

Unmanned, Autonomous Surface Vessel to Provide Subsea Pipeline Surveys in the North Sea



Intrepid Hydrographic, a specialist in subsea pipelines engineering, has selected Marlink and Eurostar Mobile to deliver a reliable connectivity solution for Autonomous Surface Vessels (ASV) in the North Sea.

A mobile and compact satellite solution was required to fit their small vessels which operate fully autonomously for more than a week with any crew onboard. A prerequisite was a low power solution to ensure the needs for real-time transmission of data from sub-surface surveys.

Key Benefits

Intrepid Hydrographic achieved the following successful takeaways:

- Autonomous and low-cost satellite tracking solution for surveys of subsea pipelines and cables
- Secure and reliable satellite connectivity for unmanned boats
- Use of global S-band connectivity
- Robust IP67, auto-acquire terminals to operate in harsh environments
- Bespoke airtime plan to perfectly match commercial needs
- Remote management tools to manage data access and optimise traffic, keeping costs down

The Challenge

For unmanned boats to go offshore over-the-horizon beyond the reach of line-of-sight communications, Intrepid Hydrographic required a reliable communication solution that could acquire and maintain a high-quality satellite connection automatically, without the need for manual pointing.

In addition, Intrepid Hydrographic needed to ensure that any hardware deployed could cope well with the harsh environmental conditions inherent to the North Sea without the need for additional accessories, while also having a compact form factor suitable to the small vessel on which it was installed.

Finally, Intrepid Hydrographic needed to ensure that the solution when deployed would suit their budgetary needs.

The Solution

Marlink responded to these challenges by providing Intrepid Hydrographic with a satellite-based solution based on the Hughes 4500 S-band terminal launched by EchoStar Mobile in 2019.

This low-cost terminal with a high environmental rating (IP67) requires no manual intervention to acquire and maintain the connection to the satellite, whether stationary or on the move, making it the ideal solution for the unmanned survey boats.

The low standby power consumption of the Hughes 4500 terminal makes it possible to provide end-to-end IP connectivity to sites that are otherwise off the grid. It is suited to power-challenged locations that rely upon solar-battery arrays with sensitive power budgets.

Lastly, operating in the S-Band ensures that the connection remains unaffected by the often-extreme atmospheric conditions inherent with offshore operations.

Marlink introduced a series of remote monitoring tools to prevent unnecessary data increasing the airtime costs. Data was managed to optimise the traffic by using filtering and firewall rule sets, resulting in a scalable and flexible satellite solution for Intrepid Hydrographic's future sub-surface survey needs.

Intrepid Hydrographic's Feedback

"A core part of Project Intrepid over the past 7 years has been to develop software to sample, compress and transmit data so that onshore surveyors can monitor the quality of surveys in real time. For that we needed a reliable satellite connection covering Northern European waters, and the Southern North Sea in particular. We also wanted a small, lightweight dome without moving parts so were looking for electronic satellite tracking. Of course, sensible costs were important, however, in this new market, so too were the responsiveness of customer/technical support, and flexibility in how the airtime package was structured"

Trevor Jee, Managing Director, Intrepid Hydrographic Ltd



Marlink Service Desk

EMEA: +33 (0)1 70 48 98 98 Americas: +1 (310) 616 5594 +1 855 769 39 59 (toll free) Asia Pacific: +65 64 29 83 11
Email: servicedesk@marlink.com www.marlink.com

Proof of Concept

Marlink worked closely with EchoStar Mobile and Intrepid Hydrographic to design and deploy a comprehensive Proof of Concept over a two-month period:

- Complete test and evaluation of the performance of EchoStar Mobile's S-band service and the reliability of the Hughes 4500 terminal
- Assessment of the vessel's data consumption
- Creation of a bespoke airtime plan to perfectly match the commercial needs of the customer

About Intrepid Hydrographic Ltd

Intrepid Hydrographic surveys subsea pipelines and cables. It uses unmanned boats capable of operating autonomously for up to 4 weeks at a time, obtaining standard survey data whilst leaving the surveyors and mariners safely onshore and keeping costs down.

About EchoStar Mobile Ltd

EchoStar Mobile, an Irish company with commercial operations headquartered in the United Kingdom and a data centre based in Griesheim, Germany, is a mobile operator that provides connectivity across Europe through a converged satellite and terrestrial network. EchoStar Mobile is a subsidiary of EchoStar Corporation, a premier global provider of satellite and video delivery solutions.

