

JASON

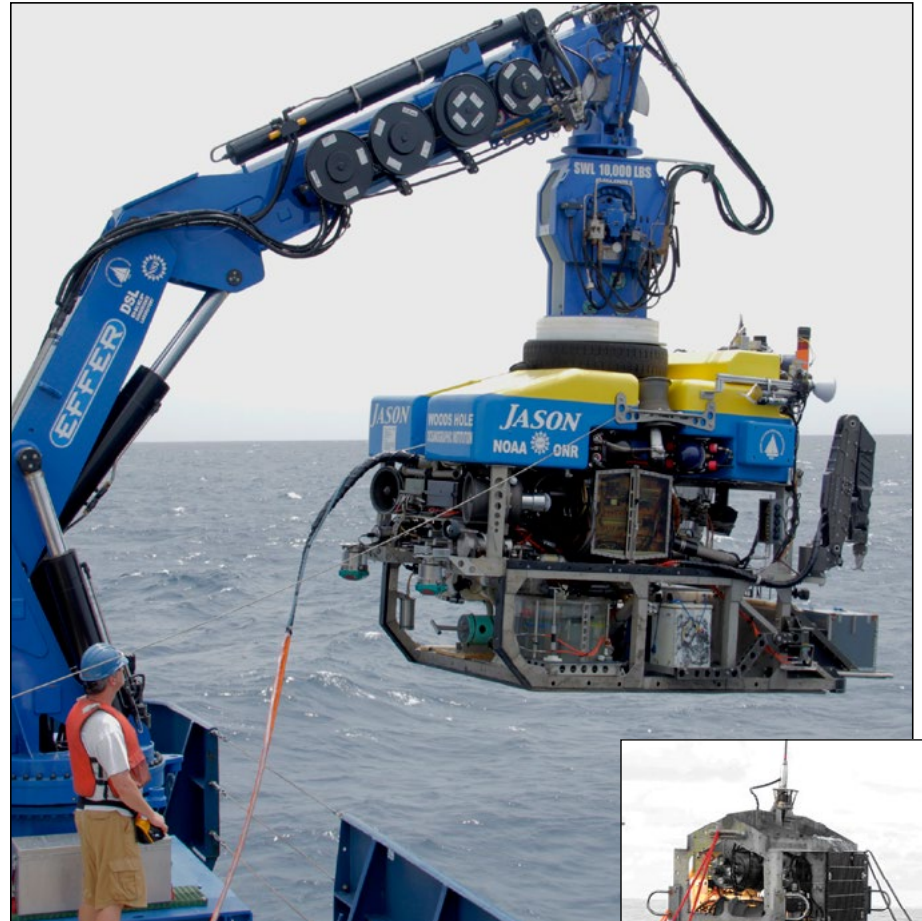


Jason is a remotely operated vehicle (ROV) system designed by the Woods Hole Oceanographic Institution's Deep Submergence Laboratory for scientific investigation of the deep ocean and seafloor. It is a two-body ROV system, with *Medea* serving in a tether management role that decouples *Jason* from surface motion.

Together, *Jason* and *Medea* offer wide area survey capabilities with *Jason* as a precision multi-sensory imaging and sampling platform. Both *Medea* and *Jason* are designed to operate to a maximum depth of 6,500 meters (21,385 feet), are transportable, and can be operated from a variety of vessels. The current *Jason* ROV has conducted over 745 dives and the longest dive to date has exceeded 115 hours.

Medea is connected to the surface ship by a 0.68 inch armored cable with three fibers and three electrical conductors. *Jason* is connected to *Medea* by a neutrally buoyant tether that is 2.1 centimeters (0.84 inch) in diameter and approximately 50 meters (164 feet) long. *Jason* is designed for detailed survey and sampling tasks that require a high degree of maneuverability. It weighs 4,082 kilograms (9,000 pounds) in air but is neutrally buoyant at depth. *Jason's* closed-loop controlled dynamic positioning abilities make it a very maneuverable and stable platform.

Both *Medea* and *Jason* have been designed to be superior real time optical imaging platforms with high quality cameras and lighting. The vehicles work together to provide lighting for



Jason and *Medea* (inset)

each other in a fashion not commonly available in other submersible systems. *Medea* is configured with three cameras for tether management and terrain identification and visual location of *Jason* when both are operating.

The Control Vans accommodate the operator positions (pilot, engineer and navigator) and stations for the

scientific watch leader, event logger and data/video recorder plus auxiliary stations for 1 or 2 additional observers. Thus, a full complement of up to 5 scientists can be comfortably accommodated in the vans at any one time. There is also a remote viewing station, with comms to the van, that can be set up elsewhere aboard ship.

For more information please contact:

Catherine Offinger, ROV Operations Coordinator, coffinger@whoi.edu or
Chief Scientist for Deep Submergence, csds@whoi.edu

Specifications

Depth Capability:	6,500 meters (21,385 feet)
Tether:	50 meters (164 feet), 20 millimeters (0.8 inch) diameter, neutrally buoyant
Size:	3.4 meters (11.2 feet) long, 2.4 meters (7.9 feet) high, 2.2 meters (7.2 feet) wide
Weight:	~4,000 kilograms (~9,000 pounds) in air
Maximum Sampling Transect Speed:	0.4 knot on flat bottom surface, 0.1 knot up-slope
Maximum Transit speed:	1 knot, no sampling, in layback mode
Maximum On-Bottom Transit Speed (no sampling):	0.5 knot
Maximum Vehicle Speed (on site, within tether range):	1.5 knots forward, 0.5 knot lateral, 1.0 knot vertical (1 knot equals 0.5 meters/second)
Descent/Ascent Rate:	30 meters/minute (98.4 feet/minute)
Propulsion:	Six brushless DC electric thrusters, each providing 113 Newtons (250 pounds) of thrust

Imaging

NDSF hybrid HD camera and file-based data storage system

Insite Mini-Zeus HD camera

8 video channels generally configured as:

- 3-chip color camera (optional)

- Scientist's pan & tilt

- 1-chip color cameras

- Pilot's pan & tilt

- Light bar, fixed

- Utility color cameras

- Manipulator

- Basket

- Aft-looking

- Digital still camera

Lighting

Sixteen 17,700 Lumen LED lights, providing over 283K Lumens

Two 250 watt Incandescent

Alternate custom Imaging available as needed - contact NDSF

Scientific Instrument Support

A flexible Telemetry and Power System with excess capability including high speed serial, ethernet and video channels.

Switched power at various typical sub sea voltages is available.

Vehicle Sensors

Attitude and Heading: Fiber optic north-seeking gyro

Pressure Sensor: Paroscientific

Altimeter: 300 kHz, 100 meter (328 feet) range, and 1200 kHz, 30 meter (98.4 feet) range

Acoustic Sensors

Navigation:

- Sonardyne RangerPro USBL Navigation

- Long Baseline transponder or relay transmitter / receiver

- 7 - 12 kHz, vehicle powered or battery operated for emergency location

- RDI Doppler Velocity Log 1200 kHz with 30m bottom lock range or 300 kHz with 100m bottom lock range

- Used for closed-loop controlled dynamic positioning

- Reson SeaBat 7125 Multi-Beam Sonar

Manipulators/Sampling

Schilling Titan 4:

- Hydraulic - 7 function, 6 degrees of freedom

Kraft Predator II:

- Hydraulic - 7 function, 6 degrees of freedom, force feed back

- Five hydraulic bi-directional functions available for science

Sample Storage:

- Forward sampling drawer (basket), 98 centimeters (38.5 inches) x 1.52 meters (60 inches), with hydraulic movement

- Two swing arms, one each side, 51 centimeters (20 inches) x 51 centimeters (20 inches), with hydraulic movement

- Payload: Up to 350 lbs. depending on sensor package

Elevator Sampler - mission configurable

- Free ascent

- Payload: 200 lbs.