SENTRY

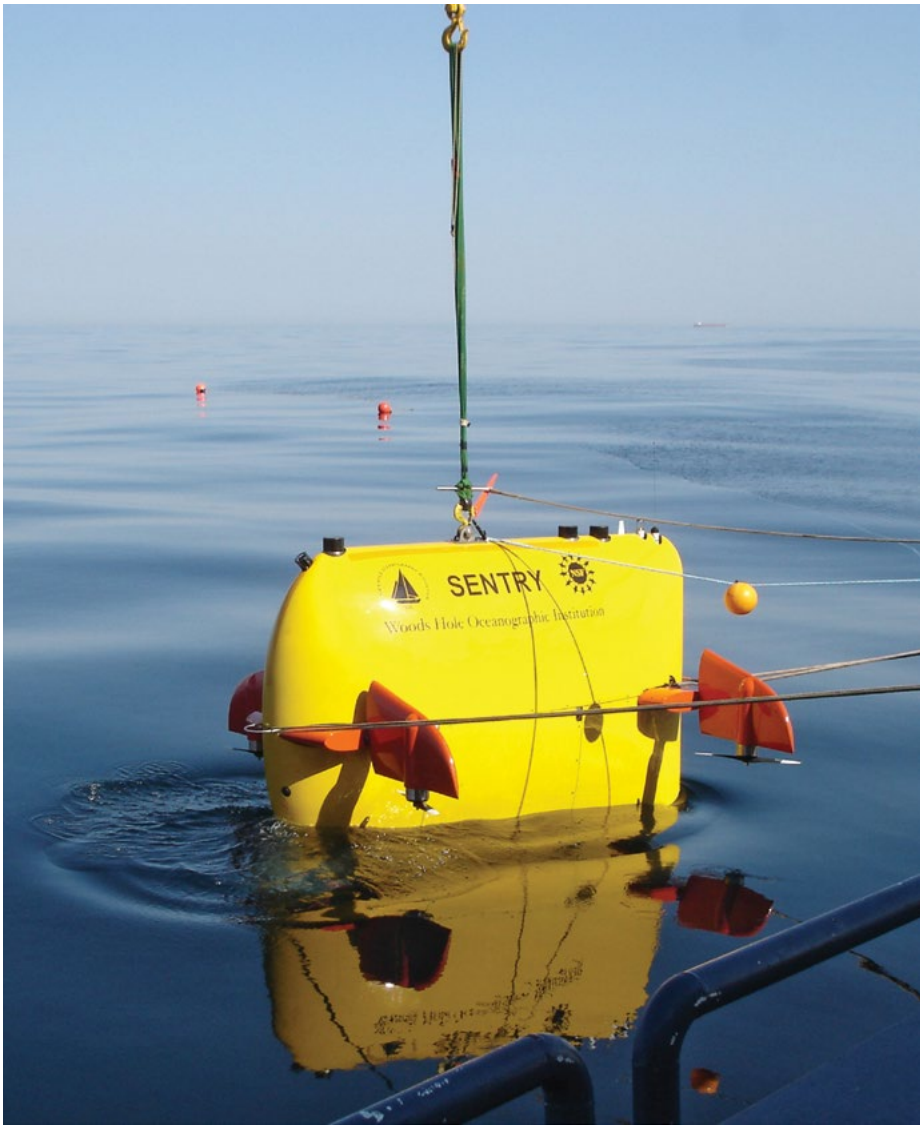
The autonomous underwater vehicle (AUV) *Sentry* is the newest member of the National Deep Submergence Facility having been adopted to replace its predecessor *ABE* in Summer 2010. *Sentry is* designed for operations down to 6,000 meters (19,685 feet) depth, with a design that emphasizes extreme maneuverability, close bottom following, large and innovative payloads, and rapid transit to and from the seafloor.

Sentry can be mobilized readily for use as a stand-alone vehicle on a wide range of research vessels but can also be used very effectively in tandem with *Alvin,* an ROV such as the NDSF's *Jason or a wide variety of other cabled or free swimming assets* to improve the efficiency of deep submergence investigations.

Sentry carries an extensive scientific sensor suite as standard but can also accommodate diverse user-provided science payloads enabling it to be used for a variety of midwater and near-seabed investigations.

Sentry produces bathymetric, sidescan, chemical and magnetic maps of the seafloor and is capable of taking high quality digital color photographs in a variety of deepsea terrains including along mid-ocean ridges and at ocean margins and in complex settings such as hydrothermal vent and cold seep ecosystems.

Sentry's navigation system uses a doppler velocity log and inertial navigation system, aided by acoustic navigation systems (USBL). The USBL system also provides acoustic communications, which can be used to obtain the vehicle state and sensor status as well as to retask the vehicle.



In addition to its standard sensors, *Sentry* has carried numerous custom sensors including the PMEL-MAPR potential probe, the TETHYS *in-situ* mass spectrometer, a 3-D camera, a gravimeter, and several other science provided payloads. Recently, *Sentry* has also begun taking pumped filter samples. *Sentry* is increasingly being utilized for a much wider range of oceanographic applications and collaborations to develop new missions and new sensing are actively encouraged. And in 2015 pioneered precision deep vent larval sampling.

For more information please contact:
Carl Kaiser, AUV Operations Manager, ckaiser@whoi.edu or
Chief Scientist for Deep Submergence, csds@whoi.edu
Or look at the cruise planning guide at: www.whoi.edu/main/sentry

Specifications

Depth capability:	6,000 meters
Dimensions:	Length: 2.9m (9.7ft)
	Width* 2.2m (7.2ft)
	Height 1.8m (5.8ft)
Weight:	1,250 kg (2,750 lb) without extra science gear
Operating range:	50-70 km, (38-54 mile) depending on speed, terrain and payload
Operating speed:	0-1.0 m/s (0-2.0 knots)
Propulsion:	4 brushless DC electric thrusters on pivoting wings
Energy:	Lithium Ion batteries, 18 kWh
Bus power:	48-52 Volts DC.
Endurance:	26-60 hours on bottom depending on mission type and depth
Turn around time:	16 hours deck to deck
Descent/Ascent speed:	50m/min for both descent and ascent, 2400m/hr.
Navigation:	USBL Navigation with real-time Acoustic Communications, Doppler Velocity Log (DVL), and Inertial Navigation System (INS)

** width of body with fins extended (without fins: 0.8m/2.7ft)*

Standard Sensors

Sensor	**Model**
Sonardyne Ranger 2 w/ Avtrack2	Ranger 2
WHOI LBL	Custom
INS	IXSEA PHINS 1 INS
DVL	RDI 300kHz & RDI 1200 including dual config
Pressure Depth Sensor	Paroscientific 8B7000
CTD	SBE FastCAT 49
Dissolved Oxygen	Aanderaa Optode w/ fast foil
Turbidity	Seapoint Optical Back Scatter (OBS)
Side Scan Sonar	Edgetech 2200-M 120/410kHz
Sub Bottom Profiler	Edgetech 2200-M 4-24kHz
Magnetometers	3x APS1520 3 axis
Camera	Prosilica GE-4 11MP Digital Still Camera
Multibeam	Reson 7125 MBES AUV 3 200/400kHz
DF sidescan	Edgetech 2205 - 850kHz DF
Sound Velocity Probe	Reson SVP70
Forward looking Imaging Multibeam	Blueview P900-90
Current Profiling	Nortek Acoustic Doppler Velocimeter
Localized Accelerations	Microstrain Accelerometer and inclinometer