



Survey Case Study

Decommissioning Survey

Wellhead/ Buried Concrete Mattresses

Customer Background

PanGeo Subsea is a marine geophysical-geotechnical service delivery company, specialising in high-resolution 3D acoustic imaging solutions.

Neptune is a leading provider of integrated inspection, repair and maintenance solutions to the oil and gas, marine and renewable energy industries and is headquartered in Perth, Western Australia.

Subsea Technology & Rentals (STR), Great Yarmouth is a leader in the supply of advanced subsea technology to support the offshore survey, IRM, subsea construction and renewables sectors.

Profiling Sonar - Offshore Survey

Tritech's Gemini 620pd profiling sonar achieves accurate bathymetric data to assist with a decommissioning survey in the Southern North Sea (SNS).

The **Gemini 620pd** is a high-resolution echo sounder from Tritech's renowned Gemini range of multibeam sonars. With features such as automatic bottom tracking, variable gate setting, gate tilting as well as roll compensation, Gemini 620pd ensures a survey can be completed with minimal user interaction during operation.

The Need for Multibeam Profiling in Surveys

Tritech's Gemini 620pd provides an easy-to-use interface for multibeam seabed profiling. The system comprises a 620 kHz multibeam sonar, which is depth rated to 4000m and can be configured in a single or dual head configuration, along with a Gemini Hub for accurate time stamping of all associated sensor data. Dedicated Gemini software allows the user to easily configure and monitor the Gemini 620pd. Neptune used Tritech's Gemini 620pd profiling sonar along with a Gemini Hub (as rented to them by STR), to obtain a true profile of the seabed, as part of a decommissioning contract for wellhead survey and positioning for their client PanGeo Subsea.

The Challenge of Decommissioning Surveys

Accuracy is critical and operators often have to contend with conditions which have poor visibility and the possibility of uncharted obstacles.

Equally, rough sea conditions typically result in the requirement for an intervention-capable system which results in the charter of an expensive vessel and Remotely Operated Vehicle (ROV).

Positioning and station keeping requirements can therefore significantly impact upon the options available to perform decommissioning operations; along with the expense to mobilise offshore vessels.



Image of the Atlantic Maritime ROGE-ROV* with the PanGeo Sub-Bottom Imager (SBI) module (as visible) where the Gemini 620pd was mounted along with a PHINS** positioning system.

*Remote Operated Grab Equipment-Remotely Operated Vehicle

**Photonic Inertial Navigation System

However, by utilising intelligent technology to overcome the challenges experienced in rough seas, the MV (Motor Vessel) Atlantic Explorer and its on-board Atlantic Maritime ROGE-ROV were able to undertake the survey with a high degree of accuracy.

This project was located in the SNS around the remote Welland Platform.

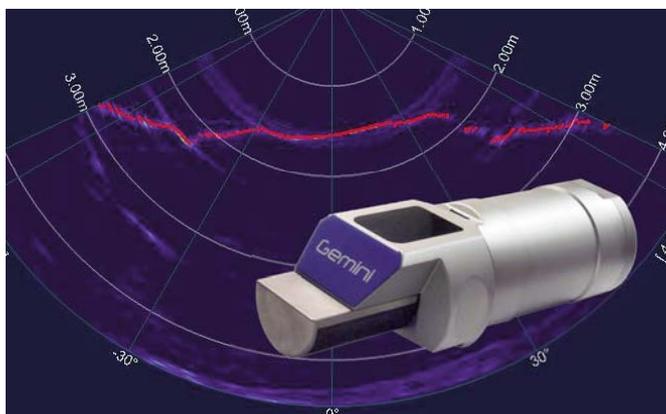
How it Works

Operating at 620 kHz, the Gemini 620pd can provide 10mm range resolution with an angular resolution of 1 degree.

A 130 degree swathe is covered by 256 x 1 degree beams resulting in an effective angular resolution of 0.5 degrees, producing high performance bathymetry data, which in turn can be output to industry-standard survey packages for processing.

Mounting Requirements

The Gemini 620pd is of robust design and an easy form to mount. In this operation, it was deployed on an Atlantic Maritime ROGE-ROV to allow PanGeo/ Neptune to measure a 6m wide x 6m deep survey corridor. The Gemini 620pd profiling sonar was mounted along with the PanGeo SBI module and a PHINS positioning tool.



Gemini 620pd Profiling sonar and data which shows the clear contours and profile of the seabed.

Will Primavesi, Survey General Manager for Neptune comments:

“The data provided by Tritech’s Gemini 620pd profiling sonar was of a high standard given that the project was undertaken during the winter in the SNS where motion risk was a hazard. The Gemini 620pd demonstrated its capabilities as a survey tool, allowing the client [PanGeo] to integrate the resulting Digital Terrain Model (DTM) with their SBI data to profile the position, size and structure of buried concrete protection mattresses which were installed over a decade ago.”

Measuring Success

Gemini 620pd is rapidly becoming the added-value survey tool for bathymetric surveys, allowing increased seabed coverage from a multibeam in situations where a mechanical scanning profiler was previously used.

The SBI/ PHINS package allowed the buried mattresses to be precisely located and visualised, whilst the Gemini 620pd provided the seabed profile. This allowed accurate depth of burial of the mattress to be confirmed, without having to disturb the seabed.

By removing the need for seabed intervention it was possible to perform the operation in unfavourable sea conditions, the project was therefore completed quickly and cost effectively.

Bill Docherty, PanGeo Subsea comments:

“The Gemini 620pd integrated seamlessly with our SBI for this operation in the SNS. The data supplied by the sonar enabled us to accurately report the depth of coverage above the mattress which the SBI system had located.”