SILAS 3D
3D Seismic Sub-Bottom profiler

System specifications

Frequency	3 – 7 kHz
SPL Powerlevel 2 transducers at 3.5 kHz (3 at 3.5 m below transducers)	190.01 (in DB re 1 microPa, 0 degrees)
Pulselength	Variable, generally 0.5 millisecs at 3.5 kHz
Hydrophone array	High sensitivity broadband hydrophone array with signal recording for reprocessing with alternative array length. Active array length can be chosen in field based on distance to seabed
Hydrophones	>10
Pingrate:	5-10 Pings/second
Max height of transducers above object	10 m
Max penetration in seabed	>10m depending on seabed composition
Acccuracy	0.05 to 0.1 m
Beamwidth	8m
Surveyspeed	1-3 knots
Detection capability longlines	Yes
Dtection capabilities crosslines	Yes
Seismic seabed detection	Yes
Integrated verification with multibeam data (optional)	Yes
Integrated Magnetometer (optional)	Yes
Matched Filtering	Yes
Synthetic Aperture Processing	Yes
Motion correction heave, pitch, roll	Yes
Real time tracking of pipeline/cable	Yes
Near real time top of contact picking	Yes
Max acceptable heave	0.8 m
Width of frame	3.8 m
Standard configuration. multibeam,etc. Approximate Weight of mandatory wet components (excl frame) 2 transducer configuration	50 KG (wet weight) excluding poles,
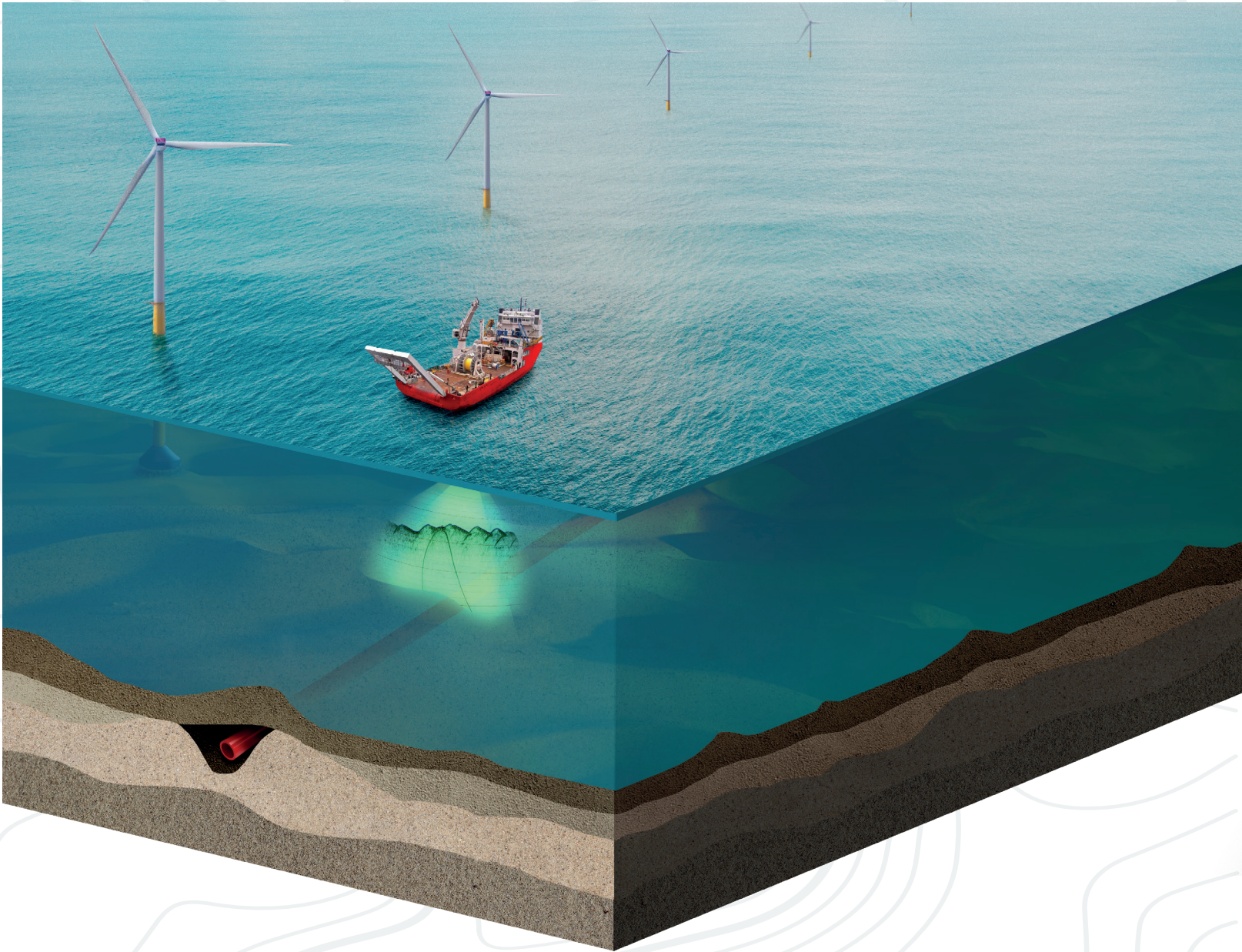
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Specifications

Acquisition
Digital high resolution seismic acquisition. Real-time data and live line trace monitoring, including real-time output of depth values, including bottom layers. Real time centimetric correction for all directional movements (heave, pitch, roll). Detailed positioning of the center point use of dedicated beam patterns. Application of real time and off-line Synthetic Aperture Processing and filtering techniques. Recording of all data, including seabed. Real time tracking of seabed in seismic data.

Processing
Silas 3D
Digital seismic processing package that enables the user to identify, analyze and interpret the geological features and objects found in the sea bottom.

With features such as:
- 3D plan view display
  Depth of Burial & Depth of Cover
  Exact measurement and application of the
- configuration of system of seismic sources and receivers
- Autodetected seabed detection for all beams
- Import both 2D and 3D data
- Offline check of seismic data with data of auxiliary systems (such as multibeam).
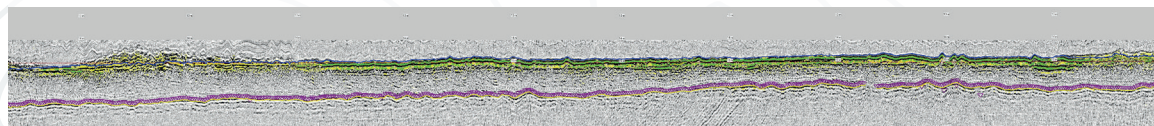
Contact detection
User controlled data determination of observations and related objects (contacts).

SEG Y import
Silas module: reads and stores seismic data in various SEG Y-formats.

Matrix import
Silas module: displays multibeam or gridded data loading in seismic records to check against or match with height data.

Frequency filtering
Silas advanced signal processing modules for S/N enhancement providing a wide range of frequency filters.

GeoTiff mapviewer
Import of geo-tiff data (multibeam, sss, geological map etc) and presentation in plain view.


Deliverables

Real time Depth of Burial (DOB)
Depth of Cover (DOC)
Site investigation / Layer detection
Object / Cable / Pipeline detection / UXO

Silas 3D is a complete data acquisition, processing and interpretation system, that covers a wide range of tasks and shows live line tracking in the helmsman display.

The SILAS S3D system is a passive cable detection system which uses an acoustical pinger source. The sound source consists of an array of transducers which are mounted in a frame over the side of a vessel, on a ROV or depressor. This sound source in turn is connected to a transceiver which actually sends the signal Reception of the signal is executed by an array of hydrophones mounted on a frame. The signals sent by the transducer array are not in all directions the same due to the fact that the transducer array geometry has an elongated shape. The axis through the array of the transducers is located parallel to the vessel sailing direction and results in the largest beam angles perpendicular to the sailing direction. Pipeline and cable contacts are detected by sailing longitudinal lines over and parallel to the object. The beam pattern of the Silas 3D cable detection system is approximately elliptical. The system combines high penetration with to ultra-high resolution, allowing for detailed interpretation and object detection.
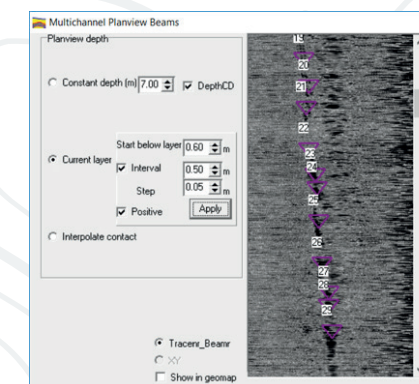
Silas 3D Helmsman display detection
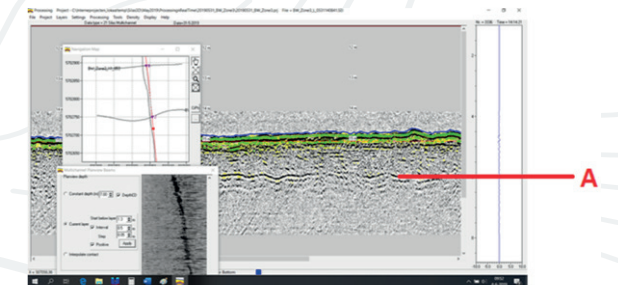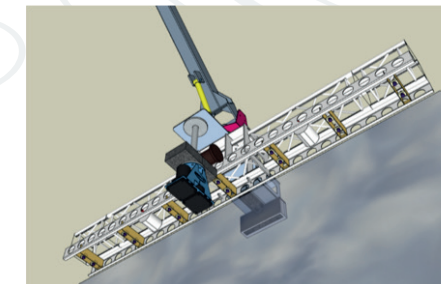
S3D Results near real time: longitudinal sections

Key features

- Live line tracking helmsman display
- Vessel & ROV mountable
- Seg Y Import
- Records all raw S3D seismics
- Realtime and near real time processing options