

The *DEEPSEA CHALLENGE* Expedition

Read about the *DEEPSEA CHALLENGE* Expedition below.

On March 26, 2012, James Cameron made a record-breaking solo dive to the Earth's deepest point, successfully piloting the *DEEPSEA CHALLENGER* nearly 7 seven miles (11 kilometers) to the Challenger Deep in the Mariana Trench. *DEEPSEA CHALLENGE* is now in its second phase—scientific analysis of the expedition's findings.

We know less about the deepest points on our planet than we do about the surface of Mars. The *DEEPSEA CHALLENGE* team is dedicated to advancing the world's understanding of our ocean's vast range of biological and geological phenomena. The historic expedition to the Mariana Trench's lowest point, the Challenger Deep, which lies 6.83 miles (10.99 kilometers) below the ocean surface, was the first extensive scientific exploration in a manned submersible of the deepest known spot on Earth. James Cameron successfully piloted the *DEEPSEA CHALLENGER*—outfitted for scientific exploration—to the ocean's deepest known point, where he collected samples and documented the experience in the high-resolution 3-D for which he's known globally.

The Technology

As with spaceships, deep-sea submersibles must be engineered to accommodate innumerable challenges, including dramatic changes in pressure and temperature and a total absence of sunlight. In the process of meeting these challenges, the *DEEPSEA CHALLENGER* submersible engineering team has made historic breakthroughs in materials science, incorporated unique approaches to structural engineering, and innovated new ways of imaging through an ultrasmall stereoscopic camera capable of withstanding the pressure at full ocean depth. After reaching the seafloor, the *DEEPSEA CHALLENGER* was able to explore the bottom for several hours—dramatically longer than the 20 minutes U.S. Navy Lt. Don Walsh and Swiss oceanographer Jacques Piccard were able to spend there during their expedition in the bathyscaphe Trieste on January 23, 1960.

The Science

The *DEEPSEA CHALLENGER* is designed as a science platform. It has the ability to collect rock and sediment samples, as well as biology samples, and is equipped with powerful lights and a suite of wide-field and macro 3-D high-definition cameras for observing fauna alive in their natural habitat and providing context images for all samples taken. Scientists from Scripps Institution of Oceanography, the University of Hawaii, and the Jet Propulsion Laboratory participated in the mission on the ship, as did other scientists on shore. Their research interests include marine biology and microbiology, astrobiology, and marine geology and geophysics.



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