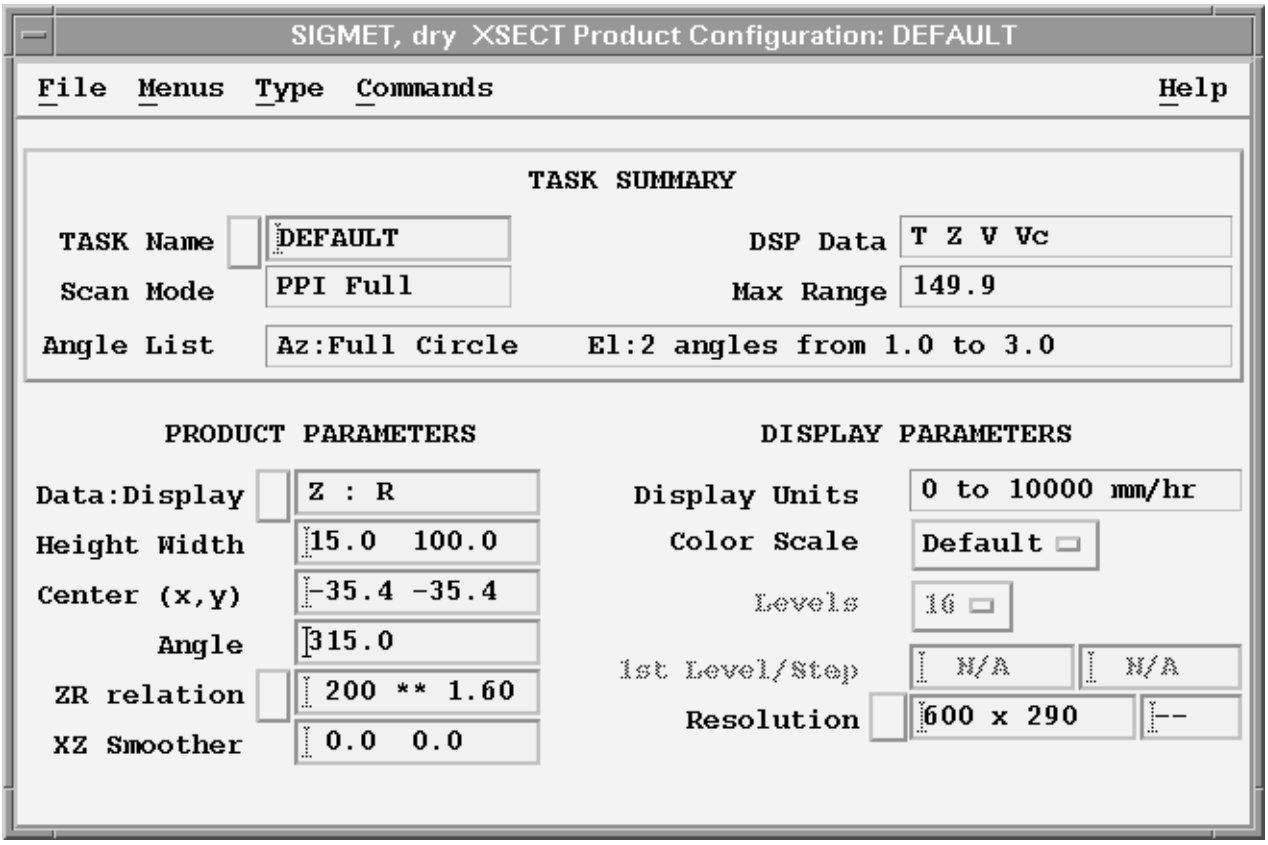
2.22 XSECT: Cross Section



This section describes the fields of the Product Configuration menu that are unique to XSECT products. For general information, see these other sections of this chapter:

- Task Summary area, Section 2.1.1.
- Product Parameters, see Section 2.1.3.
- Display Parameters area, Section 2.1.4.

The XSECT product is similar to an RHI in that it shows a range-height representation or vertical “slice” of a radar parameter. Unlike the RHI, the antenna is not scanned in elevation. Rather the cross section is constructed from a PPI volume scan. This means that if you are running a standard volume scan at regular intervals, an XSECT can be constructed without having to schedule a special RHI TASK.

The other difference between an RHI and an XSECT is that the radar location is fixed for an RHI, while the XSECT product lets you make a cross section at any point and along any line — in effect letting you move the radar wherever you want.

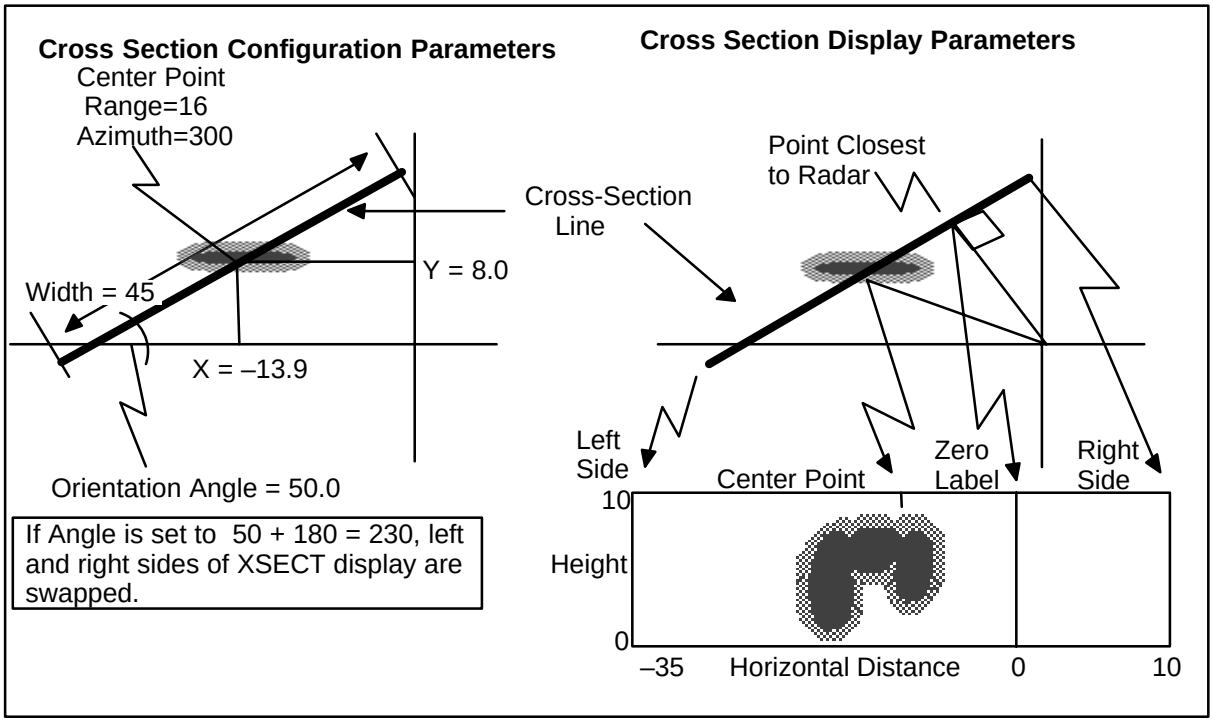
In defence of RHI’s, which are typically composed of about 100 elevation angles, the resolution in an XSECT is limited by the number of elevation angles in the volume scan, typically 10 to 20. However, the 3-D interpolation used by the XSECT

algorithm yields an excellent representation of the height distribution of radar parameters. Aside from performing 3-D interpolation, the algorithm also corrects for earth curvature effects so that the height scale corresponds to the actual height above your product reference height (usually sea level).

There are two ways to use the XSECT product. If you have a region of interest, such as a watershed area or air terminal, you may configure an XSECT as a standard product to slice through the area. However, you may also use the XSECT on an *ad hoc* basis to cut through a line of storms or an area of suspected severe weather. For *ad hoc* cross sections, use the XSECT Tool on the Quick Look window to configure the cross section line with a mouse. If you do not use the mouse to define a cross section line, display a PPI or CAPPI product with range rings and range numbers to help you configure the cross section.

A sample XSECT Product Configuration menu is shown at the beginning of this section. Its corresponding geometry is shown in Figure 2–12**.** Refer to this figure as you read through the instructions for configuring an XSECT product.

Figure 2–12: Cross Section Geometry



To open the XSECT Product Configuration menu:

Choose **Type–>XSECT** from the menu bar.

Data : Display

Z	dBZ
Z	Rain
V	Vel
W	Width
T	dBZt
T	Rain
Zd	ZDR
Zd	Rain

Center (x,y)

Look at the CAPPI or PPI image that you want to "slice" and decide where you want to make your cross section. Next, select the center point for the cross section. This is where the range marks and azimuth lines are very useful. Usually, you place the center point on the radar feature that you want to "slice," as shown in the example.

You enter the coordinates in X-distance (east) and Y-distance (north). Distances south and west are entered as negative numbers. All distances are entered in km.

Height Width

Select the maximum height and the horizontal width of the cross section in km and enter them in the Height Width field. There is no need to be exact—simply use the range and azimuth marks that are on the display to estimate the horizontal width. In the example, the height is 10 km and the width is 45 km.

Angle

Select the orientation angle in degrees. In the example, the angle is 50°. The angle that you select determines the end of the cross section slice that is displayed on the right side of the display. An angle of 50° will display as follows:

```
Left Side          Right Side
23º end            50º end
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To reverse the ends in the output display, select an angle of $50^o + 180^o = 230^o$.

XZ Smoother

The XZ Smoother field lets you set the X and Z smoothing length scales independently. However, because of the interpolation performed in constructing the cross section product, the output displays usually require little, if any, smoothing.

In the final output display, the zero point of the horizontal range scale corresponds to the point on the cross section closest to the radar. This is also shown schematically in the example. This means that if you select a line that goes through the radar (which is allowed to make a pseudo RHI), the 0 point is actually at the radar, so the horizontal distance equals the radar range.