CEE HydroSystems™

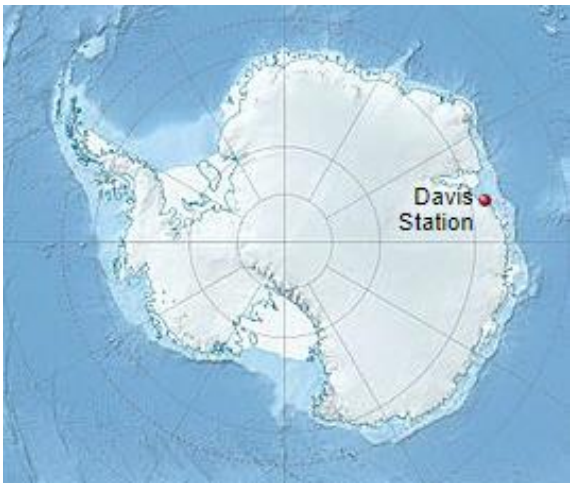
CASE HISTORY

Surveying with the CEESCOPE™ in the Coldest Place on Earth

Surveying on the Antarctic continent presents significant challenges for any instrumentation, especially in the marine environment. As part of an Australian government initiative announced in 2018 to investigate the possibility of building the first concrete runway in Antarctica, a survey team were brought in to survey waters around Davis Station. The surveys were successfully completed using the CEESCOPE™ single beam echo sounder and CEE-TSF™ enhanced StarFish side scan package. Ease of use, reliability, and simplicity were the key factors.

In 2018, the Australian government announced its intention to construct a new concrete runway at the Davis Station Antarctic base. Apart from the obvious logistical advantages of year-round access, the project is expected to result in wide scientific benefits such as higher resolution weather and climate models, and improved contributions to global sea levels studies. The runway would be the first paved runway on the continent.

As part of the project, an Antarctic survey team were called in to provide combined single beam and side scan sonar hydro-graphic surveys. The surveyors chose to use their Vessel of Opportunity (VOO) kits supplied by CEE HydroSystems, comprising a CEESCOPE™ "all in one" RTK-enabled echo sounder, the CEE-TSF™ enhanced StarFish side scan, the CEE-PACK™ super-rugged power pack, and a transducer mounting kit.



Australian Antarctic base – Davis Station.

The goal of the survey was to better understand the bathymetry close to the Davis Station base in order to assess the viability of constructing the runway. In particular, these surveys focused on the ability of landing craft to safety land and deliver supplies for the future construction of the aerodrome.

The key to the Australian team's equipment selection was the ability to mobilize easily on a very small boat, with equipment that was designed with the cold climate specifically in mind. There was no room for equipment failures.

Survey boat with side scan and SBES pole mount.

The StarFish 452H side scan towfish was pole-mounted alongside the CEESCOPE echo sounder's 200 kHz transducer. This arrangement, using CEE's VOO bracket kit, offered a more suitable deployment method that attempting to tow the towfish behind the small boat. Position data were generated by the NovAtel 729 RTK GNSS receiver inside the CEESCOPE itself.

CEESCOPE™ tactical kit with HYPACK acquisition.

The surveyors were happy they were able to complete their surveys with no mishaps or equipment problems. The combined use of side scan with single beam echo sounding was demonstrated to be an effective alternative to more complex multibeam equipment, especially for reconaissance type surveying. The HYPACK® software package used for the surveys is able to conveniently acquire and georeference side scan images along with the CEESCOPE bathymetry, creating a combined bathymetric map and bottom imaging dataset to allow the project team to better understand the potential future challenges of the area during construction.

According to one of the project members, "The job was a success and we are always impressed with the CEESCOPE and the rest of the VOO kit. We also enjoy surprising other surveyors with the good results we get from such a compact unit that is easy to use and set up!"