

Under African Skies

When LAA inspector **Graham Smith** was gifted the opportunity to travel to Africa, unsurprisingly he jumped at the chance



LAA02.african.V2.LB.indd 64 24/01/2019 10:12





As a busy LAA inspector I often get asked to travel around the country to carry out annual inspections. It is quite possible to spend more time travelling than actually inspecting. However, when I was asked last month to go back to Botswana to inspect the Royal Veterinary College (RVC) Trail, that had to be a record. It involved travelling 13,500 miles in four days; an exhausting schedule but, without realising it at the time, it turned out to be a particularly interesting trip.

The plan was initially to fly out to Johannesburg on the Thursday night to arrive early Friday to catch a connecting flight to Maun, so that I could be working on the aeroplane by mid-afternoon. I would have all day Saturday and up until Sunday lunchtime to finish, before catching the flight back to Johannesburg in time for the London flight, which would get me back to the UK early on Monday morning.

A quick search on the BA website showed that the Sunday flight back to London was fully booked so, purely by chance, I would have an extra day to spend in South Africa. Initially I was a little annoyed. I imagined that I'd have to spend the day in some boring hotel at the airport watching the clock. However, Alan Wilson, the RVC project leader, suggested I used the time to take a look at a modified Rotax installation, which he is considering for the Trail.

Flying in Africa has its dangers, and one problem we almost never have in the UK, but is common in Africa, which is elevated density altitude.

Last summer I shared the flying in Botswana, helping to track animals in the bush and experienced density altitude first hand. The effect is very odd. A couple of times I had to get a grip and tell myself that the engine was fine, even though the climb rate was appalling.

Using the same take-off technique I found reliable in the UK just brought the aeroplane back down onto the runway after a short hop. Patience was needed to let the airspeed build using a very light touch on the stick.

Main left The KFA Safari in its element, in the African bush.

Below left The delightful Ilanga Country Guesthouse, near Petit Airfield

Above left The rugged Safari proving itself very suitable as a glider tug

Above right Nosewheel or tailwheel versions of both the Safari and the Explorer are available

The combined effect of degraded airframe and engine performance was a big issue, so to make sure we were not taking unnecessary risks, a WAT (weight, altitude, temperature) chart was developed that allowed instant go/no go decisions to be made, depending on the payload and atmospheric conditions. This worked fine but did mean that on some days we were not able to fly with the full scientific kit in the afternoons, when the temperature soared. The answer of course, is to fit a more powerful and turbocharged engine.

Turbocharged advantages...

The engine Alan was considering is the Italian built Vz Power Rotax. I believe this turbocharged after market conversion of the Rotax 912 has some advantages over the 914, especially in low infrastructure environments like Africa.

Firstly, it has no additional electronics and no TCU (turbo control unit) to complicate things. The carburettors stay, so any competent Rotax mechanic would recognise the engine and be able to maintain it. Set-up and installation are simple, and the cost is very reasonable. What I needed was to talk to pilots who had experience using the motor and then, hopefully, get an opportunity to fly behind it.

Alan had discovered that a big user of the Vz Power engine was KFA (Kitplanes for Africa) based at Petit Airfield, only a 30-minute cab ride from Johannesburg Airport. I had never heard of KFA, so did a quick online search, only to be surprised to find they are a long-standing manufacturer of kit aeroplanes (established in 1993) with more than 400 aircraft kits delivered. Rather surprisingly, they have South African CAA Manufacturing Approval Part 148, which allows them to deliver ready-to-fly aircraft.

The annual inspection of the Trail was finished at Maun just in time to get the somewhat interesting flight back to Johannesburg. In the middle of the African summer, thunderstorms are common and the flight back was seriously rough. Cruising at 26,000ft in a small turboprop, weaving all over the sky to avoid towering

LAA02.african.V2.LB.indd 65 24/01/2019 10:12

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cumulonimbus, meant some of the passengers were quite ill and the onboard meal was abandoned.

Because of the turbulence, the pilot had slowed the aeroplane down, which added 30 minutes to the two-hour flight. We all survived but some passengers fared better than others.

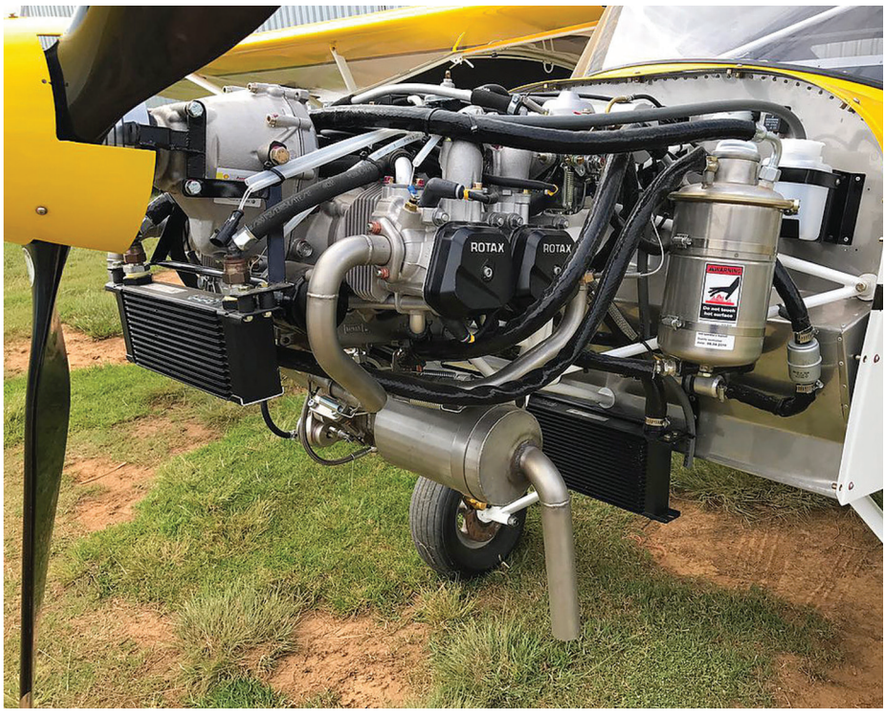
A warm welcome

The RVC had booked a taxi to collect me from the airport and take me to the Ilanga Country Guesthouse, just a short distance from Petit Airfield. I had no idea what to expect, but to my astonishment the hotel turned out to be a family-run lodge styled on an African game lodge. It was stunning, with immaculate gardens, a thatched roof and tame antelope wandering about the grounds. The lodge owner showed me around before offering me a cold beer and we enjoyed several different local beers as we watched the sunset. The welcome I was given was exceptional and definitely bore no comparison with the soulless airport hotel originally planned. I recommend that anyone planning on visiting Petit Airfield should stay there, and the accommodation was great value at less than £40.

The next morning I was collected from the lodge by Stefan Coetzee, the owner of KFA. Again, the welcome was very warm considering they had no idea who I was.

Stefan showed me around the factory and then removed the cowls of his demo aircraft, a Safari 3, so I was then able to take measurements and pictures of their installation.

He gave me an honest appraisal of the engine, which was what I really wanted, and then we went flying.



Below The Vz Power 115hp turbocharged Rotax 912 ULS – a non-complex turbocharged engine, which is finding favour with KFA customers

KFA started back in 1993 with a 450kg design called the Bushwagon, based on the Dan Denny Kitfox, and designed to use locally available materials to keep the cost down. The Bushwagon became the Bushbaby and went through various design changes until the final version, the Bushbaby 500 with a 600kg MAUW, became the Explorer in 2007. Over 160 Bushbaby aircraft were delivered.

In 2008 the Explorer 2 was developed with a larger luggage bay, longer engine mount and various other improvements. In 2014 the Explorer 3 was developed with a new tail section including horn balances for the elevator and rudder, plus a new trim tab. The latest version of the Explorer is now fully approved in Germany by the DULV (the German Ultralight Flight Association).

In 2008 work began on the Safari, which is basically an enlarged Explorer with a wider cabin and a 750kg MAUW. The max luggage load is 45kg with access via an external door. The latest Mk 3 version has a quite amazing useful load. It will take two 100kg crew plus 120 litres of fuel and the full 45kg luggage. How many other aircraft in this class can lift that?

The Safari and the Explorer have a lot of common parts and even share a build manual.

So, back to the flying. Petit airfield is 5,400ft above sea level and, being the middle of the African summer, it was very warm – the density altitude worked out at 8,900ft – very close to the absolute ceiling of some light aircraft and a real risk to the unwary. The installed engine was a Vz Power 912 turbo rated at 115hp and I was particularly impressed in the engine start up. Rotax 912ULS owners will know that the shudder on start-up can be worrying and can sometimes even contribute to cracking of exhaust systems. The Vz Power engine start was ultra-smooth, no shudder at all, and due to its low compression pistons, which are part of the Vz conversion.

My expectations of a short take-off were quite low, having been used to flying under African conditions. The wind was 100 per cent crosswind from the right at about 12kt and Stefan took the controls. We were airborne in just under 100 metres!

After take-off, the flaps were retracted and control was handed over to me. My initial impression was that the controls were light but well harmonised. The directional stability was not very strong but slightly better than I am used to, and the longitudinal stability was good. Cruise speed was 100kt with good visibility all round.

I only had time to get an impression of the flying qualities, but it felt comfortable and fairly quiet with a low cockpit workload in the bumpy African skies. Approach is commenced at 60kt, bringing the speed back over the threshold for a wheeled-on landing, and although I did not have the controls it looked very easy, with few required control inputs. Engine shut down was again without shudder, protecting the exhaust system from unnecessary damage. Overall, I really liked the aircraft,

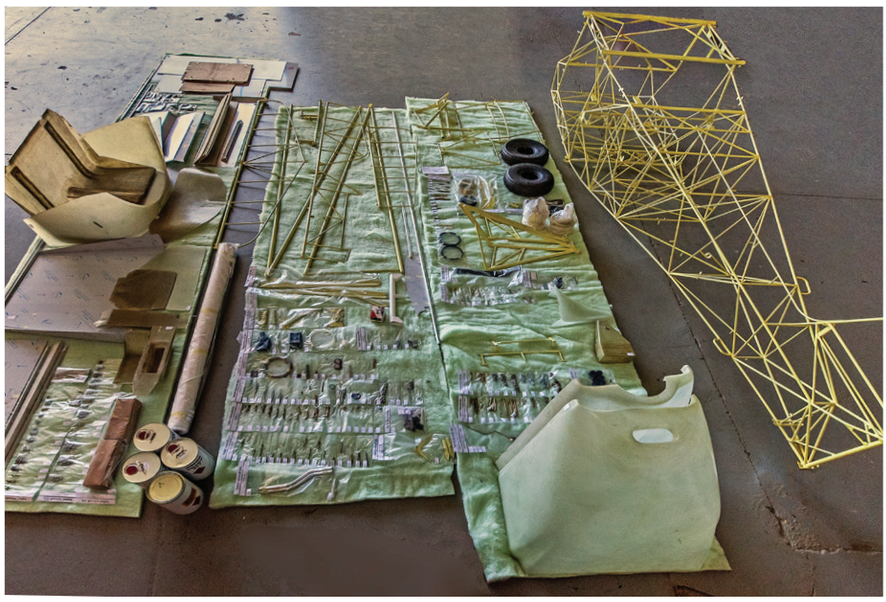
LAA02.african.V2.LB.indd 66 24/01/2019 10:12

it has a big aeroplane feel and I think that any competent pilot would enjoy flying it.

Back in the factory I was wondering why this very practical and well-supported aircraft was not available in the UK. The conversation was turning away from my original questions about the engine to the Safari and Explorer, which seemed to me to be ideal candidates for LAA members. I have looked at a lot of potential LAA projects and mostly they fall down on lack of paperwork, manuals, testing or even a reluctance to make changes where required.

Much time can be wasted if the initial assessment is wrong, you have to think maybe one year down the road to whether the manufacturer will still be helpful and willing to supply that last remaining load test. I spent a couple of hours with Stefan going through their CS-VLA compliance documentation and although LAA Engineering will be the final judge, I thought their paperwork was the best I have ever seen.

I have decided to ask the LAA to open a file on the Safari and the Explorer with the intention of getting both aircraft LAA approved. Hopefully, in the not too distant future, UK builders will have the opportunity to build and fly a genuine African Bush aeroplane. ■



Above The KFA kits are available as flat packs, which will hopefully make the aircraft very competitively priced

About the author

Graham Smith is an LAA inspector and operates Sprite Aviation, which has imported the SportCruiser and Groppo Trail light aircraft, plus the Aviad Zigolo and Techpro Merlin SSDRs. He has also designed his own SSDR, the Stinger. For more details email: ***graham@spriteaviation.co.uk***

