The venerable DHC-6 Twin Otter is incredibly versatile. With its STOL characteristics and ability to operate from unimproved airstrips, water and snow, it has virtually unlimited utility. C-FMHR (msn 51) is an early model DHC-6-100 operated by West Coast Air, shown touching down in Victoria Harbour, Canada. (Jay Selman)

“If it ain’t broke, don’t fix it.” The last de Havilland DHC-6 Twin Otter was manufactured in 1988, and there are about 600 of the aircraft still in use today around the world out of the original 844 built. So why start building it again? David Curtis, President and CEO of Viking Air Limited, asks, “Why not?” Volkswagen did it with the “Beetle” and retro seems to be popular these days. Curtis is confident that there is a market, and he is by no means alone. No aircraft built since the Twin Otter has come close to its performance and versatility. Well, there is one other, but we’ll discuss that later in this article.

**Slow but Nimble**

The Twin Otter is slow (topping out at only 160 knots), unpressurized, and can carry up to 19 passengers (thought not necessarily with all their luggage). But the Twin Otter can land on a dime, so it’s classified as a STOL (Short TakeOff and Landing) aircraft and as a result can serve communities that would otherwise not have air service. When equipped with pontoons for water landings, even places without airfields can be served. Twin Otters can be fitted with skis for landing on snowfields. It has become the largest selling 19-passenger airplane in the world.

**A Plane with a History**

The Twin Otter traces its lineage back to de Havilland Canada’s line of STOL aircraft, traditionally named for animals native to Canada. This line began in 1946 with the DHC-1 Chipmunk, a primary trainer. This was followed by the DHC-2 Beaver in 1947, an aircraft principally designed for bush operations in the Canadian north and Alaska, equally at home on wheels, floats, or skis. The Beaver was followed by the DHC-3 Otter in 1951, the DHC-4 Caribou in 1958, the DHC-5 Buffalo in 1961, and the highly successful twin-engine DHC-6 Twin Otter in 1965. The company introduced the four-engine DHC-7, nicknamed the Dash 7, in 1973, and then went back to twin engines with the DHC-8 in 1983. The DHC-8, more commonly called the Dash 8, is widely used today by regional airlines. Bombardier bought the rights to build the Dash 8 aircraft when it acquired De Havilland in the early 1980s, but it did not buy the Twin Otter. It began to market the Dash 8s in 1996 as the “Q” series (“Q for quiet”) and today continues to build the successful Q300 and Q400.

**Rebirth of a Legend**

The Reintroduction of the Twin Otter

By Joel Chusid

Can a classic be made better? With the Twin Otter, the answer is ‘Yes.’ Here’s the background behind one Canadian company’s efforts to fulfill a niche market.
Still Around

The original and venerable Twin Otter, however, remains in operation today worldwide, from the tiny island of Saba in the Caribbean with its 1,300-foot long runway to the Maldives in the Indian Ocean, where they provide a vital link to the country’s many beachside resorts. In addition, it is widely used throughout Greece and the Mediterranean, and in the Canadian North, where Kenn Borek Air is the largest operator.

Four Otters serve with the British Antarctic Survey from October to March where they support 15 field projects. They have been used to evacuate doctors and patients from emergency situations in this frigid place, even in winter. Some Otters are "customized" by converting the windows to larger panoramic ones for sightseeing and tour flights. They are also popular with skydivers all over the world because of their high wing and slow cruising speed.

One of a Kind

The Twin Otter is one of a kind, and its defined hull life is 123,000 cycles (one cycle is a takeoff and a landing), assuming a wing replacement at 60,000 cycles. Many of the Twin Otters in the world today are only at 20,000-30,000 cycles, so with an ample supply of used aircraft in service, why build more? First of all, there is far more demand than supply worldwide, with no aircraft as versatile as the Twin Otter now being manufactured. Additionally, some countries, India and Indonesia, for example, where there is untold but significant demand, have a prohibition against importing aircraft more than 15 years old. The plane is so unique and relatively low-priced that David Curtis and Viking Air felt a business case could be made to produce them again.

Viking was incorporated in 1970 as the successor to McKinnon Aviation, a company that had been maintaining flying boats like the Grumman Goose. In 1983, coincidentally the same year that David Curtis joined the company, Viking acquired the exclusive rights to manufacture spare parts for the Beaver and single
Otter. It later bought the spare parts tooling to maintain the Twin Otter. With hundreds flying worldwide, demand was steady. Remanufacturing the plane, however, was another story. At an operator’s conference in September 2006 in Victoria, British Columbia, composed of 160 delegates representing 80 operators from 22 countries, Curtiss surveyed interest. The current operators told him that there was a need for at least 85 aircraft. The company launched into business case and feasibility studies, and the decision was reached to start manufacturing the airplane again, using the most recent 400 series as a base, but making some tweaks and modifications to adapt modern technology features.

**Burden of Proof**

Viking had begun to buy the Twin Otter type certificates from Bombardier in April 2005, and received them on January 31, 2006. It was a long and difficult process to prove that they could support the huge fleet worldwide. Additionally, further investment by Viking’s majority shareholder, Westerkirk Capital, was obtained, in addition to repayable financing from the Canadian government to update the design. With these in hand and a growing list of firm, but contingent, orders, the Board of Directors gave the green light to proceed on March 31, 2007. At this writing, the order book stands at more than 30 firm units and several more in the works. The Canadian government will also assist in financing export purchases of Twin Otters for foreign companies. Interestingly, the airplane does not need to be certified as a new model. Instead, the certification basis will be “restated” from CAR-3 to a revised FAR-23.

Despite its uniqueness, another airplane, the Chinese Harbin Y-12, is reportedly very similar to the Twin Otter. The Y-12, however, is not widely flown outside of China and has certainly not been marketed extensively. Not long ago, with the demand for Twin Otters exceeding supply, there was a move in Canada to import the Y-12 and rename it the “Twin Panda.” As soon as Viking began expressing their interest in remanufacturing the original Twin Otter, that idea evaporated.

**Two Years Away**

The order book is already diverse due to the global awareness and need of this niche airplane. Of the firm orders, Trans-Maldivian Airlines has bought five; Lord Ard Otters, LLC of Florida bought six and also took six options; Air Seychelles and Air Moorea each took two; and Zimex Aviation of Switzerland one. The first deliveries are expected to be in early 2009. The cost of the airplane is $3.2 million, relatively inexpensive for a new aircraft. Components will be manufactured in Victoria, and final assembly will take place in Calgary. The airplane will be updated with new engines, with the P&W Canada PT6A-27s replaced by more efficient PT6A-34s or optional PT6A-35s. Curtis believes in keeping the production and finished aircraft as simple as possible. Aircraft will be delivered “green” and completed to customer specifications, with 19 seats, although it is certified for 20. Most are expected to be used for sea landings, but they can be fitted with a tricycle fixed landing gear or skis. Sea landings are especially cost-effective, since there are no airports to charge landing fees or taxes. An independent study has forecast demand for 400 Twin Otters over the next ten years, so Viking appears to have found a comfortable manufacturing niche for some time to come.