

Solid growth in the fighter market

In December 2004, the Eurofighter partner countries—the United Kingdom, Germany, Italy, and Spain—agreed to fund the long-awaited Tranche Two procurement contract, placing an order for 236 Eurofighters and launching an improved multirole version of the plane. Almost simultaneously, France agreed to sign the equally overdue contract for the next batch of 59 Dassault Rafales.

These two contracts confirm that European air power recapitalization is proceeding as planned, despite serious budget problems that have hobbled these aircraft. The success of these programs, along with other signs of strong demand, implies a robust growth market for much of the next 10 years.

One last great decade

In the medium term, the numbers look very promising, at least for domestic markets. The new Eurofighter contract, worth €14 billion (\$18 billion), brings the order book to 384 aircraft, against a total partner country requirement of 620. The €3-billion French contract had an almost equally strong impact on the Rafale program,

bringing the order book from 61 to 120 aircraft, against a total French air force/navy requirement for 294 planes.

In the U.S., Lockheed Martin's controversial F/A-22 Raptor has succeeded by stealth—only appropriate for a stealth fighter. Without any kind of full-rate production decision, as of FY05 there are 92 aircraft either funded or on contract. In short, the question of F/A-22 procurement and deployment is no longer debatable. The only issue is whether the Air Force will need to truncate or stretch out its anticipated buy of 279 aircraft.

There are fewer questions about the Navy's goal of 548 Boeing F/A-18E/F Super Hornets. As of early 2005, 315 have been funded, with another 117 covered by multiyear procurement contracts; 90 will be in EA-18G Growler electronic attack configuration. Deliveries of all 548 planes will be completed in 2013.

The only U.S. fighter program with any uncertainty is the Lockheed Martin F-35 Joint Strike Fighter. While development budget numbers have grown considerably—over \$4 billion was authorized in FY05, up from \$1.4 billion in FY02—there are still doubts about the plan beginning production in FY07, when procurement of the other aircraft will still be proceeding at maximum rate. Yet given the three services' need for a low-cost fighter, and the support of eight international partners, there is



little worry of a program cancellation. The worst-case scenario is another delay of one or two years.

All of these strong programs, along with key export orders such as the United Arab Emirates' 80-unit F-16 Block 60 acquisition, mean a very promising growth market. Teal Group forecasts a market peak of \$17.5 billion in 2011, up from \$13.5 billion in 2004. Overall, we anticipate production of 3,032 fighters in 2005-2014, worth \$151.1 billion.

A change in the wind

But in the long term, starting toward the end of our forecast, we anticipate technology change having a depressive effect on the market. The general perception has been that unmanned combat aerial vehicles (UCAVs) are the primary cause of this change. In our view, the real culprit will be net-centric warfare (NCW).

First, the UCAVs might not be the fighter surrogates currently envisioned. The U.S. Joint Unmanned Combat Air Systems (J-UCAS) program and several international efforts envision relatively heavy, capable strike platforms that are distinguished merely by being unmanned. But as these programs grow in cost and complexity, their attractions relative to traditional manned platforms are likely to dim. The J-UCAS program was one of the few major DOD strike programs to take a serious hit in the FY05 budget.

Meanwhile, there has been a growing appreciation for the capabilities of lighter UAVs with hunter-killer capability. These use existing UAV designs, such as General Atomics' RQ-1 Predator or the Northrop Grumman RQ-4 Global Hawk. Although



designed for reconnaissance and surveillance, these platforms can be integrated with precision strike weapons such as Hellfire missiles, providing a completely new capability in terms of endurance, range, and radar signature. In November 2002 a Predator fired a Hellfire missile to destroy a civilian vehicle in Yemen carrying suspected terrorists.

NCW is a less direct potential threat to fighter demand than UCAVs, but ultimately it should prove more damaging to the fighter market. NCW is designed to reduce the time needed to find and strike enemy targets, making each "shooter" asset more effective. As a platform multiplier, NCW will naturally reduce demand for strike platforms, resulting in force structure cuts.

This force multiplier/procurement subtraction impact will accompany a direct budgetary strain. Developing and deploying NCW systems and capabilities will increasingly take cash away from traditional platform procurement. While there are doubts about the services' budget priorities, there is some precedent that implies an NCW budget victory in some circumstances. In FY94-95, when the Air Force budget procured no new fighters, the service found \$1.3 billion for four E-8 JSTARS surveillance/battle management systems.

While JSTARS was expensive, follow-on NCW systems such as the Space-Based Radar and Northrop Grumman's E-10 Multi-Sensor Command and Control Aircraft will prove considerably more ambitious and costly.

The last pre-JSF contest

NCW will also enhance the F-35's already strong market prospects. The F-35 may



JSF

not be the best fighter ever designed—that honor belongs to the F/A-22—but it is designed to maximize use of offboard sensors such as satellites and other reconnaissance and targeting assets. The F-35 will have a unique market advantage as the first fighter designed from the beginning to be part of a larger military architecture.

If development remains on track and as planned, the F-35 will have numerous other advantages. The only fifth-generation aircraft on the drawing board, it will have the U.S. military stamp of approval, with commensurate guarantees of upgrades, training, and logistical support for decades to come. And with a planned flyaway cost in the \$40-million to \$50-million range (for the basic version), it should prove very competitive, even as a stand-alone platform.

Accordingly, most countries in the market for fighters are postponing their acquisition decisions, to wait and see how the F-35 matures. By the end of 2004, there were more European countries committed to the F-35 program than there were committed to Eurofighter. Two key Eurofighter partner countries (over half of the partnership's total defense spending) have joined F-35.

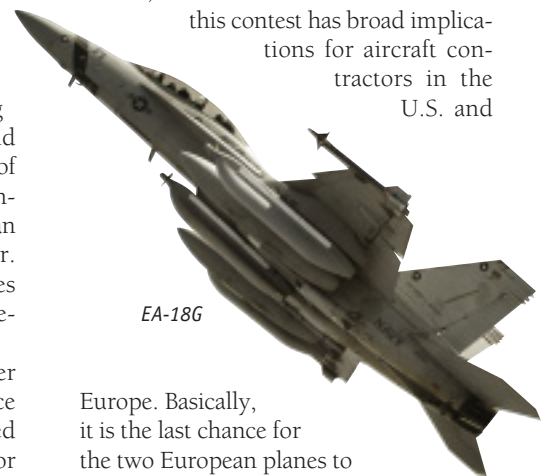
Worse, just before the Eurofighter Tranche Two contract signature, Greece announced it was shelving its planned purchase of 60 Eurofighters. As a major

U.S. fighter client, there are few doubts that the country will examine the F-35 when it does relaunch its fighter competition this year. This leaves Austria as the only secure Eurofighter export customer.



F/A-22

Singapore is the last major competition now under way that is scheduled to be decided before the F-35 becomes a major factor. In October 2003, Singapore short-listed the Eurofighter Typhoon, Dassault Rafale, and Boeing F-15 for its next fighter purchase. While this involves a small number of planes—just 8-12 at first, with another 10-12 to follow—this contest has broad implications for aircraft contractors in the U.S. and



EA-18G

Europe. Basically, it is the last chance for the two European planes to secure a major export customer before going head-to-head with the Joint Strike Fighter.

The most interesting aspect of the short-list decision was the elimination of Lockheed Martin's F-16 from the competition. The easy solution for Singapore's fighter needs appeared clear: acquire an additional batch of F-16s. It already has

65 F-16s, and the country is an F-35 Security Cooperation Partner. It joined the Systems Design and Development phase of the program in February 2003, with an anticipated \$50 million-\$70 million investment. In short, there was an easy and relatively low-cost roadmap between F-16 and F-35 acquisition. The decision to acquire a non-Lockheed Martin fighter (and, if Singapore buys Eurofighters or Rafales, one without the USAF stamp of approval) is a major departure from this roadmap.

Introducing an all-new fighter type into service presents major costs, in terms of creating a new logistics and training infrastructure. This is particularly true considering that the surviving contenders are twin-engine heavyweight designs. Surrounded by potential threats and political instability, Singapore wants a high-end multirole machine, and is willing to pay for the capability.

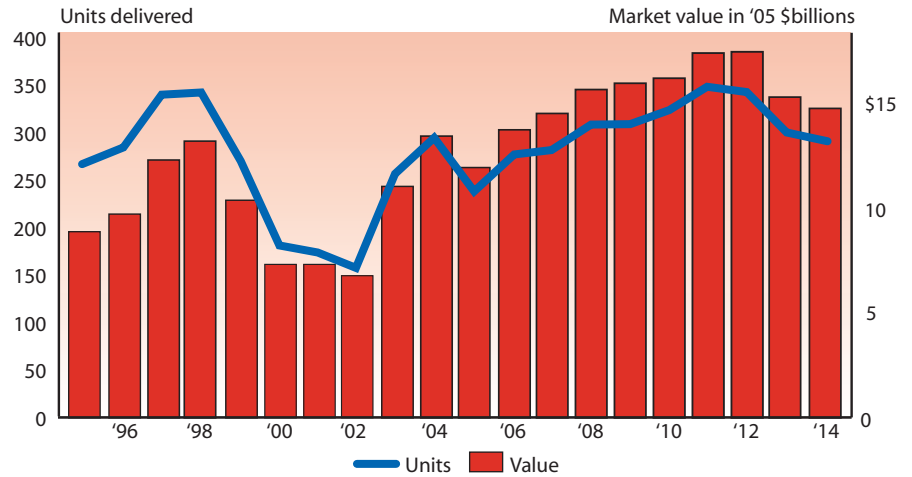
The swing markets

Beyond Singapore, European manufacturers still have export hopes in two key markets that are not particularly interested in the F-35. While Saudi Arabia and India have not announced specific competitions, they have ongoing military aircraft requirements, and they are willing to spend hard currency on Western military equipment yet are averse to dependence on any single supplier, such as the U.S.

For political and budget reasons, Saudi Arabia has not announced any major new arms sales since the mid-1990s. Yet with an aging fighter fleet and higher than expected oil revenue, the country could conceivably make some kind of major purchase in the next few years.

Saudi Arabia was by far the largest single export customer for European air

ONE LAST GREAT DECADE



systems over the last three decades, with orders for 120 Panavia Tornados (alongside 146 Boeing F-15s). It is also one of four countries that have a history of purchasing imported high-end twin-engine fighters, such as Eurofighter and Rafale.

The key remaining fighter market is India. While not as wealthy as Saudi Arabia, India does have large military requirements and a growing sense of strategic importance. Also, like Saudi Arabia, it has an ongoing commitment to purchasing weapons from diverse sources. In addition to Russian aircraft (Sukhoi and MiG), India has procured 59 Dassault Mirage 2000s, and is rumored to have considered Dassault's Rafale. India also has begun construction of an indigenous alternative, Hindustan Aeronautics' Light Combat Aircraft (LCA).

If the LCA project dies, everyone, particularly Dassault, will double their efforts to sell fighters to India. Even with LCA, there is a good chance of an additional Mirage 2000 buy, and there is even talk of a coproduction line with a 100+ aircraft acquisition commitment. The country is upgrading some of its MiG-21s, and will most likely stick with Russian aircraft for most of its heavier fighter needs, despite its proposed Medium Combat Aircraft development program.

Yet here, too, the U.S. has cards to play. In the past two years, the U.S. government began discussing the idea of

weapons sales to India, and in 2004 these talks began focusing on the sale of used U.S. Navy P-3 antisubmarine planes.

If this test case proves successful, it would mean the first major U.S. weapons sale to India since the country declared independence in

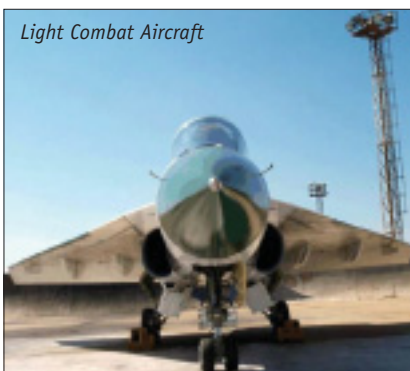


Rafale 2

1947, and would likely lead to further sales. U.S. industry and government officials have already mentioned the possibility of F-16 sales, and, in the longer run, even F-35 sales are regarded as possible.

From the standpoint of European manufacturers, such maneuvers must appear as a major threat, and as part of a broader pattern. Combat aircraft are a large and growing market. The F-35 is already as much an industrial strategy as a fighter, designed to dominate this market. U.S. pursuit of any remaining nonaligned customers, such as India, would cement this dominance and could lock Europe out of the export market indefinitely.

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Light Combat Aircraft