

Autonomous survey solution

The Gavia Offshore Surveyor Autonomous Underwater Vehicle (AUV) from **Hafmynd** is a self-contained, low logistics survey tool, capable of delivering high quality data for a variety of applications.

The Gavia AUV is a powerful asset to any commercial survey operation, providing highly cost-effective data when compared with traditional survey methods, such as surface vessels and ROVs.

The Gavia is also capable of gathering an array of other data sets through field-swappable sensor modules, which allows a single system to carry out a variety of tasks as mission requirements dictate. In addition, field-swappable batteries can greatly reduce downtime in the field.

The Gavia can operate from vessels that do not require specialised handling equipment for deployment, from small, low freeboard or inflatable vessels, or when using launch and recovery systems on larger vessels.

The Gavia system is highly mobile and packs into FedEx shippable cases with a small logistical footprint. No specialised equipment is required to operate the system apart from a ruggedised laptop running a chart-based user interface and an acoustic modem.

The data gathered is time-synchronised and left in the sensor manufacturer's original format while all vehicle logs are stored in an open format. Data is compatible with a variety of third-party processing packages including SeeTrack, which also allows for autonomous pipeline tracking through the AutoTracker module. This then tracks the pipeline through input received from the side scan sonar.

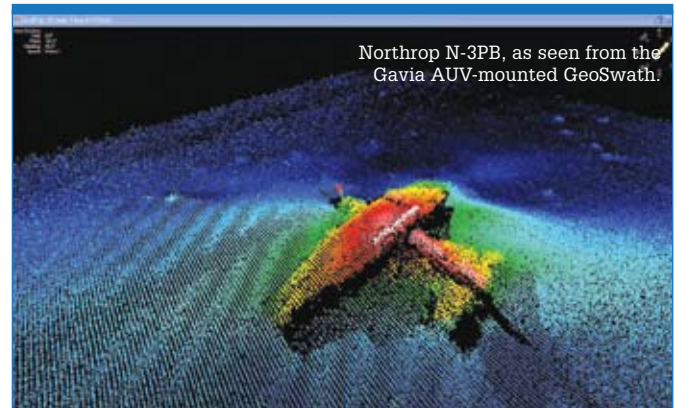
Typical commercial applications include bathymetric surveys, pipeline inspections, environmental surveys, exploration, post-hurricane inspection, pre-lay, pre-build and post-lay, post-build surveys for pipelines and platforms.

Case study: *Alexander Hamilton*

The Icelandic Coast Guard conducted a pollution survey in an area, located a few hours sailing from Reykjavik. The findings revealed a wreck in the area, and an operation was planned with the Icelandic Coast Guard cutter to identify it using sensors with a high-resolution side-scan sonar and bathymetric data from a Gavia AUV.

The operation was conducted on 31 August 2009 in windy conditions and sea state 4-5. Due to the high swells and limited visibility, small-boat operations were challenging for the AUV operators, particularly during the launch and recovery. Even with a known GPS position of the wreck, the visual relocation of the vehicle proved difficult.

From the data gathered by the Gavia it was possible to ascertain the identity of the wreck as the *Alexander Hamilton*, which was lost by the US in January 1942, and that the vessel



Northrop N-3PB, as seen from the Gavia AUV-mounted GeoSwath.



The Gavia AUV being used in a commercial pipeline inspection in the Caspian Sea.

was lying on its starboard side roughly at a 45° angle, at a depth of around 95m. It was also possible to see evidence of the massive damage from a German torpedo, which left an 11m hole at the bottom of the ship.

"The Gavia AUV proved to be a powerful tool in the Icelandic Coast Guards' identification of the *Alexander Hamilton*," said Captain Halldór Nellet, chief of operations, Icelandic Coast Guard. "It provided us with a clearer picture of the vessel in its entirety, including the damage sustained and how the wreck lies on the sea bottom, through a high quality side scan and bathymetric data from a man-portable platform. It was a valuable asset in this operation." ■

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