What is a submersible, like the one missing near Titanic?

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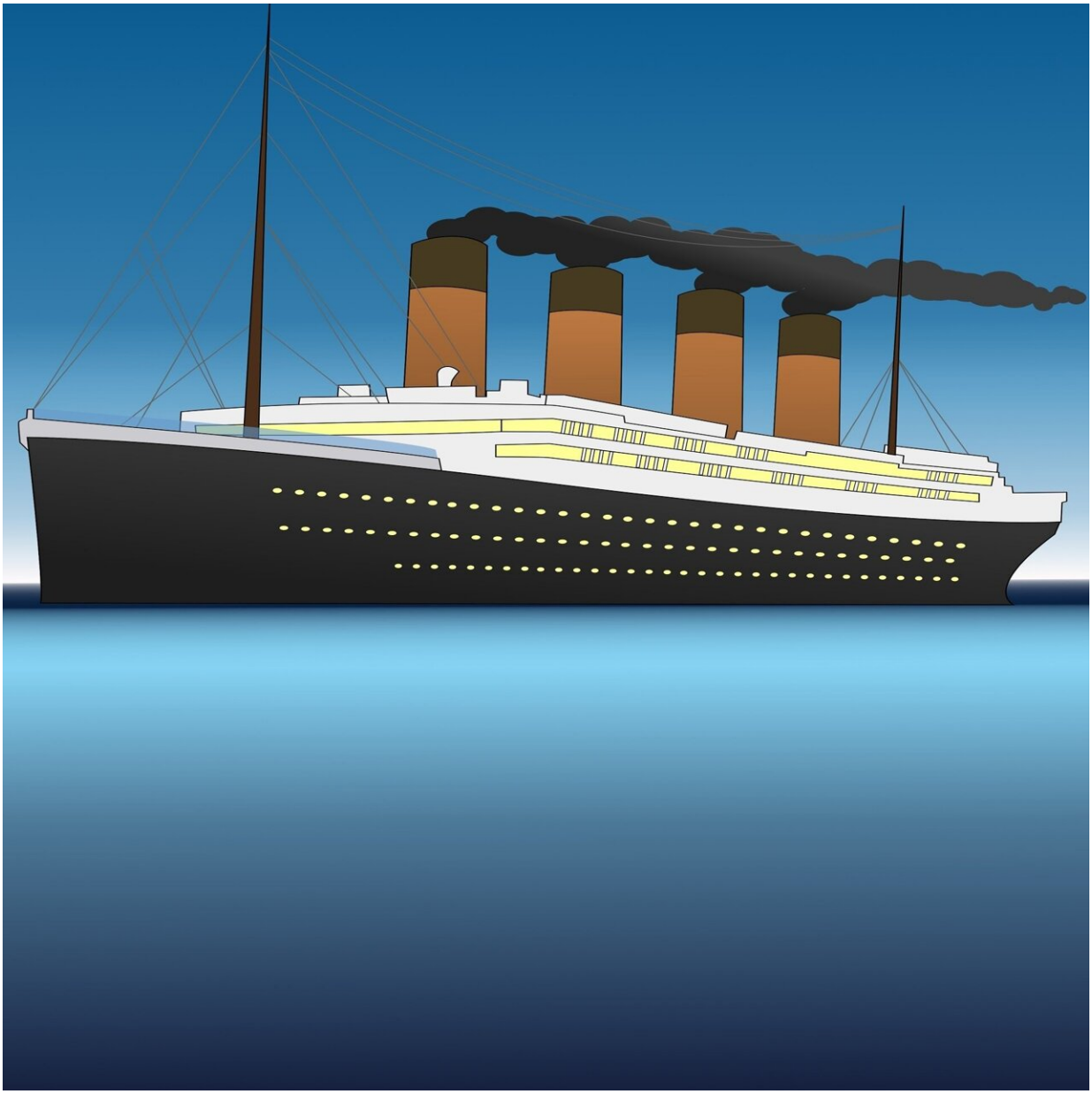

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Submersibles, such as the one that has gone missing near the wreck of the Titanic with five on board, can explore the deep sea like submarines but with more limitations.

Compared to submarines, which are generally military vessels, submersibles are more limited in their movement and how long they can stay under water.

They can have a small crew or be operated remotely, and are usually used for scientific research, deep sea exploration—or sometimes for tourists to catch a glimpse of underwater attractions such as shipwrecks.

The latter was the case for Titan, a submersible operated by US company OceanGate.

It began its descent towards the Titanic wreck in the North Atlantic on Sunday.

But it lost contact with its support vessel on the surface fewer than two hours later, prompting a search and rescue operation.

Titan has enough oxygen to last the five people on board for 96 hours, according to OceanGate.

Among those believed to be in the vessel are British businessman Hamish Harding, veteran French diver Paul-Henry Nargeolet, prominent Pakistani businessman Shahzada Dawood and the latter's son.

How deep can it go?

The white tube, which has a porthole in the front, is 6.7 meters (21 feet) long, and 2.8 meters wide.

It has a top speed of three knots, or 5.5 kilometers (3.5 miles) an hour.

Titan allows tourists who can afford the $250,000 price for a seat to dive down to visit the Titanic, perhaps history's most famous wreck after it sank in 1912.

The submersible can take its passengers to a depth of 4,000 meters, according to OceanGate, which means it can just reach the Titanic wreck at 3,800 meters.

Stefan Williams, an underwater robotics expert at the University of Sydney, told AFP that the pressure at those depths was "pretty unforgiving".

"Every 10 meters you descend into the water, you increase the pressure by effectively one atmosphere," he said.

That means that at the Titanic's depth, the pressure is 380 times higher than on Earth's surface.

Do submersibles need a crew?

While submersibles were usually used for scientific purposes, Williams said there were an increasing number being used for commercial purposes such as tourism.

Williams, who works with unmanned submersibles, compared the rise in interest to space tourism, where there was also an "appetite to experience these sorts of things first-hand".

But he added that "there is some discussion in the community about the relative merits of manned submersibles versus remotely operated" platforms or vehicles.

"You can do an awful lot of exploration and scientific research with uncrewed vehicles," he said.

"The utility of putting people into these sort of situations has been questioned."

Best- and worst-case scenarios?

Williams said the best-case scenario was that Titan had lost communication or power.

If so, its safety system may have kicked in, dropping a weight that sent it up to the surface, where the submersible would be waiting to be found by rescuers.

The "next least-worst scenario" was that the vehicle had sunk to the ocean floor but remained intact, he said.

In this case finding the Titan would be very difficult—as would swiftly deploying a mission to try to float or drag the submersible back to the surface, he said.

He said there were some remotely operated vehicles capable of a rescue mission at a depth of 6,000 meters, but it could take some time to get them to the scene.

The worst-case scenario would be if something like a fire compromised the pressure hull, which "would be a pretty catastrophic failure at that kind of depth", he said.