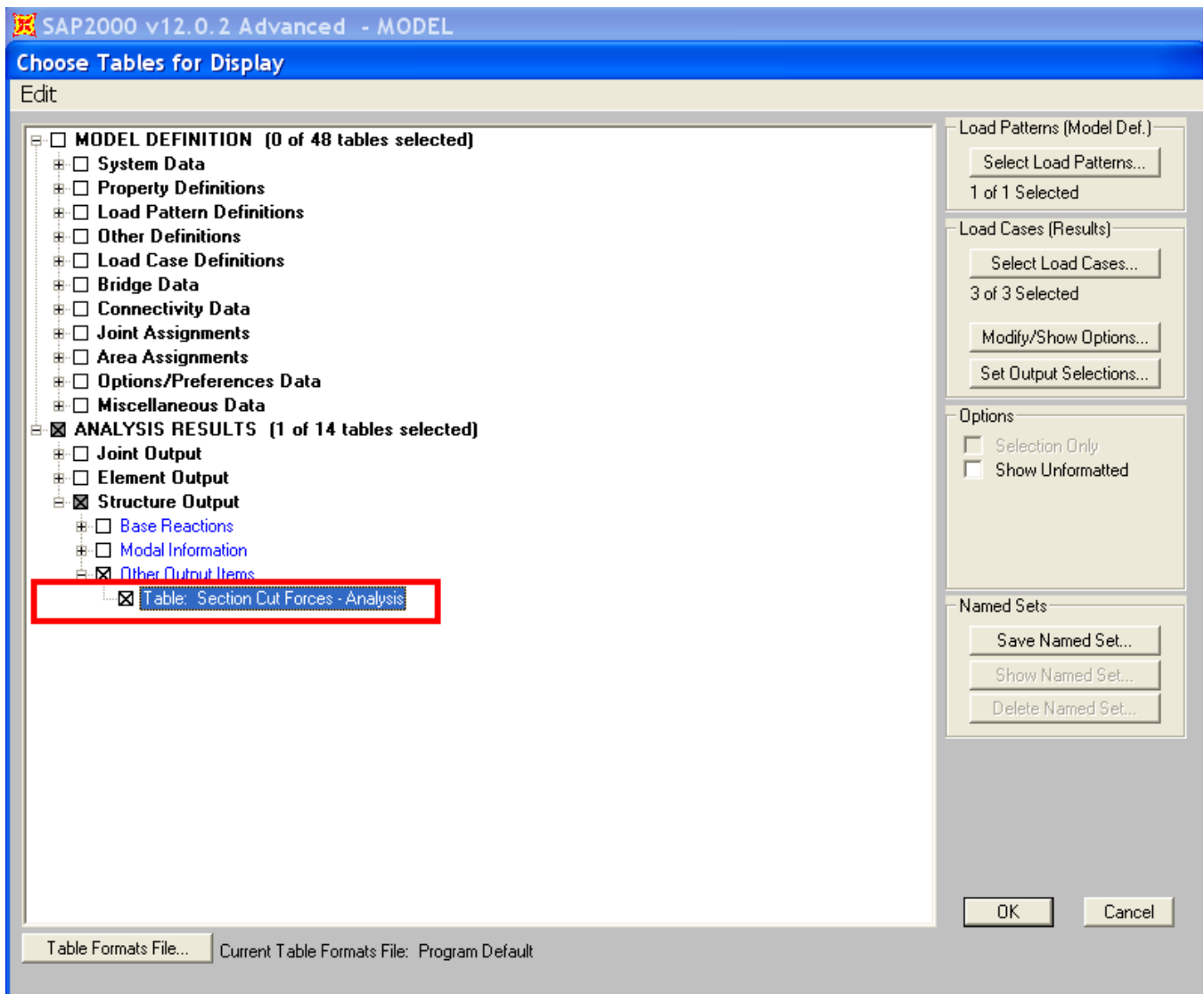


Figure 2 - Section-cut forces

2. Define a group

Section cuts may also be defined by specifying a group of structural objects. Here, section-cut forces represent the sum of **joint** forces within those **frame**, **shell**, and **link** objects which are included in the group. As shown in Figure 2, the Section Cut Group must include All joints for which forces should be summed.

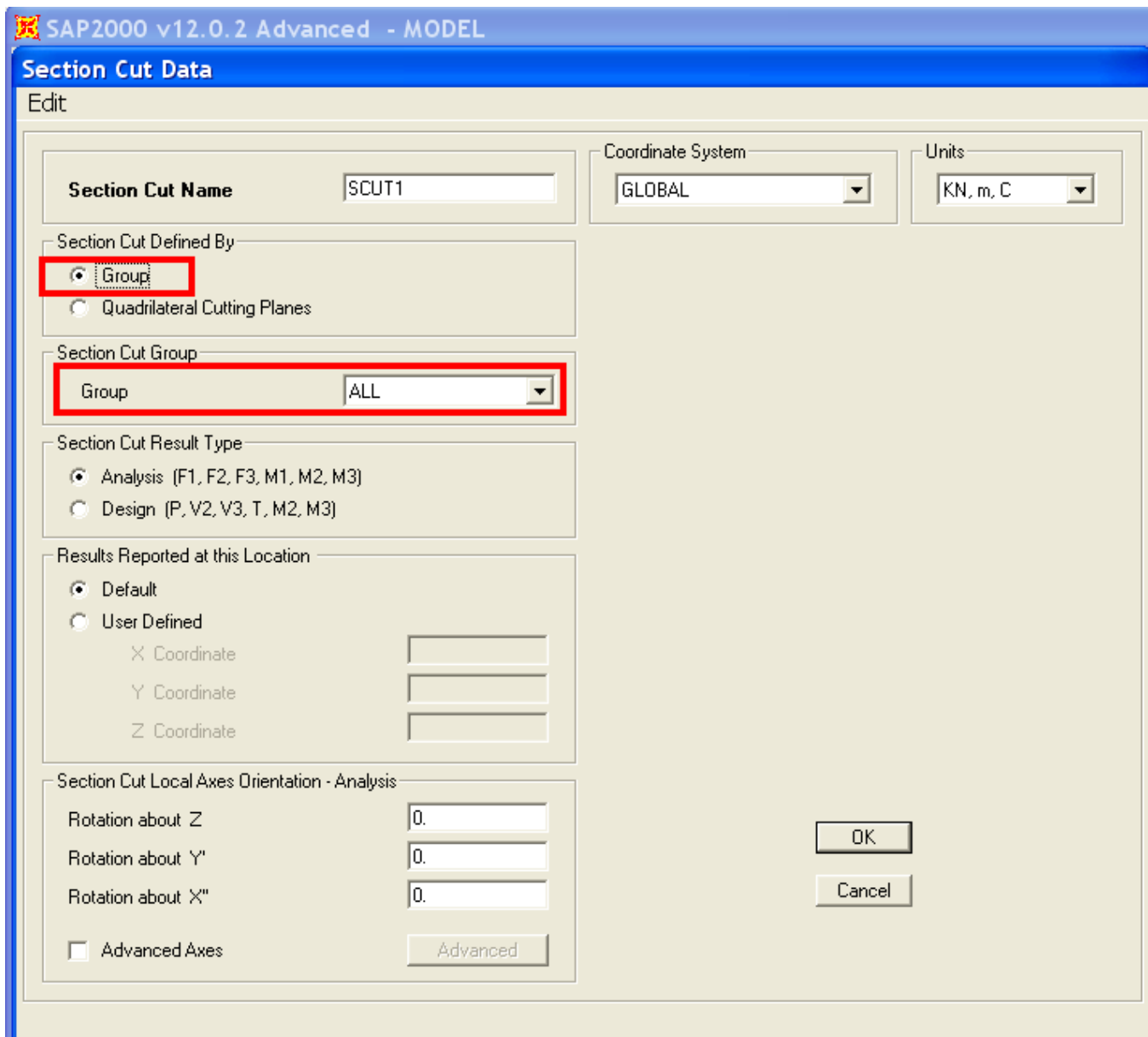


Figure 3 - Section-cut group

3. Draw the section cut within the graphical user interface

Section cuts may be drawn within the graphical user interface by selecting Draw > Draw Section Cut. Section-cut forces will then be displayed on the Section Cut Forces and Stresses form shown in Figure 3:

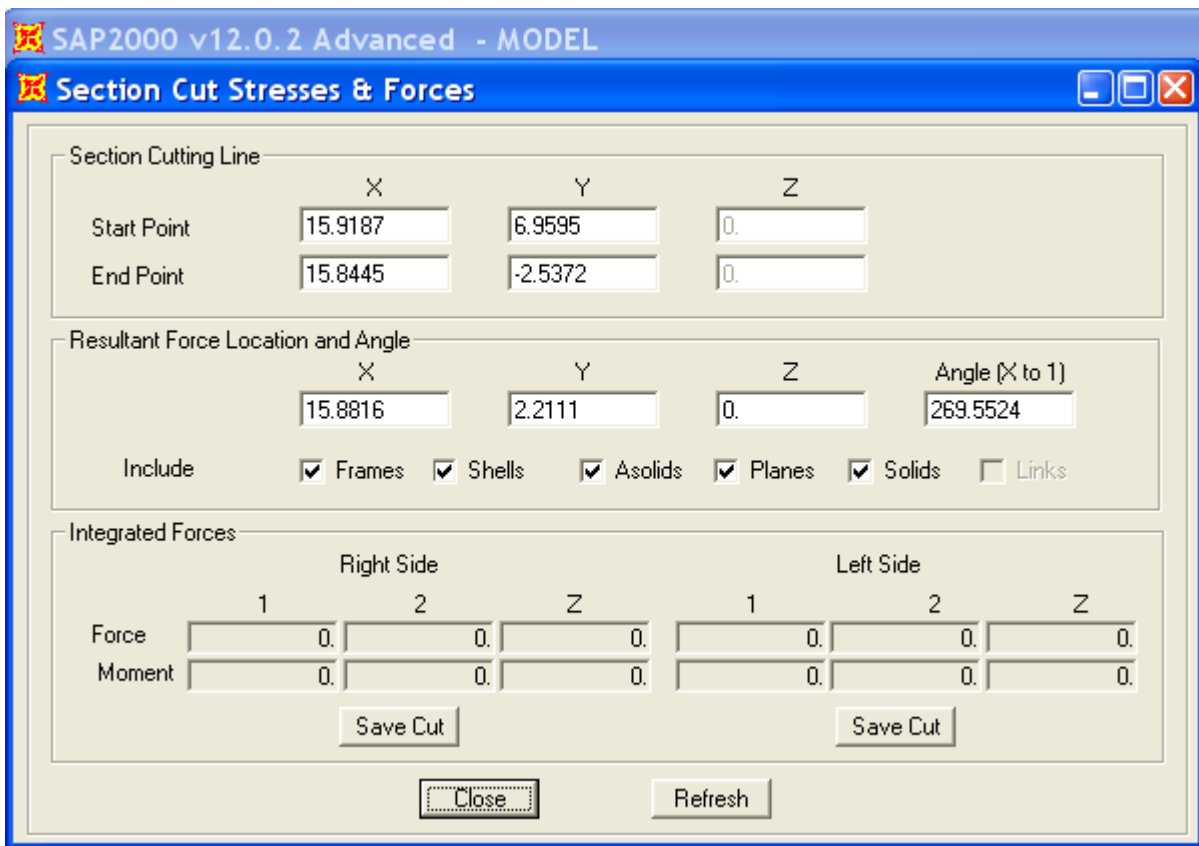


Figure 4 - Directly drawn section cuts

See Also

- [Section cuts](#) section
- [Context Help](#) (Output Conventions)
- [Context Help](#) (Example Problems B, N, and S)