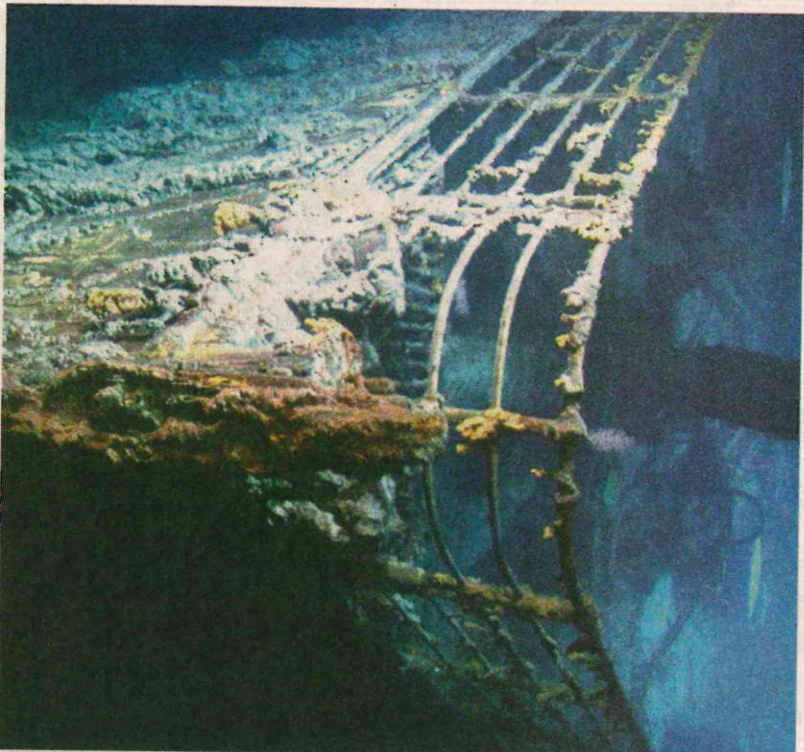


the week

BBC EXPLAINER



Why the waters around the Titanic are still treacherous

At some point in Autumn 1911, an enormous chunk of ice cleaved away from a glacier on the southwest of Greenland's vast ice sheet. Over the following months, it slowly drifted south, melting gradually as it was carried by the ocean currents and the wind.

Then, on the cold, moonless night on 14 April 1912, a 125m-long (410ft) iceberg - all that remained of the estimated 500m (1,640ft) chunk of ice that left a fjord in Greenland the previous year - collided with the passenger ship RMS Titanic as it made its maiden voyage from Southampton in the UK to New York, USA. In under three hours the ship had sunk, taking more than 1,500 passengers and crew to their deaths. The wreck now lies nearly 3.8km (12,500ft) beneath the waves at a site nearly 400 miles (640km) southeast of the Newfoundland coast.

Icebergs still pose a hazard to shipping - in 2019 1,515 icebergs drifted far enough south to enter transatlantic shipping lanes during the months of March to August. But the Titanic's final resting place carries dangers of its own, meaning visits to the world's most famous shipwreck present a significant challenge.

With the disappearance of a five-person submersible while carrying paying passengers on a trip to the Titanic wreck, the BBC looks at what this region of the ocean floor is like.

NAVIGATING IN THE DEEP

The deep ocean is dark. Sunlight is very quickly absorbed by water and is unable to penetrate much deeper than about 1,000m (3,300ft) from the surface. Beyond this point, the ocean is in perpetual darkness. The Titanic lies within a region known as the "midnight zone" for this very reason.

Previous expeditions to the wreck site have described descending for more than two hours through total darkness before the ocean floor suddenly appears beneath the lights of the submersible.

With limited line of sight beyond the few metres illuminated by the truck-sized submersible's onboard lights, navigating at this depth is a challenging task, making it easy to become disoriented on the seabed.

Detailed maps of the Titanic wreck site put together by decades of high-resolution scanning, however, can provide waypoints as objects come into view. Sonar also allows the crew to detect features and objects beyond the small pool of light illuminated by the submersible.

Submersible pilots also rely upon a technique known as inertial navigation, using a system of accelerometers and gyroscopes to track their position and orientation in relation to a known starting point and velocity. OceanGate's Titan submersible carries a

state-of-the-art self-contained inertial navigation system which it combines with an acoustic sensor known as a Doppler Velocity Log to estimate the depth and speed of the vehicle relative to the sea floor.

Even so, passengers onboard previous trips to the Titanic with OceanGate have described just how hard it is to find their way upon reaching the ocean floor. Mike Reiss, a TV comedy writer who worked on The Simpsons and took part in a trip with OceanGate to the Titanic last year, told the BBC: "When you touch bottom, you don't really know where you are. We had to flail around blindly at the bottom of the ocean knowing the Titanic is somewhere there, but it is so pitch dark that the biggest thing under the ocean was just 500 yards (1,500ft) away and we spent 90 minutes looking for it."

CRUSHING DEPTHS

The deeper an object travels in the ocean, the greater the pressure of the water around it grows. On the seabed 3,800m (12,500ft) underwater, the Titanic and everything around endures pressures of around 40MPa, which are 390 times greater than those on the surface.

"To put that into perspective, that is about 200 times the pressure of what is in a car tyre," Robert Blasiak, an ocean researcher at the Stockholm Resilience Centre at Stockholm University, told the BBC Radio 4's Today programme. "That is why you need a submersible that has really thick walls."

The carbon-fibre-and-titanium walls of the Titan submersible are designed to give it a maximum operating depth of 4,000m (13,123ft).

BOTTOM CURRENTS

The strong surface currents that can carry boats and swimmers off course are probably more familiar to us, but the deep ocean is scoured by underwater currents too. Although usually not as strong as those found on the surface, these can still involve the movement of large amounts of water. They can be driven by winds at the surface affecting the water column below, deep water tides or differences in the water density caused by temperature and salinity, known as thermohaline currents. Rare events known as benthic storms - which are usually related to eddies on the surface - can also cause powerful, sporadic currents that can sweep away material on the seabed.

What information there is about the underwater currents around the Titanic, which is split into two main sections after the bow and stern broke apart as it sank, come from research studying patterns in the seabed and the movement of squid around the wreck.

Part of the Titanic wreck is known to lie close to a section of seabed affected by a stream of cold, southward-flowing water known as the Western Boundary Undercurrent.

The flow of this "bottom current" creates migrating dunes, ripples and ribbon-shaped patterns in the sediment and mud along the ocean floor that have given scientists insights into its strength. Most of the formations they have observed on the seabed are associated with relatively weak to moderate currents.

Sand ripples along the eastern edge of the Titanic debris field - the splatter of belongings, fittings, fixtures, coal and parts of the ship itself that spread out as the ship sank - indicate there is an easterly to westerly bottom-flowing current, while within the main wreckage site, scientists say the currents trend from northwest to southwest, perhaps due to the larger pieces of the wreck, altering their direction.

Around to the south of the bow section, the currents seem particularly changeable, ranging from northeast to northwest to southwest. Many experts expect the winnowing of these currents to eventually bury the Titanic wreckage in sediment. Gerhard Seifert, a deep-water marine archaeologist who recently led an expedition to scan the wreckage of the Titanic in high resolution, told the BBC that he did not believe the currents in the area were strong enough to pose a risk to a submersible - provided it had power.

"I'm not aware of currents representing a threat for any functioning deep-sea vehicle at the Titanic site," he says. "The currents... in the context of our mapping project, represented a challenge for precision mapping, not a risk for safety."

FACT CHECKER

PESACHECK

FALSE: This flamingo sculpture is not at Lanet Airport, Nakuru

This Facebook post with an image of a flamingo sculpture supposedly at Nakuru's Lanet airport is FALSE. The picture was shared on 1 June 2023 as Kenya commemorated the attainment of internal self-rule in 1963. The image, also tagged 'GoK Delivers', suggests it is a government project.

The image gained popularity when content creator 'Moseax' shared it on Twitter and Facebook. The creator proposed implementing the flamingo sculpture at the Nakuru Lanet Airport, known for its association with Lake Nakuru flamingos.

The tweet attracted the attention of Nakuru Governor Susan Kihika, and Roads and Transport Cabinet Secretary Kipchumba Murkomen. The claim being fact-checked states that the sculpture can be seen at the nearly complete airport.

We performed a Google reverse image search to verify the sculpture's origins and established that it was published by the Tampa Bay Times on 25 September 2022 and was attributed to the publication's photographer Luis Santana.

"The 21-foot floor-to-ceiling sculpture has been a popular stop for guests boarding and arriving at Tampa International Airport," part of the image description reads.

Named "Home", the sculpture was created by artist Matthew Mazzotta and it pays tribute to Florida's iconic bird - the flamingo.

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This post is part of an ongoing series of PesaCheck fact-checks examining content marked as potential misinformation on Facebook and other social media platforms.