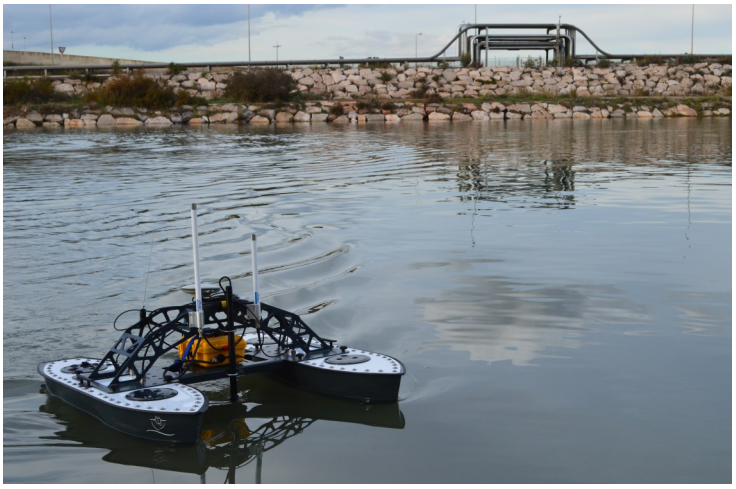
Bathymetric survey of a large shallow river section, Port of Tarragona

The Unmanned Survey Solutions' (USS) Inception class unmanned survey vessel (USV) has been developed to address a gap in the shallow water sector. This hydrographic survey vessel is composed of tough aluminium hulls, weed cutting propellers and provides bathymetric surveys in areas where access for a traditional survey vessel is not possible such as quarry lakes, lagoons, mining ponds and other shallow water zones.

Summary

The Port of Tarragona Authority required a bathymetric survey of a challenging shallow river section which flows into the port. Previously uncharted, due to its inaccessibility for standard vessels, the production of accurate bathymetric charts enabled the Port of Tarragona Authority to assess the site and its suitability for future development. The Inception helped deliver a complete, efficient and cost effective survey solution.



The Task

The customer required a bathymetric survey of a previously uncharted section of the Riu Francoli, which flows into the port. The area was particularly challenging due to its size, shallow depth and submerged rocks and hazards. The total area of the proposed site was over 150,000m^2 and required 10-20m line spacing to achieve sufficient coverage. The USS Inception with its rugged design and durability proved to be the perfect survey package for the task.

The Solution

The USS Inception class USV can be easily transported by car or van and its quick mobilisation and deployment procedure means that online survey activities can commence almost immediately upon arrival at site. Once deployed, it is remotely piloted from shore with the aid of an additional HYPACK navigation display. The solution for this application consisted of a CEE HydroSystems CEESCOPE-USV system, a combined SBES, GNSS, Telemetry system and HYPACK survey software package.

Overview

With the survey site surrounded by rock embankments, health and safety dictated a two person survey operation. At a survey speed of ~2.5 knots, the total linage required to provide sufficient coverage of the 150,000m^2 area was completed within 3 days. Battery changes for the USV occurred at midday and took 45 minutes for recovery, exchange and redeployment. Contours and TIN models were created near real time, allowing for initial charts and onsite Quality Control. The Inception proved to be a great solution for the customer's requirements.

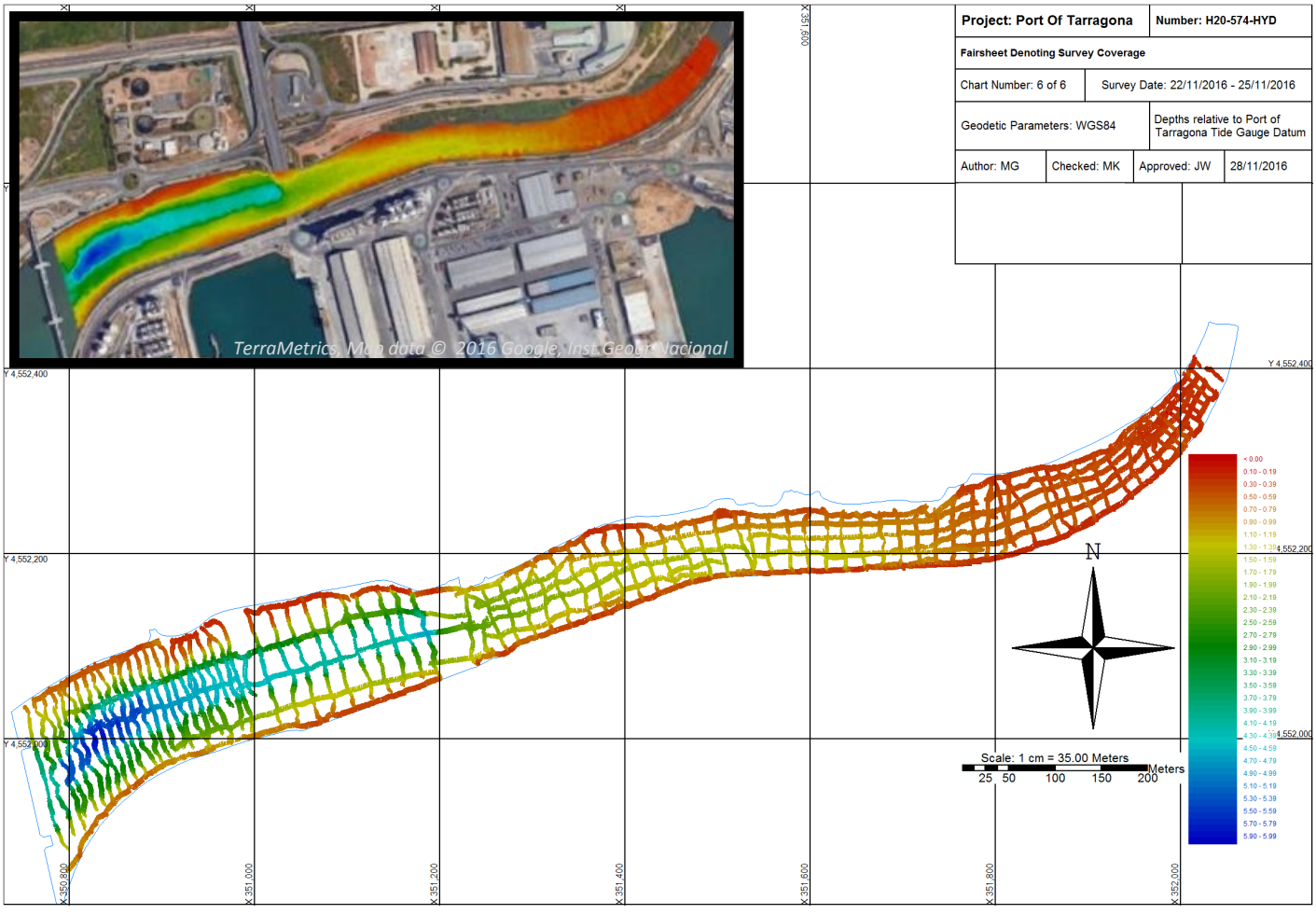


Figure 1. Sample bathymetric chart and overlaid satellite imagery produced from the data collected with the Inception USV survey solution.