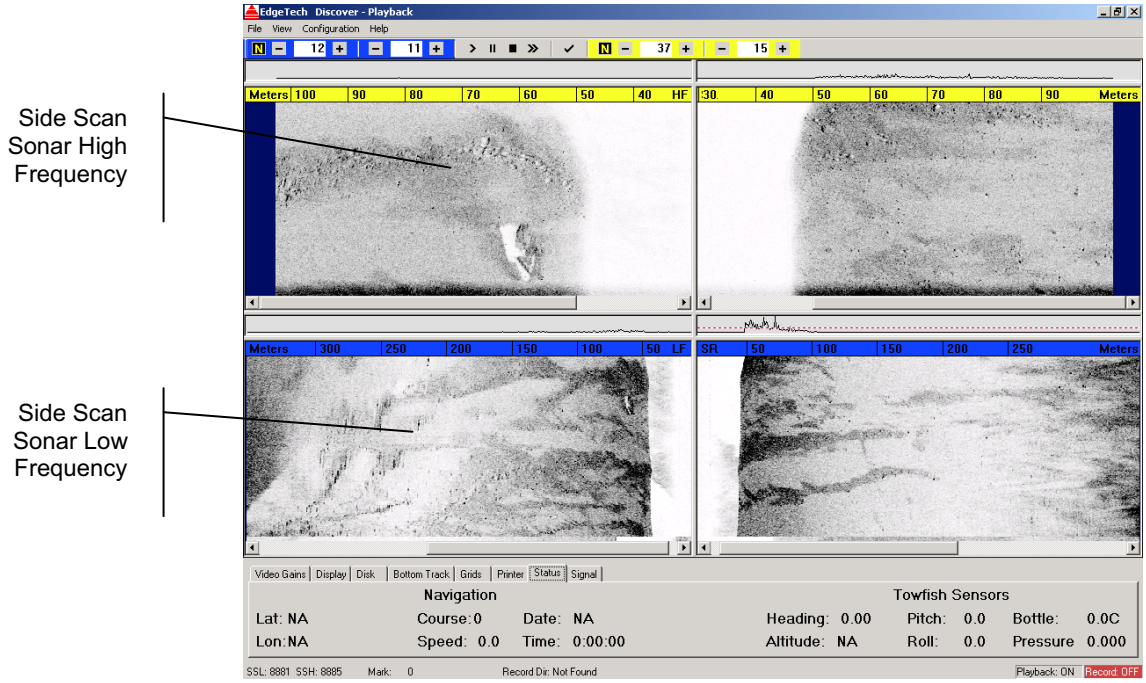
EdgeTech's DISCOVER Software

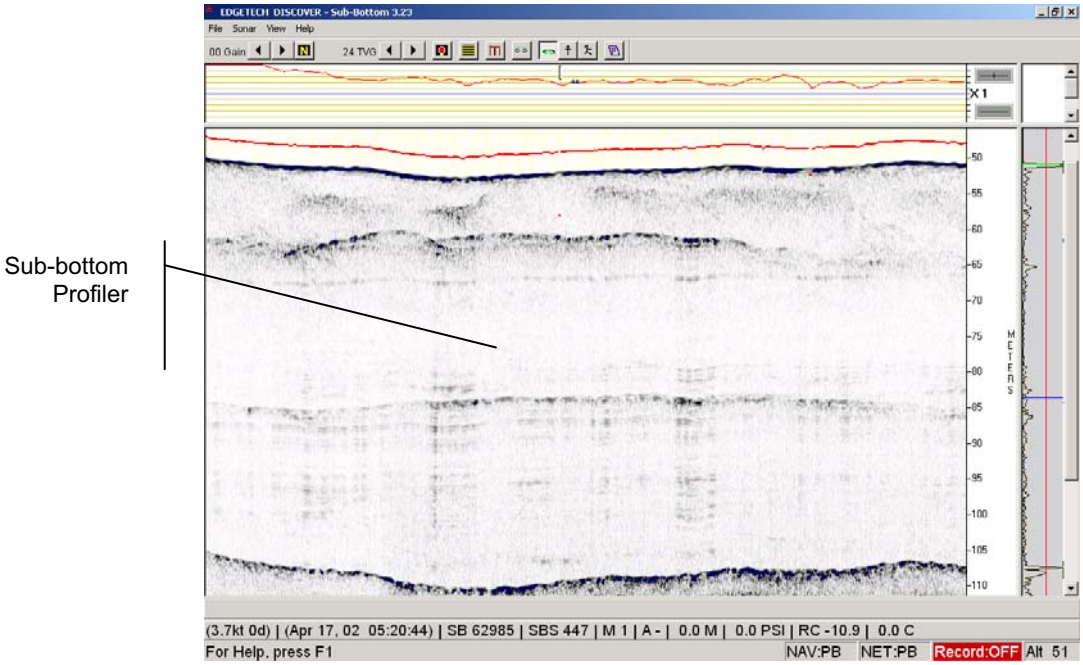
DESCRIPTION

DISCOVER is a modular acquisition and processing software package compatible with all of EdgeTech's sonar systems. It serves as the sonar image processing, display, storage and surface control station for the EdgeTech family of Sub-Bottom Profilers, Side Scan Sonars, and Combined Systems. DISCOVER runs on a Model 56x hardware platform.

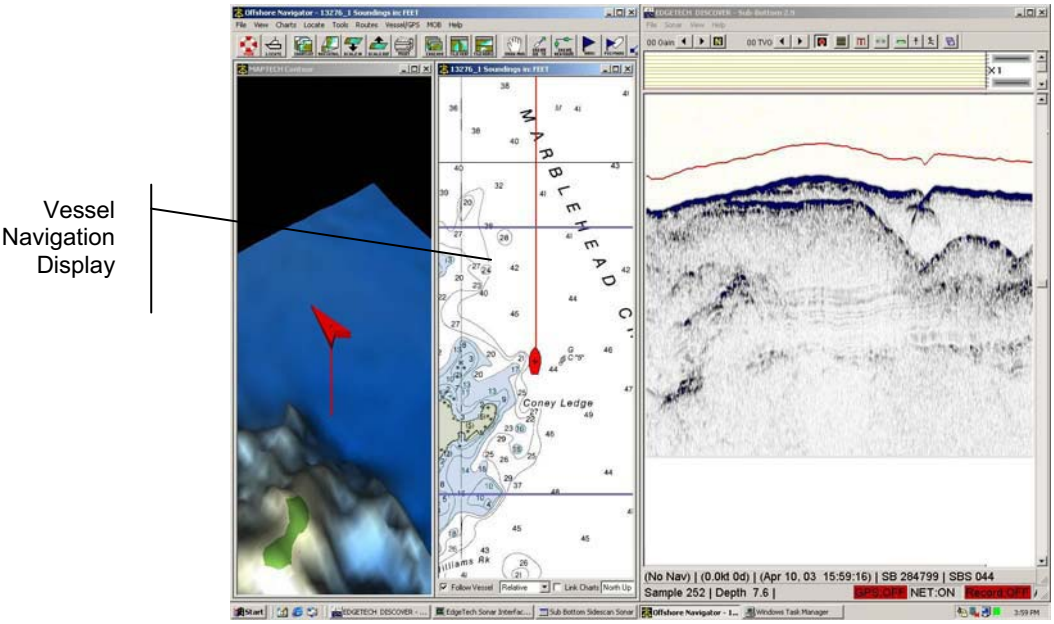
General Features

Real-time Sonar Display - In real-time, the software displays data in a dedicated window. Each channel of the side scan sonar and sub-bottom profiler has its own independently controlled window.



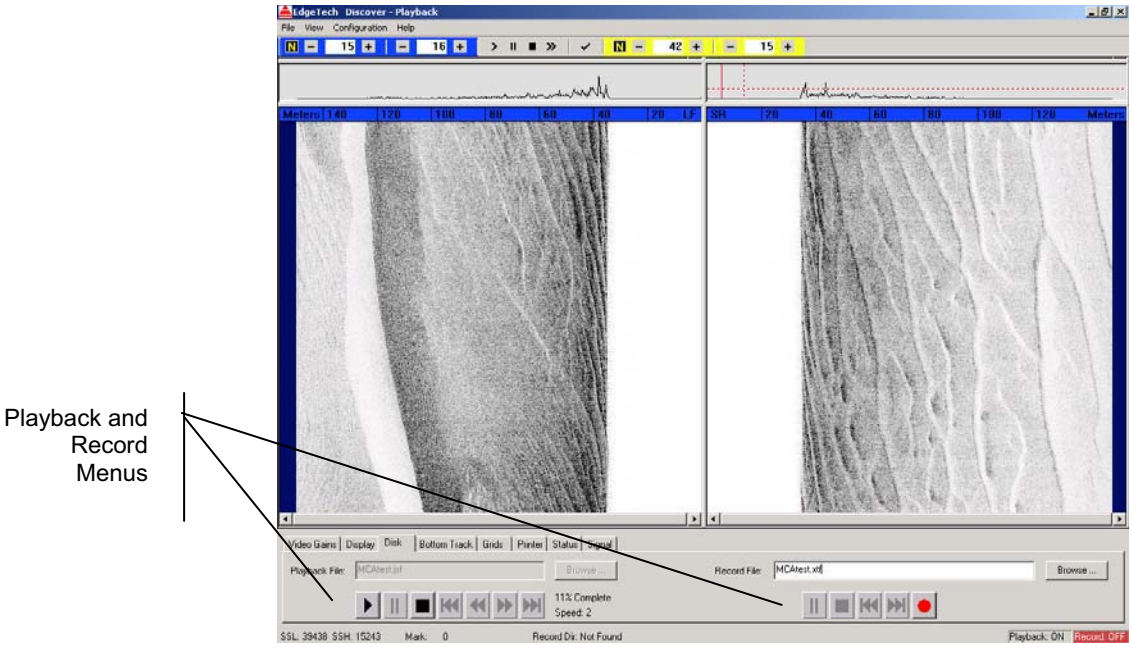


Navigation Management – An optional navigation display shows the location of the vessel on navigational charts. One of the system's RS-232 ports can be configured to receive navigation data from a navigation computer or from a GPS. Various NMEA 0183 strings are received through this interface. Navigation information is stored in the trace header of the sonar data. The navigation message is displayed on the screen and can be printed on the thermal printer.



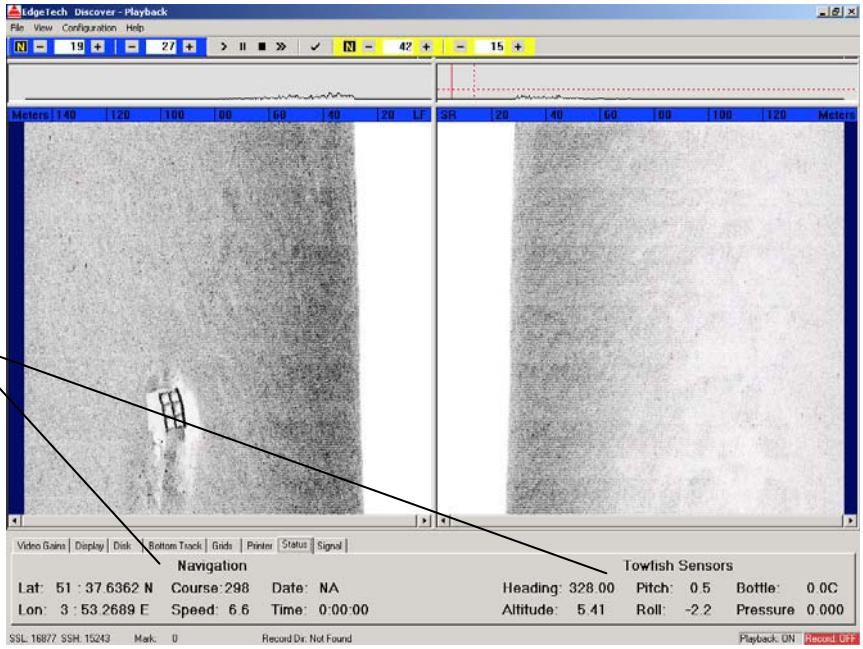
Printer Drivers- DISCOVER can interface with a variety of printers. The hard copy is printed in shades of gray in real-time as well as in post-processing.

Data Recording & Playback - The raw data received, is recorded in EdgeTech native sonar file format (.jsf). And (or) the data can be stored in SEG-Y for the sub-bottom profiler and e**X**tended **T**riton **F**ormat (.xtf) for the side scan sonar. The data can be stored on any device that is identified as a hard drive by the operating system. Data from any connected sensors are also logged. DISCOVER can be installed; free of charge, on most any PC for data replay.



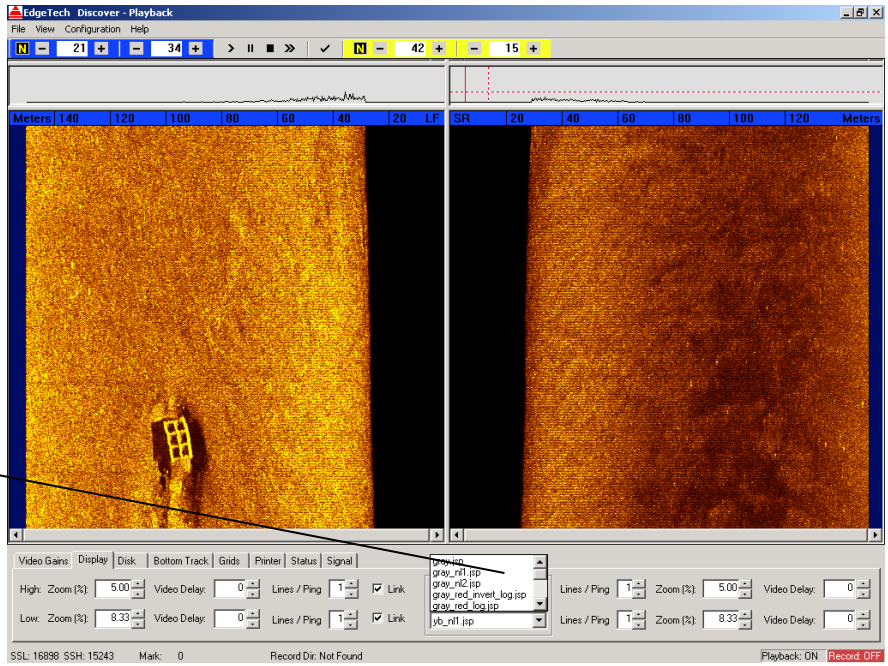
System Status – During data acquisition the Navigation and Towfish Status are available at all times. Information such as position, speed, heading, and depth are displayed if available.

Sonar Status



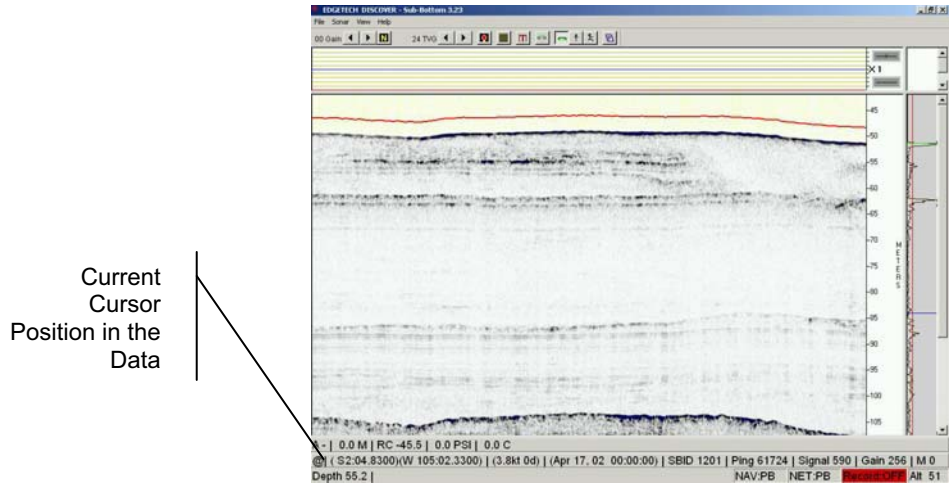
Pseudo Color – Sonar data can be displayed in inverse gray scale or in a number of colors. A number of preset color palettes are available.

Color Palette selection

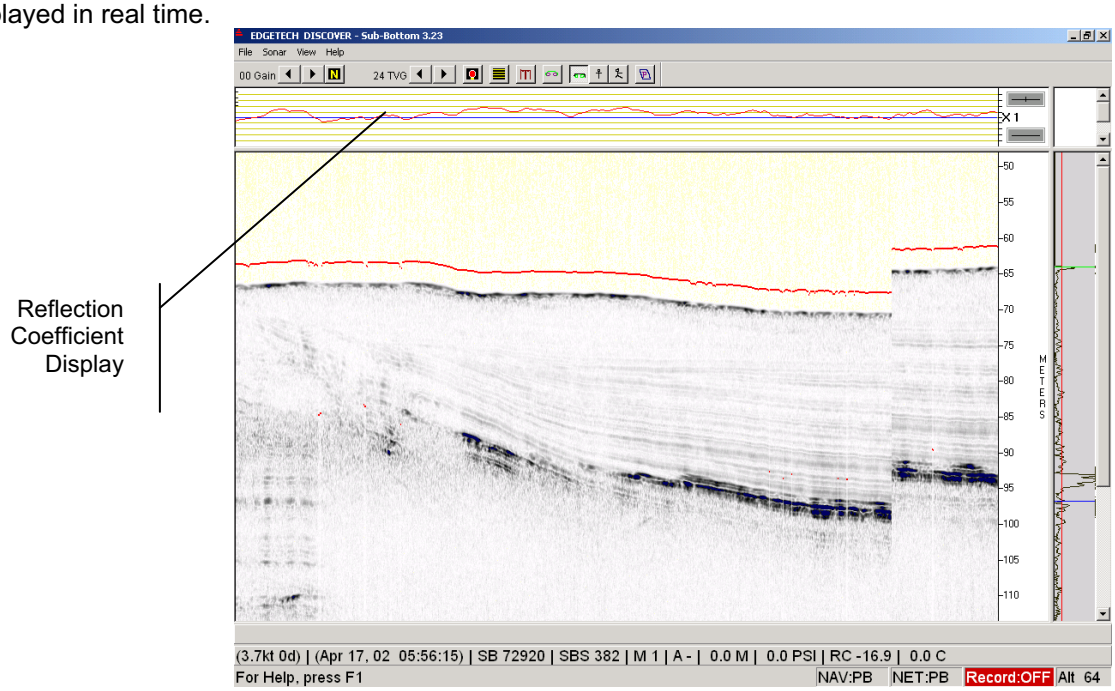


Key Sub-Bottom Profiler Features

Real-time Geo-referencing – The sub-bottom data are geo-referenced when navigation information is supplied to DISCOVER.



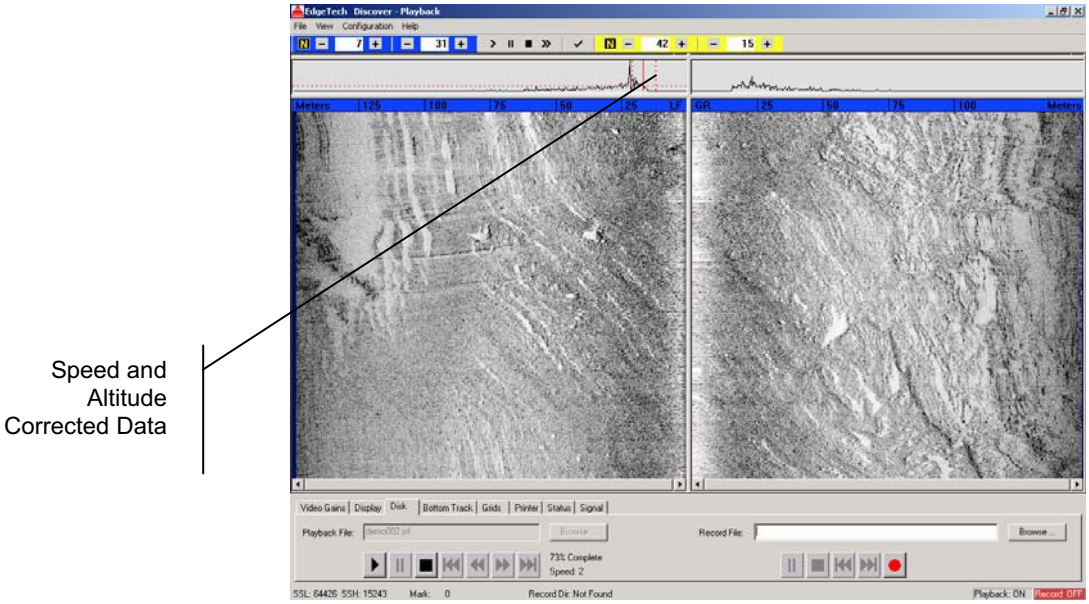
Sub-Bottom Profiler Reflection Coefficient – Since the EdgeTech sonar is linear, the measured refection coefficient can be used to identify the type of material (i.e. sand, clay, mud etc.) on the bottom. A graph of the refection coefficient is displayed in real time.



Key Side Scan Sonar Features

Slant Range Correction No Pixel Replication – Because the imaging source point (transducer) is not on the seafloor but rather above it, slant range does not represent the true range between any two objects. Below the towfish, the data is compressed. Further away from the towfish, the data becomes less compressed with the least error at the outermost ranges. The near range compression is corrected via a computerized repositioning of sonar data on the display using available sonar resolution. The result is a combined port and starboard image where the range between any two objects across track is the same regardless of their absolute range from the side scan sonar tow fish.

Speed Correction – By taking input from a navigation device the system proportionally matches the sonar display (video or printer) length with the over-the-ground speed of the survey vessel. When combined with Slant Range Correction the sonar image is a true representation in x and y ranges. Measurements of ranges and objects can be made directly from the screen or of a print out that has both of these corrections applied.



Target Mensuration - Scaling of the physical dimensions and volume of an object from a sonar record. With a sonar display or update rate matching tow speed and taking into account the effect of slant range distortion, very accurate dimensions of seabed objects are made from sonar data.

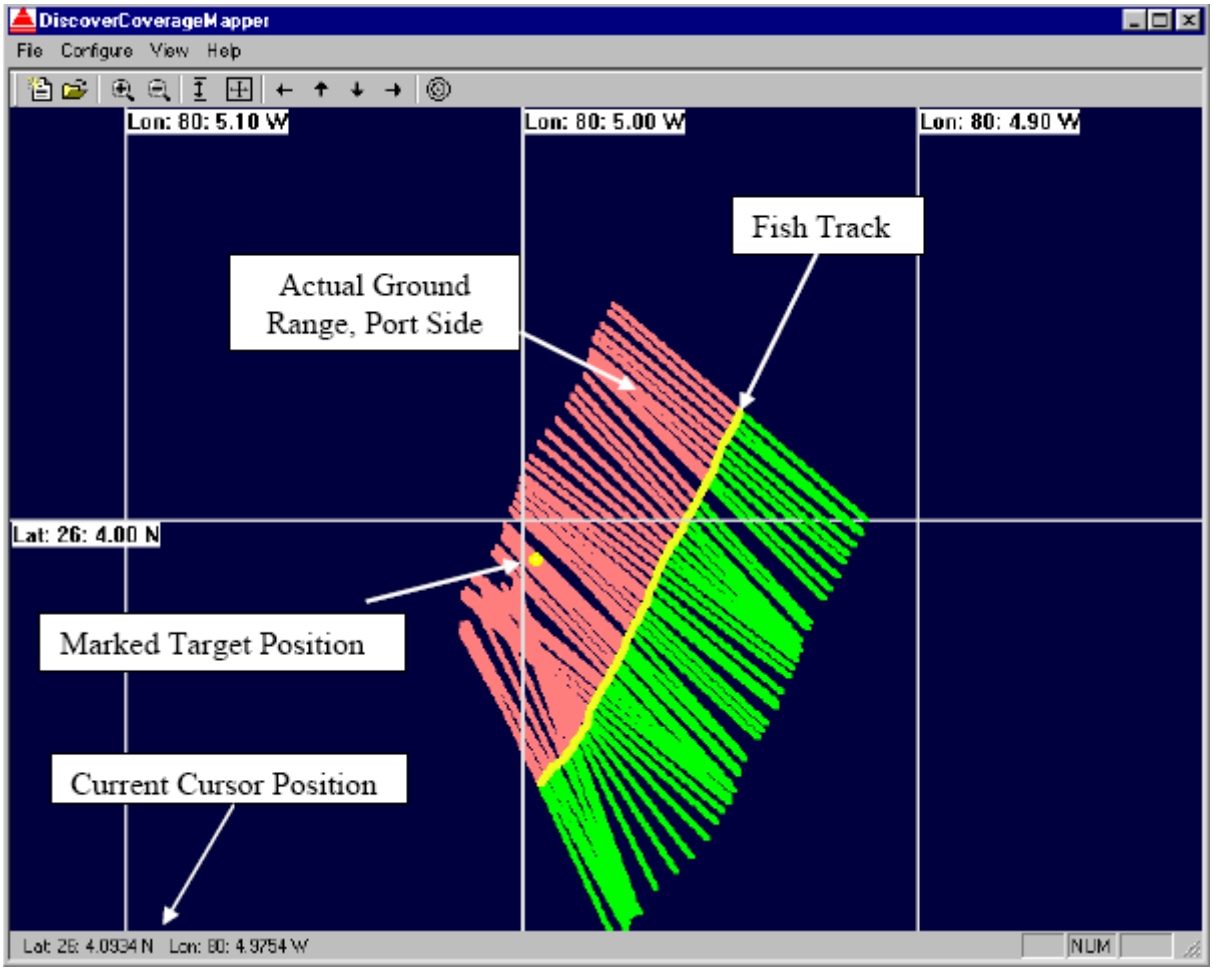
A comma-delimited file is created to store information on targets that are selected. Target position, size, and altitude are some of the data stored. Also stored is a link to a jpeg file containing the target image.

COVERAGE MAPPER MODULE for DISCOVER Side Scan
INTRODUCTION

EdgeTech's Discover Coverage Mapper is used primarily to assist in performing side scan surveys and ensuring adequate overlap on adjacent runs. The towfish position (as calculated from GPS co-ordinate history, with user entered layback and offsets) is plotted in real-time on a 2-Dimensional latitude and longitude grid, along with the current bottom track coverage of the side scan sonar. Targets marked and then saved in the Target Logger application, (Sees Section 5,) are also displayed on the same latitude/longitude grid as the towfish track and coverage data.

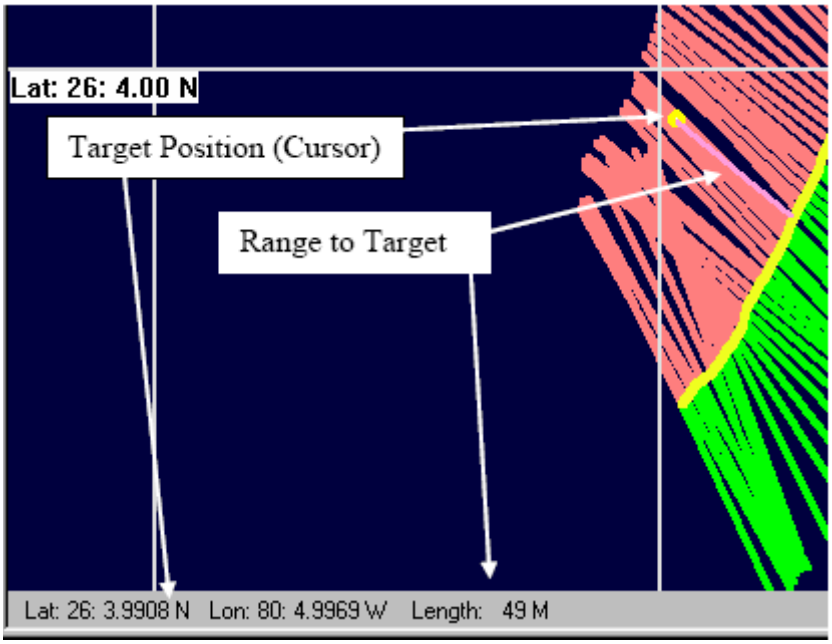
The Coverage Mapper application is separate executable, normally located in the same folder as the Discover.exe application. (Typically: C:\Edgetech\Discover xxxx-FS\DiscoverCoverageMapper.exe). There is normally a shortcut on the user Desktop to the application. It needs to be independently started either before or after Discover Sidescan is running. The two applications share data to present the fish track history and coverage, and the Target Logger application provides marked and saved Target positions to the Coverage Mapper application. The Discover Sidescan application must have a GPS receiver connected, providing valid position data during the survey. The Coverage Mapper application will also show the fish position and coverage history during playback of user created JSF files in Discover-side scan, provided the data had good GPS position data during the survey. Coverage history is also saved in a user designated folder in a file such as 20051220212635.enl. The file name represent the date and time of the history file creation (not data acquisition date). Such files may be created and re-loaded at any time.

An example of the Coverage Mapper screen is shown below:



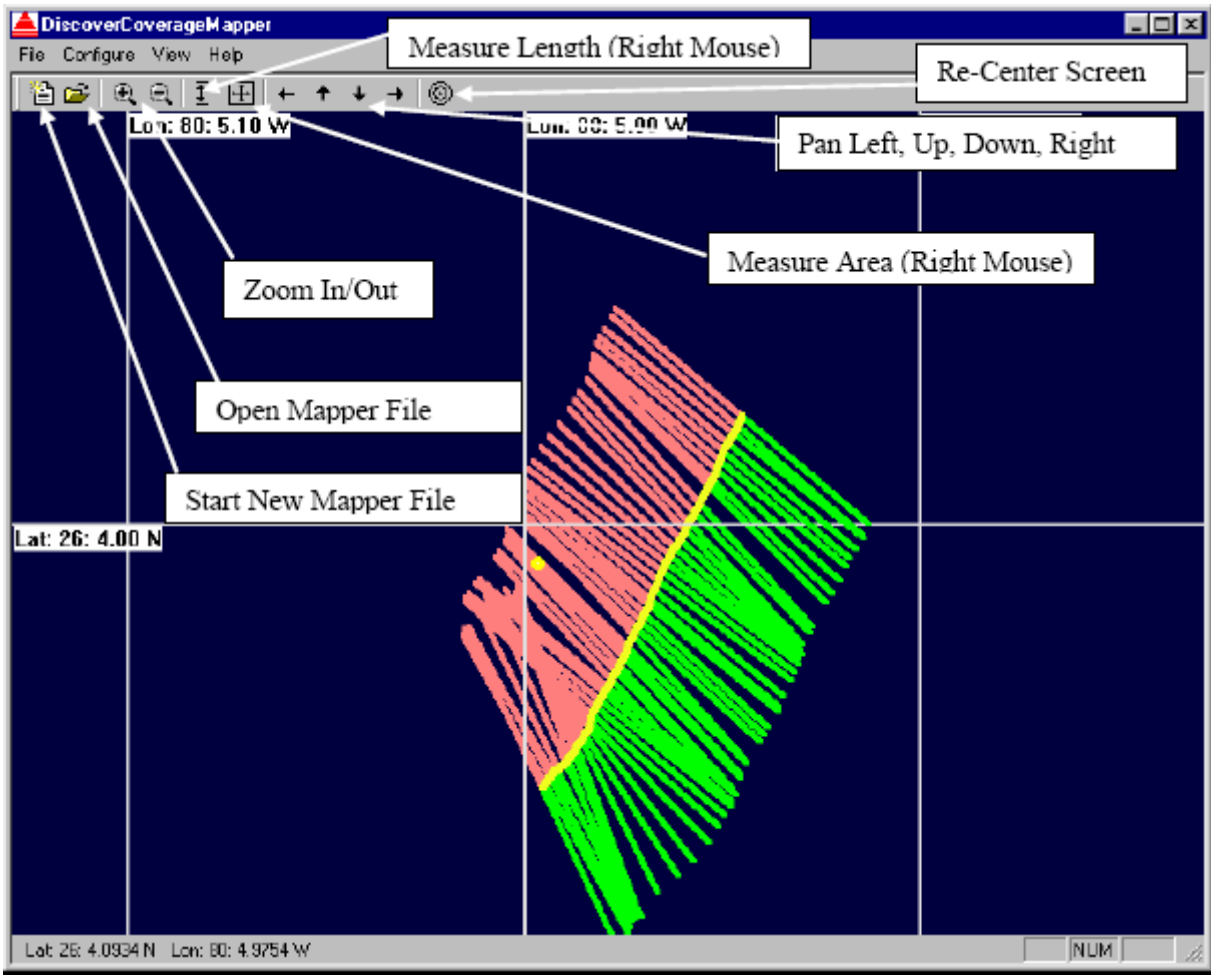
The Coverage Mapper can be user configured to:
• Auto Pan (follow ship with fixed zoom factor)
• Auto Zoom (shrink scale as region is expanded) for larger areas of coverage.
The user may customize all the colors of the Coverage Mapper display such as: background, targets, grids, towfish position, high and low frequency coverage, port and starboard, etc…
Current Cursor Position
Marked Target Position
Actual Ground
Range, Port Side
Fish Track

Coverage marks for indicating both the High Frequency and Low Frequency System ranges (if simultaneous dual frequency operation is supported by the towfish, e.g. 4200-FS) is also provided.



Direct measurement of distance between two points on the mapper screen, in meters, is provided by using the mouse RIGHT “click and drag” function. See above.
Other features and controls provided are:
• Zoom IN/Zoom OUT
• Re-center screen on Fish Position
• Pan Up/Down (North/South)
• Pan Left/Right (East/West)
• Measure Area or Length
Users may also select the track items to be displayed or hidden (such as Boat Position, Fish Position, Targets, Coverage, etc.).
Range to Target
Target Position (Cursor)

WINDOW LAYOUT

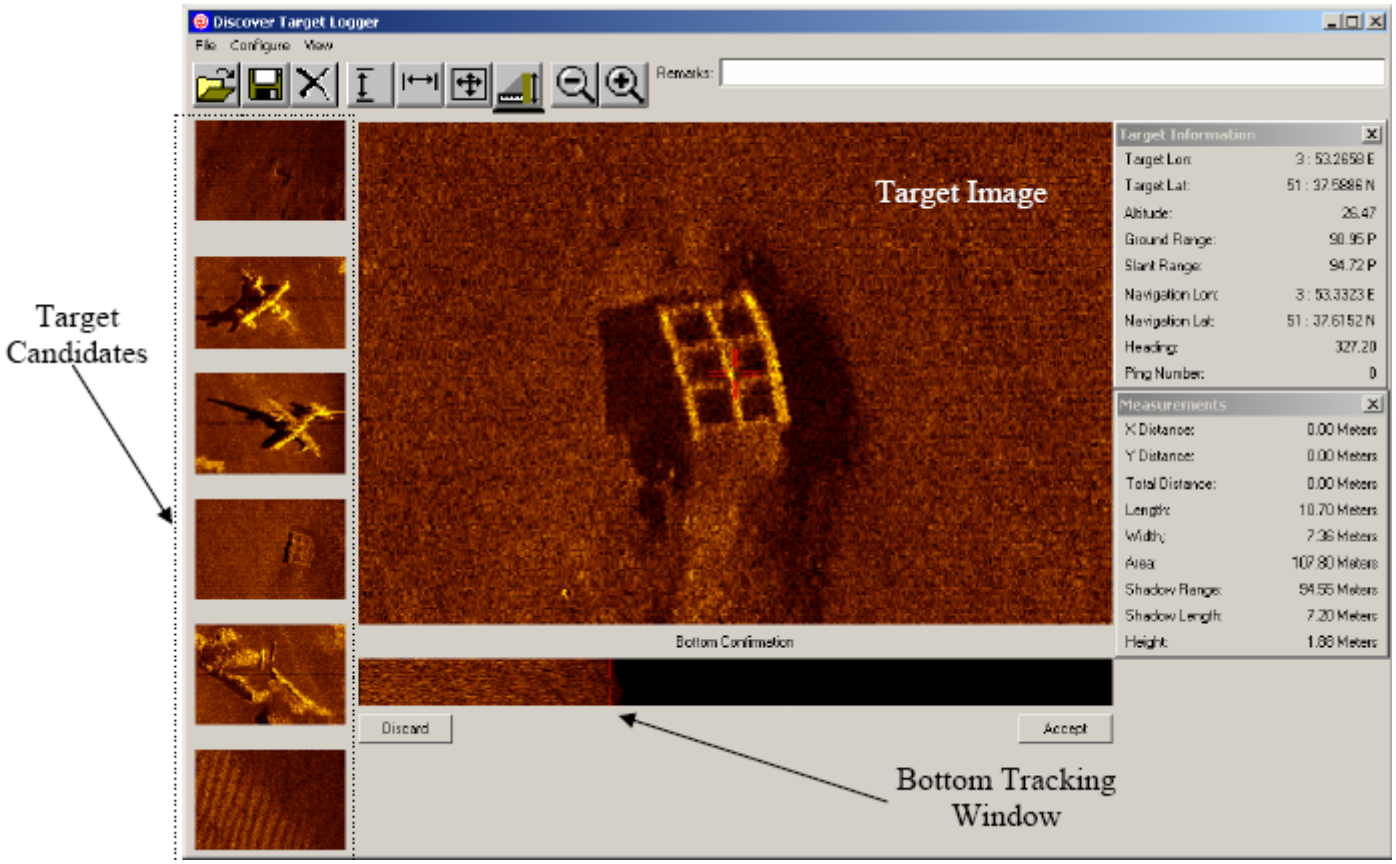


TARGET LOGGER for DISCOVER Side Scan

EdgeTech's Discover Target Logger is used for feature mensuration, logging and recall.
Right clicking on the sonar image in the Discover software launches the Target Logger.
If the Target Logger is already running when a feature is selected from the waterfall (right click) Target Logger becomes the active window.
If Discover software is not running, Target Logger can be initiated by clicking on the desktop shortcut.
A right click action on the sonar data waterfall causes Discover to define an area of imagery, centered about the current cursor location. This area of imagery is displayed in full resolution in the Target Logger main window. The default window size of the target image is 200 Display lines by the full sonar range. The vertical size for the window can be changed by modifying the 'TargetWindow' line in the active Discover Software initiation file (DiscoverLastxxxx.Jni).

OPERATION

As the sonar data is scrolling down the display, a target of interest may become visible. By placing the cursor over the target and right clicking, you will activate the Target Logger; log the target into the candidate directory, and open a target window. If the target is saved, you will also generate a mark file that can be imported into the Maptech® ® Software and plotted on a chart. Within the target window you can zoom, pan, save, get the exact location, and measure dimensions and height.



Target
Candidates
Bottom Tracking
Window

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