

South China Morning Post

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Friday, August 05, 2011

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The deepest challenge on earth

Entrepreneurs are lining up to build submersibles to plunge through 11 kilometres of seawater to try to unravel the mysteries of a final frontier

■ EXPLORATION
The New York Times
Aug 03, 2011

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A new generation of daredevils is seeking to plunge through almost 11 kilometres of seawater to the bottom of a rocky chasm in the western Pacific that is veiled in perpetual darkness. It is the deepest spot on the planet. The forbidding place, known as the Challenger Deep, is so far removed from the warming rays of the sun that its temperature hovers near freezing.

"When I was a kid, I loved not only amazing ocean exploration but space, too," said James Cameron, the director of *Avatar*, *Titanic* and *The Abyss*. "I can think of no greater fantasy than to be an explorer and see what no human eye has seen before."



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The would-be explorers can afford to live their dreams because of their extraordinarily deep pockets. Their ambitions far exceed those of the world's seafaring nations, which have no plans to send people so deep.

That even includes China, which last week sent its first manned deep-sea submarine, the Jiaolong, to a depth of 5,057 metres. But the Challenger Deep is more than twice as far down, and there are no plans to even attempt sending the Jiaolong there.

The billionaires and millionaires who are embracing the challenge include Cameron, airline mogul Richard Branson and internet giant Eric Schmidt.

Their vehicles, meant to hold one to three people, are estimated to cost anywhere from US\$7 million to US\$40 million.

The first dive is scheduled for later this year. The rush is happening now in part because of advances in materials, batteries and electronics, which are lowering the cost and raising the capabilities of submersibles. Still, the challenges are formidable.

Hardest to build are the crew compartments, whose walls must be very thick, strong and precisely manufactured to withstand tonnes of crushing pressure.

Humans have laid eyes on the Challenger Deep just once, half a century ago, in a US Navy bathyscaphe called the Trieste. A window cracked on the way down and the landing stirred up so much ooze that the two divers could see little and took no pictures. They stayed just 20 minutes.

In April, Branson unveiled his submersible in Newport Beach, California. "The last great challenge for humans," said Branson, the founder of Virgin Atlantic and Virgin Galactic, "is to explore the depths of our planet's oceans".

His solo craft, nearly 5.5 metres long, looked like a white-and-blue aircraft with stubby wings and a cockpit. The curve of the wings is meant to drive the vehicle downward as it speeds through the water.

Graham Hawkes, the craft's designer and a veteran maker of undersea vehicles, said that

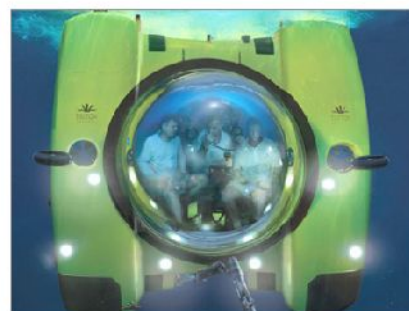


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Triton Submarines is looking at building a submersible to carry three people into the Challenger Deep.

Photo: SCMP

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more conservative designs were possible but that his goal was "to advance the state of the art".

The winged craft and its mother ship cost an estimated US\$17 million. The submersible is scheduled to plunge deep this year, its pilot a colleague of Branson.

A few weeks later another team went public. It unveiled plans, rather than a nearly complete vehicle. The company, Triton Submarines, based in Vero Beach, Florida, makes tiny submersibles with acrylic personnel spheres that carry two people down 800 metres or more. It said it was ready to build a submersible to carry three people into the Challenger Deep. The vehicle's personnel sphere - 2.2 metres in diameter - would be made of glass and open like a clamshell to admit passengers.

He said two people were talking separately about buying one or two of the craft, each costing US\$15 million. A company brochure says investors can expect to charge US\$250,000 a seat for tours of the Challenger Deep.

Cameron, the maker of Hollywood blockbusters, based his effort in Australia. Five years ago, he formed a team that has been quietly building a submersible along traditional lines. He said its steel personnel sphere was just 1.2 metres wide and would carry just one person.

The team was building cameras for three-dimensional filming, Cameron said. Despite reports that the vehicle might be involved in an oceanic sequel to *Avatar*, he said the craft had "nothing to do with my feature life" - although a documentary or two might be forthcoming.

He said the craft cost US\$7 million to US\$8 million and that chartering a mother ship for the expedition would run from US\$30,000 to US\$40,000 a day. Cameron said test dives were scheduled for early next year.

Perhaps the least visible of the entrepreneurs is Schmidt, the executive chairman of Google and the founder of the Schmidt Ocean Institute and the Schmidt Research Vessel Foundation.

Schmidt has financed the development of an advanced submersible designed by Deep Ocean Exploration and Research, a company on Alameda Island in San Francisco Bay.

The craft, Deepsearch, is large and sleek. Holding up to three people, it would plunge the 10,911 metres to the bottom of the Challenger Deep in little more than an hour.

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