FREE SUPPLEMENT

UK TYPHOON FORCE

ALL THE SQUADRONS EXCLUSIVE FORCE COMMANDER INTERVIEW • ORBAT

AIRFORCES MONTHLY

AIRFORCES MONTHLY

Officially the world's number one authority on military aviation

ITALIAN TORNADOS

Ghedi strike force

Fighter Weapons Instructor Training

Europe's F-16 masterclass

Airborne nuclear deterrent

France's 'big stick'

Lightning II exports

Fifth-gen success

Issue 384 March 2020 £4.99

KEY

03 >

9 770955 709303

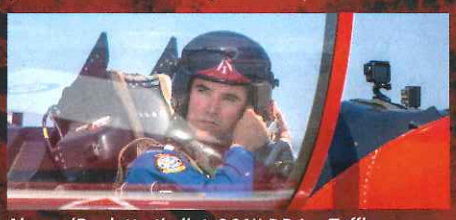
East Sale's trainer transition

Patrick Dirksen and **Frank Mink** were invited to Royal Australian Air Force Base East Sale, Victoria, to witness operations by the PC-21 and learn more about the benefits of the new training system that comes with it.

Australia's military flying training is focused on two bases on opposite sides of the country, both of which have started operating the newly acquired PC-21 as part of a high-tech pilot training system for the Australian Defence Force (ADF). Basic flying training is provided by No 1 Flying Training School (1FTS) at RAAF Base East Sale, 137 miles (220km) southeast of Melbourne. The station is home to 22 of the Royal Australian Air Force's (RAAF's) PC-21s, as well as the Central Flying School (CFS). Meanwhile, advanced flying training takes place with 2FTS at RAAF Base Pearce, Western Australia.

The delivery of of PC-21s from the Pilatus Aircraft Factory at Stans-Buochs, Switzerland, began in February 2017 and was completed last November. Meanwhile, by March last year, the PC-21 had fully replaced the previous PC-9/A in the role of training new pilots for the ADF. A retirement ceremony for the PC-9 took place at RAAF Base Pearce last December 12.

Under the command of Wing Commander (WGCDR) Chris Pouncey, 1FTS provides ab initio flying training for RAAF, Royal Australian Navy and Australian Army pilots. WGCDR Pouncey explained: "Here we teach the students the very basic skills. By the time the student graduates from the Basic Training Course [BTC], they have reached a safe, solid standard for flying the aircraft by day and by night. They have had an introduction to instrument flying skills and they are also able to conduct basic aerobatics. The first students commenced training [using the PC-21] on January 14, 2019. Pilot training will take approximately a year. After they complete the BTC here at 1FTS, they transition to 2FTS [at RAAF Base Pearce] and complete the intermediate course there. We expect to see the first graduates sometime in the first half of 2020."



Above: 'Roulette 1' pilot, SQNLDR Jay Tuffley, secures his helmet prior to performing at the Australian International Airshow in Avalon, Victoria, last year. *CPL Nicci Freeman/Commonwealth of Australia, Department of Defence*

To train his charges, WGCDR Pouncey receives his instructor pilots from the resident CFS: "The number of instructors with the new system is ramping up to mature numbers. [It] is ultimately scaled to handle an input of 165 students per year once the system reaches maturity, and that's a combination of air force, army and navy students. The division is proportional to the relative strength of our three services. Broadly speaking, the bulk of our students are air force students and then navy and army students. The specific numbers at any point in time are based on service demands."

Central Flying School

WGCDR James Atkinson has headed up the CFS since January 2018: "Our main role is flying training. We train instructors and we are responsible for the standards of flying instruction across the ADF. So, it's not just the air force, it's navy and army as well. We run the Flying Instructors Course, FIC, that trains qualified flying instructors. After that they go out to the other flying schools to instruct students. So, we train the trainers." The CFS has been operating the PC-21 since May 2018. Prior to this, the first aircraft to be delivered and the initial group of instructors were part of an aircrew transition training office that was under command of the Air Academy (AirA, formerly the Air Training Wing).

The secondary role of the CFS is flying displays, as WGCDR Atkinson observed: "Our formation aerobatic teams have been a very big part of CFS for a long time. The Roulettes have been around for almost 50 years – actually they celebrate their 50th anniversary this year." The team switched to the PC-21 after saying goodbye to the PC-9 at the Australian International Airshow at Avalon last year. 'Roulette 1', Squadron Leader (SQNLDR) Jay Tuffley told ▶

Project AIR 4528

Australia's then Minister for Defence, Kevin Andrews, announced in September 2015 that Lockheed Martin Australia had been selected to supply the ADF's new pilot training system under Project AIR 4528. Formal contract signature followed that December. Under the AUS$1.2bn deal, Lockheed Martin Australia delivered 49 PC-21s to the RAAF, along with seven flight simulators, a modern learning environment for students, updated courseware and support for an initial seven-year term. Performance-based options provide the opportunity to extend the contract for up to 25 years.

The new pilot training system is headed by prime contractor Lockheed Martin. As original equipment manufacturer (OEM), Pilatus Aircraft delivered the PC-21s, while Hawker Pacific provides the maintenance facilities under the umbrella of Lockheed Martin. Of the 49 PC-21s, 42 are used for flying training. In addition to this primary task, the contract provided four replacement aircraft for No 4 Squadron's forward air control role at RAAF Base Williamtown, New South Wales and three aircraft for the Aircraft Research and Development Unit (ARDU) at RAAF Base Edinburgh, South Australia.

Left: Two of the RAAF's recently acquired PC-21s, A54-003 and A54-004, during a flight in the Gippsland region in southeastern Australia. The Basic Training Course is the first module for pilot training regardless of service and is flown exclusively on the PC-21. *FLTLT Ash Kissock/Commonwealth of Australia, Department of Defence*

A row of flying helmets waits to be signed off for the day's sorties. Note the emblem of the Central Flying School on the nearest examples. *All photos Patrick Dirksen and Frank Mink unless stated*

"The PC-21 has a more jet-like handling. That means that it won't be as tight a show as it used to be, but we will be get higher speeds and noise, ramped up to 300-plus knots – we were not able to do that with the PC-9."
SQNLDR Jay Tuffley

AFM: "The PC-21 has a more jet-like handling. That means that it won't be as tight a show as it used to be, but we will be get higher speeds and noise, ramped up to 300-plus knots – we were not able to do that with the PC-9. So that's one exciting aspect! The disadvantage is that we need more energy conservation." A first full air display with the PC-21 was flown last October.

Flying the PC-21

With the retirement of the CT-4/B Airtrainer, ab initio student pilots face the challenge of taking their first ever flight in a PC-21. WGCDR Atkinson explained how the new training system helps these students meet the challenge: "We need a good cockpit-procedure trainer and a good flying-training device – simulation is critical. That's what we rely on to bridge that gap. It's the synthetic world that enables you to fly the aircraft and do all your checks and be monitored before you actually get airborne. We can monitor the student and see if he is competent and confident enough to get airborne. Without that it wouldn't work very well. The PC-21 is quite an easy aircraft to fly, but it's a very difficult aircraft regarding where to look when and deciding what system to prioritise above others. So, the basic 'hands and feet' flying and aviation navigating, communicating and administrating, that prioritising for a basic student will be a challenge to teach."

Above: ***RAAF Base East Sale is home to a brand new maintenance facility to help keep the PC-21s in the best possible shape.*** ***Below:*** ***Instructor and pupil strapped into their PC-21 and ready to go. The new trainer's sophisticated avionics and systems enable a more advanced level of tuition than was possible with the PC-9.*** ***Bottom:*** ***A pair of Roulettes PC-21s takes off during the Wings Over Illawarra 2019 airshow. For aerobatic work, the turboprop trainer's disadvantages include limited mass, which has a negative impact on energy manoeuvring.*** *CPL David Said/Commonwealth of Australia, Department of Defence*

Another huge step forward with the PC-21 over the PC-9 is that the students gain their first flying experience with hands on throttle and stick (HOTAS) controls, flight management system and multifunction displays. The head-up display presents information in the same way as those of new-generation RAAF fighters.

WGCDR Pouncey concluded: "Overall, we see the new pilot-training system as delivering us a capability to provide more pilot trainees with the skills commensurate with operating our advanced operational aircraft and in a shorter time than the [previous] system. We think that's going to meet the needs of ADF aviation for the next three decades." AFM

Above: A qualified flying instructor from the Central Flying School runs through cockpit procedures with a student during a pre-flight briefing. Perhaps the PC-21's biggest advantage is the advanced modular cockpit layout with multifunction displays, head-up display and HOTAS controls. Below: A PC-21 simulator at RAAF Base East Sale – one of seven that have been ordered. Realistic simulation is critical for trainee aviators starting their flying careers in the high-performance turboprop. Bottom: PC-21 A54-012 taxies out for its next training mission, with a line of Roulettes aircraft under the sun shelter behind the taxiway. The PC-21 has greatly reduced costs and noise emissions compared with a jet trainer.

BAE ends 30 years of ADF pilot training at Tamworth

After 30 years of service, BAE Systems Australia announced on December 18 that it was saying farewell to flight training at Tamworth, New South Wales. The company's Flight Training Academy used a fleet of 31 Pacific Aerospace CT-4/B Airtrainers to support primary training for the ADF Basic Flying Training School at Tamworth. It tutored more than 4,000 pilots for the ADF and an overall total of 6,000 including overseas students. On August 7 last year the company notched up 280,000 flying hours of training at Tamworth.

The last ADF students graduated from Flight Training Tamworth on November 12, bringing to an end BAE Systems Australia's ADF tri-service flight screening and basic training for the RAAF, Australian Army and Royal Australian Navy. Henceforth, all basic training will be centralised at RAAF East Sale, Victoria, using the new PC-21s.

The Tamworth operation will continue for a short period to complete training for overseas contracts, prior to shutdown of the facility in June. One of the final customers is the Republic of Singapore Air Force (RSAF), which has been provided with Air Grading Services at Tamworth since 1999, along with training for RSAF instructors. **Dave Allport**

Last September, a formation of CT-4/Bs completed a formation flypast over Tamworth, New South Wales. CPL Nicci Freeman/Commonwealth of Australia, Department of Defence