

Just how deep is 35,797 feet?



Undersea Exploration

The U.S. Navy is highly involved with undersea exploration for navigation, scientific research, strategic, and educational purposes. Often a catalyst for innovative research, by 1958 nearly 90 percent of all U.S. oceanographic ventures were funded by the Navy. Nurtured by such support scientists explored the deepest regions of the oceans and designed increasingly sophisticated remotely operated vehicles that could observe the depths without risk to human life. Improvement of naval operations and equipment continues to be largely dependent on the discoveries made through oceanographic research. The Navy's undersea operations have ranged from diving to the collection of scientific data, to the investigation of shipwrecks such as the *Titanic*.



Learn more about the U.S. Navy Museum and undersea exploration at the Naval History and Heritage Command's website: www.history.navy.mil

Exploring the Deep: Bathyscaphe TRIESTE

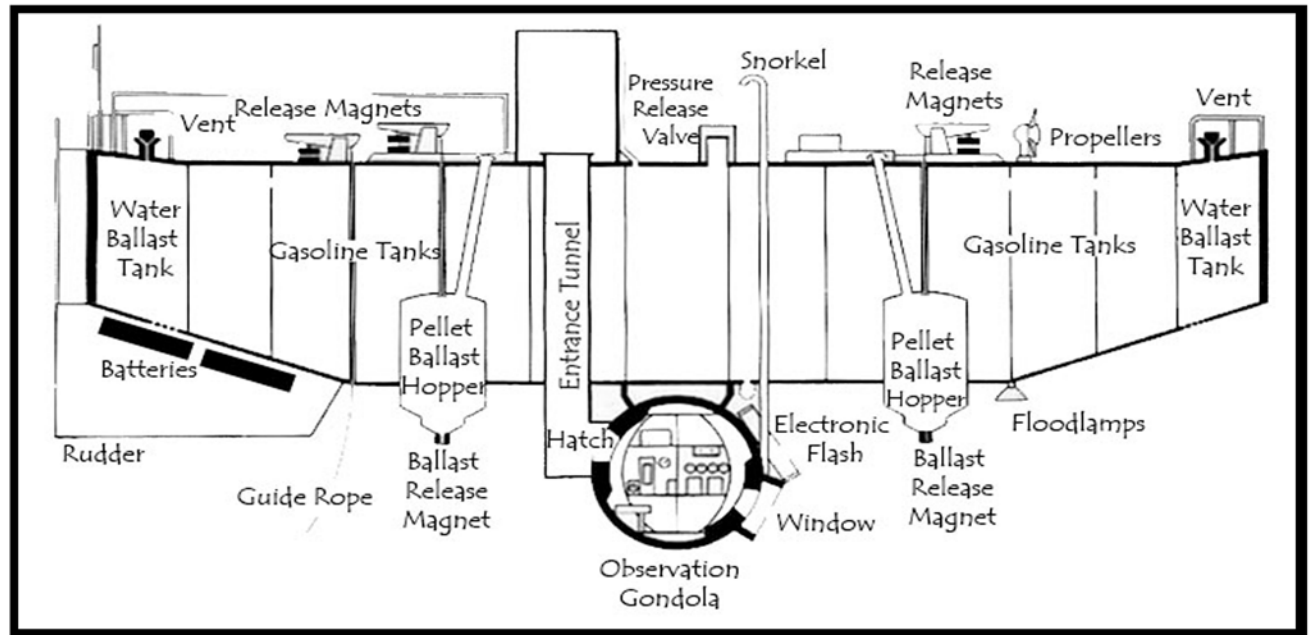


Celebrating 50 Years
Since Diving the
Marianas Trench
1960-2010



Trieste, a deep-diving research bathyscaphe, was launched in 1953 near Naples, Italy, by the Swiss scientist Auguste Piccard. Comprised of steel, it had two distinct sections. The observation gondola housed its two person crew. Constructed of five inch thick steel to withstand the immense pressure found at great depths, the operators viewed their surroundings through one small plexiglass window. This sphere weighed 28,660 pounds, or just over 14 tons. The largest section of *Trieste* was its gasoline and water ballast tanks, which provided buoyancy control, or the ability to move up and down beneath the surface of the ocean. Gasoline was used in addition to water because it is less dense than water, thus compensating for the dense sphere and making *Trieste* buoyant.

In order to descend to the depths of the ocean, water ballast tanks were filled, and if needed, portions of the gasoline ballast tanks were released. In order to ascend back to the surface, iron pellet ballast, which was housed in four chambers called pellet ballast hoppers, located on either side of the gasoline tanks, was released. Pellet ballast was used in place of traditional compressed air used in modern submarines because at the great depths at which *Trieste* was travelling, the pressure was too great to allow the compressed air to be released into the surrounding salt water. Also unlike today's submarines, *Trieste* had very limited maneuverability, other than sinking and small side to side movements, as it was designed specifically to descend to the deepest point of the ocean, Challenger Deep in the Marianas Trench.



TRIESTE'S historic dive

On January 23, 1960, *Trieste* made history by reaching the bottom of the Challenger Deep, the deepest part of the ocean, located in the Marianas Trench. *Trieste's* two operators, Jacques Piccard and U.S. Navy Lt. Don Walsh, were in the bathyscaphe for almost nine hours. During the journey, the interior of the gondola reached a chilly 45 degrees F, and the crew was able to snack only on chocolate bars, as there was little room for provisions. It took five hours to descend the 35,797 feet to the bottom of Challenger Deep. Once at the bottom, Piccard and Walsh spent only 20 minutes investigating the deepest point known on Earth. They discovered life forms that were not expected at such great pressures-deep water flounder and sole. It took three hours to ascend. Since this historic voyage, no manned craft has ever returned to Challenger Deep.

Diagram of TRIESTE

TRIESTE after 1960

Following its 1959-60 mid-Pacific work, *Trieste* operated out of San Diego, California, supporting Navy research objectives. Modified somewhat from its earlier configuration, it was taken to New London, Connecticut, in April 1963 to assist in the search for the lost submarine USS *Thresher* (SSN-593), and to support the investigation into the cause of that tragedy. In August 1963, *Trieste* located *Thresher* off New England in 8,400 feet of water. Shortly after the discovery, *Trieste* retired. Some of its components, however, were used in the newly constructed *Trieste II*. *Trieste* was subsequently placed on permanent exhibit at the U.S. Navy Museum in Washington, DC.

