

Point-Arrays into Pro/E

Data Manipulation: You've been given data. Could be an Excel spreadsheet. Could just be a text file.

Interrogate the data.

Is it radial? (Were you given a distance along a radius or diameter?)

ex] point data from a "Go-No Go" gauge for cutting the absorber port on one of the storage ring vacuum chambers. Data consisted of height from flange face vs. chord distance from a set point (from which angle around perimeter could be determined). See Figure 1.

Is it Cartesian? Is there an x and z? (Usual case... You were given just two sets of columns with an assumed planar constant for the third.)

ex] Survey&Alignment provided position of magnet fiducials relative to a point on the loaded girder. Data consisted of x's and z's. As this was a layout, the height above the girder was not important. See Figure 2.

If you get only two columns, you must massage the data. If it isn't already, dump it in Excel and add a third column of zeroes. (Point arrays are tied to a coordinate system. Relative to that origin, there must be three distances from that origin to define where the point will be placed.)

Excel File Manipulation: Pro/E is particular about what files it sees.

Three things to worry about: file type ➡ Pro/E expects a *delimited* text file (rows of three numbers, with each number separated by either a , or a space) (with Excel, **Save-As** and in Type, look for **Tab-Delimited**)

file extension ➡ must be ****filename**.pts**
(when you rename extension, click **OK** through the warnings)

and file name ➡ no spaces in the file name!

Place this text file in your Working Directory (C:\ptctemp). Makes it easier to find.

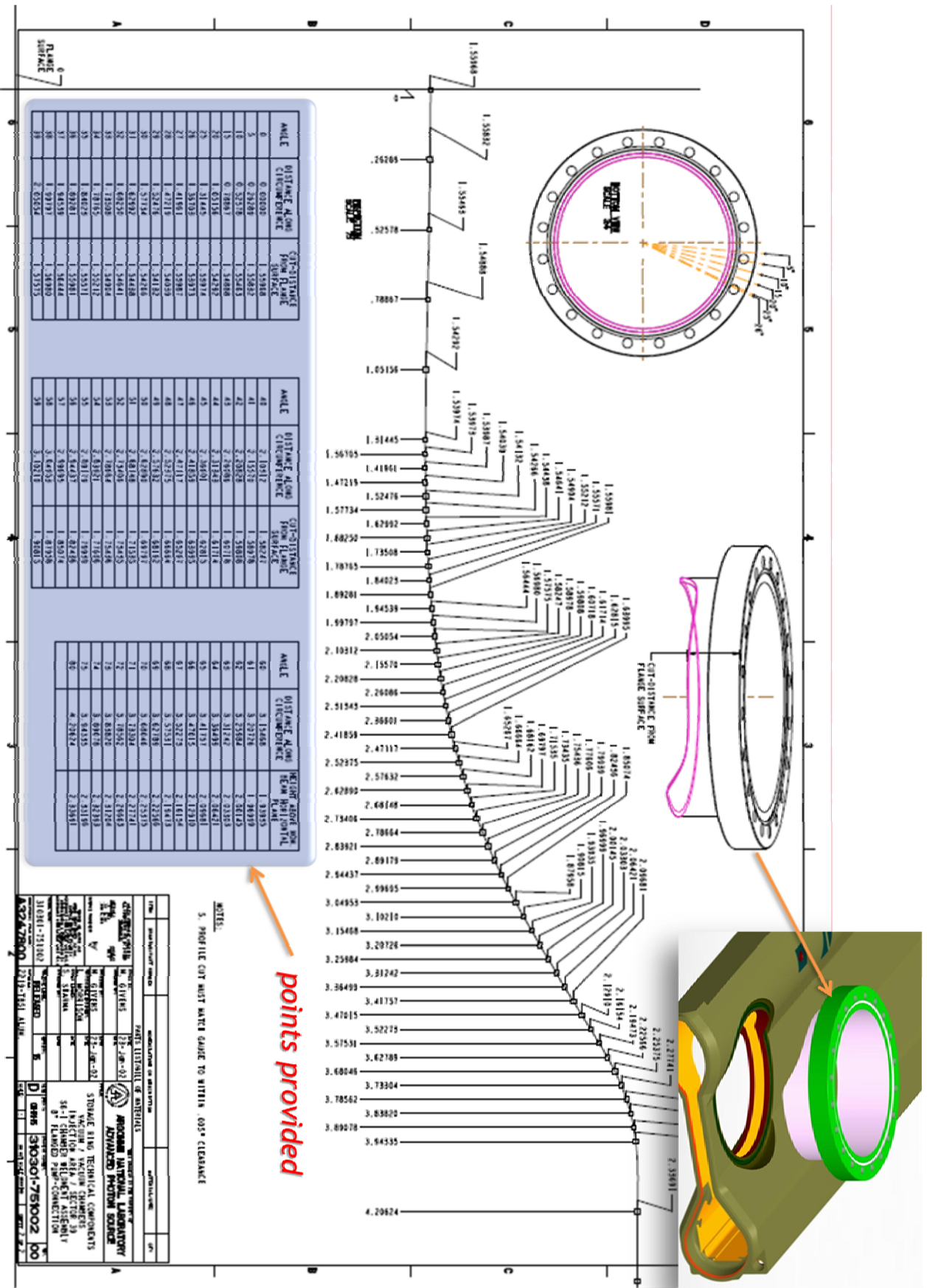


Figure 1

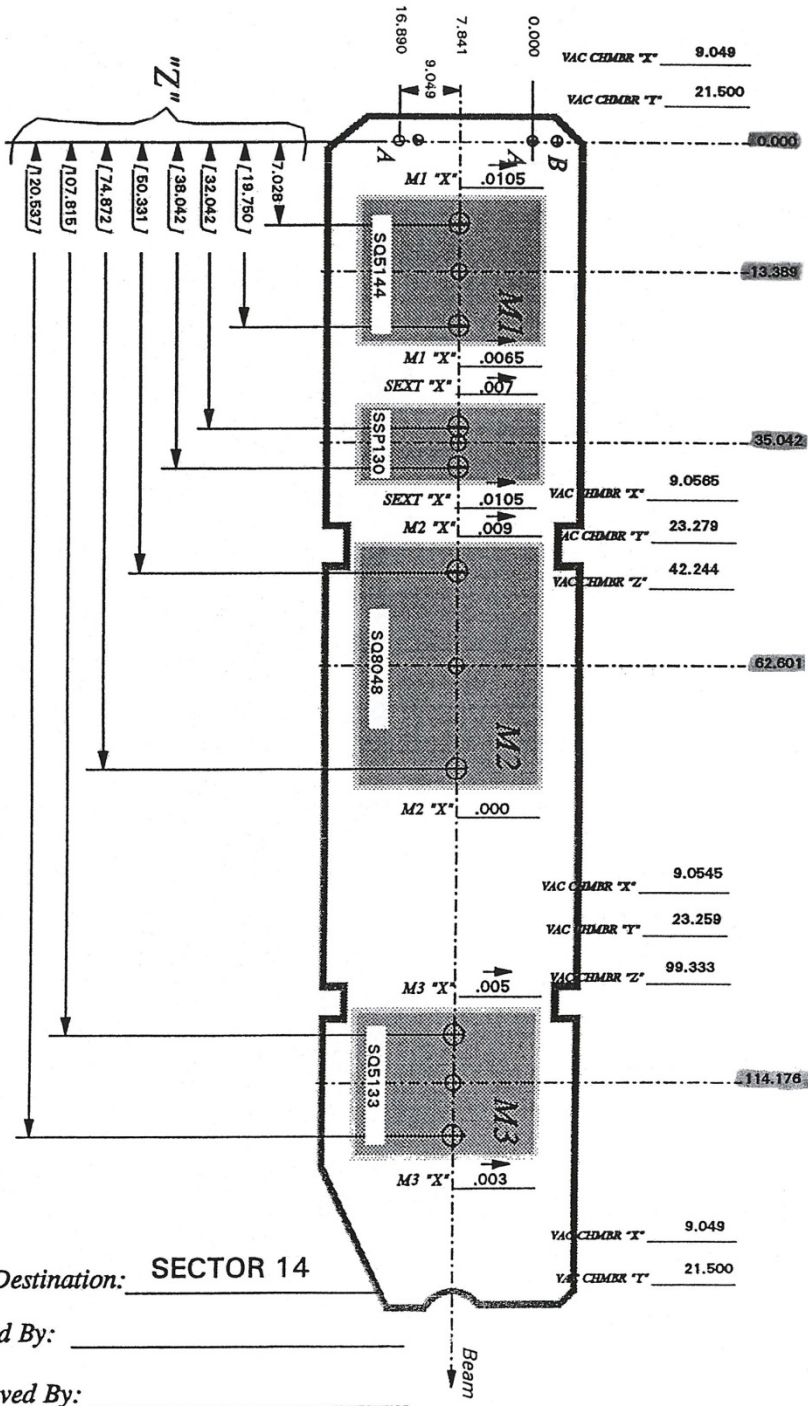
points provided

SECTION #5 GIRDER ASSEMBLY
 DATA STORAGE SHEET

AFS / SURVEY GROUP

Assembly Number: _____

Date: 04-25-94
 VM-SG-0528



- ELEVATION "Y"
- MI "Y" .006
 - SI -.003
 - M2 "Y" .006
 - M3 "Y" 0.005
 - MI "Y" .005
 - SI -.009
 - M2 "Y" .0055
 - M3 "Y" 0.005

* All positions relative to "0" position on Girder Dwr. No. 310701-00054-03

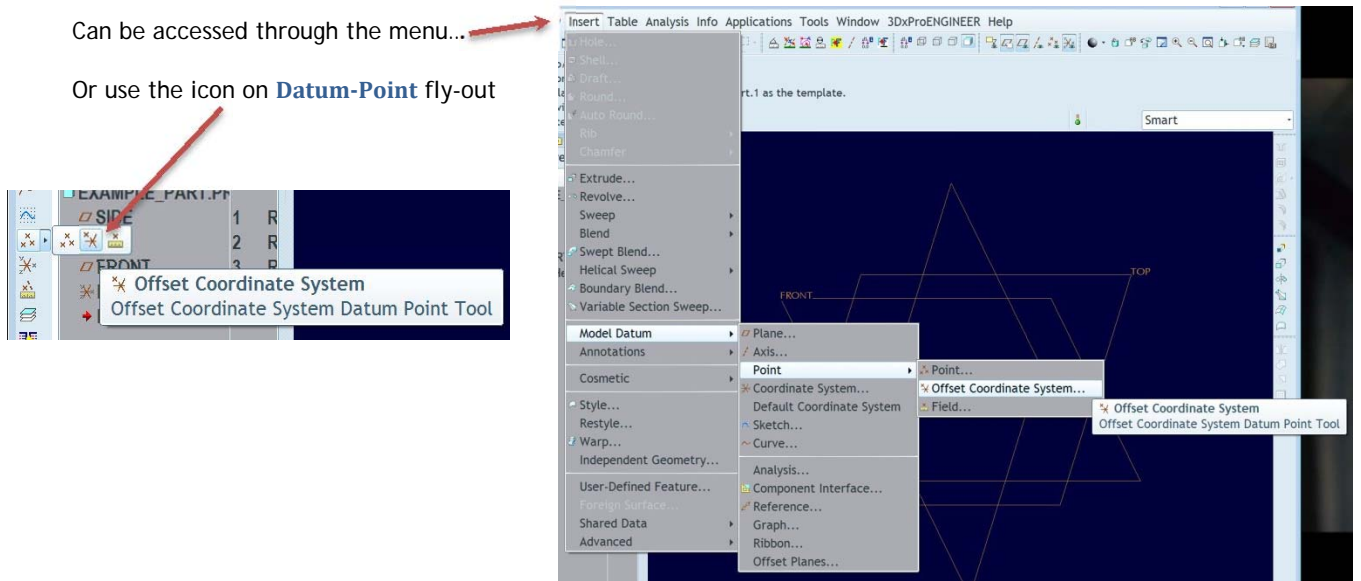
Figure 2

Final Destination: SECTOR 14
 Aligned By: _____
 Approved By: _____

Within Pro/E: pts files are used with the **Offset Csys Datum Point** tool

Can be accessed through the menu...

Or use the icon on **Datum-Point** fly-out



This brings up the **Offset Csys Datum Point** window...

The green area (may be different with your color scheme) is waiting for your choice of Coordinate Systems

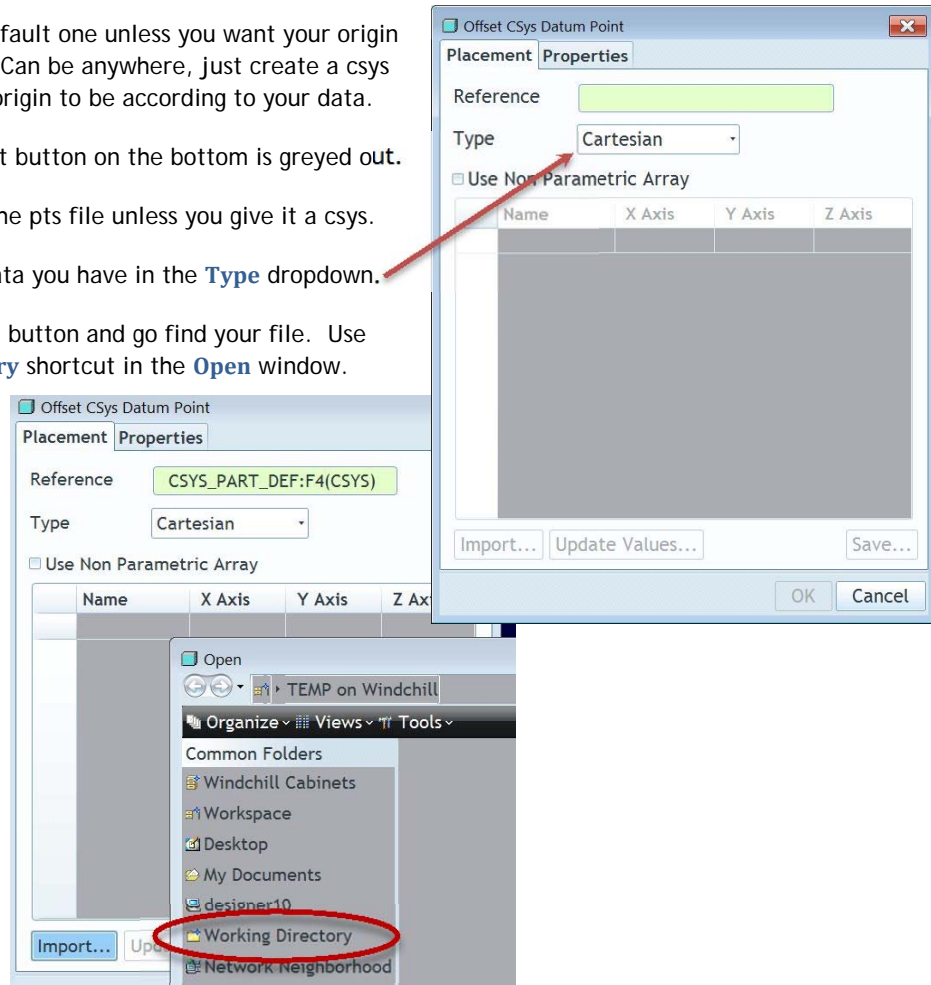
Just pick your default one unless you want your origin other than (0,0,0). Can be anywhere, just create a csys where you want the origin to be according to your data.

Notice the Import button on the bottom is greyed out.

You cannot get the pts file unless you give it a csys.

Choose the kind of data you have in the **Type** dropdown.

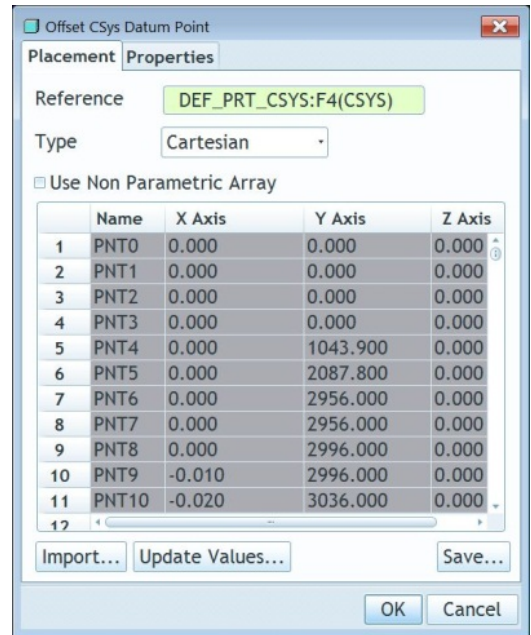
Click on the **Import...** button and go find your file. Use the **Working Directory** shortcut in the **Open** window.



Pick your pts file out of the directory ...

... and the table populates with your data.

Click the **OK** button and display your points.



What can you do with this data?

In Figure 1, it was originally used to cut the profile on the bottom of a port so that it would match the weld prep on the vacuum chamber. The reason it had to be that precise was because of a welding program that already existed to follow that path. For whatever reason, Vacuum Group would not rewrite that program for a new chamber.

In Figure 2, such input was useful in the placing of components on one of the Storage Ring girders. In this case, the point array was dumped into a skeleton, axes were attached to the points and perpendicular to the Top Plane, and those axes served as constraints for the magnet fiducials.

In like manner, Survey&Alignment provided the outline of the ratchet wall. Probably overkill, but it allowed for a precise positioning of the walls for the construction of an adjoining beam line hutch.