



## Air Watch from **GYROCOPTERS**

Text and Photography by Athol Franz

**The ever increasing need for airborne surveillance of strategic installations such as railway lines to prevent cable theft and other damage is an ongoing problem in South Africa. A company known as Air Watch has come up with a cost effective method of observing criminal activity as a preventative measure in the fight against organised crime.**

The method of operation is to deploy two modified ELA Gyrocopters and a German manufactured Falke motor glider as airborne platforms in which to undertake surveillance. I spent a memorable afternoon with the owners of Air Watch, which included a flight in one of the two gyrocopters in order to capture images of the second machine with which to illustrate this article.

The operation has two distinctive sides to it. Alto Air is the electronics side which takes care of all operational aspects of the business including pilots, marketing and obtaining the correct authorities to fly surveillance operations namely Part 96 from the SA CAA. The operation is one of the first in South

Africa that is CAA approved utilising NTCA aircraft (Gyrocopters) in a commercial business. The second side of the business covers all operational aspects including the marketing of Air Watch services. Johan von Ludwig has seen to the upgrades of the basic ELA gyrocopter to the 'Super ELA.' The commercial authority to fly was well researched together with the SA CAA in order to ensure that the whole operation would be entirely legal. As the first company to receive SA CAA approval to operate Non-Type Certified Aircraft for this air surveillance business, Alto Air has made a significant contribution to aerial law enforcement and asset protection, most notably in the fight against non-ferrous metal theft. Both gyrocopters are subject to 25



hour inspections and reports due to the changes made. These include a hydraulic pre-rotator that replaces the mechanical engine driven unit, a much larger cooling radiator with ducts for cooling the Rotax engine and an upgrade on instrumentation.

The advantages of a visible air security asset are well documented and fairly obvious

Air Watch utilises the unique capabilities of its aircraft (Gyrocopters and Motor Glider) to provide a fully staffed, affordable aerial observation and patrol service for security patrols and law enforcement.

The unique operational requirements of helicopter operators (vertical upliftment of cargo and confined space work) determine that they have to make use of helicopters. Air Watch recognises helicopter services as separate or add-on to and by no means as a replacement to its service. Due to the fact that a fully staffed Gyro-based aerial security observation service, consisting of aircraft, pilot, spotter and mobile base of operation, is possible for a fraction of the cost of a similar helicopter based operation, it is a viable low cost alternative to the helicopter, as a crime prevention and general security observation tool.

A highly mobile patrol service that can be easily deployed into remote areas and by utilising the unique flight capabilities of the Gyrocopter such as; fast dash speed, slow loitering speed, very short take-off and landing, safe low altitude capabilities and small support infrastructure ensures

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real financial savings are made for the customer. In addition, the stealthy capabilities of the motor glider can be utilised to provide a variety of patrol options. Day and night patrols at a fast or slow speed can easily be carried out in areas where there is little or no regular aviation infrastructure.

**THE OPERATION CONSISTS OF**

- Gyrocopters fitted with spotlight / night vision equipment, configured for day / night VFR operations. (Supported where necessary by a Motor Glider)
- Support vehicle with fuel, trailer for aircraft, technical backup and radio base-station. (For remote, off-base operations)
- Commercially rated pilot
- Suitably trained spotter
- Support driver/engineer

A typical five-hour day is flown by each gyrocopter as the ‘eye in the sky’ providing information to ground based crews about criminal activity. The pilots do not become involved in apprehending the criminals, but simply provide information. At times they use digital cameras equipped with thermal imaging. The gyrocopter can fly low and slowly with excellent 360 degrees vision. Sorties are generally about two hours at a time and the gyrocopter is usually supported by a ground crew.

**DIFFERENCES BETWEEN A GYROCOPTER AND A HELICOPTER**

It is only natural that some confusion should exist between a helicopter and a Gyrocopter, because the appearance of the two machines is quite similar. However, the autogyro will not have any power applied to the rotor blades when the machine is in flight. It relies entirely on aerodynamic

forces to keep the blades turning and provide lift which is referred to as autorotation. Autorotation can be sustained at a very low airspeed. Even with zero forward airspeed, only a slight rate of descent would be required to sustain autorotation. In other words, a properly designed autogyro cannot just lose lift in the same way as a fixed wing aircraft can in a ‘stall.’ The significance of this is the safety during very slow flight, and the aerodynamic impossibility of the potentially deadly stall or spin at low altitude. The helicopter and fixed wing have the advantage that they can carry a larger number of passengers, over longer distances, considerably faster. This makes them handy transporters, but less suitable or cost effective as surveillance platforms. The Gyrocopter with its auto rotating, flexing rotary wing, only carries a pilot and one passenger, but it is much more stable and a less demanding platform in adverse weather conditions. The simplicity of design converts directly to a lower operating cost.

Gyrocraft	Helicopter
Rotor is un-powered	Engine power turns rotor
Short take-off run normally required	Can take-off vertically
Speed under 100 mph	Speed can exceed 100 mph
Standard aircraft rudder	Complicated tail rotor
Low hourly operational cost	High hourly operational cost
Low acquisition and maintenance cost	Extremely expensive to operate
Easy to land without power	Can be done, not recommended
Requires understanding spouse (it is addictive)	Requires understanding accountant (it is expensive)

**SOME OF THE PILOTS INVOLVED IN AIR WATCH**

**Kendal Gayle Ballantyne**, born and raised in Harare, Zimbabwe is 23 years old. At the age of 14 Kendal watched the news which at that


time featured the Mozambique floods where SAAF helicopters were engaged in rescue operations. Kendal was particularly impressed at the rescue of a mother and baby from a tree. She applied to join the Royal Air Force, but the RAF was not any longer accepting Zimbabwe citizens, as Zimbabwe was not any longer part of the British Commonwealth. However, her parents were prepared to finance her fixed wing PPL at Harare's Charles Prince Airport (No, this should not be Prince Charles Airport. This airport some 8kms north of Harare was formerly called Mount Hampden. The name was changed after the war to Charles Prince Airport. Charles Prince was a former manager of the airport and an officer in the RAF during the war.) Kendal began her training at a small flying school at the airport known as Guthrie Aviation. Once Kendal started flying, she was hooked due to the addictive nature of aviation. After completing her PPL and with reduced opportunities in Harare, Kendal decided to attend 43 Air School in Port Alfred to undertake her Commercial Pilot's Licence (CPL). This move also served to keep Kendal close to her sister who was studying in Grahamstown at Rhodes University. 43 Air School was an amazing experience for Kendal and after some difficulty she managed to complete her single engine CPL. This was the hardest she had ever worked in her life, but worth every minute of the experience. In due course her instrument rating was completed with Eagle aviation based at Wonderboom Airport. Kendal headed back to Port Alfred with the intention of completing her instructor's rating and whilst she was back in Port Alfred, she received a call from Alto Air with a job offer and that is how she landed up in Potchefstroom, flying Gyrocopters. Kendal currently has about 500 hours total flying time. However, her desire to fly helicopters remains in her blood and one day she hopes to be in a position to take up a career flying helicopters.

**Daniel Benjamin Sebastian Henderson**, mostly known as 'Night Rider' was born in Blantyre, Malawi and moved with his parents to South Africa when he was very young. He grew up in Natal, in an area known as Underberg in the Southern Drakensberg. Dan now lives in Potchefstroom. For as long as he can remember Dan wanted to fly, which was something he dreamed about as a child. However, along the way he became distracted and the 'real world' dictated that he should attend university where he studied for his BSc. A number of employment positions in sales presented him with the opportunity to travel to Kosovo, part of the former Yugoslavia, where he worked for NATO. What started out as a six month contract with NATO ended up as a four year one. During this time Dan was introduced to Gyrocopter flying by his father, and this rekindled his desire to fly. In addition, whilst in Kosovo he was exposed to some serious military types of aircraft such as the Black Hawk, Apache and Chinook helicopters flown by the USAF as part of the United Nations contingent. On returning to South Africa Dan took all his savings and headed to 43 Air School in Port Alfred, to undertake his fixed wing PPL, Instrument Rating and Commercial licences. He completed his Commercial Licence in November 2006 and presently has in the region of 800 hours most of which has been flown during the past six months with Sky Watch. Ultimately Dan's goal is to fly helicopters commercially, but for the time being he is happy undertaking surveillance from above. Dan's favourite aircraft are the Bell Huey, the Hercules C-130 and the classic Dakota - DC-3. He believes that sooner rather than later he would like to fly at least two of these aircraft. His short term goals are to keep flying commercially whilst studying for his Airline Transport Pilot's licence (ATP), initial twin and turbine conversions and make a start with helicopter training. In between he would like to undertake an aerobatic course to strengthen his understanding of aerodynamics as well as improve his flying ability. Daniel flew me in the gyrocopter for the air-to-air sortie of the second gyrocopter simulating a railway line inspection.

### CONCLUSION

As the pressure to deliver cost effective aerial services increases, the cost of additional personnel and infrastructure escalates. Air Watch believes that through the utilisation of tried and tested technology, it can provide a significant force multiplier and asset extending service, in the areas where the service is most needed and where conventional methods are too expensive or not practical. African Pilot applauds pilots and aviation companies who work at keeping aviation alive through practical methods of operation. This is all part of the 'freedom of flight', which is essential in the modern South African economy.

I would like to thank the staff at Air Watch for their help in compiling this article. ✈️




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