Using the CEESCOPE™ with RosePoint ECS and Hydromagic; Importing Hydrographic Survey Data into RosePoint ECS.

To operate Eye4Software Hydromagic and RosePoint ECS software packages simultaneously, the CEESCOPE echo sounder must be connected to the acquisition PC using the Ethernet (LAN) cable. The two software packages, RosePoint ECS for navigation chart information and Hydromagic for hydrographic mapping can both extract the required information from the data stream if the CEESCOPE output is properly configured. First, the PC must be set with a static IP address on the LAN port used, for example 192.168.2.10. The PC IP cannot be 192.168.2.1, which is the CEESCOPE IP address.

Setting up Hydromagic:

Usually, when using the CEESCOPE with Hydromagic *without* RosePoint ECS running at the same time, the **Devices** configuration is as follows (**Options > Preferences**).
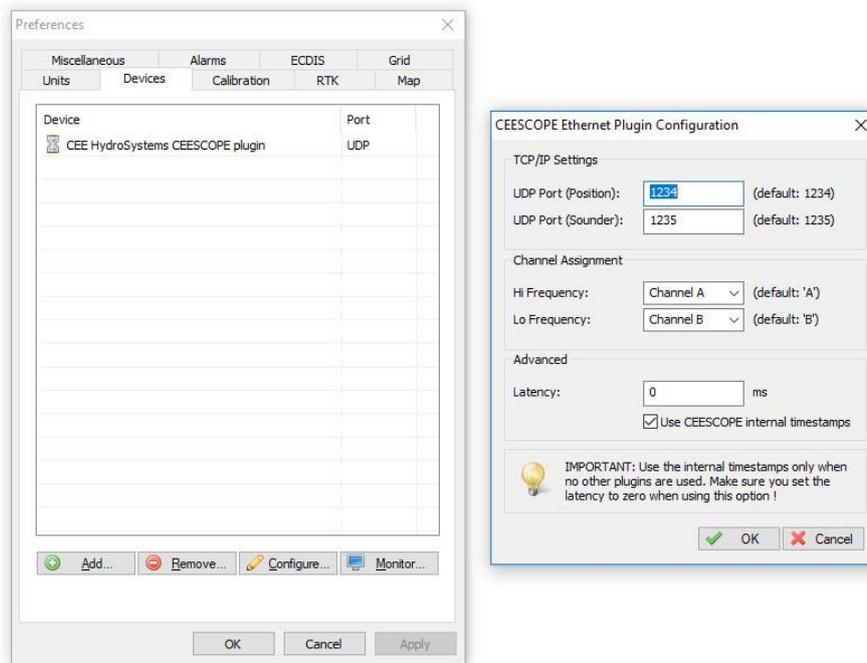
R/T (real time) Output on the CEESCOPE should be set as **GNSS + CEE** when using this device setup in Hydromagic. This format allows the high definition echogram to be visible and recorded.
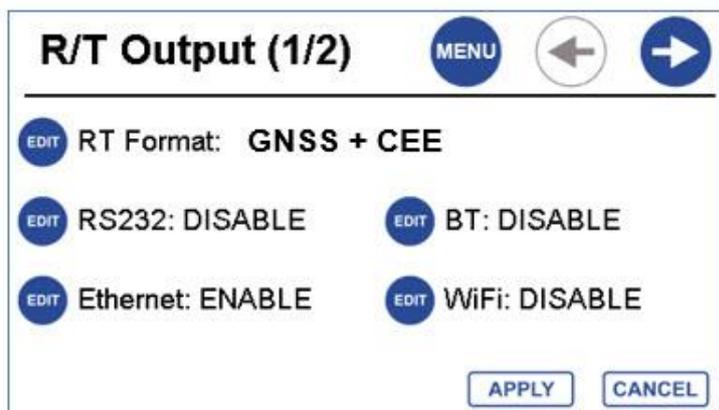
However, when using RosePoint ECS simultaneously, this software is not capable of reading the "CEE" proprietary data used in the GNSS + CEE message. Instead, the **R/T Output** of the CEESCOPE must be changed to a more basic message type that can be accessed by Hydromagic AND RosePoint ECS. The message format used is a simple text data stream with the following NMEA0183 messages types:

$GPGGA: Time, position and elevation   **$GPVTG**: Course and speed   **$SDDBT**: Depth

The **R/T Output** on the CEESCOPE should be set as follows.

The Hydromagic **Devices** Configuration must be changed to "**Hydromagic NMEA Plugin #1**" and set up as shown below to use the alternate, non-proprietary messages needed for compatibility with RosePoint ECS. The **Devices** listing should show a green check mark next to the device name if properly configured. An hourglass indicates no data. A red mark indicates no connected instrument.
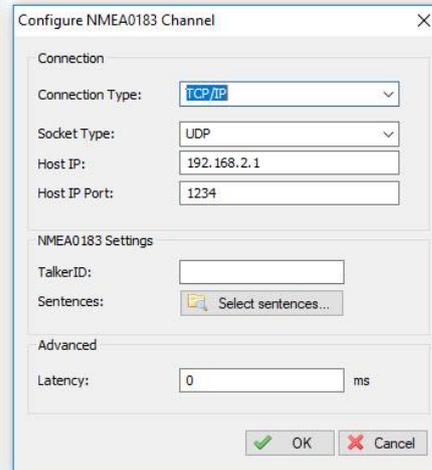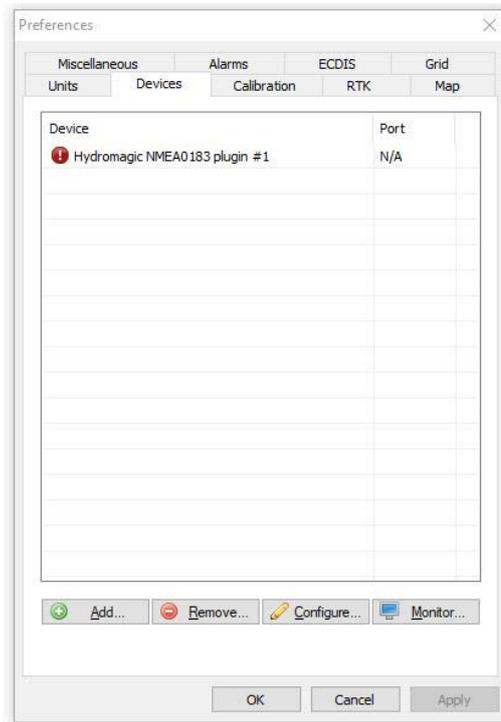
Alternatively, the "**Oceanscience Z-Boat plugin for Hydromagic**" can be used, as shown below. The two plugins will give identical results.
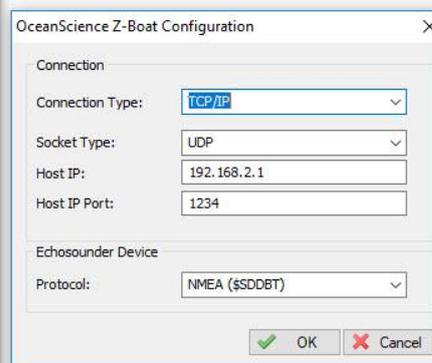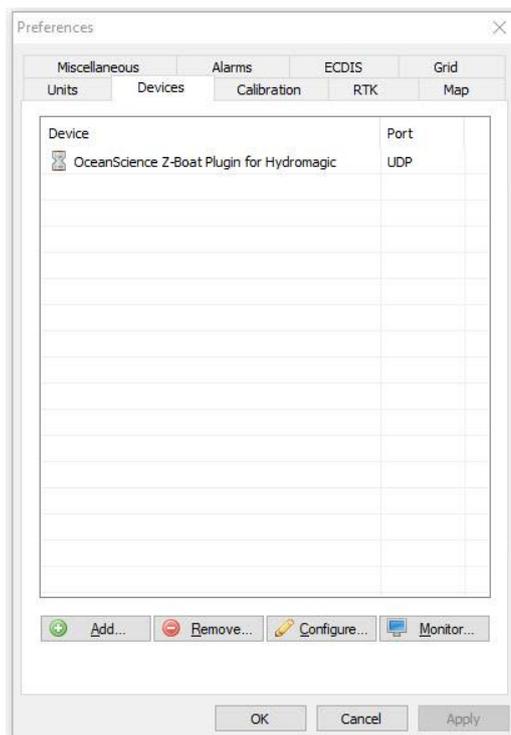
The final exported Hydromagic (Matrix) data is in the XY co-ordinate system of the Hydromagic project. Make sure that the proper State Plane NAD83 co-ordinate system is selected for the area of interest when setting up the Hydromagic project at the beginning. When starting the survey ensure that the X and Y position fields are POSITIVE, or corrupt data will result as the survey will be in the wrong zone. The X and Y data are shown in the bottom info bar in addition to the Navigation Data view.

| NAD83 / California zone 6 (ftUS) | X: 006297147.722 Y: 001968564.215 | H: U.S. Survey Foot | V: U.S. Survey Foot |

Setting up RosePoint ECS

Under "**Configure Vessel and Electronics > Data Ports > Port Settings**", the dialog below is the main configuration menu used to set up the network port required to receive CEESCOPE data. The **Interface** should be set as **NMEA 0183**, with **Talker** checked although Listener, Talker, and Repeater may all be checked. Under **Filter Sentences**, ALL available sentences should be selected. The **Baud Rate** is irrelevant.
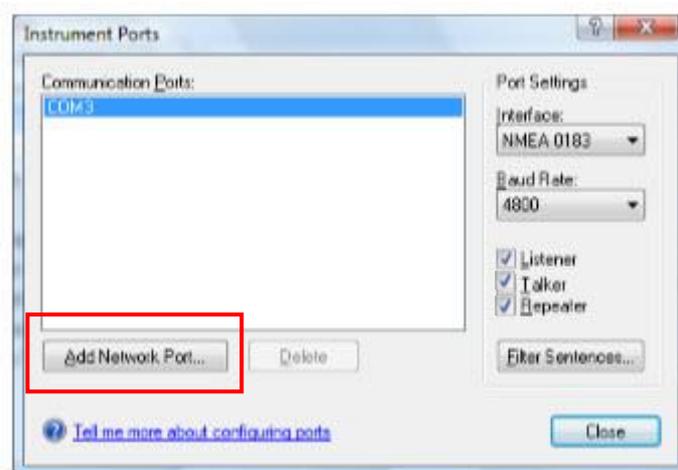
The "**Add Network Port**" button should be pressed to install an Ethernet data input to RosePoint ECS. The IP address of the CEESCOPE should be entered, as shown below.
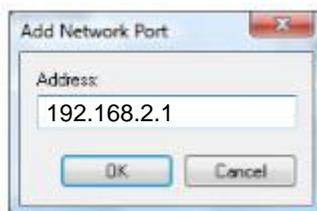
The menu will ask for the **Port Number**, which should be **1234**. The **Protocol** should be **UDP** (not TCP/IP). These menu items are not shown in this guide.

With the Network port added, RosePoint ECS will display the depth, position, and vessel heading derived from the CEESCOPE.

Things to remember:

- Turn off the boat echo sounder to avoid crosstalk interference.

- Ensure the CEESCOPE Real Time Output button is BLUE (home screen bottom left).

- The data WILL NOT be received if the IP address of the laptop is not set correctly.

- Anti-virus and firewalls must be deactivated, as these will prevent network data flow.

Exporting Surveys from Hydromagic

The Hydromagic raw data should be first edited to generate a **SOUNDING**. To do this, right click on the **RAW DATA** heading in the Project Explorer and select "**Process Raw Data**" and use the Echogram Editor and other editing tools to remove any unwanted data or errors. It is recommended that a sounding point is generated for each GPS position fix, as shown below. Do not calculate a position fix for each sounding as the data volume will increase by up to 20x.

Then, once the sounding is created the bathymetry data may be reduced to a regularly spaced XYZ grid that is suitable for import into RosePoint ECS. The edited sounding data may still contain several thousand data points – far too many for a chart overlay. Hydromagic may be used to generate a **Matrix** that is a depth point in a regular grid with a calculated depth every x ft in the Northing and Easting direction. To create a Matrix, right click on the "**MATRIX**" heading in the Project Explorer and select "**Generate Matrix**". Select all the appropriate sounding files and if a **BOUNDARY** has been set for the survey, select the appropriate boundary under "**Clipping Area**". The boundary will limit the Matrix calculation to the area inside the boundary only. Choose the appropriate Matrix Spacing to set the grid sounding density.
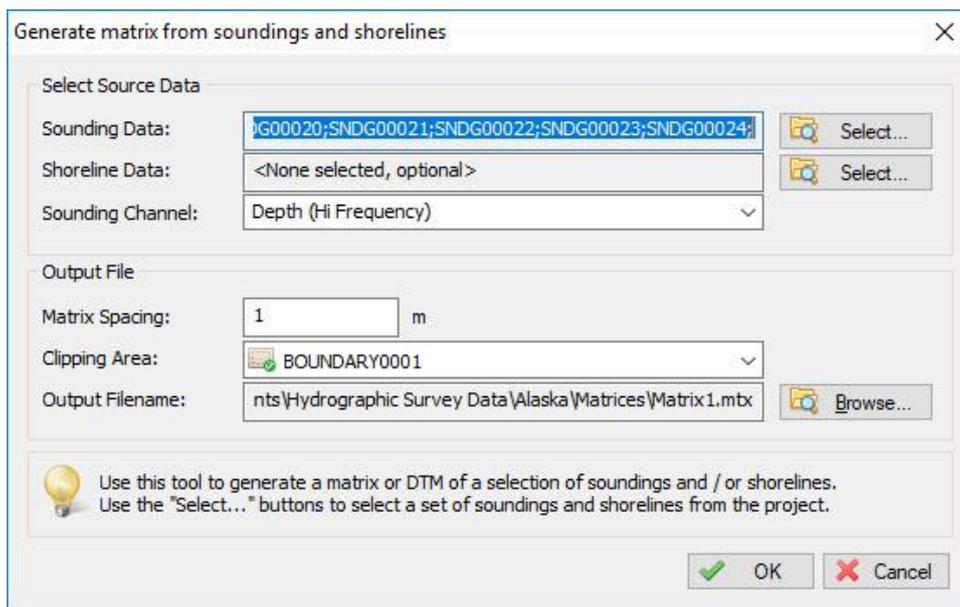
Remember that the Matrix depths are calculated based on the available soundings, and results are interpolated to form the grid. Be careful to ensure survey coverage is adequate to prevent excessive areas in the matrix with interpolated depth data.
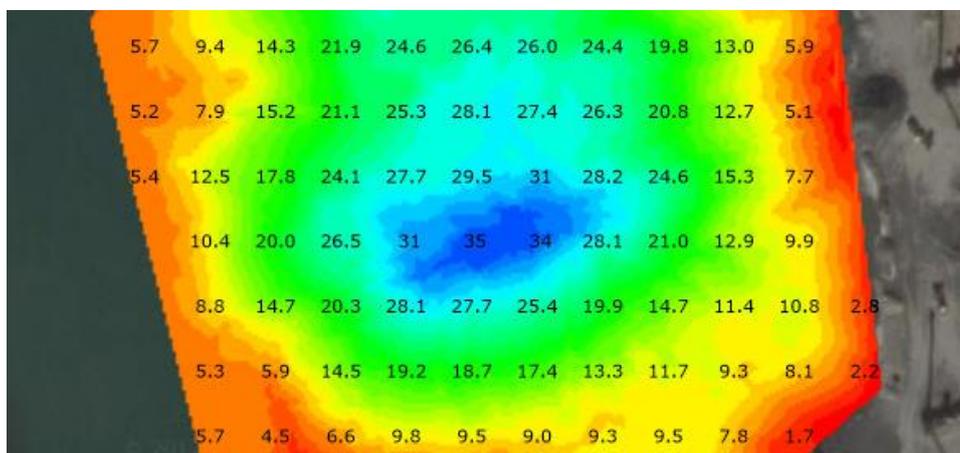
To export the Matrix data so it may be ready for subsequent import into RosePoint ECS, the Matrix results should be output as an **ASCII file**. On the Hydromagic main menu, navigate to "**File > Export > Export ASCII Data".** The following dialog will appear. Enter an output file name and select the Matrix you wish to export. Ensure the exported fields are Easting, Northing, Depth (XYZ). The typical field separator is "**comma**".
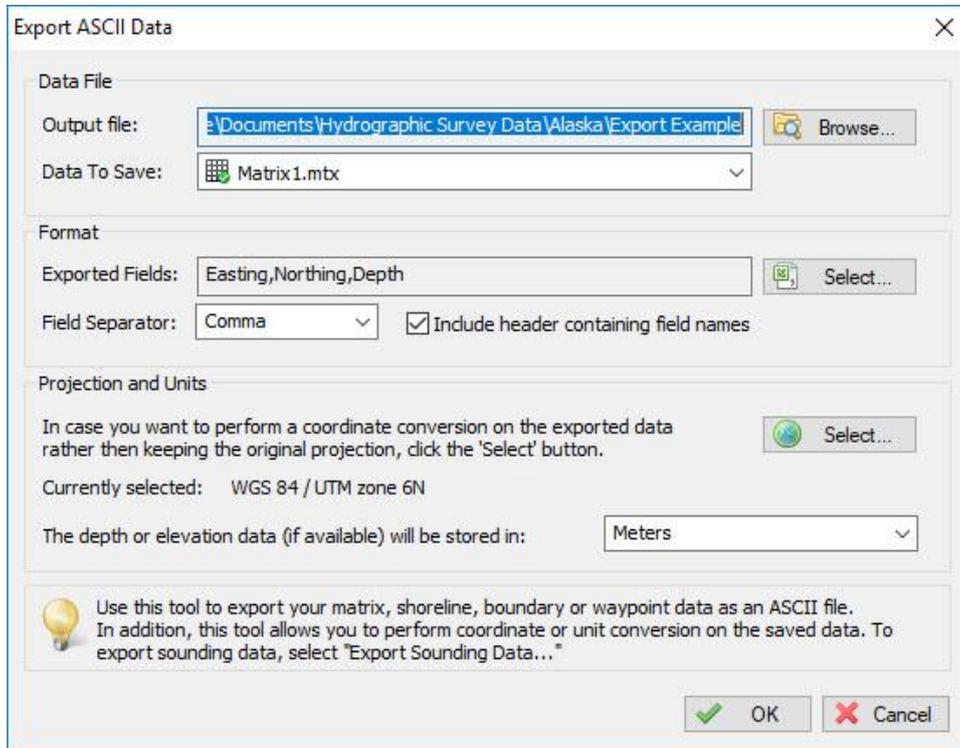
The ASCII data may be viewed in Notepad.
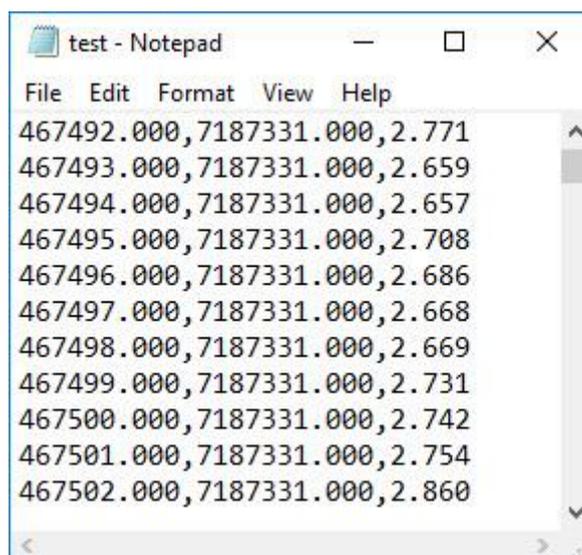
The file extension of this saved Matrix ASCII data must be changed in Windows Explorer to ***.XYZ** to enable the RosePoint ECS file manager to "see" the file as a hydrographic survey. Right click on the ASCII export file and bring up the **Properties**; then type "**.XYZ**" after the file name to convert the file from .txt to .xyz file extension.
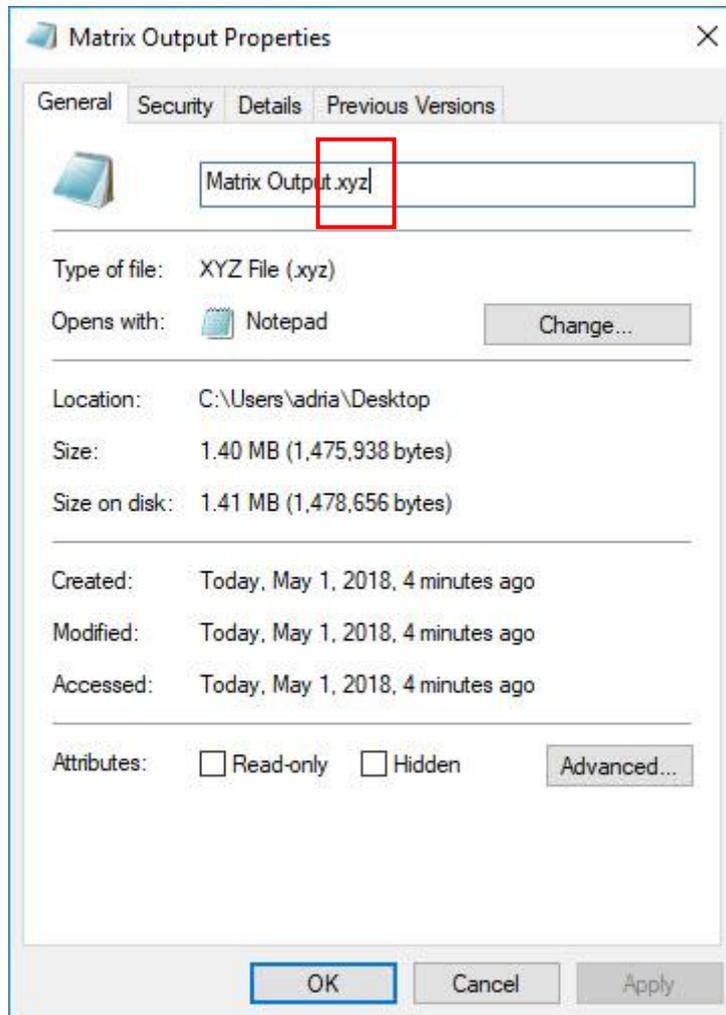
Importing Hydromagic Surveys into RosePoint ECS

In RosePoint ECS, navigate to **File > Open** and select "Survey Data / XYZ". Then, select the Hydromagic matrix data that has been exported as an ASCII (.xyz) text file. You will need to choose the co-ordinate system used to acquire the data and confirm the units are ft or meters. RosePoint ECS translates the XY co-ordinates to latitude / longitude pairs for use as a chart overlay.