# Little Known Line Editor Tools

By Josh Sampey

Many HYPACK® users are familiar with the Line Editor, a handy little program that we all use to make our planned lines for our surveys. While creating lines is more common for singlebeam and side scan surveys, there are a couple of tools within the Line Editor that can be beneficial for all surveyors. I will briefly go through a couple of the tools and how best they can be used.
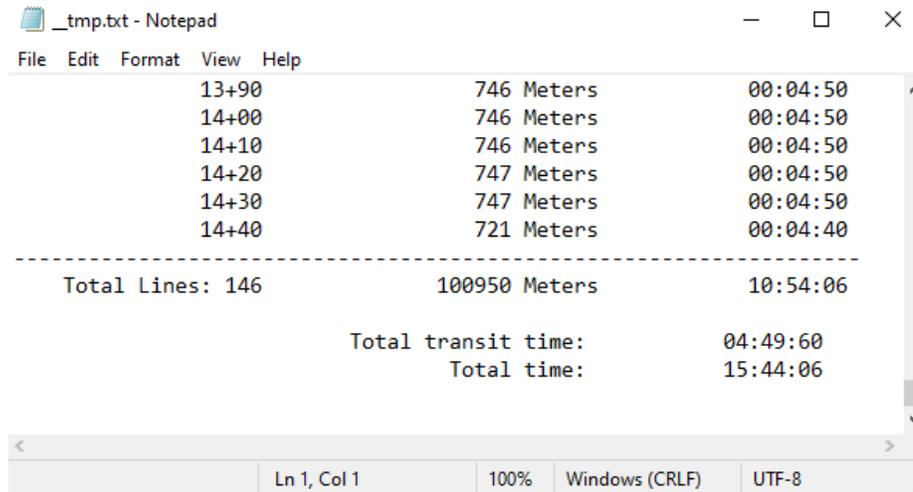
LINE REPORT

The Line Report button is a prominent button at the top of the Line Editor, however I have found that many users, especially those that only collect multibeam data, never click it and therefore do not know how useful this button can be. This tool can be used for estimating the time it will take to conduct the survey. Very useful information for both creating quotes for projects and general project planning.

To use the tool simply create a line plan. In the below example, I have created a line plan to survey between the I5 and BN Railroad bridge in Portland Oregon, my line spacing is 10m and I have clipped the lines to the shoreline using a border file.

Once your line plan is created click the Line Report button. You will be asked for a survey speed and an Interline transit time, at this point it is good to be a bit conservative with your selected values. In this example, I have selected an average survey speed of 5 knts and estimated that it will take 2 minutes to transit from one line to the next.
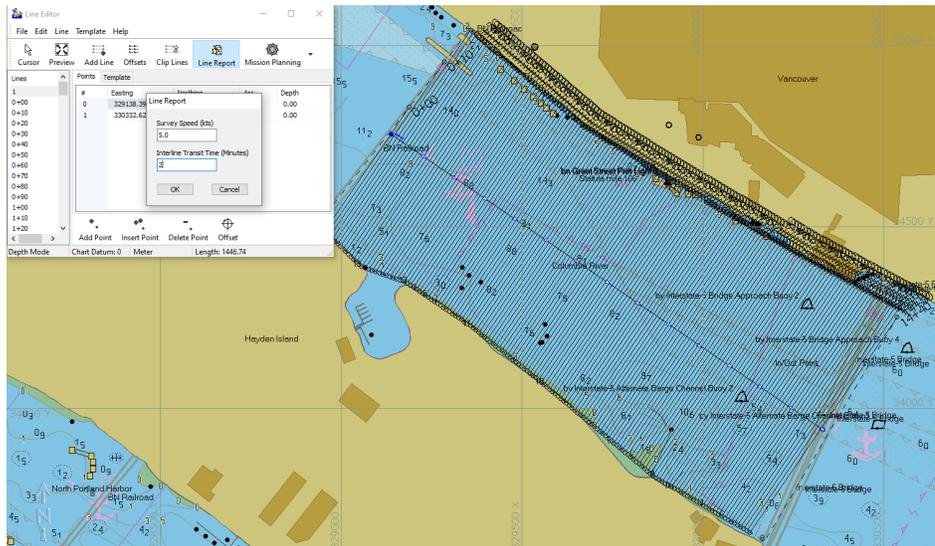
Click OK and now a *.txt document will appear showing the time it will take to survey each line. At the bottom of the *.txt document, the total time will be shown.

```
_tmp.txt - Notepad                                      —   □   ×
File  Edit  Format  View  Help
          13+90                746 Meters              00:04:50
          14+00                746 Meters              00:04:50
          14+10                746 Meters              00:04:50
          14+20                747 Meters              00:04:50
          14+30                747 Meters              00:04:50
          14+40                721 Meters              00:04:40
-------------------------------------------------------------------
     Total Lines: 146       100950 Meters              10:54:06

                      Total transit time:              04:49:60
                           Total time:                 15:44:06


                    Ln 1, Col 1        100%   Windows (CRLF)    UTF-8
```

Keep in mind that this estimation does not factor in the time to complete other requirements such as sound velocity cast, bar checks, or any other survey requirements you may have. That said you can see how useful it can be in estimating project duration.

Creating a plan for a singlebeam or side scan survey is rather straightforward, using it is a bit more involved for multibeam surveys. When creating line plans for multibeam surveys you will need to have an idea of the expected average depth along with your planned swath angle. Using the same area as an example I estimate the AVERAGE depth to be approximately 7m. Due to project specifications, I am limited to using a swath of 90° and I require 100% line-to-line overlap. To determine the line spacing you need to calculate the horizontal coverage of half of the swath. This is solved using the equation:
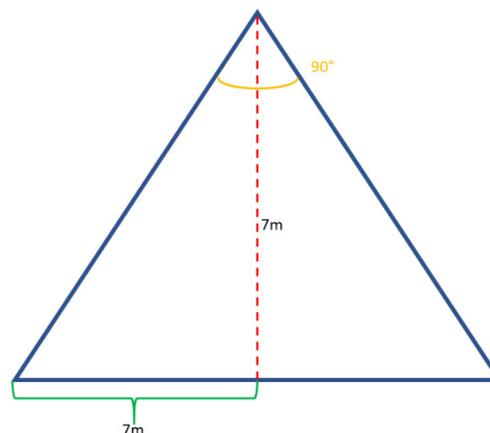
$$Depth * TAN(\frac{Swath\ Angle}{2})$$

So in our case, the horizontal distance of half the swath is 7m, this will be our line spacing. Keep in mind, in this case, this is an ultra-conservative estimation of the line spacing. Because we do not have to slow down at the end of these lines as we do with singlebeam I estimated the survey speed to be 6knts and an interline time of 1m. When the line report is run we get an estimated time of approximately 13hrs to complete the survey.

2

LINES AT POINTS

During my time as a surveyor, I regularly had to do spot investigations, especially during nautical charting surveys. This would usually involve being handed a list of XYZ points over points of interest. It can be a time-consuming task to create search patterns on these points using the offsets feature in the Line Editor as you can only make one at a time. To save time I used the Planned Lines at Points tool that can be found in the Line dropdown within the Line Editor. This tool allows the creation of either parallel or radial lines at discrete points either from an XYZ file or targets.

In the example, I have a series of XYZ points in Astoria, Oregon, and I need to create a radial search pattern at each point. I have selected my XYZ file, and set the line length and the number of lines at each point. From there, HYPACK® will create lines around each point in the XYZ saving you considerable time.