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Offshore Surveyor



The Gavia Offshore Surveyor Autonomous Underwater Vehicle (AUV) is a self contained, two-man-portable, modular survey platform capable of delivering high quality data while operating from vessels of opportunity or from the shore.

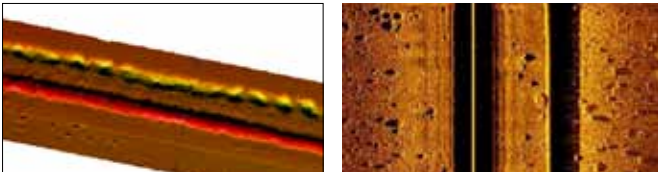
The Gavia AUV can be a productive asset to any commercial survey operation and has been proven in real-world environments, providing cost effective data when compared to traditional means using surface vessels utilizing towed assets and ROVs.

COMMERCIAL APPLICATIONS

Bathymetric surveys, environmental surveys, exploration and various construction support and inspection tasks for pipelines and platforms, utilizing side scan, camera and swath bathymetry. Specialized payloads can be used for post hurricane inspection, pre/post lay & build surveys, and sub-bottom surveys.

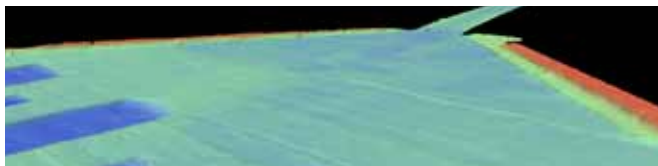
HIGH QUALITY DATA OUTPUT

All data is kept in manufacturer's original format and readily exportable to a number of post processing packages.



Left: A section of a 5km pipeline trench survey performed on completion of operations in the Caspian Sea. The trench was surveyed from the beach out starting in waters less than 2m deep.

Right: 900 kHz side scan image from pipeline inspection gathered by Gavia AUV using AutoTracker, showing potential hazard to the pipeline.



Detail of bathymetric harbour survey image gathered by Gavia AUV carrying a GeoSwathPlus, showing dredged areas used for barge anchorage. Images courtesy of NCS-Survey and BP Azerbaijani Subsea Performance Unit

MODULAR CONSTRUCTION

The modular construction of the Gavia AUV allows the user to conduct a variety of missions with user changeable modules. Additional Gavia modules can be purchased at a later date to increase capability as mission requirements dictate.

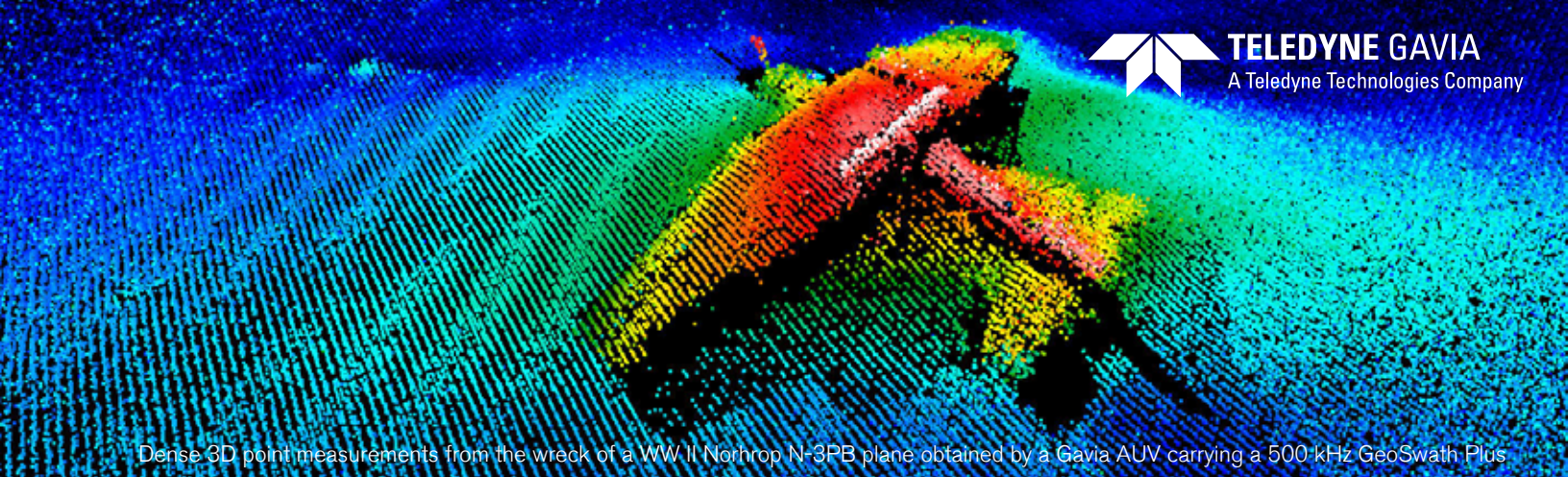


GAVIA OFFSHORE SURVEYOR FEATURES

- » The Gavia AUV is packaged in small cases that are both FedEx shippable and easily transportable in a van or pickup truck to the operational site
- » The Gavia AUV can be operated by two operators and does not require any specialized equipment for launch and recovery which is typically done from either the shore or small crafts/boats
- » Quick mobilization / demobilization - No installation or calibration of peripherals required
- » Over the horizon communications through Iridium satellite connection
- » Easy to use chart-based graphical user interface with enhancements for commercial operations
- » Small logistical footprint with no specialized equipment required to operate the system
- » Survey grade sensors available, including sub-bottom profiler for geophysical sub-layer surveys and swath bathymetry systems for hydrographic surveys
- » Proven survey grade deliverables from commercial pipeline and hydrographic surveys in real world environments
- » Optional payload modules for customer supplied sensors or additional sensors
- » All data time synchronized and stored in manufacturer's original format and all vehicle logs in an open format
- » Field-changeable battery and sensor modules.
- » Compatible with a variety of third party post processing packages

AUTONOMOUS PIPELINE INSPECTION

- » Using SeeByte's AutoTracker software, a Gavia AUV can autonomously detect and track a pipeline from onboard sensors while constantly maintaining a predetermined offset to optimize the data that is being collected. The AutoTracker can handle both expected and unexpected pipe burials
- » In the summer of 2009, NCS Survey of Aberdeen operated a Gavia vehicle for commercial survey operations, successfully inspecting approx. 90 km of pipeline in what is believed to be the first commercial



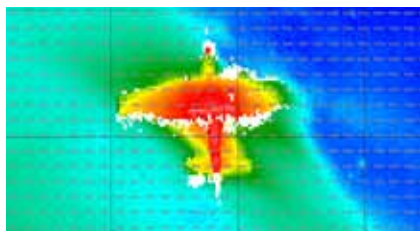
Dense 3D point measurements from the wreck of a WW II Northrop N-3PB plane obtained by a Gavia AUV carrying a 500 kHz GeoSwath Plus

Northrop Data Sets

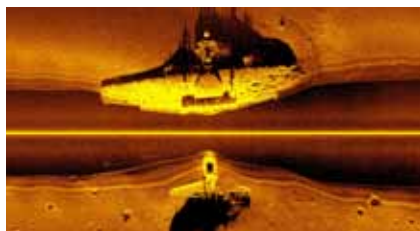
Crashed by Reykjavik Airport during WW2



Northrop N-3PB.



Binned GeoSwath MBES image of target.



1800 kHz Side Scan Sonar image of target



Detail of bottom hatch from the Gavia camera system.

Mine Counter Measures (MCM)



OFFSHORE SURVEYOR SPECIFICATIONS

Length: 2.7 m (typical, depends on configuration)

Weight in air: 70 - 80 kg (typical, depends on configuration)

Diameter: 200 mm

Depth rating: 500m - 1000m

Battery module: 1.2 kW lithium ion rechargeable per Gavia battery module

Max speed: > 5.5 knots

Endurance: Dependent on speed and exact configuration. Typically 4 – 5 hours at 3 knots per rechargeable battery module with all sensors (including swath bathymetry). Vehicle can be operated with two batteries for increased endurance (roughly doubled) or batteries can be field swapped for continuous operations

NAVIGATION

High accuracy DGPS ready receiver

High-precision DVL-aided Kearfott T-24 Inertial Navigation System (INS) with Teledyne RDI Doppler Velocity Log (DVL) and direct sound velocity meter

Positioning accuracy can be maintained over longer duration deployments by ranging to bottom-moored Long Baseline (LBL) transponders (optional)

COMMUNICATION

Wireless LAN: IEEE 802.11g compliant

Satellite communications: Full global coverage via Iridium link

Acoustic modem: For tracking and status updates

TYPICAL CONFIGURATION

Offshore Surveyor base vehicle (500m or 1000m depth rating)

High-precision DVL aided Inertial Navigation System (INS)

Swath bathymetry module

Side scan sonar and camera

Sub-bottom profiler

Sound velocity meter

Obstacle avoidance sonar

AutoTracker from SeeByte

Spare battery module(s)

The Gavia AUV began in 1997 as a joint development effort between the University of Iceland and Hafmynd ehf (now Teledyne Gavia).

Since then, numerous Gavia vehicles have been sold to military, commercial, and scientific users in Iceland, Australia, Denmark, Portugal, United Kingdom, Japan, Canada and the United States.

