

"SUB SEA SAIL SEES MULTIPLE USES FOR AUTONOMOUS SAILBOAT"

TECHNOLOGY: U.S. Army Corps of Engineers Is Its Inaugural Customer

By BRAD GRAVES

There are occasions that call for exquisite and expensive hardware. Think of a fighter jet in all of its complexity.

Then there are occasions that call for the opposite: simple, inexpensive systems that might be bought in multiples, which are potentially expendable.

Michael B. Jones hopes to supply such simple systems to organizations in the market for seagoing robots.



Michael B. Jones

Jones is managing partner of **SubSeaSail**, a 3-year-old Mission Valley company that makes autonomous vehicles built to travel the ocean. The firm's Gen 6 vessel is priced around \$60,000, though the price will vary with the different types of sensors the owner chooses to integrate into it, Jones said.

"That's a fraction of the price of anything else on the market," he said.

The company recently had its first sale, to the **U.S. Army Corps of Engineers**.

In April, the Corps of Engineers and the **U.S. Navy** tested the Gen 6 vessel off the island of Vieques, near Puerto Rico, to see how it might detect unexploded ordnance in the water. A team from SubSeaSail accompanied biologists from the Corps of Engineers.

There was a sensor aboard to sniff out TNT, which can leak from munitions used during war games and harm the marine habitat.

The Corps of Engineers craft also includes a sensor to test turbidity, or the amount of sediment suspended in the water. Companies and governments that dredge waterways have to comply with environmental laws that limit turbidity, Jones said.

The system is capable of many other types of monitoring, Jones said.

The SubSeaSail Gen 6 model measures 5 feet long and 5 feet high. It weighs 60 pounds and can be handled by two peo-

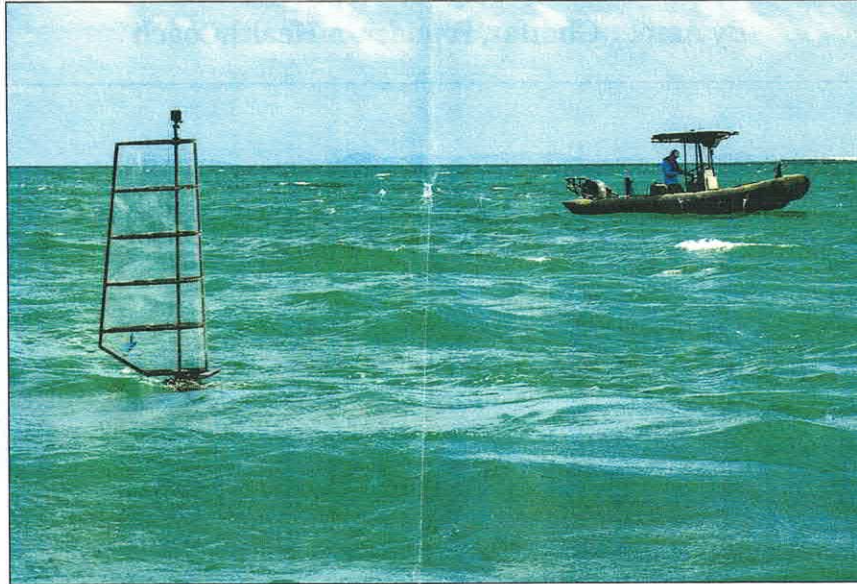


Photo courtesy of SubSeaSail

The autonomous SubSeaSail vehicle catches the wind and generates solar power to operate.

ple. It harvests its power from the world around it. It has a wing sail that propels the vessel forward. It also carries solar panels to generate electricity.

It communicates with its handlers electronically. The vessel has the ability to submerge and reemerge from the water to avoid weather or bad actors.

Autonomous Vessels in Demand

Autonomous oceangoing vehicles are getting an increasing amount of attention these days. The Navy has been testing a robotic surface ship called Sea Hunter. The 132-foot vessel has traveled between San Diego and Hawaii, unaided. **Leidos** is the contractor behind the ship.

A San Diego company called **Ocean Aero** builds an autonomous craft that travels on the surface and dives, using a hard sail and solar power. Ocean Aero recently announced the **U.S. Department of Homeland Security** was evaluating its product for use at several federal agencies. Ocean Aero's investors include **Lockheed Martin Corp.** and **Teledyne Marine**.

Demand for unmanned underwater vehicles is expected to grow. A 2016 study from **Markets & Markets** estimated that the market will expand from \$2.69 billion in 2017 to \$5.19 billion in 2022. Companies operating in the space include big defense contractors (such as Lockheed Martin and **The Boeing Co.**) as well as smaller or more specialized firms (such as **Saab Group** of Sweden and **Oceaneering International** of the United States).

In addition to military and government use, autonomous boats might have uses in specific industries, such as oil and gas, the **Markets & Markets** report said.

There is one more trend SubSeaSail seems to be tapping. The military has taken an interest in low-cost systems rather than what it calls "exquisite" systems. For example, the Pentagon is considering deploying swarms of low-cost drone aircraft to send against an adversary.

Big Jobs Made More Manageable

In a recent interview, SubSeaSail's Jones spoke of an increasing need to

monitor the ocean. It can be a big undertaking, yet robotic systems can build on what humans are capable of doing.

One use for the SubSeaSail vehicle could be detecting countries fishing in another country's offshore territory, he said.

SubSeaSail has three patents for different technologies on its sixth-generation vessel. They include a patent for a sub-surface hull with a wing sail above, as well as a patent for a passive wing sail control mechanism. "No electronics, lines or pulleys are required to optimally position the sail ...," say company marketing materials.

Jones said the business is pursuing a patent for a hydrophone array. A hydrophone is an underwater microphone. The Navy uses such tools extensively.

So far, SubSeaSail has funded its projects internally, and revenue has been "modest," Jones said. The business is looking for outside funding, he added.

Jones is an investment banker who runs **TMA Blue Tech**, an organization formerly known as **The Maritime Alliance**.

Incidentally, Jones has been involved in Ocean Aero, the other San Diego drone maker.

The products are markedly different, Jones said a few months ago. He likened Ocean Aero's craft to a racehorse, and the SubSeaSail craft to a workhorse.

The SubSeaSail vessel can also be a tool for environmental stewardship — a subject Jones speaks about passionately.

"We need affordable vessels and sensors to really understand the ocean and make sure we deal with it in a sensible way." ■

SubSeaSail

FOUNDED: 2017
MANAGING PARTNER: Michael B. Jones
HEADQUARTERS: Mission Valley
BUSINESS: Maker of autonomous watercraft
EMPLOYEES: 5
WEBSITE: www.subseasail.com
NOTABLE: The main hull of SubSeaSail's G6 craft is actually underwater. It is attached to a float at the water's surface, which supports a sail

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