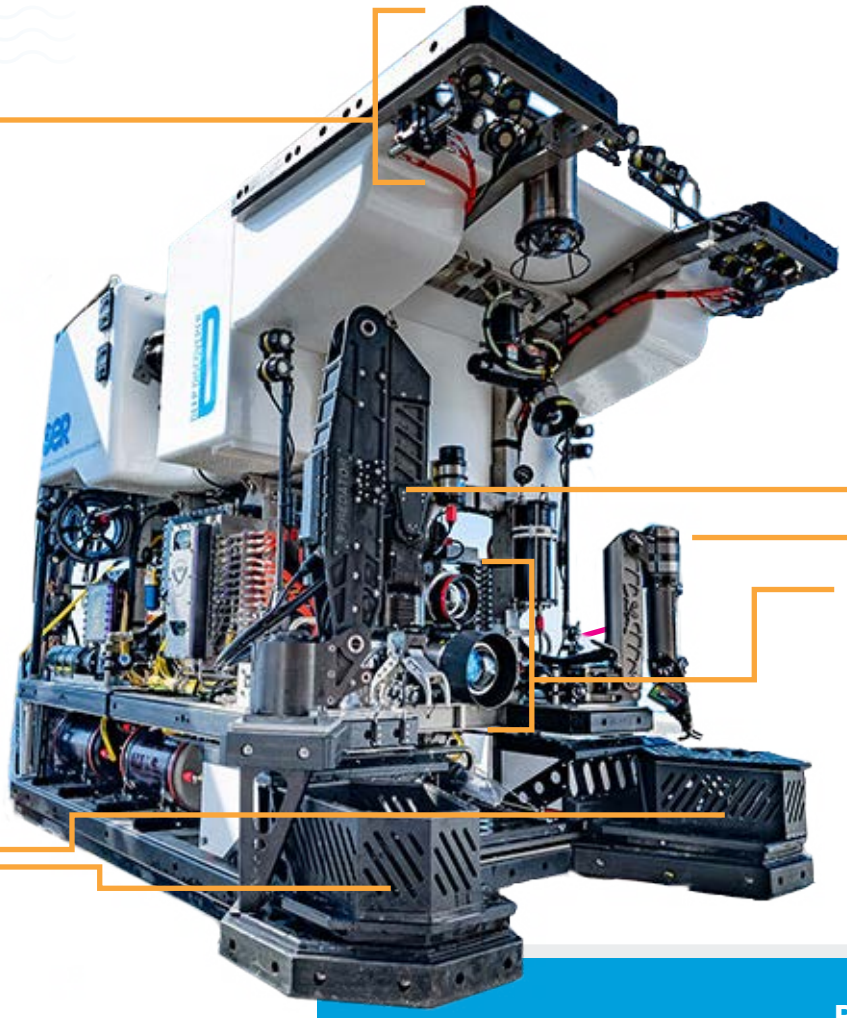
What is an ROV?

ROV stands for Remotely Operated Vehicle. ROVs are tethered to and operated from a ship allowing humans to explore the ocean without actually being in the vehicle.



LIGHTS

High power LEDs bring light to the dark depths of the ocean so that cameras can capture exceptional images and video of the deep ocean world.

SAMPLE BASKETS

Containers that store biological specimens and geological samples to be brought to scientists for further study.

MANIPULATOR ARM

Multi-joint arm with interchangeable jaws collect biological, geological, or archeological samples.

CAMERAS

Multiple cameras are mounted at different angles to take photos and high-definition video of the seafloor and water column to transmit back to explorers.

CUSTOMIZABLE

Additional sensors can be added to the ROV to measure parameters like temperature, salinity, chemical compounds, and pressure.

The remotely operated vehicle, Deep Discoverer, being recovered after completing 19 dives during the Windows to the Deep 2019 expedition. *Image courtesy of Art Howard, Global Foundation for Ocean Exploration, Windows to the Deep 2019.*

ROV FUN FACTS

SMALLEST SCIENCE ROV: about the size of a large laptop

BIGGEST SCIENCE ROV: about the size of a small truck

DEEPEST DIVE: ROVs can be designed for a variety of ocean depths and a few can descend to the deepest part of the ocean (~11,000 meters or ~36,200 feet)

LONGEST DIVE: several days

What is an ROV?

DAVIT

Small crane that stabilizes the ROV while it is being lowered into the water or retrieved after a dive.

SYNTACTIC FOAM

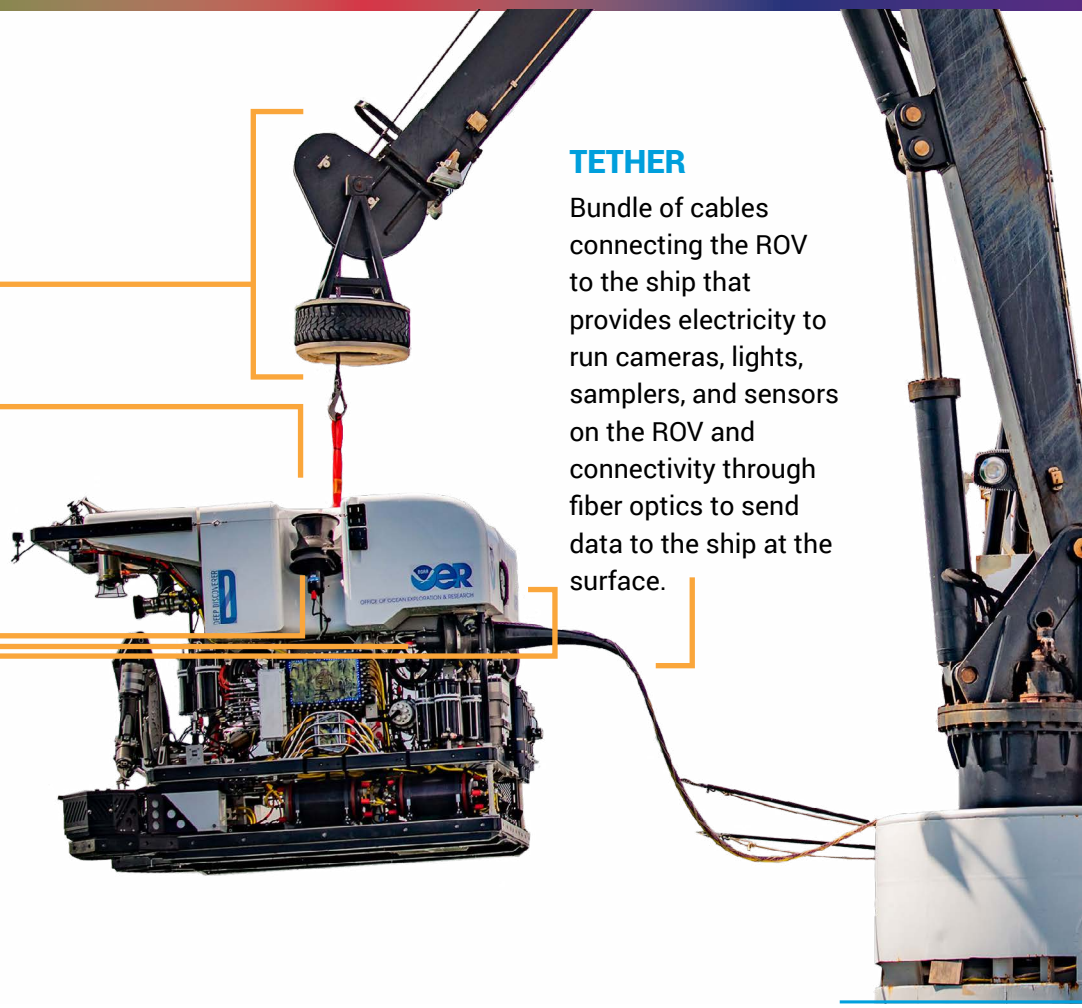
Supports the weight of the ROV and helps maintain neutral buoyancy in the water column.

THRUSTERS

Control the motion of the ROV underwater.

TETHER

Bundle of cables connecting the ROV to the ship that provides electricity to run cameras, lights, samplers, and sensors on the ROV and connectivity through fiber optics to send data to the ship at the surface.



ROV *Deep Discoverer* being launched off the back deck of NOAA Ship Okeanos Explorer. *Image courtesy of Art Howard, GFOE, Exploring Deep-sea Habitats off Puerto Rico and the U.S. Virgin Islands.*

CONTROL ROOM

Aboard the surface vessel pilots, engineers, and navigators work together to control the ROV.

The ROV pilot controls D2's grasping arm, while the co-pilot points the main camera. *Image courtesy of NOAA Ocean Exploration, 2017 American Samoa.*

ROV pilots use this scale model to control D2's manipulator arm when collecting a sample. *Image courtesy of Art Howard, GFOE; edited by Jeffery Laning, GFOE.*

ADDITIONAL RESOURCES

ROV FACTS https://oceanexplorer.noaa.gov/facts/rov.html

FREQUENTLY ASKED QUESTIONS https://schmidtocean.org/education/rov-faqs/

Deep Discoverer (photo 1): https://oceanexplorer.noaa.gov/facts/rov.html
Deep Discoverer (photo 2): https://oceanexplorer.noaa.gov/okeanos/explorations/ex1811/dailyupdates/oct30/media/oct30-2-hires.jpg
Control room operations (photo): https://oceanexplorer.noaa.gov/okeanos/explorations/ex1702/logs/feb25/media/sampling-hires.jpg
Joystick (photo): https://oceanexplorer.noaa.gov/okeanos/explorations/ex1702/logs/photolog/welcome.html#cbpi=/okeanos/explorations/ex1702/logs/feb28/media/miniarm.html

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