

THE DEEP FLIGHT UNDERWATER FLIGHT INSTITUTE The World's First Sub-Sea Flight School

Motivated by the same irresistible dream that drove mankind to soar with the birds, Graham Hawkes invites you to fly underwater in his state of the art Deep Flight Super Falcon submersibles.

The Deep Flight Underwater Flight School offers several different options to experience sub-sea flight: one dive, one-day (2 dives); and a 3-day training and licensing course. The next course is scheduled for July 2009 in Monterey Bay National Marine Sanctuary.



What: A once-in-a-lifetime opportunity to explore the ocean, “flying” underwater in a state-of-the art submersible. First flights into Monterey Bay, aquatic creatures, adventure, and an opportunity to hobnob with NOAA officials, scientists, fellow adventurers and other VIPS. Pilots will fly/dive with Graham Hawkes, designer and builder of the Deep Flight Super Falcon submersible.

When/Where: Mid-June to mid-July, 2009. Monterey Bay National Marine Sanctuary, Monterey CA.

Super Falcon Submersible: Super Falcon is the fourth generation winged submersible built by Hawkes Ocean Technologies, and is the full production version. Super Falcon is literally flown (maneuvered) in a positively buoyant state with aircraft-type controls via winged surfaces for pitch, roll and heading so that the craft is fully operable through all three rotational axis throughout horizontal travel and ascent and descent. The Super Falcon utilizes fly-by-wire flight control technology coupled with “heads-up” state-of-the-art flight instrumentation.

Levels of Flight Experience:

One Dive – For those people interested in a unique experience, and not necessarily any training. Short land-based orientation and 45-60 minute dive in Super Falcon, with minimal instruction in maneuvers and fundamentals of flight control.

One-Day – Ground school, introduction to the Super Falcon, familiarization with controls and instrumentation, pre-dive check-list, safety procedures, introductory shallow orientation dive (15min), followed by instruction on basic maneuvers and fundamentals

of flight control, followed by a longer dive to approx 100-200' and 45-60 minutes in duration. Student pilot will practice procedures and maneuvers from rear seat, with Graham Hawkes flying in front seat as Pilot in Command. The one-day can be used towards the 3-day licensing and certification course. Note: 2 people are typically trained in the one-day course scheduled as morning and afternoon dives.

Three-Day Training and licensing course – Note: 2 people are typically trained in the three-day course scheduled as morning and afternoon dives each day.

Day 1 - Same as One-Day above.

Day 2 – Review of controls and instrumentation, pre-dive check-list and safety procedures, orientation to 3-axis underwater flight, use of communications systems, hands-on piloting and practice of thrust control and 3-axis maneuvers. The day includes two longer and deeper dives, each approximately 60 min. in duration. Depending on speed of individual progress and demonstrated proficiency the student may be permitted to pilot the Super Falcon from the front cockpit. Graham Hawkes will act as Pilot in Command, however the goal is to have the student pilot “fly the mission” on the second dive of the day.

Day 3 – Review of controls and instrumentation, safety procedures. Advanced instruction, emergency procedures including practice with reverse-thrusters, communications, and complex flight maneuvers, underwater navigation. Graham Hawkes will act as Pilot in Command from the rear cockpit. Depending on individual progress and proficiency, the student pilot will fly the Super Falcon from the front seat and assume responsibility for cockpit management including use of safety check-list, communications, life-support, and flight controls. Student pilot will have choice of mission on proficiency qualification dive. Certification dive will likely be below scuba depth (>100 fsw) and approximately 120 min. in duration. Upon satisfactory completion of dive, including demonstrated competence in procedures and flight proficiency, student will receive license. The license will enable the pilot to fly the Deep Flight Super Falcon as "crew pilot", and with the accumulation of additional flight experience (log time to be determined), the “crew” restriction may be removed.

Safety Features of the Super Falcon:

The Super Falcon is a Fixed Positive Buoyancy craft. Unlike conventional underwater craft that depend on ballast, the Super Falcon automatically returns to the surface. Super Falcon is engineered and built with an ultimate depth capability calculated to be in excess of 2000'. Unless specifically requested, the sub school dives are unlikely to exceed 200'.

The previous three generations were all fully tested in sea trials.

Undersea communications link provides continuous real-time communication with surface team and support vessel.

Super Falcon is equipped with redundant cabin environment systems providing more than 24 hours of submerged life-support.

Built-in emergency flotation provides 800 kg of additional positive buoyancy sufficient to maintain the craft safely on the surface. This system effectively converts the Super Falcon into its own life raft and enables the crew to float comfortably on the surface, or exit, even in heavy seas.

The first Super Falcon was delivered to venture capitalist, Tom Perkins, in November 2008. The Super Falcon went through a rigorous test schedule whereby the sub was tested successfully in sea trials to ABS standards, which are 1.25 times its operating depth. All tests were witnessed by a third party hired specifically to document the test procedures and results.

Cost: 1 dive: \$2500; One-day: \$5000; Three-day: \$15,000

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