



PROTEUS: A DUAL MODE UNDERWATER VEHICLE

Combining its long range and large cargo capacity, Proteus provides a highly flexible undersea vehicle that can deliver payloads at distances of hundreds of miles without human intervention in autonomous mode or transport divers in manned mode. Based on the heritage of the Swimmer Delivery Vehicle (SDV) built by Huntington Ingalls Industries and proven in operation with Special Operations Forces Teams, Proteus is enhanced with cutting edge autonomy software and high energy density batteries to dramatically expand the capabilities available to users of underwater vehicles.

The vehicle can be used for a variety of tasks including: payload integration and test; advanced autonomy development; long range and duration trials; transporting and installing equipment on the sea floor; inspecting undersea infrastructure such as bridge pilings, subsea pipelines and oil rigs; and transporting divers and cargo.

Compared to conventionally-sized UUVs, Proteus can carry much larger payloads and cover much greater distances than has previously been possible, and its energy capacity markedly reduces the need for frequent launch and recovery.

AUTONOMOUS FEATURES AND BEHAVIORS

- Standard interface to payloads for command/control/data
- Backseat driver capability for advanced payloads
- Waypoint-to-waypoint and track-based maneuvers
- Maintenance of depth or altitude during flight
- Control of speed over bottom or through water
- Hovering at set depth or altitude
- Payload deployment at multiple locations
- Automated ballast and trim systems
- Communications on surface, at depth, or over the horizon
- Control of masts and cargo bay doors

Advantages

- Advanced Autonomous Behaviors
- Large Payload Capacity
- Long Range
- High Endurance



Undersea Solutions Group
A Subsidiary of Huntington Ingalls Industries

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ADDITIONAL FEATURES

- Vertical and horizontal thrusters fore & aft
- X-tail to reduce drag in long transits
- Fly-by-wire (vs. mechanical) controls
- Open architecture electronics keel
- Open cargo space amidships with large bay doors for deployment of payloads
- Optional external cargo pods

MANNED MODE

Proteus is capable of operating as either a fully autonomous UUV, or as a wet manned submarine utilizing six diver's air stations to accommodate a team of operators. Proteus can also be fitted with an optional air module in the center cargo space, capable of supporting all six divers for a period exceeding 10 hours.

COMMUNICATIONS

Proteus is outfitted with through-water voice and data acoustic communications systems, an Iridium satellite communications system and voice and data radios. A hard-wired internal diver's intercom is included for manned operations.

NAVIGATION

Equipped with a fully integrated navigation system, Proteus uses GPS for baseline positioning. To allow Proteus to update its position without fully surfacing, the GPS antenna is located at the top of one of the masts which can be extended above the surface of the water. A combination of an RDI Doppler and a Fiber Optic Gyro (FOG)-based Photonic Inertial Navigation System (PHINS) is used for submerged navigation.

OPEN SYSTEMS

An Open Systems design approach allows Proteus to ease payload integration and operation. An open standard interface provides vehicle data and controls to integrated payloads across a common Gigabit Ethernet bus. Power to most subsystems is provided by a 28 VDC bus.

PROTEUS SPECS

- Working Depth:** 150 ft. (manned); 200 ft. (unmanned)
- Dimensions:** 310" x 63.5" x 64"
- Top Speed:** 9+ knots
- Vehicle Weight:** 8240 lbs.
- Cargo Volume:** 170 ft³ (internal)
- Max. Cargo Weight:** 3600 lbs. (in air)
- Variable Ballast Capacity:** 1150 lb seawater
- Cargo Bay Door Opening:** 60"L x 21.5"W; (36"H clearance)
- Masts:** 2 (folding)
- Thrusters:** 2 – vertical, 2 – horizontal
- Energy Storage:** 148 kWh Baseline 296 kWh Extended
- Battery Chemistry:** Lithium Polymer
- Comms (surfaced):** Iridium
FreeWave
VHF radio
- Comms (submerged):** Benthos Modem
OTS Diver Comms
Internal intercom
- Cameras:** 4
- Data Recording:** 1 Terabyte Network-Attached Storage (NAS)
- Collision Avoidance:** 300kHz Multi-Beam Sonar

Speed (knts)	Range (nm)	
	Bare Hull	w/Cargo Pods
3.0	347	290
5.0	166	127
7.1	75	50
8.0	55	37
8.9	40	NA

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