

The professional approach

Money and experience, in vast quantities, make FlightSafety Farnborough one of the best flight training organisations in the world, as Pat Malone reports

It takes a stout heart to invest a quarter of a billion dollars in UK general aviation these days, but that's just what the international flight training group FlightSafety has done. The company has built one of its largest and most sophisticated simulator centres at Farnborough and is handling up to 100 pilots a day in a high-quality, high-priced round-the-clock training operation.

Business aviation is the brightest of the GA industry's few bright spots, and FlightSafety is backed by the deep pockets of Warren Buffet's Berkshire Hathaway, which has invested billions in NetJets and seems happy to wait for a real return on its money; like NetJets, FlightSafety is in for the long haul.

The numbers are frightening. Start-up costs of \$250 million included an average of \$12 million each for 15 simulators covering a range of aircraft from Cessna, Bombardier, Embraer, Gulfstream, Hawker, Saab, Beechcraft, even Sikorsky. The FAB facility – so named after Farnborough's ICAO designator – has 27 classrooms and 30 briefing and debriefing rooms. To stand a chance of turning a profit the assets have to be sweated almost every minute of the day and night, and FlightSafety FAB is as busy at 2am as it is at 2pm.

Ironically, much of Farnborough's custom previously went to FlightSafety in America, Canada or elsewhere. Rudy Toering, managing director of European marketing, says the UK investment was necessary because home-based training is vital for aircraft operators. "A three-day recurrent training module turns into a week's absence when you factor in travel and jet-lag, and that's too long," he says. "Coming to Britain means our customers in Europe save time and money. If you value a pilot's time at £500 to £750 a day, the

arguments are compelling."

Understandably given its ownership, NetJets Europe is FlightSafety Farnborough's biggest customer, accounting for 40 percent of the business. NetJets pilots spend an average of 18 days training each year, so the saving on pilot down-time is serious. Furthermore, while JAR training has been done in the US, FlightSafety was keen to create a situation in which instructors understood the JARs as natives. Says Rudy Toering: "In England they're steeped in the JARs, they live and breathe flying the JAA way, and there's a difference in their depth of understanding that communicates itself to pilots."



FlightSafety attracts business by keeping tabs on every hull in the world. They know where every business jet is based and who owns it, and if you buy one new or second-hand your purchase will swiftly be followed by a phone call from FlightSafety inquiring after your training needs. If you haven't already been steered towards them by your dealer, you'll lean towards them because of their name.

The company has a peerless reputation for high-quality training, carefully nurtured over the 56 years since founder Al Ueltschi, who used to fly Pan Am's pioneering chief Juan Trippe around, started FlightSafety in order to provide business jet pilots with the sort of recurrent training from which airline pilots benefited. The company stands or falls by the quality of its training and has never compromised its standards. Any loss of trust would be disastrous. FlightSafety has built an international network of 42 training centres on the trust of pilots and owners, and it trains 75,000 pilots a year.

Business aviation forms the bulk of its custom, although FlightSafety does Flybe's training – the Dash-8 Q400 simulator is one of their busiest, and a second is being installed. But a significant proportion of their work is for one-aircraft operators with two and a half pilots who train only once a year – companies which, FlightSafety says, they treat exactly the same as the 600-pilot operations.

The FlightSafety FAB operation is a mini United Nations. MD Rudy Toering was born in

**Top: simulators costs some \$12 million each and cover types from a dozen manufacturers
Left: Rudy Toering, FlightSafety Farnborough's Managing Director of European Marketing**

Holland and raised in Canada, and has worked in America, Canada, France and the UK. Marketing manager Anthony van de Geest is a Swiss South African, and the staff come from Zimbabwe, Australia, New Zealand, the US, Switzerland, Germany, Holland, Mexico – even Britain. They all have great aviation stories to tell. Anthony van de Geest was a rep for an aircraft finance company in South Africa, and has been known to prise open a hangar door in the dead of night to fly away a disputed item. He made a living in aerial advertising before joining South Africa's biggest Raytheon dealer then moving up to FlightSafety. One of his bugbears is young instructors who have little experience of the real world. "Very often in GA your instructor has just climbed out of a training aircraft himself," he says. "I've had young instructors who were petrified of stalling or spinning and who wouldn't know how to handle it if they were flipped on their side while banner-towing at 1,000 feet.

"In business aviation we take a completely different approach. At FlightSafety our instructors are vastly experienced and must meet the most stringent internal quality requirements. It takes six to eight months from interview to instructing, and frankly, finding instructors who are good enough is getting



Above: Anthony van Geest - one of the biggest problems is getting instructors who are good enough

more and more difficult.

"A lot of our people have airline pensions and don't need to work – they do it for the love of giving back their expertise. We also have people who've lost medicals and who want to continue to be part of the industry."

All the instructors I met had hard-earned grey hair. Wayne Scott, programme manager for the Citation Bravo, spent 32 years with BEA and BA. "The experience quotient here is tremendous," he said. "Between us we have hundreds of thousands of hours on more types than you know exist. As you can imagine, the age-60 rule is much discussed in the crew room."

About 15 to 20 percent of the business is initial type ratings, and recurrent training accounts for the rest. Anthony van de Geest says: "On the initial side, we aim to make a pilot competent and confident on a new type through comprehensive ground school, moving to the simulator to get the feel of the aircraft before showing him or her how to cope with emergencies. There are no surprises – we don't bounce pilots into something they're not prepared for. Confidence has to be built up before we load them with emergencies, and then we increase the complexity of the failures so that when it happens in real life it's not new to them.

Where history meets the future

FlightSafety chose Farnborough because they were impressed with the ambitions of owners TAG, because the airfield is well-placed between Heathrow and Gatwick, and because business aviation is unlikely to be shouldered out of Farnborough as it has been elsewhere.

The name of Farnborough is synonymous with flight. It's Britain's longest-established aerodrome, 100 years old next year, where the great Samuel Franklin Cody performed the earliest aerial experiments for the British Army. One wonders what Sam would say if he could see it today, with long-range business jets clustering around a futuristic terminal building.

TAG – Techniques de Avante Garde – has invested heavily in providing the kind of facilities that will attract top-end business. The main buildings are triumphs of design, light, spacious, airy and uncrowded. The terminal, open for a year, has on-site immigration and customs, and there's no queue – you're whipped straight through to your waiting limousine or helicopter. Compared to the frustrations of business travel through the major airports, where security and congestion are onerous problems, Farnborough is a traveller's dream.



are dedicated to them. Maintenance is available on site, there are luxurious flight crew briefing and rest rooms, and even your car parking is free.

One fly in the ointment is movement restrictions. Currently the airfield has a 28,000 annual movement limit imposed by the local council (a landing and take-off is two movements) and with business increasing by around 30 percent a year, they'll be bumping up against their ceiling next year. They're limited to 2,500 movements at weekends and already turn away about 1500 weekend flights. TAG is currently awaiting the outcome of an appeal to be allowed to shift some of its allowance onto the weekends, where the shortage is most acute.

Chief executive Brandon O'Reilly says: "We'd like to double our weekend quota within the existing 28,000 limit. There was a public inquiry, and we'll have a final decision on October 15th."

Local MP Gerald Howarth is supporting the company's application for a weekend increase, a courageous move when it would probably be more popular to lie doggo. Howarth, a GA pilot who flies a PA28, says: "Farnborough Airport is a well-run asset to the community and I'm keen

Operations are equally slick. Business aircraft aren't competing with passenger jets for ramp space, runway slots or approaches. Ground facilities



to help ensure that no unnecessary obstacles prevent its efficient operation."

Understandably, Brandon O'Reilly sets great store by community relations. "We invest a great deal of time in the community, showing people what we're doing and why we need to do it, seeking co-operation and consent," he says. "We wish to grow responsibly, bring the community along with us, show them how we're creating jobs and contributing to the economy.

"We work hard to allay their fears on noise, which is the major issue. New noise abatement trials are under way, in which we seek to avoid flying over noise-sensitive areas. We encourage pilots to fly accurately and to adopt noise-abatement procedures. Farnborough Airport is part of the fabric of this society, and I find that most local people welcome us and are pleased that we're here.

"Ultimately I'd like to see a noise budget replace a movement cap. That way there would be great incentives to reduce the amount of disturbance and encourage those aircraft that meet stage three standards. Our movement limits were set when aircraft were generally much noisier."

Farnborough is allowed to take aircraft up to the BBJ2 – the council has set a weight limit of 80 tonnes – and while they do get the occasional 172 dropping in, with landing and handling fees of around £275 light aircraft find they prefer Blackbushe, a few miles away. For business jets the fees compare favourably with other airfields. London City, for instance, looks for around £1,000. And with business aircraft increasingly being squeezed out of airports like Luton, demand can only increase.



TAG sees FlightSafety not just as a tenant but as a showcase for new business. O'Reilly says: "Pilots come through FlightSafety here, and when they're asked for their opinions on which airports to use, the name of Farnborough tends to come up."

“Some pilots come with a certain amount of trepidation, but there’s nothing here that’s designed to catch them out. A little tension is no bad thing – over-confidence is a greater problem, but most pilots are sensible. We aim to make training a positive experience. The failure rate is very low, but it does happen – we are absolutely inflexible about safety. Failure might happen in recruitment training, less so later. We recognise quite quickly when someone is struggling. In every session you have to meet the goals of that session, and if you’re continually scoring threes – the lowest mark – the programme manager might fly with you, and the Director of Training would look at the facts and perhaps call the customer and say look, this chap isn’t getting it, could he perhaps come back at a later stage when he has more experience?”

“This happens even less often in the US because there, we don’t take pilots with less than 1,000 hours. In the US you don’t need a type rating. Here, you do have a type rating, and sometimes you get people with low hours. We don’t do second pilot courses – everyone has to cut it, and sometimes the experience is not there. We regret the passing of the old progression – it used to be you’d go from a 152 to



Left: Citation Bravo manager Wayne Scott flew for 32 years with BA and BEA
Below: FlightSafety Farnborough has 27 classrooms with the DTS desktop simulator installed
Bottom: Cessna Citation CJ2 simulator is one of 15 in operation at Farnborough

a 172 to an Aztec, to a King Air and so on, an incremental learning process. Now you go straight from a 172 to a CJ2.

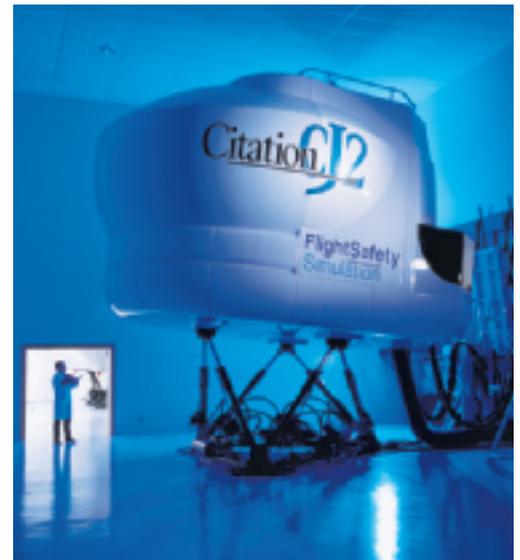
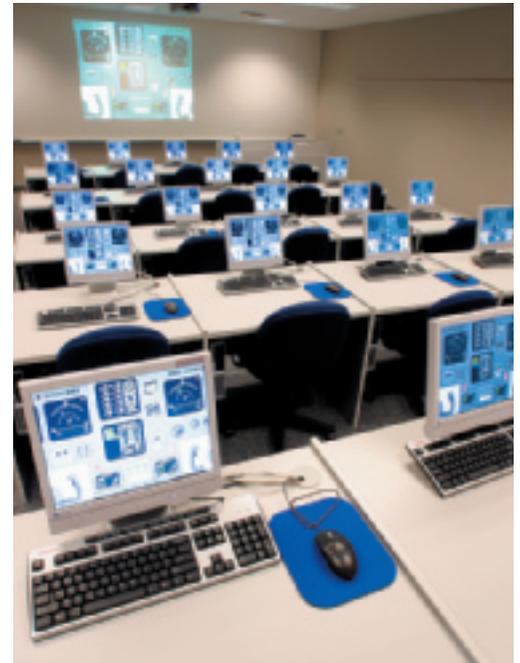
They’re easy to handle in good conditions, but not so easy when things go wrong and you don’t have that foundation of experience to draw on. We get people coming in with no glass cockpit experience at all, for whom planning a descent 120 miles out instead of 20 miles out is new. Getting your brain up from 100 knots to 500 knots is not an overnight task.

“People who’ve been flying the type for 20 years go away with an increased body of knowledge and confidence. They’re used to having nothing go wrong, but we had one pilot who’d been flying for 40 years without incident, then he had two engine failures in one month. It will fail, of that there is no doubt. Even engines like the PT6, a fantastically reliable powerplant, will one day fail.”

The heart of FlightSafety is what they call the Matrix system, which has three components – a desktop computer simulator (DTS), a graphical flight desk system (GFS) and a debrief computer called SimVu. During ground-school, instructors explain concepts and systems using dual projection graphic



Left: the Graphical Flight System displays can be configured to represent any aircraft



Grappling with the VAT anomaly

High-quality safety training is a capital- and labour-intensive business, and operating in Europe is even more expensive than the rest of the world. FlightSafety FAB managing director Rudy Toering says: “The cost of doing business in Europe is much higher. I think it’s beginning to even out a little as things like landing fees start to hit the US. But there are many costs we have here that are much lower, or that don’t exist, in America.”

Britain has its own unique burdens. Value Added Tax is an issue that concerns the company. In Spain, France, the Netherlands, professional flight training is zero-rated, but in the UK we must pay 17.5 percent VAT. “It’s an inequity that troubles us,” says Toering. “It represents an onerous administrative burden for the companies who want to train in Britain, particularly for those who are training in several countries and must have different financial systems for the UK. It makes everything that bit more difficult.”

But most costs are common across the world. One of the major expenditures of which users may not even be aware is for the data that goes into the simulators. FlightSafety has a close relationship with the OEMs and a lot of information flows both ways, but data has to be bought before

simulators can be built and programmed – FlightSafety make their own simulators in Oklahoma. That data can be hugely expensive, and the price is increasing as aircraft and simulators get more sophisticated. For instance, icing conditions used to be simulated simply by adding weight. But in the case of the Citation Mustang, for example, Cessna did some 3,000 stalls during testing to examine airframe icing, and the data they harvested has gone into the Mustang simulator that’s coming to Farnborough – and Cessna didn’t give it away. While the simulator will behave exactly like the aircraft in icing conditions, exactitude comes with a ferocious bill.

Add to these costs a serious level of risk. You never know how well an aircraft is going to sell, and if your forecasts are far out, you’re going to be embarrassed one way or the other. Anyone want a Beech Starship simulator?

And you’d be amazed (I was, anyway) at how much fuel a simulator uses. FlightSafety Farnborough’s electricity bill is £55,000 a month. So expensive is sim time that when you get down to something like the King Air 200, it’s almost cheaper to do the training in the real thing. At the higher end the sim is much less expensive than the real thing, of course. You don’t have to take an aircraft out of the line, and you can safely replicate malfunctions that no sane man would attempt in an aircraft – when it goes pear-shaped, you just press the ‘reset’ button.

of the matter in hand, the other showing cockpit indications. Pilots can use the DTS to examine individual systems in great detail. The GFS is a cockpit mock-up made up of touch-screens where the integrated information from the DTSs can be displayed as it appears in the aircraft. Pull up a chair and you can 'fly' the GFS like the simulator, without the motion or the graphics. By the time you get into the big-money sim you're almost able to find your way round the cockpit blindfolded.

A four-hour session starts in the briefing room, where paired-off pilots are given a full run-down of what they'll be doing in the simulator. You'll discuss the procedures and speeds, talk through an engine failure, review the memory items and how the checklist will

be used. That takes an hour – then you've got your two hours in the sim, with a break in the middle to change commanders, and afterwards there's a one-hour session in the debriefing room. Here, the SimVu gives you a precise account of every control input you made, every instrument readout, every error. You can print out your approaches and see where you were high, low or off the localiser, and co-ordinate your movements with those of the 'aircraft'. Pilots who are concentrating hard in the sim sometimes don't believe they did certain things, but the evidence is there.

Each of the simulators is worked for 20 hours a day, with four hours down for maintenance. Just as in real life, you can be scheduled to take off at noon or midnight.

During initial training you're not allowed to take off before 6am and you must land before 10pm, but recurrent training happens at all hours. There's a gym for the body and a prayer room for the soul, and Farnborough's owners TAG are building a hotel nearby so you'll never have to leave.

FlightSafety has brought the highest levels of professionalism to business aviation training in the UK, and its presence is a significant feather in Farnborough's cap. Even though it's working at close to capacity after less than two years and more resources are being brought to bear to handle the demand, the investment will take years to pay off. In an industry in which long-term planning is difficult when it's possible at all, that's a rare gem. ■

The day I crashed the Gulfstream GIV

I never quite got the approach stabilised and the Gulfstream GIV hit the runway at Luton with a jolt that might well have driven the oleos through the floor. We bounced 20 feet and I had that horrible sinking feeling before our second arrival, which would certainly have finished off our suffering undercarriage. "Not bad," said my instructor Mike Carver as he helped steer the wreckage down the piste. "But it does illustrate one of the advantages of doing these things in the simulator."

Mike has 25 years' experience flying Gulfstream jets for such employers as King Hussein of Jordan and the Saudi oil minister. Before that he was in Her Majesty's employ, hand-flying autopilot-free Canberras at 48,000 feet, which teaches you to fly smoothly, he avers. Unusually, he did his ab initio training on the Jet Provost during a short-lived RAF experiment. With 40 years in the trade behind him, he has 15,000 hours.

Today he presides over a GIV simulator of impressive fidelity, in which you can roam around the countryside pointing out landmarks when you're not sweating to resolve some fiendish combination of unlikely emergencies. The simulator has to be good because if you have an FAA ticket you can walk straight out to the actual jet and fly it away (if you can get the door open, as the old joke goes). With a JAR licence you need four take-offs and landings in the aircraft with an instructor first.

"We can simulate any airfield in the world," says Mike, "but there are only a few with full detail. I can take you to Munich, Innsbruck, Paris, Nice, several airports in the United States, and all the major British airports. You can have your own home airfield added to the simulator, but it costs about \$50,000 to have the model made."

For an initial type rating your course would last about three weeks, with two weeks of ground school and seven days in the sim. There's the usual avalanche of paper – you get a bag of documents costing \$2,000, and the 'quick-reference' handbook for the GIV is as thick as a brick. Having missed out on the ground school (and being a VFR helicopter pilot) I was all at sea in the GIV and spent most of my



Left: Mike Carver - 'hand-flying skills are deteriorating and need refreshing'



Above: the GIV simulator, still in one piece after some gross mishandling

time trying to find the numbers.

Mike ran through some of the weather conditions he could conjure up, from CAVOK down to Cat II – the limit for the GIV – before we settled on a fine VFR day at Luton and began our take-off roll. I was surprised at how heavy the ailerons and rudder were. In an EFATO, says Mike, the nose can whip 40 degrees before you know it. Climbout is just a matter of trimming into a notch on the AHI and letting the autothrottles hold the speed. It's easy when nothing's going wrong. We explored some of the aircraft's safety systems by flying low – the terrain turns brown, then red as the danger increases, and an old nag on an audio system repeats "Don't sink!" in a grating voice. We eyeballed our way into Luton for a half-decent landing with Mike nudging things along a little, then I performed a circuit without help. It was a bit of a helicopter approach, high, fast, and a stranger to the localiser, and a few last-minute adjustments led to a landing that must have looked spectacular to anyone standing outside the sim. Time to press the 'reset' button.

Even after half an hour I was sweating – Mike says that after a four-hour session, including two hours in the sim, pilots are pretty well wrung out. "You can watch their performance degrade as the time goes on," he says. "They get a day off in the middle of the sim sessions, which helps."

Common problems, he says, are a loss of situational awareness and rusty basic skills. "Pilots' hand-flying skills are deteriorating and need refreshing. There's an over-reliance on the systems, but when all else fails – and one day it will – your hands and your brain must be up to the job."