AT-504

Field Report

An Ag Plane For The Next Generation



As spraying seasons blend from one year gaining traction among more and more forto the next, veteran aerial applicators are ward-looking ag operators. asking a question that becomes more press-The AT-504 As Trainer ing each year. "Who's going to take over my operation when I'm ready to retire?" With an average of over 25 years of ag flying among Fran de Kock, owner of Battlefords Airspray in Saskatchewan Canada, comes at the new pilot challenge as a flight instructor and aerial applicator. Fran not only holds his commercial license with instructor and instrument ratings, he is also a board member in the CAIR Self Insurance Program. He has been turning out ag pilots Aerial application owners are from his Professional Agricultural Pilot looking for a practical and Training Program since 2000. Fran is a affordable path into turbine big believer in Air Tractor's AT-504 and its engine aircraft side-by-side pilot/student setup. In fact, he encouraged Leland Snow to build a side-byside seat turbine training platform. "Leland and I go back a long way. I bought my first Air Tractor in 1985," Fran recalls. Having instructed for many years in a tandem seat PA25 and with the Gippsland GA200

them, it's no secret that a fresh generation of ag pilots is needed. And the hurdles operators and new pilots must overcome are well known, too. Piston aircraft pilots and aerial application owners are looking for a practical and affordable path into turbine engine aircraft. The Air Tractor AT-504 offers one way to bridge the piston-to-turbine gap, providing the vehicle to begin bringing new pilots into the business in a way where they can learn while they earn their keep. The logic behind the 504's reason for being is

AT-504

Air Tractor's AT-504 earns its place in the ag plane fleet.

ag trainer, which has side-by-side seating, Fran is convinced there's no better cockpit configuration than side-by-side seating. "Leland and I had several years of discussions about it. He was going to build another tandem seat AT-503 with a bigger engine. At one of the NAAA conventions, he and I

In my wildest dreams I didn't think the 504 was going to be as good an airplane as it is

sat in a little room and had a spirited discussion about ag pilot training. He had his opinion and I had mine. I guess he saw it my way, because some time later he called me and said, 'You'll be happy to hear that we're going ahead with this side-by-side seat airplane, and we're going to have it at the 2009 NAAA convention.' I felt pretty good about that because he was a great man. But in my wildest dreams I didn't think the 504 was going to be as good an airplane as it is."

Battlefords Airspray has, in fact, two AT-504 aircraft. The first one was purchased in January 2012; the second 504 in the fall of 2012. With these two aircraft, Fran has begun a new turbine transition

training program. "It's reality training at its very best." His ag pilot training operation at North Battleford Airport includes 14,000 sq. ft. of facilities, maintenance shop, classroom and onsite pilot accommodations. His training programs have attracted ag pilot trainees from around the world. The AT-504 aircraft are outfitted as fully operational spray planes-equipped with Hemisphere GPS, flow controls, booms and nozzles, etc. When 504s aren't being used for training, they're part of Fran's working fleet. He points out, "Whether we're doing



bug or insecticide work, we're using all Fran recounts how in 2013 he instructed three 500-gallon Air Tractors – two 504s two experienced tt AN-2 pilots from and our AT-502. Mongolia. Even when language issues made communication difficult, in the AT-504 the And when it comes to transition training two pilots achieved proficiency after ten ag pilots into turbine aircraft, Fran adjusts hours of turbine transition training. On the the instruction to each pilot's needs and other hand, a low-time piston engine stuexperience level. CAIR insurance programs dent recently came to Battlefords with no require a minimum of five hours for turprior spraying experience. He took Fran's bine transition. Two to three of those hours initial ag pilot course, then completed 25 are typically ground school for teaching the hours of instruction in the AT-504. He was differences in flight characteristics and aerolater hired and flew 200 hours last season in an AT-402. "Without the training in the dynamics of turbine-powered aircraft. A good portion of the ground school is devoted AT-504, that exercise just wouldn't have been feasible for that guy," Fran says. to the engine and power management.



The 504 works at the same speeds, hauling the same loads as the 502

Cockpit communication is always an important element of flight instruction, time spent by pilots on higher altitude even more so when flying with heavy loads close to the ground. In tandem seat trainers, instructor and student can only communicate via radio. Directly observing the student during flight is just about impossible. Side-by-side seating brings the instructor elbow to elbow with the student. The instructor can observe the student's demeanor, see approaching terrain from the same perspective and watch the student's eye gaze to see if he's focusing on the right problem at the right time.

"The communication advantage [of side-by-side seating] is the big thing," Fran points out. "You can feel the student's reaction and see their face. When they're in a situation that's becoming dangerous, you can be ready to react at the right moment if it's necessary. It's also nice to be able to help the student reprogram the GPS, or whatever. You're right beside him. Engine management... you can put your finger on Notice what the NG is.' You can physically tap the gauge and draw their attention to it."

Fran says he's noticed a deficiency in training-exploring the flight envelope of a turbine aircraft—how it handles in slow flight. The first flight is typically devoted to upper air work in all configurations and power settings. Then there's work on landings and takeoffs. Next comes low-level spray turns without GPS-handling the airplane and the flaps in the turns. A few trips with loads come next. "Most of these guys know how to spray. So once you get them comfortable going 145 mph across the field, we spend time on emergency procedures... emergency drops, engine failures, flameouts. Sitting there beside the guy, you can see how they handle the airplane when stuff goes sideways."

Having flown 13 seasons in an Air Tractor AT-502B, Fran was a bit apprehensive changing to the AT-504 for spraying. But he was pleasantly surprised by how quickly he adjusted to the two-seat cockpit. "We placed the GPS and light bar directly in front of the the gauge and say 'Hey, watch the torque. left pilot seat. This proved to be the perfect configuration for spraying. After flying the 504 about 30 hours, I'm as comfortable in

> Side-by-side seating brings the instructor elbow to elbow with the student.







it as I am in the AT-502B. I flew all season with 502s, and as advertised, the 504 is an AT-502 with two seats."

Earnin' While He's Learnin'

Grace under fire is SOP for Bill Dare of Twin Eagles Aviation in Mohave Valley Ag pilot and instructor Randy Hansen is Arizona. The decorated Vietnam veteran Dare's primary pilot. Following an "Are you and Purple Heart recipient flew and comserious about this?" check-flight in Hansen's manded Huey helicopter combat missions Super Decathalon, Hansen and Jake began during his hitch in the Army. "We took basic flight training. And when Jake got his ground fire all the time. You get used to commercial license, he and Randy hopped it," Bill says with a cool smile. He came into the AT-504 for turbine engine flight away from that experience with a few scars training. Hansen instructs from the right and an exquisitely refined outlook on risk seat as Jake flies spray jobs. "It's a wonderful management. flying airplane," says Hansen. "It reminds me a lot of the 502; there's very little differ-Now Dare is bringing his grandson into ence. It's light on the controls, and even with his business as a brand new ag pilot, and two side-by-side seats, everything is within believes he's stacking the odds in his favor easy reach. As an instructor, I can see with the AT-504. By Bill's calculations, everything that's going on. It's a productive, it makes more sense to start his grandprofitable ag plane, and a safe trainer-all son Jake in the 504 and skip the piston ag rolled into one." plane training phase altogether. "Having

trained other pilots, when they first take off you gotta cross your fingers and hope they make it," Bill says. "But with the 504, you



can have an instructor in there until you're ready to release the new guy. When you put a pencil to everything, add in the safety factor, in my book it's better to go ahead and buy the 504 than to put Jake into an older piston airplane and worry about the chance of an accident because it's an old airplane."

L-R: Jake Dare, Randy Hansen, Bill Dare

PAGE 9

Jake and Randy have logged 400+ hours 5,000 hectares (12,300 acres) per week duron the 504 since Dare got it in late 2012. The airplane holds its own with Dare's three 802s and 502B. By working the 504 as he would his other spray aircraft, Bill contends the 504 isn't just a training expenditure. It's bringing in revenue as Jake gets his training. "As far as carrying the load and getting out and doing the work, it does an excellent job. It's probably the most productive training aircraft I've ever seen. And safety-wise, it's so much better than a tandem seat airplane."

Man With A Plan

About 5,700 miles south of Bill Dare's Mohave Valley operation, in Nova Ponte Brazil, Manoel Francisco Fenner de Souza has put his company, Fenner Aviação Agricola Ltda., on a path to an all-turbine aircraft fleet. Two key elements of his plan are the AT-504, and a turbine transition training program developed in partnership with Air Tractor dealers DP Aviação and Frost Flying Inc.

The aerial spraying service area of Fenner Aviação Agricola spans a 250-kilometer stretch of farmland planted in corn, cotton, soybeans, sugar cane and bananas. Working with an Ipanema 201-A, Brave 300, Cessna AGwagon, and AT-502B, Fenner's four pilots typically cover about

ing peak season. Buying the AT-504 boosts his spraying capacity about 30 percent. Manoel Fenner has his sights set on moving into more turbine aircraft, which will increase productivity, require fewer aircraft and help trim his operational costs. But he needs more turbine engine-qualified pilots. And that's where the AT-504 and training program come into the picture.

While the turbine transition program is being developed, the AT-504 is already working along with the rest of the fleet. It has accumulated a little over 150 hours flight time since its delivery in December 2013. Most of the 504's work consists of spraying corn and cotton crops. Usually there are two applications per season for corn; eight applications for cotton, typically at 30 l/ha and 20 l/ha.

Pilot Luiz Gustave Del'Arco Geromini has been at the controls of the AT-504 and likes the side-by-side cockpit seating. "I have a lot of cockpit space and can carry any normal person with comfort." The main difference he's noticed, compared to the AT-502B, is the pilot's view angle and positioning of the rudder pedals. He says it takes a bit of getting used to the angle to the aircraft's nose because the pilot sits to the left or right of the centerline. Compared to



a single seat cockpit, "It appears as if you're hangars and training classrooms. There's drifting. If you correct for that you'll go to the left when you land." The rudder pedthey're more spread apart, he says.

Diego Preuss is working with Fenner Aviação Agricola on the turbine transition training curriculum. The program will consist of both theoretical ground school and flight training in the AT-504. "The instruction will be done at Nova Ponte, in the Fenner's operation is based." According to to begin in May or June 2014. Diego, it's a perfect location for an ag flight school. There are aircraft support facilities,

no airport control tower and almost zero traffic. The 4,900-foot asphalt runway is als are close together in the 504; in the 502 more than adequate. And the airport is surrounded by open farmland. "A comprehensive training program will be available for pilots having no experience in turbine aircraft, as well as an "express" training curriculum for experienced turbine pilots who just want to update or work on their operational procedures," says Preuss. Firefighting training will also be available. state of Minas Gerais, at the airport where The turbine transition training is expected



L-R: Diego Preuss, Manoel Fenner (owner) and Luiz Gustavo Geromini, pilot.



Fenner is enthusiastic about the AT-504 and what it promises for his business. "The AT-504 is the hub of our turbine transition training program and a big part of our plans for growth. It is an ideal platform for training pilots in a safe manner. When not used for training, the 504 will be earning for us along with our other aircraft."

Closing the gap

Shaun Kinniburgh, of Kinniburgh Spray Service in Taber Alberta, echoes Señor Fenner's sentiments. It's all about improving efficiency and propelling business growth. "We got the 504 for future expansion of our turbine aircraft fleet. The 504 closes the gap in the transition from piston to turbine. With it we can gradually move

This airplane is meant for bringing in new pilots in the business.

pilots up into the turbine a lot easier - or start them off in a turbine."





Kinniburgh recently sold his Pawnee, "we're officially piston-free!" and took delivery of his AT-504 in mid February 2014. He also sold his Air Tractor AT-402 to acquire his third AT-502B "for more commonality in our fleet." The last couple of seasons, Kinniburgh's eight pilots and stable of Air Tractors have been spraying about 400,000 acres-mostly row crops. He's been busy enough that he brought Fran de Kock down from North Battleford to help with the work.

"Fran came here last summer and worked with his 504. We saw what it will do: everything a 502 can do. So I thought, 'Why not bring that asset into my business, too?"

Taking his lead from de Kock's ag pilot training operation, Kinniburgh says that he intends to develop a training syllabus for his own pilots. "We're going to do annual check rides and go through standard operating procedures to make sure everybody is doing things pretty much the same." Kinniburgh still gives a nod to Battlefords for Fran's world-class ag pilot training and turbine transition programs. "Fran's got a good thing going there. Even with this 504, I will still be sending new pilots to him for a transition course."



our loading crew, and Fran brought a loader picked up on the way home."

Kinniburgh is convinced the AT-504 is just what the industry needs right now. through an ag course at Battlefords with they learn.

There's one thing the 504 does that no Fran. Even right now, one of our pilots we AT-502 can do. "Last year, we were short in moved up from the Pawnee that we just sold, we sent him to Fran. Then he's going to with him in the 504. It was pretty handy," Central Florida Ag Aero for more training. says Kinniburgh. "The loader hops in the Then he's back here for some non-revenue right seat and away you go. Then he gets time in the 504 with me. He's the lowest ag time pilot we've ever transitioned into a turbine, so we want to do it safely."

Four operators, located in North and That loader in the right-hand seat? That's South America, have each found their your future pilot right there. If he's a com- AT-504 to be two aircraft in one-a trainer mercial licensed pilot and he's coming back and a spray plane-and in each role it and forth on a few jobs, then he's flying that is fast earning respect and acceptance. airplane and getting his hands and feet It's the Air Tractor that offers retiring ag wet. We'll gradually start moving him into operators an exit plan and the next genthe process. Get him trained and get him eration of ag pilots a way to earn while





AT-504

Estimated Performance With Spray Equipment Installed

Specifications

<u>Engine Type</u>	P&W PT6A-34AG	<u>Cruise speed</u>	151 m.p.h. (243 k.p.h.) at 8 000 ft
<u>Engine S.H.P.</u>	750 @ 2200 RPM		(2 438 m)
<u>Propeller</u>	Hartzell HC-B3TN-3D/ T10282NS+4	<u>Working Speed</u> (typical)	120-145 m.p.h. (193-233 k.p.h.)
<u>Take-Off Weight</u>	9,600 lbs. (4 354 kg)	<u>Stall Speed,</u> <u>Flaps Up</u>	75 m.p.h. (121 k.p.h.) at 8,000 lbs.
<u>Landing Weight</u>	8,000 lbs. (3 629 kg)		(3 629 kg)
<u>Empty Weight W/</u> Spray Equipment	4,768 lbs. (2 163 kg)	<u>Stall Speed,</u> Flaps Down	65 m.p.h. (105 k.p.h.) at 8,000 lbs.
<u>Useful Load</u>	4,832 lbs. (2 191 kg)	Stall Speed	(3 629 kg)
Hopper Capacity	485 U.S. gal. (1 836 L)	<u>As Usually Landed</u>	53 m.p.n. (85 k.p.h.)
Fuel Capacity	216 U.S. gal. (818 L)	<u>Rate Of Climb</u>	860 f.p.m. (262 m.p.m.) at 9,600 lbs.
<u>Wing Span</u>	52 ft. (15,84 m)	<u>Take-Off Distance</u>	(4 354 kg) 1,150 ft.
<u>Wing Area</u>	312 ft. (29,01 m²)		(351 m) at 9,600 lbs. (4 354 kg)
<u>Main Wheel Size</u>	29.00 x 11-10	<u>Range,</u>	608 mi.
<u>Tail Wheel Size</u>	5.00 - 5	<u>Economy Cruise</u>	(978 km)









Air Tractor produces a line of aircraft that includes 400, 500, 600, and 800-gallon capacity planes powered by Pratt & Whitney turbine engines. They are used for agricultural purposes, fire fighting, narcotic crop eradication, fuel hauling, fighting locust plagues, and cleaning up oil spills in coastal waters. Air Tractor aircraft are found working not only across the United States, but around the globe, in Canada, Mexico, Central and South America, North and South Africa, Auastralia, New Zealand, Spain, Croatia, Saudi Arabia, South Korea and China.



Air Tractor, Inc. Olney, Texas USA 76374 940 564 5616 www.airtractor.com