

Autosub6000 – the next generation of AUV

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Having successfully completed sea trials in the NE Atlantic Ocean, Autosub6000 is now ready to take on science missions. Working from onboard the UK research ship, RRS Discovery, the objective of the trials was to demonstrate that *Autosub6000* is ready for science missions to at least 4500 m deep. Ultimately the AUV will be able to reach depths of 6000 m.

Following a short test deployment in Falmouth Bay (the first time that this AUV had ever run in water), the second mission took Autosub6000 to a depth of 4556m. *Autosub6000* controlled and navigated effectively, and the Linkquest Tracklink 10000 Ultra Short Base Line (USBL) and telemetry system worked well to a slant range of over 7 km. Later navigation tests proved the accuracy of the AUV dead reckoned navigation system (drifting less than a metre for every one kilometre travelled), and the bottom tracking range of the ADCP (to 240 m altitude).

Autosub6000 is a 5.5 m long, 2800 kg, Autonomous Underwater Vehicle (AUV).

With a 6000 m depth rating and powered with pressure balanced Lithium polymer rechargeable batteries (5 hours recharge time) it has an autonomy of up to 60 hours, or 300km (and there is scope and funding to double this in the future). The free flooded nose section has 0.5 m³ available for any generic scientific payload such as CTD, cameras, sonars, chemical sensors, samplers, microstructure probes and up to 250 Watts of electrical power can be made available for the sensors. The navigation system uses an Ixsea PHINS Fibre Optic Gyro (FOG) based Inertial Navigation System, closely coupled to a RD Instruments 300 kHz ADCP. Control modes include constant altitude, constant depth, and up down profiling.

Steve McPhail, the *Autosub6000* project manager was impressed with the performance of the AUV during the trials: "We had no significant technical problems, and our engineers did not need to open up any of the pressure resistant enclosures to service the vehicle control systems - a good indication that things went very well".

Following on from the success of the sea trials, *Autosub6000*'s first science mission will be in August 2008 on the RRS *James Cook*, where it will survey the deep European margin using high resolution multibeam sonar.

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