

TUCAN'S NEST

BRAZIL'S AIR FORCE ACADEMY

Dirk Jan de Ridder describes how the pilots of South America's largest air arm are trained

Below: The T-27 is more suitable for aerobatics than the T-25, which very easily loses airspeed and altitude during such manoeuvres.
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THE HISTORY of Brazil's Air Force Academy (Academia da Força Aérea - AFA) is closely linked to that of its air force. For many years Brazilian military aviation was divided between the army and the navy. But when the Brazilian Air Force (Força Aérea Brasileira - FAB) was established in 1941, it took control of all military aircraft, and pilot training was centralised at the School of Aeronautics at Dos Afonsos just outside Rio de Janeiro.

Because of the lack of space for growth around the airfield, a search for a new location began only a year later; Pirassununga, in the state of São Paulo, was chosen and construction of the first hangars started during the late 1940s. But it was not until the 1960s that the first few pilots began training there, and 1971 that the AFA (as it had been renamed in 1969) moved to Campo Fontenelle, as the base is

officially known. The AFA trains future leaders of the Brazilian Air Force in the fields of aviation, supplies and infantry. Every year thousands of candidates apply for admission, but only around 200 of the best are selected. In August 2013, 759 cadets were being trained at the AFA, including nearly 500 aviators (18 of them women).

After four years' study, cadets leave with two degrees - either a bachelor's degree in aeronautical sciences and a major in military aviation; logistics sciences with a major in aviation; or military science with a major in air force infantry. Courses include exercises in basic ground combat and command and leadership as well as emergency parachute jumping (in the first year), sea survival training (second year) and jungle survival training (third year).



Left: Cadets start performing aerobatics in formation when they fly the Tucano during their last year at the academy.

With increased demand in recent years, the AFA is training more students than ever, leading to a need for additional instructor pilots (IPs). Transferring them from frontline squadrons would have only shifted the problem, so in 2009 reserve officers began to be taken on as IPs. Squadron operations may now be commanded by a major or lieutenant colonel with very experienced reserve colonels as their subordinates training students to fly.

As for flight units, apart from two training squadrons, the AFA comprises a support unit flying two

H-50 Esquilho (Eurocopter AS350) helicopters for search and rescue, two C-95 Bandeirantes for liaison duties and a gliding club operating 14 gliders and two G-19A Ipanema (Embraer 202) tugs. The club only flies at weekends.

The FAB's air demonstration team, the Esquadriilha da Fumaça (Smoke Squadron), is working up on its brand new A-29 Super Tucanos. While based at Pirassununga, the team technically doesn't form part of the AFA.

The air base is split into two sections, the two run-

ways in the western section being used by the T-27s and a single runway on the eastern side by the T-25s. The taxiways, ramps, hangars, lecture and dining halls, sports facilities and all other infrastructure sit between the two sections. This area also houses the cadets.

The military land where the airfield is located has a 24-mile (38km) perimeter enclosing 500 houses, a water treatment plant and the only military farm in Brazil, which provides dairy products, meat and sugar cane to several air bases.

The Aviator Officers Graduation Course - taken by future pilots - is regarded as the most difficult and demanding flying course in the Brazilian armed forces. Cadets follow a very strict timetable. Those scheduled for a morning flight or a ▶

Gliders

Most cadets join the academy with very little or no flight experience. The extra-curricular glider pilot course offered by the CVV (Clube de Voo a Vela – glider flying club) gives many first-year cadets valuable flight experience that can actually make the difference between succeeding or failing at the academy when they begin to fly the T-25 during their second year. It is also the only opportunity for third-year students to log useful flight time.

The CVV opened in 1976 when the FAB received ten TZ-13 Blanik gliders. They are pulled into the air by winch – or glider tug in the form of one of the club's two Embraer G-19 Ipanemas. The 16 gliders consist of three TZ-17 Duo Discuses, four TZ-23 Super Blaniks, a Z-15 Libelle, four Z-17 Discus GSSs, a Z-20 ASW, a Z-33 Blanik Solo and a pair of engine-equipped Z-180 Super Ximangos.

simulator session wake up at 0430hrs, one-and-a-half hours before everyone else. After discussing the flight schedule, briefings commence at 0600hrs with the first take-offs starting an hour later. Non-flying classes start at 0700hrs.

For both groups, the morning programme ends at 1130hrs with a daily parade. The cadets assemble in four groups, based on their year in the course, and on special occasions the parade ends with a fly-by of military aircraft. During AFM's visit it was performed by four T-27 Tucanos one day and, on the next, by a six-ship of A-1 AMXs which landed and refuelled before continuing their journey to exercise Cruzex. After lunch, classes continue from

1330hrs. Physical fitness training is scheduled between 1620hrs and 1800hrs before cadets have dinner. After 2000hrs is free time when many opt to study or prepare for the next day's flight.

Cadets typically fly from February until October. From May to July, winter weather such as fog may cause some flights to be cancelled in the morning, but otherwise the climate is pretty much ideal for flying. Flight operations have finished by the time the rainy season starts in October.

Pirassununga is the FAB's busiest airbase, and very likely the busiest in South America. There are normally 200 take-offs and full-stop landings a day. Cadets had already stopped flying when AFM visited in the last quarter of 2013 but there were still up to 100 daily flights made by IPs and foreign students – and Brazilian Navy lieutenants who come to Pirassununga purely for flight training before moving to the US for carrier qualification. Brazilian Army pilots used to be trained at the AFA as well.

Foreign students come from all over Central and South America as well as countries including Nigeria, Pakistan and Portugal. They either take the complete officer course or, if they have already completed officer training in their own country, they follow a shortened course focused on flight training.

Every FAB pilot has been trained at Pirassununga, so they all have a special bond with the AFA. One instructor described the academy as the perfect place to make friends and build a network in the pilot community. IPs arriving at Pirassununga will work with some of their previous instructors or fellow cadets, and when they return to an operational

squadron will be welcomed back by students they once taught to fly.

Most IPs have fond memories of their time as cadets, but probably none of them would want to do it all over again! Before they are accepted as IPs, they generally need about two to three years' operational experience. Their backgrounds vary as much as the future careers of the cadets they train. Some have many years' experience flying the Embraer A-29 Super Tucano over the most remote parts of the Amazon; others have been responsible for the seizure of thousands of kilos of drugs while patrolling the border in an Embraer E-99 or R-99. Several have stayed at the academy throughout their careers, acquiring 3,000-plus hours of airborne teaching experience. Every 100 hours of instruction flights earns an IP a star on their flight suits, so they are easily recognisable, although some choose not to wear them.

There are more than 100 IPs, but there's a big difference in the number of hours they fly. Several have desk jobs, flying only once or twice a week, while the number of full-time IPs on each aircraft type is around two dozen. A small number also instruct on both types of training aircraft.

During their second and fourth years, cadets fly the SCAN T-25 Universal and Embraer T-27 Tucano. They are divided into four groups (esquadrilhas) named after constellations. The esquadrilhas of 2º EJA (Esquadrão de Instrução Aérea – flight training squadron) operating the T-25 are called Aquila, Centaurus, Leo and Orion. The T-27 squadron, 1º EJA, consists of Antares, Castor, Sirius and Vega. Most IPs are assigned to one or two esquadrilhas.

T-27 Tucano

Embraer's T-27 Tucano is one of the world's most successful military turboprop trainers.

The aircraft was a direct result of a US boycott of sales of defence equipment to Brazil in the mid-1970s. Instead of turning to US manufacturers to replace the Cessna T-37 with more than 100 new

aircraft, the FAB was forced to find a domestic solution. The Tucano first flew in 1980 and in 1982 the air force placed an order for 118 aircraft with options for 50 more. The T-27 replaced the T-25 in the advanced training role in 1985. Besides being a training aircraft, it has been

extensively used in the Amazon carrying 12.7mm machine-guns, rockets and bombs during border patrol, counter-insurgency operations and interceptions of illicit flights. In 2013, the AFA celebrated the aircraft's 30th anniversary in service as an advanced training aircraft.



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To celebrate 30 years of operating the Tucano the FAB has painted T-27 1361 in this special 'Toucan' paint scheme. FAB/Johnson Barros

Primary and advanced flying training

Cadets start their flying training in their second year at the AFA, getting 50 hours on the T-25 over five months. Powered by a Lycoming O-540 300hp engine, the T-25 features side-by-side seating, ideal for primary flight training. The arrangement enables the IP to give instructions easily and assess what the student is doing and looking at. Both the T-25A and T-25C are used; the main difference is the T-25C has different avionics and is more suitable for navigation training flights.

The primary course is sub-divided into dual instruction in basic manoeuvres, aerobatics, formation flight and navigation. Each phase includes flights with an instructor and finishes with one or more solo flights. What makes the AFA unusual is that cadets go solo after only 13 flight hours, a major challenge for many of them. In order to select

only the very best, about a third will be eliminated from the course, most during pre-solo on the T-25. Three strikes and they're out. Cadets are normally allowed to stay at the AFA if they are taking the supplies or infantry course, but many only want to become pilots, so they leave.

The T-25 has been in service for more than 40 years, but it is cheap to fly, easy to maintain and still doing a good job. Its sturdy landing gear is ideal for primary flight training and there is no shortage of spare parts. The maintenance team always aims to have 60% (about 25) of the airframes available for flight. There are no plans to replace the aircraft, simply because there is no need to - it is a very straightforward, low-tech machine, which is all that's needed to assess and train pilots.

The course has no flying element in the third year and unless a cadet joins the gliding club they will not log any air force-sponsored flight hours - this

is not the practice in most flying schools and IPs admit it is not ideal, but every year a sufficient number of very capable pilots graduate – and that's what matters. Those who can't handle the course simply aren't good enough.

Cadets start ground school in preparation for converting to the T-27 at the end of the third year, and they must be ready to begin flying it in their fourth and final year when they arrive back from leave at Pirassununga. Over the next nine months they will log nearly 110 hours, learning more complex aerobatics, formation flights with four aircraft, IFR (instrument flight rules) navigation and night flying. At the end of the course, each student makes a 14-hour trip to Natal in northern Brazil and back to test their navigation skills.

Graduation

At the end of their time at the academy, cadets indicate their preference to become a fighter, helicopter or transport pilot. It might be thought most would opt to fly fighters, but actually the choices made are quite equally divided. The FAB's fighter jet fleet is small, offering few vacancies and limited flying hours and helicopter or transport pilots may well have better career opportunities after leaving the air force. A cadet's preference will be taken into consideration, but the final decision will depend on their skills and service requirements. Only around 30 of the best end up on the fighter course and even then there is no guarantee they will fly jets as the FAB operates more A-29 Super Tucanos (considered fighters) than A-1s and F-5s combined.

After graduating, fighter pilots transfer to Natal in the north-western tip of Brazil to learn to fly the A-29 as a tactical aircraft before continuing to fly it with an operational squadron or converting to the A-1 or F-5. Helicopter pilots fly the H-50 Esquilo (AS350 Ecureuil) from the same base. Future transport pilots have multi-engine training on the C-95 Bandeirante (Embraer 110) at Fortaleza and may get to fly airborne early warning, patrol or reconnaissance aircraft, for which they will have specific training after joining their first operational squadron.

T-25 Universal

The Sociedade Construtora Aeronáutica Neiva (SCAN) T-25 Universal was designed as a primary training aircraft with a secondary ground attack role. After the retirement of the Cessna T-37C Tweet in 1979, the AFA started using the

Brazilian-made T-25 for its advanced flying course. Later replaced both as an advanced trainer and as a counter-insurgency aircraft by the Tucano, it is still used at the Air Force Academy for basic flight training.



While the T-27 can fly IFR above clouds, the T-25 is only allowed to do so when there are gaps in cloud cover, in accordance with visual flight rules (VFR). The T-25 syllabus includes formation flying, but not complicated manoeuvres or aerobatics.