```
V_Flag=0; V_LevelX=-0.37497; V_rising=1;
```

Finding a Level in XY Data

You can find a level crossing in XY data by searching the Y wave and then figuring out where in the X wave that X value can be found. This requires that the values in the X wave be sorted in ascending or descending order. To ensure this, the command:

```
Sort xWave,xWave,yWave
```

sorts the waves so that the values in xWave are ascending, and the XY correspondence is preserved.

The following procedure finds the X location where a Y level is crossed within an X range, and stores the result in the output variable V_LevelX:

```
Function FindLevelXY()

   String swy,swx                // strings contain the NAMES of waves
   Variable startX=-inf,endX=inf // startX,endX correspond to VALUEs in wx, not any X
scaling
   Variable level
   // Put up a dialog to get info from user
   Prompt swy,"Y Wave",popup WaveList("*",";","")
   Prompt swx,"X Wave",popup WaveList("*",";","")
   Prompt startX, "starting X value"
   Prompt endX, "ending X value"
   Prompt level, "level to find"
   DoPrompt "Find Level XY", swy,swx,startX, endX, level

   WAVE wx = $swx
   WAVE wy = $swy

   // Here's where the interesting stuff begins
   Variable startP,endP                    //compute point range covering startX,endX
   startP=BinarySearch(wx,startX)
   endP=BinarySearch(wx,endX)
   FindLevel/Q/R=[startP,endP] wy,level           // search Y wave, assume success
   Variable p1,m
   p1=x2pnt(wy,V_LevelX-deltaX(wy)/2)             //x2pnt rounds; circumvent it
   // Linearly interpolate between two points in wx
   // that bracket V_levelX in wy
   m=(V_LevelX-pnt2x(wy,p1))/(pnt2x(wy,p1+1)-pnt2x(wy,p1))  // slope
   V_LevelX=wx[p1] + m * (wx[p1+1] -wx[p1] )      //point-slope equation
End
```

This function does not handle a level crossing that isn't found; all that is missing is a test of V_Flag after searching the Y wave with FindLevel.

Edge Statistics

The **EdgeStats** operation (see page V-190) produces simple statistics (measurements, really) on a region of a wave that is expected to contain a single edge as shown below. If more than one edge exists, EdgeStats works on the first edge it finds. The edge statistics are stored in special variables which are described in the EdgeStats reference. The statistics are edge levels, X or point positions of various found "points", and the distances between them. These found points are actually the locations of level crossings, and are usually located between actual waveform points (they are interpolation locations).