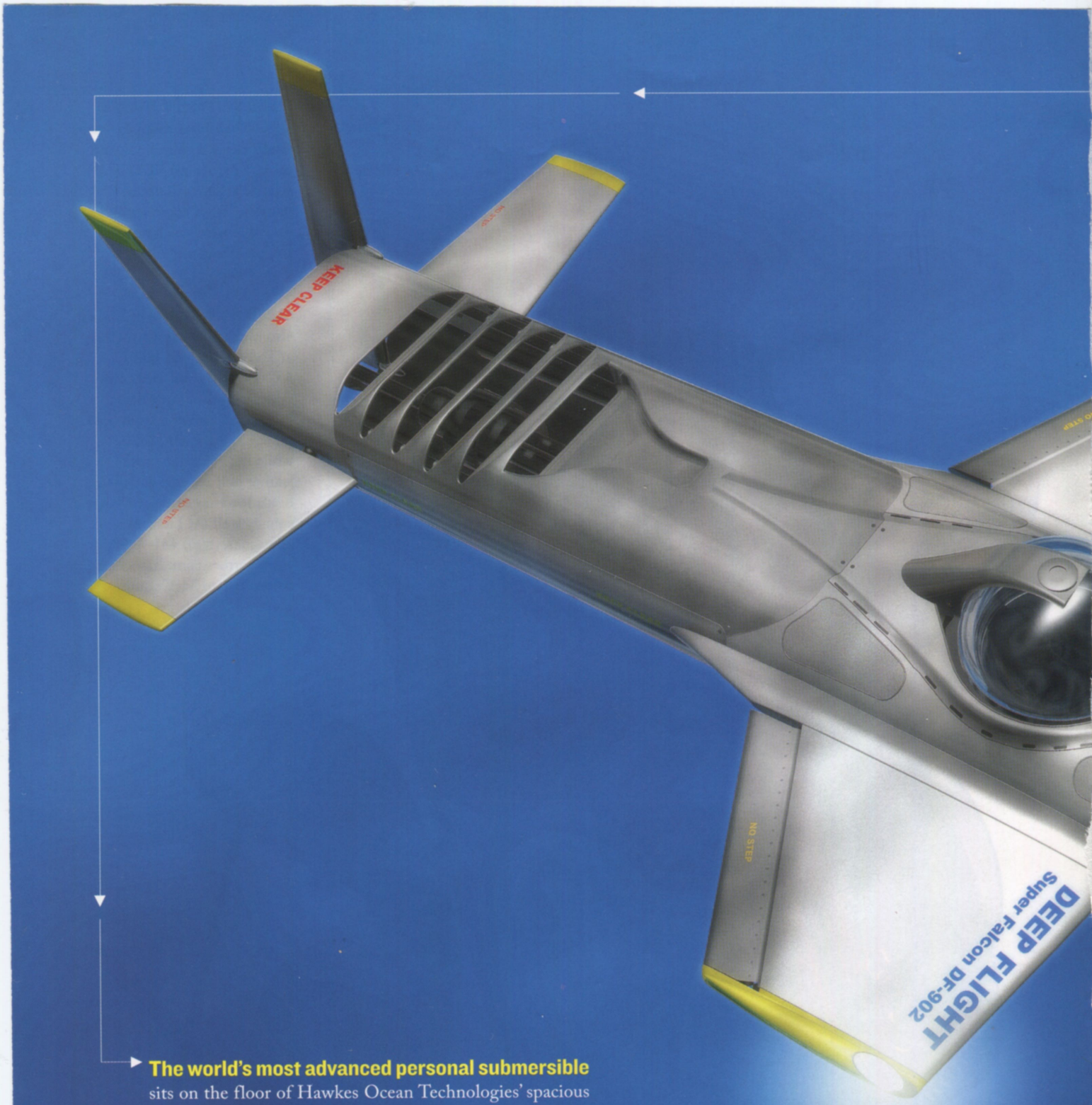
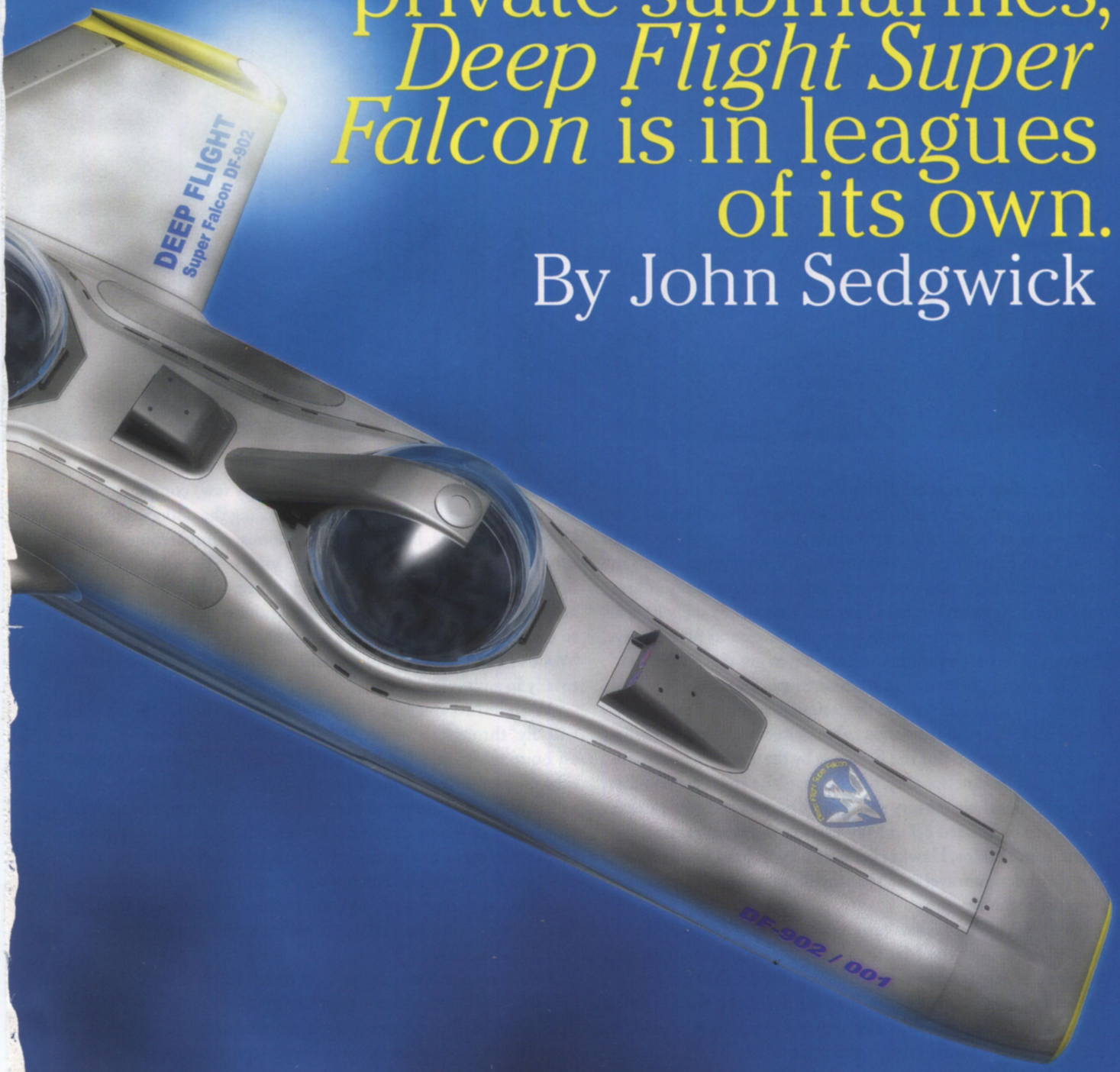


The world's most advanced personal submersible sits on the floor of Hawkes Ocean Technologies' spacious workshop adjacent to the yacht-filled harbor of Point Richmond on San Francisco Bay. Or at least the essential parts of the sub do—the computer-sculpted pressure hull that allows *Deep Flight Super Falcon*, as this baby is called, to withstand the bone-crushing pressures 1,000 feet down yet still glide through the water like a shark; the state-of-the-art thrusters that will generate enough *vroom* to slam the pilot back in his seat when he hits full throttle; a lithium-polymer battery system; and a sparkling dashboard navigational display system that might have come straight out of a Lamborghini design. • All these elements are scattered

Sub Prime

When it comes to private submarines, *Deep Flight Super Falcon* is in leagues of its own.

By John Sedgwick



Hawkes Ocean Technologies' newest submersible is part Bugatti, part SuperCub.

about the shop among other flotsam—a spherical hatch, a deep-sea-diving suit, and less-identifiable items from previous efforts—like mounds of glittering treasure strewn on the ocean floor. Each Falcon part has been fashioned from scratch (with the aid of several high-powered computers) by the company's cheerful English founder, Graham Hawkes. Dressed casually in jeans and an open shirt and surveying the pieces around him, he says, "It's not as if there's a submarine catalog to get this stuff from."

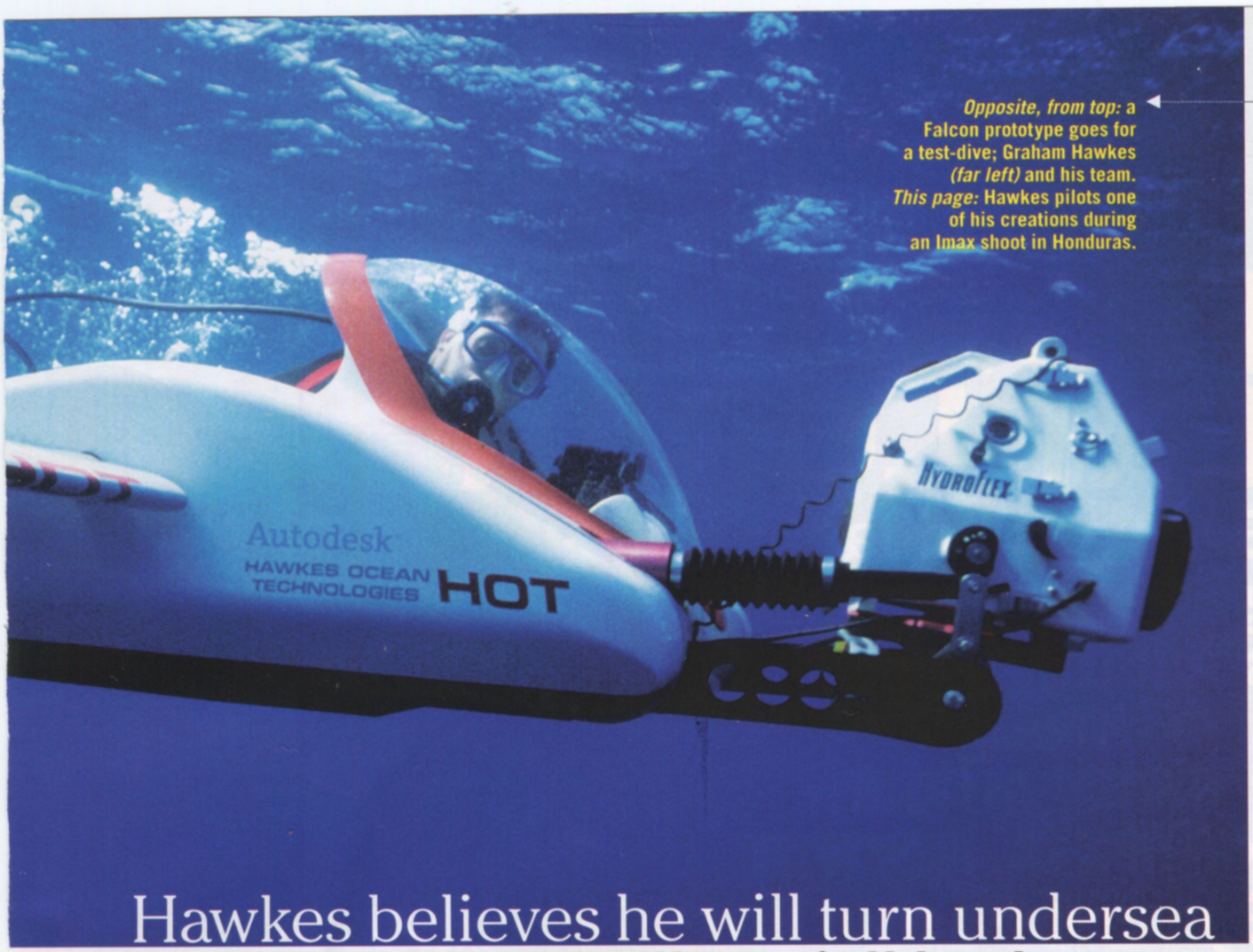
The grand eminence in his field—perhaps the *only* eminence—Hawkes has personally designed and built three quarters of all the personal manned submersibles ever made, totaling more than 60 craft. But the Falcon is by far the most ambitious. It's not just its functionality, he says, but "the style, the comfort, the *feel*." The whole sensory package. When this very first Falcon is ready to be handed off in May to its new owner, venture capitalist Tom Perkins, Hawkes believes he will have finally turned private undersea travel into that thrilling, full-body experience he calls "a real '*Yee-hah*!'"

Sixty-year-old Hawkes began constructing submersibles in the 1970s, such as the Mantis, a craft with a manipulator arm designed to repair undersea drilling platforms. (Mantis made a cameo in the James Bond film *For Your Eyes Only,* with Hawkes aboard.) He also developed a variety of other undersea vehicles for offshore fieldwork, salvage and scientific research. (Film director James Cameron dove in a Hawkes creation to film his documentary *Aliens of the Deep*.) His (very few) competitors in the sub-building business are still producing the undersea equivalent of dirigibles, he maintains: bulbous, cumbersome, slow-moving craft with foggy, porthole views. His submersibles, however, are designed to be speed cruisers, the equivalent of an underwater private jet. "What Graham does is analogous to designing spacecraft," says researcher Dana Yoerger of the Woods Hole Oceanographic Institute in Massachusetts. "He is totally in a class by himself."

With its broad wings, slim fuselage and trim tail, the Falcon will "fly" through the water at up to ten knots, or about 11 miles an hour, which is warp speed undersea. While dirigible-type subs are perfectly suitable for going up and down, Falcon is able to roam. Its pilot is free to cruise along, taking in the Imax-like view, nose down to descend an undersea cliffside, or soar up to the surface. He can also perform underwater barrel rolls or loop-the-loops. The Falcon will be equipped with glass-bubble canopies fore and aft, and will be available in one-, two- or three-person versions. "People always want to share the experience," Hawkes says.

Five years ago, Peter Sprague, former chairman of the board of National Semiconductor, took his first ride in the *Aviator,* one of Graham's earlier submersibles. It was part of the $15,000, four-day "flight school" Hawkes was conducting in Mexico's Sea of Cortez to train potential undersea pilots. The experience was

Photographs, *both pages:* courtesy of Hawkes Ocean Technologies



Opposite, from top: a Falcon prototype goes for a test-dive; Graham Hawkes *(far left)* and his team. *This page:* Hawkes pilots one of his creations during an Imax shoot in Honduras.

Hawkes believes he will turn undersea travel into that thrilling, full-body experience he calls a real *'Yee-hah!'*"

thrilling, he says, but not long ago Sprague tried out a Falcon prototype and was blown away by the advances achieved in just a few years. "It was just like flying my SuperCub," he says, referring to the hardy version of the Piper that he flies around the Alaskan outback. He mastered the controls so quickly that he soon started doing what he termed "Sprague double helixes," corkscrewing down a hundred feet, then doing a reverse turn to come back up.

Others who piloted the early Falcon models say that the near-total silence beneath the surface is broken only by the gentle whir of the Falcon's electric-powered thrusters and the soft blowing of the air vents. Unlike a commercial airplane, where cabin pressure can vary by as much as 20 percent, the Falcon's pressure is intended to be nearly constant. "So your ears won't pop," Hawkes says. The thrust is instantaneous, and the turns tightly controlled. As the sub descends, the pale blue water near the surface turning indigo then finally pitch black, the wing lights come on to penetrate the gloom, and lasers illuminate any obstacles beyond the reach of natural light. A five-point harness snugly secures each pilot, but should there be an accident, like an engine failure or a snapped wing, the sub's natural buoyancy will float the Falcon back to the surface. This sub actually crashes *up*.

When Peter Sprague sees a Hawkes submersible, he says he immediately thinks Bugatti, which isn't far off the mark when you start looking closely at the price tag. At $1.7 million a copy, the Falcon isn't cheap. But it is the first of the Hawkes line to be designed for batch production, up to five at a time. Not exactly an assembly line, but a significant step in lowering production costs and eventually increasing affordability.

Meantime, what *would* you pay to be able to explore the undersea world in such freedom? Hawkes marvels at the $25 million that joyriding American billionaires like Microsoft's Charles Simonyi are shelling out to blast off into what he dismissively calls the "sterile vacuum" of outer space. Ninety percent of the seafloor is terra incognita, Hawkes says. "That's the equivalent of the entire surface of Mars, plus the moon," insists the man who holds the record for the deepest solo plunge. "You never want to come back up." But it's always nice to know you can. •