

CF6-80C2 values & aftermarket activity

Despite the CF6-80C2 being a ubiquitous engine, supply of spare units is short and this stabilises values and lease rates.

The CF6-80C2 is a prime example of an engine with little liquidity in the used market. There is strong demand for all the aircraft types it powers, with few airframes or engines staying on the market for more than a few months. This low liquidity has kept the supply of available CF6-80C2s tight, and the values of used engines strong and at a high percentage of new engine list prices. Few engines are available on short-term leases, and most that are available in engine lessors' portfolios are leased on long-term contracts.

New engines

The -80C2 has been in production since the mid 1980s, and has sold in large numbers. The largest fleets are the -B1Fs powering 280 747-400s and -B4/B6/B7/B8 variants powering 400 aircraft of the 767 family. A smaller number power the A300-600, A310 and MD-11. Only the 747-400 and 767 can be ordered new from Boeing, and with the 787 available, orders for 767s have virtually stopped. Most orders for 747-400s are for the freighter variant, and these are also in small numbers. The

launch of the 747-8I is likely to herald the end of production for the CF6-80C2.

As a result of few engines now being built, General Electric (GE) steeply increased the list price of new engines in 2004 and 2005. "The list price of new engines depends on the thrust rating, but it went up from \$7.5 million to \$11 million in two jumps over an 18-month period," says Tom MacAleavey, senior vice president at Willis Lease Finance Corporation (WLFC). "This is mainly due to the sharp increase in the list price of life limited parts (LLPs) in the engine. The list price for a full stack has gone up to about \$3.4 million. The list price for a -B7F, for example, is now \$11.4 million. The LLPs are one way for GE to profit from aftermarket activity. Given the age of most engines, the lives of LLPs and the fact that many are used on long-haul operations, many LLPs are coming due for replacement.

"The limited supply of engines in the market and the high price of new engines keeps the value of used engines buoyant," continues MacAleavey. "The engine is also popular, with none being parked, even during the downturn of 2002 and 2003."

The value of used engines is

determined by their maintenance status. Jon Sharp, president and chief executive of Engine Lease Finance (ELF), explains that an engine overhaul will cost up to \$2.3 million and the list price of a full LLP stack is \$3.4 million. A completely run-out engine will require about \$5.7 million to recover its maintenance condition. "The market value of a -B6/B7 engine with half-life maintenance condition is \$6.5 million, while Airbus engines will be worth a little less because of the smaller number of A300s and A310s in the market," says Sharp. "There is no feasible replacement for the 747-400 yet, so this makes the market for -B1F engines very secure. The same applies to all variants used on the 767. These aircraft are long-term assets used by major airlines, and they are not sold or traded on a frequent basis. Spare engines are consequently also retained, and there are very few available in the market. The value of an engine with full maintenance life and new LLPs will therefore be high."

MacAleavey puts the value of a freshly overhauled engine (zero-timed) at about \$7.5 million, but it can be up to \$8 million or more if it is in a very good condition where its LLPs are near to full life. "The carcass of a completely run-out engine will be worth \$2.5-3.0 million, so the total of \$5.5-5.7 million added to this will take the value of a zero-timed engine to about \$8 million," explains MacAleavey.

Few or no CF6-80C2s are available for short-term leases, which is explained by Sharp's point that these assets are invested in on a long-term basis. "Engine lease rates are basically a lease factor of the engine's value," explains Sharp. "These factors are less than 1% per month, at 0.65-0.80% per month. A new or young engine with a market value of \$10 million will therefore have a lease rate of \$65,000-80,000 per month." These are similar rates quoted by MacAleavey. "Rates for most engines in a good maintenance condition are \$75,000-80,000 per month, if you can get one. The independent lessors have modest fleets and the situation of the tight supply of engines has not changed since 1998. Most engines are held by GE Engine Leasing." **AC**

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The -80C2B1F powering the 747-400 is the most numerous variant of the CF6-80C2 series. The aircraft and engines are long-term assets invested by major airlines, and there is little liquidity in the -80C2 market generally as a consequence.

