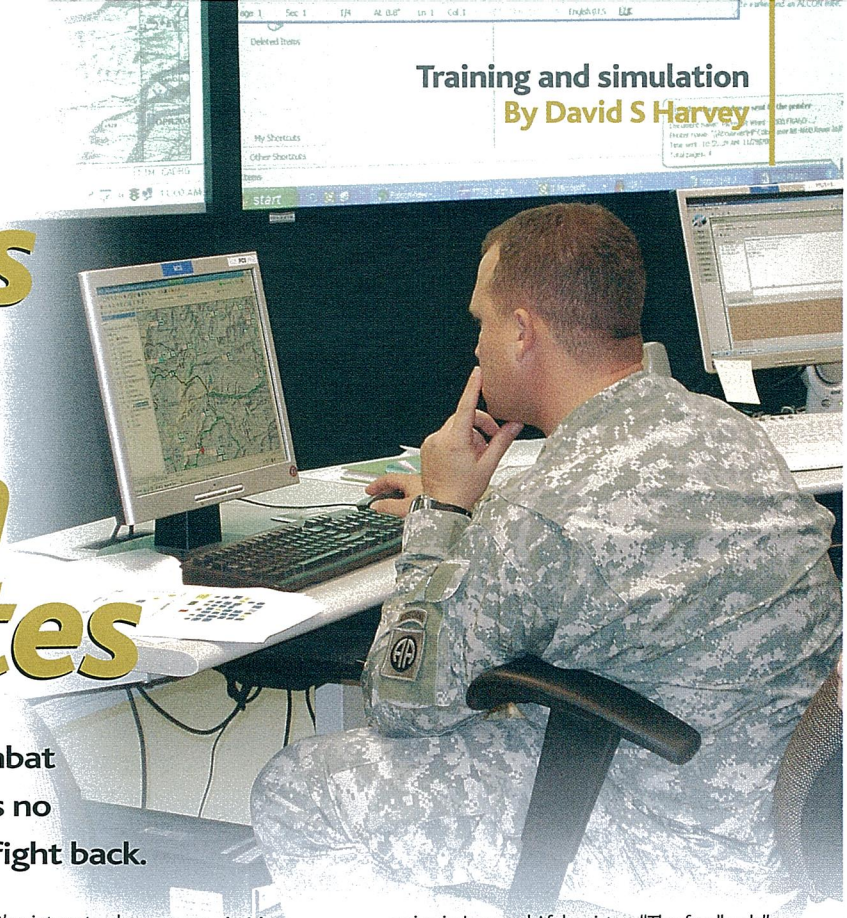
By David S Harvey

# Ft Rucker's simulator revolution consolidates



**Flight School XXI delivers its first combat pilots and shows that virtual reality is no longer a myth as simulators learn to fight back.**

Driven by a rapidly combining mix of wartime needs, technology and increased integration with ground forces, the US Army's aviation simulation activities at the US Army Aviation Warfighting Center in Ft Rucker, AL, focus on two distinct fronts. One of them – individual crew training – is, perhaps, more familiar. The other is an expansion into fields of virtual reality more representative of developments in the world of computer gaming. Increasingly, the message is that the two are becoming mixed as new devices, and the software programs that drive them are becoming intertwined.

"The day is not far away when procedural training will cross the bridge into virtual reality," predicts Ft Rucker's director of simulation, Col Lee LeBlanc. "If we don't do things like that, then we could be left behind in the future."

Actually, the case for Army Aviation's current pre-eminence in the field of simulation is the strongest that this observer, who has tracked trends in the field for 20 years, has ever seen.

On the crew operational flight and procedural training side, new intakes into the Flight School XXI (FSXXI) system are finding a depth of simulator resources they have never had before. A new off-base facility in nearby Daleville, developed and run by CSC and known as Warrior Hall, is now producing the first 'Readiness Level 2' aviators to show up in actual combat units.

FSXXI has dramatically increased the amount of synthetic training to as much as 30% of a pilot's total training activity, in response to concerns some years ago that operational units could not realistically handle the 'extra' training burdens needed to convert new aviators into operationally useful ones.

## Training time halved

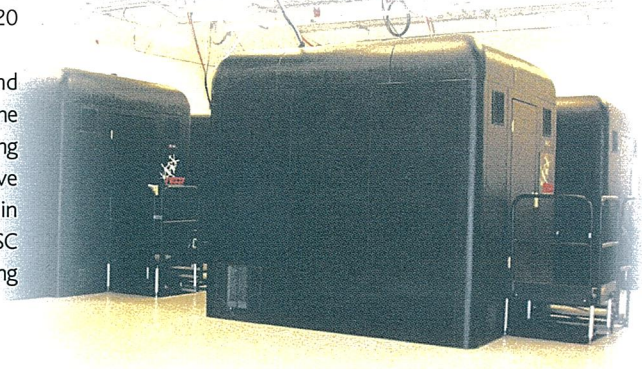
One consequence, says Rodney Sandslund, a veteran (CW5) Army aviator, now turned FSXXI developer with E Company, 212th Aviation Brigade, at Hanchey Army Airfield, is that the 180 days of post-training normally needed before have been cut in half for pilots headed to units.

Sandslund and his group have the job of getting this new type of operationally savvy Black Hawk pilot out the door: the first of the new 'product' is, in fact, just beginning to arrive in Iraq and Afghanistan. "The feedback," he says, has been "fantastic. We're getting calls from the guys out there asking if they can come back and see how we do it."

**82nd Airborne Combat Aviation Brigade personnel train for deployment to Afghanistan. (Photos: US Army)**

Back on the actual Ft Rucker base, at the Seneff Center, the simulation directorate is delving into new ways of presenting reality to reflect greater integration of ground and air. Here, the job of meeting perhaps the greatest test in terms of operational authenticity that simulation can face – preparing front-line units for immediate combat operations – is being tackled with the willing participation of forces already so busy that coming here for warfighting exercises is something they must consciously take time to do.

The effort is focussed on a number of directions simultaneously drawing on a new core of collective training devices based on both the Aviation Combined Arms Tactical Trainer (AVCATT) and Reconfigurable Collective Training Devices (RCTDs) (both are parts of the same, L-3-developed, system: AVCATT is trailer-mounted; RCTD is fixed-based equipment at both the Seneff facility and Warrior Hall). The effort involves the exploration – and exploitation – of new and functionally compatible terrain databases, and increasingly, insertion of simulated forces which exhibit random 'behaviours' – minds of their own – capable of challenging pilots with unpredictable, lifelike responses.



**Simulators in the new off-base facility, Warrior Hall.**

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The advent of the collective philosophy inherent in AVCATT has, say managers, propelled aviation training forward into a new generation of situational awareness among the aviators trained on it. Although it is not here yet, LeBlanc, for one, believes the time is coming when seamless training on vast air-ground models using common databases will become common practice as developmental efforts in such areas as Synthetic Environment (SE) Core – for databases – and an Army-wide system called 'One Semi-automated Force' (OneSAF) take shape across various Army and industrial organisations.

Ft Rucker is scheduled to become a major centre for terrain database development as the effort to replace today's highly sophisticated, pixel-based displays with digitally rendered 'real-world' images drawn from the environments of surveillance and digital database generation comes to fruition over the next few years.

### Doctrinal change

Indeed, it is hard to find a more enthusiastic proponent of 'simulation as cybernetics' than LeBlanc, a non-aviator (and former lawyer) deeply embroiled in his subject. "There are so many threads to it, but the complexities that we in aviation have faced over the years offer a tremendous amount of opportunity for the air-ground integration side of things, once we get the enablers done." Aviation, he says, is no longer a stepchild in Army thinking (thanks almost entirely to the perceptions of its utility being raised by its contribution in the current operations), and this bodes well for both doctrinal and technological changes in virtual simulation as things like UAV systems start to come onto the battlefield.

Both aspects of this heightened focus on simulation at Ft Rucker – flight training, and the 'virtualness' of collective training and the like – are housed in spanking new facilities carefully designed around the job at hand.

CSC's Warrior Hall (developed together with subcontractors L-3, FlightSafety International, Talon and ATC) was built and put into action in record time in response to the pressure on training caused by the war – although FSXXI, as a concept, had been in the making since operations in Bosnia exposed flaws inherent in pilots too green to go into the traces.

"Ft Rucker is scheduled to become a major centre for terrain database development."

The Army agreed to the idea of an off-site facility produced under a $1.1 billion Private Finance Initiative scheme so it could get rolling as soon as possible. The Seneff Center now routinely hosts combat units that work supported by large and comprehensively equipped after-action review facilities which analyse every piece of every task they do.

During *DH*'s visit in late November, the 82nd Airborne Combat Aviation Brigade, Col Kelly Thomas commanding, was starting a 10-day work-up prior to going to Kandahar province sometime in the new year. "The biggest benefit is the cost-effectiveness. I don't want to spend one penny on a blade-hour I don't have to, and besides, the reality is that all my stuff is packed up and on the boat, and I'm having to give up my own AVCATT to someone else," he said in a brief interview.

"You come here to this AATX, and you get this really great orientation to everything that's going on over there. Have we been there before? Yes. Do we know what we're in for? Yes. But do I have the same guys? No, and that's the point here. We have this great mix of combat people and highly skilled but not-yet-over-there aviators, and this is the only place I can get the standardisation I need across the three battalions in my brigade, all varied as they are."

In one of the physically similar full-motion simulators in Warrior Hall, this writer was taken for a ride in a UH-60L Black Hawk that culminated in a deck landing. Visuals were excellent – in details, more realistic, perhaps, than a similar state-of-the-art ride taken three years ago in a 160th SOAR Little Bird simulator. But what got our attention most was the deck handler 'manikin' inserted in the software, whose hand signals guided our pilot to touchdown and while deck chains were inserted underneath. The completely lifelike figure was realistic enough to suggest that this world of authentically simulated human beings was a here-and-now artefact of simulation. This time, the figurine did not have the ability to randomly produce its own 'behaviours' (initiate, say, a random wave-off unexpected by the pilot), but LeBlanc says it's only a matter of time.

### Expect the unexpected

It's true that, for some time, individual soldiers have been modelled into simulation databases. But 'random' groups exhibiting, perhaps, artificial-intelligence-based actions? What about an RPG gunner popping up unexpectedly? A crowd in a market place where an Apache is taking gunfire? An insurgent sniper seen from the air as he manoeuvres across a rooftop to kill a soldier?

"Boggles the mind, doesn't it?" suggests LeBlanc. "But that is the kind of thing the Army is thinking about for the future. Once you admit to yourself the broader implications of 'train as you fight', once you seriously develop the relevancy of simulation, make it inter-operable, then the sky's the limit. That's why I think not going for it would eventually leave us behind, in the sense that our asymmetric advantage in the future will be joint – and coalition – exploitation of what, today, we see possible tomorrow."

Two impressions are left behind. One is the way Ft Rucker – through FSXXI and collective device training in AVCATT and RTCDs, and now the drive to seamlessness of combined arms simulators – has advanced to practical synthetic source offerings good enough for war. But the other is the way aviation simulation development here is truly offering the hooks to draw in ground forces so the two entities can fly and fight together for training purposes in ways as yet unexploited. The next few years in both business areas could be the most intriguing yet. **DH**

*The next issue of* Defence Helicopter *will include an extensive interview with Col LeBlanc on the subject of Army Aviation directions towards future combat simulation.*