

Hydrographic Survey

2018.11.12

Hydrographic survey with S/L Bintang in nearshore, narrow and shallow waters

To be able to carry out detailed bathymetric surveys in nearshore, shallow and narrow waters, Wise Survey uses a 8.5 m long aluminum survey boat.

The boat is equipped with a Volvo D4 225 HP engine with duo prop stern drive giving a cruising speed



KHz covering depths from 0.5 – 500/600 m in seawater. The swath coverage is up to 140° giving a coverage up to 5.5 times the water depth.

The EM2040 measures 256 to 400 beams pr. ping and gives a total accuracy of 5 – 10 cm on seabed depending on the depth.

Precise positioning

The survey boat is equipped with a Seapath 330 RTK GNSS system using GPS and GLONASS satellites. The system receives correction data via the CPOS service from Kartverket via a triple redundant mobile communication solution. Raw GNSS observations are logged and enables post processing of raw GNSS using the PPP (Precise Point Positioning) method, if required due to e.g. poor mobile communication. Typical accuracy of RTK or PPP positioning is 2-5 cm horizontal and 5-10 cm vertical.

Motion compensation

To correct the depth measurements from the multibeam echo sounder for the boat's motion in the sea, the boat has installed a Motion Reference Unit (MRU 5) integrated with the Seapath 330 system. Measured roll, pitch, heave and heading are used by the echo sounder to compensate vessel attitudes in real time.

Sound velocity and tidal data

Prior to start of survey the velocity of sound in water at the site is measured using a SAIV SD204 CTD sensor. The recorded sound velocity profile is loaded into the echo sounder and used to correct the depth measurements for range and ray bending. Local variations in sound velocity at the transducer is measured using a Valeport smart sound velocity sensor in real time.

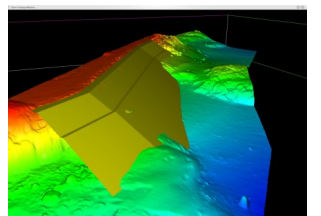
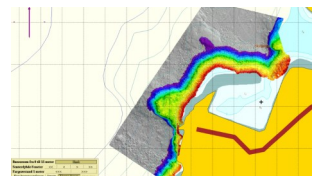
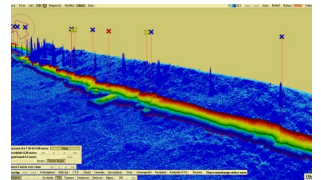
Depth measurements must be corrected for the effect of water level variations during the survey. Vertical level variations come from tidal variations, weather effects and vessel draft. Recorded GNSS height corrected by a geoid model is compared with observation from the

permanent water level network along the coast operated by Kartverket. Based on this comparison, a water level correction file to the required vertical datum is made for use in post processing.

In remote locations, a local water level recorder can be deployed and used for depth corrections.

Presentations

Data may be visualized with charts, CAD, terrain models and images.



Additional equipment

Bintang is outfitted permanently with the equipment described above, but has detachable A-frame and a bow pole, so it is also well suited for mounting additional equipment such as sub-bottom profiler and side-scan sonar.



- Hydrographic surveys to IHO standards
- Cable and pipeline route surveys
- Landfall / site surveys
- Lakes and dams
- Harbor entrances
- Depth verifications
- Volume calculations
- Geophysical surveys
- Sub bottom profiler
- Side Scan Sonar

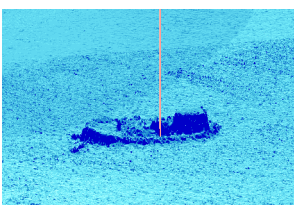
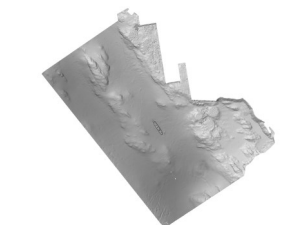
of 18 knots. The boat has IMCA class D classification for safe operation up to 20 nm from the coastline.

Quick mobilization

The boat's base is in Stavanger, Norway, and can mobilize at short notice. For survey tasks in other regions, it can easily be transported by standard truck or by ship. All sensors and systems onboard are installed permanently and calibrated regularly. The boat is ready for work when arriving on site.

Multibeam swath surveying

The boat is equipped with an EM2040 multibeam echo sounder with 0.7x0.7 TX/RX transducers. The system operates from 200 – 400



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