Training the virtual way

TIM ROBINSON reports from the Hawk Synthetic Training Facility at RAF Valley.

In parallel with the real Hawk flying at RAF Valley is the simulator facility operated by BAE Systems as the Hawk Synthetic Training Facility (HSTF). No mere adjunct to the course, the synthetic flying is now an integral part of the courses offered at Valley.

Delivered on time and on budget in 1999, the HSTF has been one of the most successful private finance initiatives (PFIs) established. The facility delivers Hawk simulator training by the hour to the (mainly RAF) customer with penalties for lost sorties and provides 63 hours of synthetic training per student.

The key to its success seems to be the level of integration both technical (in providing a crucial part of the syllabus through its simulation devices), and its ethos (its instructors, though civilian, are all high houred ex-RAF QFIs/QWI/QTIs with a wealth of teaching and operational experience to pass on to students). This set-up also benefits in another way, in that, being outside the rigid rank structure of the military, students find it slightly easier to discuss problems informally with the older civilian simulator instructors.

The facility itself comprises two dome Hawk Weapons & Tactics Simulators, a Hawk Instrument Flight Simulator and a Hawk Cockpit Procedures Trainer. The procedures trainer is just that — a Hawk cockpit without any visuals. The instrument trainer features a small display to practise night and IFR flying.

Flying the sim

The most realistic synthetic devices are the Hawk Weapon & Tactics Simulators, (HWTS). These comprise two domes with a cockpit, each giving a 330° view to the pilot. They can be linked together for formation flying or air combat training and have a full mission capability.

Compared to the latest PC flight sims the terrain detail is good — but not outstanding — however an upgrade will address this in August and September. Digital projectors from Evans & Sutherland will enhance the whole of the view around the pilot — not just directly in front, adding to the immersion already experienced.

Like most fast-jet simulators it is fixed base, the militaries around the world having decided that the extra cost of a moving platform is outweighed by the negligible ability to transmit the extreme G-forces acting on pilots in combat manoeuvres.

However, what the simulator does have is a motion-cued seat and seats, which tightens the straps to simulate G-loadings and pushes the seat forward into the pilot's back to create sensation of acceleration.These, along with realistic stick forces and a stick shaker, allow the sim to replicate the feel of flying the Hawk — a classic jet which is easy to fly but difficult to fly well. Abuse the aircraft and buffeting will set in — enough to let you know that this is not a electric fly-by-wire jet that will allow carefree handling.

Other users

As well as the RAF (and FAA) pilots going through the fast jet course at Valley, the facility also plays host to other pilots. RAF Valley is not only playing host to Indian Air Force pilots who are training with the RAF under the Hawk interim training contract, but also other air forces such as Kuwait and Saudi Arabia. The HSTF also handles BAE Systems' own test pilots who might want to retain currency on the Hawk, or practise test or display flying. Refresher training to other RAF/MoD pilots returning to fast jets from desk jobs is also undertaken as well other users like the RAF's Red Arrows, 100 Sqn and FRADU, the Royal Navy Standards Unit, RAF St Athan Test Pilots and the Empire Test Pilots School.

Finally the HSTF also lets Air Cadets see the most exciting part of an RAF career, with one instructor commenting: "Before they go in we ask them what they want to do and they invariably say pop star, but after they come out they all want to join the RAF!"

The future

Despite the obvious relevance and utility the future of the HSTF is not as clear as it should be. In the first instance, with reducing pilots and cutting of platforms, the RAF is taking in fewer pilots than ever before — yet the facility must be open five days a week from 8am-9pm to satisfy the contract. To that end BAE Systems is considering exploiting the facility as a corporate entertainment 'experience' to help fill the excess capacity.

Finally, while the introduction of the Hawk 128 and MFTS will finally give the RAF the glass-cockpit trainer it needs, there will need to be new simulators installed by the winner of the MFTS programme. Common sense would suggest that an extension of the HSTF would be the obvious answer (thus avoiding a duplication of instructors, technicians and administration), co-locating the new 128 simulator(s) with the steam-gauge simulators. However, it may be that the MFTS winning consortium could take another approach.

Whatever happens, says BAE Systems, with the Hawk 128 due to enter RAF service in 2008, progress needs to be made quickly to procure Hawk 128 synthetic training devices — otherwise the aircraft will enter service without a simulator to train on. Not an unusual event but, given the vital place of the HSTF in the RAF Valley syllabus, and the massive differences between the Hawk T1 and 128, this needs to be addressed sooner rather than later. ◆