

Kraut **KOERANT**

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THE NEWSLETTER OF THE CAPE GLIDING CLUB WORCESTER SOUTH AFRICA

From the Chair

It seems to me that winter has arrived very suddenly this year. How lucky we are at Worcester knowing that we can look forward to wave and ridge soaring with the occasional thermic and convergence thrown in for good measure over the next four or five months. Unlike the USA and Europe who have to close down their gliding operations for half the year, we are able to carry on our training, pax flying and soaring all year round.

Trevor Johnson has suggested that we should actively pursue pax flying as a serious source of income for the club. This would mean advertising and accepting firm bookings at pre-arranged times so that "customers" do not have to hang around all day on the off-chance of getting a flip. The winch could be used to maximise the revenue to the club. There is no reason why we should charge less for a winch launch than an aerotow for these flips. In addition to earning money, this could be a good source for attracting new members.

To make this work we would need a rostered team of members to assist with ground handling, winch driving and pax-rated pilots or instructors. The committee would like your views on this initiative. Volunteers for duty would be welcome. Winter would be a good time to get this off the ground so please email the secretary, or speak to any committee member so that we may judge the reaction of the members.

Our sliding door has been fitted to the clubhouse and all agree that this is a huge improvement. Thanks to André for making this happen and to Ed for overseeing the operation at Worcester. The sliding door was fitted in time for a wonderful party given by Rico for club members. Those of you who did not attend missed a great evening and delicious food. Once again Rico, many thanks. We passed the hat around and raised more than R800 towards the cost of the sliding door.

Rico and I attended the monthly meeting of the Worcester Flying Club on 4th April. They have a new committee with Marcel Viljoen as chairman. Peter Muller-Brunke is their representative on flying safety and security matters. We had a very positive approach from their committee and they are as keen as we are to continue the friendly co-operation that we have between the two clubs.

The hang gliding club would like to do some car launching from Worcester airfield from time to time and

this is being discussed with both clubs at Worcester. If any members wish to give their views please speak to our CFI or a flying panel member.

The response from dog owners to the new rules has been very positive and the situation is much improved. Many thanks and please keep it up.

You will find the budget report elsewhere but I would like to thank Graham for all the time spent in preparation, and the committee for their time and effort at the budget meeting.

The Aero Club of SA debacle appears to be in the process of being sorted out. Reports are that the operation has been slimmed down and dialogue has been re-established with CAA. At our committee meeting of 11th April it was resolved to forward the funds we have been holding on behalf of members to the Aero Club. We have been assured that the third party insurance that forms part of our subs is in place, but as renewal is at the end of April, our subs are required to ensure continuation. Our thanks to Steve Thomas and the committee of the SSSA for their tireless efforts on our behalf, this has been a very difficult time for them.

Till next time, safe flying, Dave

A committee presentation of the 2001 – 2002 club budget

A new tariff will be in operation from the first of May. Precious few members realise the laborious process involved in preparing the annual club budget. To explain it simply, the treasurer must first study preceding years of historical data from our records, as this provides a background. He then looks at the present operating expenditure and income, comparing the actual figures with the last year's budgeted ones, checking what was up and what was down and trying to ascertain why. He then tries to project what the operational costs and the flying hours are likely to be during the next 12 months. The resultant projections form the basis of the budget. This is then studied item by item by the full committee and after a lot of deliberation, the new tariff is finalised. It's not a short or easy process, and it always involves many unknown quantities, especially the vexing question of "*how many hours will be flown in which aircraft*".

The committee members feel that under the prevailing circumstances, a reasonable budget has emerged in which the inevitable increases attributable to inflation have been contained, where possible, to within 8%. It may have looked clever to have pegged the tariff closer to previous rates, but apart from general inflation, sharp increases in fuel and insurance charges have also taken their toll on flying rates. As if those devils were not enough, the club's capital accumulation, that financial element so essential to major tug maintenance and other special projects (such as the electricity upgrades for the airfield), presently stands at almost zero, still suffering from the capital outflow of the ZS-NIG purchase.

The present tariff has been carefully tailored to cover our continued day-to-day operation, but financially speaking there are dark clouds on the near horizon. NIG is tending to overheat badly and needs certain modifications to ensure that its continued use does not cause major engine damage. Apart from the cost of effecting these modifications to NIG, approval for their implementation will first have to be obtained from CAA, which under the new dispensation will cost, literally, some thousands of Rands in itself. Anything for CAA to make a buck off, though it almost seems as if they don't trust the AMO's.

Our number one tug, MIV, will shortly be required to have a major strip down of its fabric covering for a mandatory full-airframe inspection. This is a pity as the covering is still quite serviceable. The cost of this project is open-ended as it's any guess what could be found on inspection of the aging airframe. *Stellair* have indicated that the estimate is in the ball-park of R70 000. Then as far as the engine of MIV is concerned, we have to date never been fortunate to have had such long service from any previous Lycoming, but it's coming up for its 2000 hour mandatory rebuild in 2002. This is an unavoidable condition-checking procedure and will probably result in the replacement of many internal components. A full rebuild could cost up to R120 000, depending on what is replaced. Running two tugs is no joke financially speaking, and even those of you who have suggested inhibiting the motor and mothballing NIG must realise that simply owning the aircraft comes at a high price, even before it is used. The committee is aware that some members are even in favour of the disposal of NIG, but those members *must* consider the following: The major advantage of owning two tugs is that of **security**, security of being able to continue our gliding operation should MIV become unserviceable, as it definitely will be fairly soon, for maintenance reasons. But it can also become unserviceable at any other time for a multitude of unforeseen reasons. In the past we were usually able to hire tugs from other sources (Supercub CKP, Pawnee FBB); **today not one of these alternative tug aircraft remain accessible to us** and without NIG to fall back on, we could all be grounded. NIG is therefore our only guarantee of continuing the operation in the face of a major problem occurring with MIV. The committee feels it is unlikely that the club could withstand the resultant membership loss if the gliding operation was

suspended for a prolonged period, notwithstanding the part played by the winch, which is of little use to those pilots wishing to fly across country on all but the best soaring days.

Considering the certainty of the looming and substantial costs with regard to MIV alone, viewed together with the knowledge that the club has a zero capital accumulation, somehow capital will have to be raised, and raised in good time **before** the MIV recovering, for which we must obviously have funds before the AMO commences work. This means that positive moves must be made **now** to raise capital to cover this work.

Members have already indicated their agreement with the plan to dispose of the K7 GUU once the K13 GHB is returned to service, which should be in the fairly near future. However, K7's are all now very old and do not fetch much money on any market. More capital is required. The committee has deliberated long and hard on this issue and realises that even if we were to borrow the capital required (say from members), it would eventually have to be repaid, whatever the interest rate may be. The possibility of disposing of one of the single-seater gliders can't be ignored as the most logical way to go about raising additional capital, short of borrowing. Certain members have in the past continuously balked at the idea of ever disposing of any club assets, but according to sentiments expressed by members in the recent *Members' Opinion Poll* (MOP, published in a recent *Krautkoerant*), GJJ was cited as the aircraft most favoured for disposal, should such a move be necessary. This, together with the disposal of GUU, is therefore being pursued by the committee. Notifications are being placed to test the market response, if indeed there will be any. More bad news is that even with the estimated proceeds from the sale of both GUU and GJJ, insufficient funds to cover the coming tug expenses could result, and it may unfortunately still be necessary to ask the long-suffering members once again for bridging loans.

The committee would ideally like to see GJJ syndicated among club members, and having said this, offers are now invited from members in this regard. If any member has any other feasible idea on how better to raise the capital required, the committee would value their input. In any case, apart from the K7 sale which has already been agreed to by the members, nothing final will be decided by the committee regarding disposals without first consulting the members, probably through the medium of an e-mailed opinion poll. It must be realised though, that these things are not something in the grey and distant future, they are pressing items and money will have to be raised now if we are to remain airborne later in the year.

Tug alternatives

Many members saw the demonstration of the **Samba** composite **ultralight** aircraft some months ago at Worcester. The power to weight ratio of this little four-cylinder Rotax-powered aircraft is such that it has been tested at 4000' altitude towing a ballasted Nimbus 4 –

not an easy call. There has been a lot of talk among the members of the possible purchase of a *Samba* as a combined replacement for the second tug NIG and the motorglider UUA, as a *Samba* would fulfill the roles of both these aircraft admirably, possibly with pilots being able to fly it on suitably endorsed GPL's. How the ultralight *Samba* would perform in the high NW winds we experience at Worcester is another matter. The real bad news is that the recent strengthening of the Dm has made this little aircraft incredibly expensive in Rand terms (about R400 000), and it seems that this has all but blown the idea away. Any ideas?

The news column

There's so much club business in this edition of the *Krautkoerant*, that there won't be much space for other articles of general interest. We're trying to limit *KK's* to between six and eight pages, but that doesn't mean you have to stop writing, especially of your *flying exploits* round and about Worcester. And remember, in the interests of complete "transparency", the latest committee minutes are always placed on the clubhouse notice board, so you can see "what's up".

So what's been happening at Worcester? Definitely the social highlight of recent times was the informal get-together hosted by **Rico Suter** on Saturday 24th March, which was a huge success on all counts, as Dave has already said. **Firstly**, it was a *large* party which gathered; members, friends, and even some of those rarely-seen wives and family members as well! Rico's son Carlo was there, as well as his friend Michi Kaiser from Switzerland, who some will remember used to fly with us. **Secondly**, it was the debut of our "new-look" clubhouse with its wide sliding door, giving at last a view of the runway, as well as a vista of the mountains. This project has been years in the making, and fraught with unbelievable delays, so its completion is certainly a feather in the cap for the present committee, especially Dave who liaised with the Vliegklub and Andre who managed the building operation. **Thirdly**, the weather was perfect and the party flowed freely in and out of the clubhouse – a new experience compared to our previously cramped quarters – and on this occasion there were definitely too many people to be contained within the clubhouse all at once! **Fourthly**, and not to be forgotten, **the food!** We had been expecting a spit-braai, but what arrived was a "sort of" lamb potjie, a huge one! And Christine Suter, Rico's wife, had done something amazing with the lamb. Together with salads provided by members, rolls and baked potatoes, we tucked in to a veritable feast. Large quantities of KVV wine were consumed and a novel touch was the chocolate ice cream dessert, handed out personally by Rico. Some of us definitely had more than our fair share!

During the festivities, Dave proposed a vote of thanks to Rico on behalf of us all, and with his acquiescence, made the appeal for donations towards the new clubhouse door, which he has already mentioned in his opening address.

The committee would like to sincerely thank Rico for his generosity, as well as all the members who provided salads, took photographs, helped with the cooking, and especially all who came and made it the evening the wonderful success that it was.

As far as flying is concerned, congratulations are due to **Adriaan Hepburn** and **Alewyn Burger Jr** who have both converted to the Single Astir GUC. Adriaan went on to achieve his Five Hours on his third flight, though at the same time incurring the severe censure of the CFI, for straying out of glide of the airfield without the necessary cross-country clearance. The CFI and Flying Panel does not want to be harsh, and therefore appeals to pilots to abide by the established rules and procedures laid down. A heavy responsibility rests on the CFI and Panel for flying issues, especially where student glider pilots are concerned. Adriaan subsequently converted onto his ASW19 on 7th April, which he says, flies like a dream.

A point to mention regarding the flying of GUC is that as this glider's trailer is unregistered, members are requested not to fly cross-country in it, as a retrieve could lead to you receiving a traffic fine. The committee is presently going through the troublesome process of registering this trailer, which includes obtaining a police clearance, obtaining a roadworthy certificate, and then applying to the local authority for registration. Please be patient!

There have not been any official distance Badge claims in recent months, and **Otto and Hilmar's** O&R trip to Cape Agulhas still seems to be the most commendable flying feat of this period. Badge claims excepted, during February and March the Langeberg and Riviersonderend mountains continued to provide some excellent days and flights of over 300km were recorded. No doubt we can look forward to some "downwind Silver C dashes" to Swellendam as soon as the north-westerly wave perks up. It's usually very easy to remain airborne for hours in wave, even to climb very high requires little skill, but the real challenge facing the more experienced pilots is the use of wave for some pioneering *out & return* distance flights. That would be something commendable.

The winch operation continues to run smoothly, and certain mechanical modifications are being done to make it even more reliable. Increased experience on the part of drivers and instructors has brought the number of cable breaks to a minimum, with consistently high launches. The hardened surfaces of the winch take-off points make it feasible to launch your private single there without the canopy being sprayed with gravel. Operation of the winch is being limited to twice per month so as not to compromise manpower availability and safety standards.

On the tugging scene we welcome back **Chris Dixon**, and congratulate **Ari Cotton** on his debut as a tug pilot. Ari has been quietly chipping away at his Comm rating, which he now has. It's always a big plus to have a glider pilot in the tug and we're very pleased to have Ari on the roster – let's hope it doesn't detract

form his gliding exploits. Unfortunately the ever-popular Gary Pottage has left Cape Town for greener pastures as a professional pilot with SA Airlink. We wish him well.

Tug pilots are an essential and valuable asset to the operation of our club, and competent tail-dragger pilots are not as abundant as they once were, even less so the "ideal tug pilot", who is also a glider pilot. The committee is always grateful for the services of our tug pilots, and even offers a reduced entrance fee to those tug pilots who don't ever wish to fly gliders. But it is simply impossible for the club to *pay* for tug pilots' services, guarantee them a minimum amount of hours tugging per duty, or to pay for their travelling costs to and from Worcester. The club operates as a voluntary co-operative venture, which is the only basis on which it can survive financially, as we are too small to run on a professional basis. Even Magaliesberg GC, three times the size of our club, has to operate like this. *An interesting point on finance is that at Magaliesberg GC, members settle their accounts by 7pm on the day of flying, or are charged double. NO credit facilities are afforded members at all.*

And finally on flying safety... The recent report on RAS, of a fatal accident in northern California involving an ASW20, is yet another instance of failure of the pilot to connect his elevator drive, and failure to do positive pre-flight checks. We must all keep the importance of these checks firmly imprinted on our minds.

At the airfield, André Leeb du Toit has finished arranging the repositioning of the shade structure nearer the take off point at runway 15. It was a lot of hot sweaty work and we are grateful to him.

Here's some snippets of news from members: Campbell Lyons, Werner Leppan and Richard Churley have resigned; Paul Ireland sends regards to his friends at CGC, telling us that his wife is "with child"; the Levitt family is still holed up on their country estate in rainy England, which has experienced the wettest winter since records were first kept, about 300 years. In England no cross country is being allowed due to the foot and mouth epidemic so I wonder which one of them is more grumpy. Peter Farrell has become the owner of the ex-Mike Jones' hut.

We were saddened and dismayed to learn that our insurance broker of many years standing, Fred Smart, has become yet another victim of the wave of violent crime which presently seems to be targeting Pinelands. Fred was brutally attacked and subsequently hospitalised, though he is now recovering at home. We sympathise and send our best wishes for his recovery.

The rule that *"if it works, don't mess with it"* was put to the test recently when the Kestrel syndicate decided to remove their instrument panel (who said dashboard!) for some "renovation". On re-assembly the battery terminals were reversed with grave results. We're not sure who's really to blame; "Dopey" Hoole or "Granny" Fussell? Incidentally, a *"dashboard"* is a leather or

wooden apron on the front of a wagon to shield the occupants from being sprayed with mud kicked up by the horses (and that other horsy stuff).

All members who own aircraft should have received a letter from the SA Weather Bureau (soon to be named the SAWS), which sets out the "user pays" principle which will come into effect once their "corporatising" is effected. Their annual fee to us will be covered by an additional R10.00 per glider and R120.00 per tug and be included in Aeroclub fees. This does not seem exorbitant, but no doubt this amount will escalate as time passes. If you have been reluctant as "a mere glider pilot" to phone the weather office for an aviation met report, you needn't feel shy – we will soon be paying for this service whether you use it or not.

Unfortunately most things have a negative side, and in this aspect our club is no exception. We try to keep the tone of this paper positive, but there are invariably a few people who are going against the flow. Wednesday March 21st was a public holiday but it was not possible to use MIV for tugging as the headset had mysteriously vanished, and NIG's headset would not work in MIV. Mike Mountain made a valiant attempt to launch all the flights with NIG, but later in the day it became evident that it was asking too much of the Citabria, due to its overheating. Flying was therefore forced to close early, much to the disappointment of some visiting "paxes".

By the following week end the head-set could still not be traced, and it had been given up as stolen (about R800 worth). At the last minute it was found to have been "borrowed" a week earlier by the son of one of our social members. Obviously this type of thing is totally unacceptable and highlights the growing risk to our equipment at Worcester. The committee is not quite sure about how to safeguard against this type of thing happening in future, as the line between illegal "borrowing" and theft is finely drawn. Do the members have any suggestions to make regarding security at FAWC?

Fortunately the chairman has covered the "dog issue" so succinctly, it leaves nothing for me to add!

Electricity at the airfield

While an adequate three-phase electricity supply was installed to the airfield some years ago, the *connection* was never upgraded and is totally inadequate, as everything is supplied through one 20 amp circuit breaker. In addition to this, the reticulation (the underground distribution cables) have been extended on an ad-hoc basis as further developments have taken place around the airfield, with the result that it is all hopelessly overstressed and in need of upgrading to prevent the trips and power-outages that now happen fairly regularly. To improve matters it will be necessary to lay additional underground cables and create "ring mains", as well as to install additional distribution boards. "Standing power points" must also be provided for the caravans as the existing set up of extension leads is both dangerous and illegal. All

these improvements are absolutely necessary and it is estimated that they will cost in the region of R16 000.00. The major portion of this will have to be shared between the hut, hangar and caravan owners. As the gliding club clubhouse is also affected, a smaller portion of the cost will also fall due to the general membership. The WFC portion of the clubhouse is unaffected.

In addition to the overall electricity reticulation, many of the buildings have non-standard internal wiring, and these private installations will also have to be upgraded and "certificates of compliance" obtained for all buildings on the airfield, which certificates are required by law. Upgradings can be done by the electrical contractor who is to do the major portion of the club's work, or else they may be done by any registered private electrical contractor, it's up to you. Dave Starke is co-ordinating this project so if you need to know more details about how it affects you, please contact him.

The camera reveals all!



A super view of distant Queen Victoria Peak, Kwaggaskloof dam and Brandvlei, taken from GUC by Adriaan Hepburn, about 30km south of Worcester, during his "Five Hours". How many of our pilots have not yet seen this from the cockpit of a single? Well done Adriaan, five hours will pass much more quickly when you go sniffing around for those elusive diamond flights in your 19. Just make sure you're operating according to the established club procedures and within CAA airspace limits.

Especially for the Duty Pilots

Duty pilots form one of the most vital members involved in any day's flying operation, as without them, there can't be any flying. They are just as important as the tug pilots and instructors. This means that when a rostered duty pilot does not turn up on their day, there is suddenly a problem for all who wish to take part in flying on that day. It's the function of the **Chief Duty Pilot, Alison Hultberg**, to ensure that all the arrangements for each and every flying day are in

place, and that all duty officers are there to play their respective parts.

It is therefore each duty pilot's responsibility towards all the other members to pitch up for their duty – it is not good enough to phone in to say you can't make it; if you can't make it you must then find a replacement duty pilot to take over from you. It's **essential** to do this in good time and the Chief Duty Pilot **MUST BE INFORMED** of the change in arrangements.

Being duty pilot is important and can be a lot of fun, as it is an opportunity to really get involved. You are only expected to do about one day in three months, but to fail to show when you are rostered, without arranging a replacement, is both selfish, irresponsible and completely unacceptable. Lastly, as we are trying to make a definite effort to accommodate more flying hours per day, please endeavour to be at the airfield early. We must strive to give all members value for money, especially the pupil pilots. **It's astonishing to realise that an ab-initio pupil pilot will spend between R9 000.00 and R15 000.00 (35 to 55 flights) on gliding training and club fees by the time he has landed after that first solo.** That's aerotow, but winch is no cheaper.

Our K13 two-seater...

Those that can remember the club's K13 trainer will be pleased to know that under the supervision of Herbie Oberhofer, this mammoth rebuild project has been progressing slowly but steadily at Stellenbosch airfield. **The club's workers are desperately looking for somewhere in Cape Town to house the wings while they work on them, as the travelling to and from Stellenbosch is both tedious, time consuming and expensive.** At this stage a start has been made on applying the new fabric to the wings, which in addition to gluing, it has to be laboriously stitched to each and every rib. Thanks Herbie and all the others who are busy with this.

Thursday 1st March 1984

As winter approaches and we head for the "wave season", it seems appropriate to feature a wild tale of the early days of ZS-GJJ and the famous Betty's Wave in the lee of Table Mountain. Shirley Carter recalls...

It's hard to believe that this incident happened over 16 years ago as the experience is still very vivid, although in my usual slightly distracted fashion, some of the details are bit hazy.

I remember looking out of the window at work and seeing a beautiful example of Betty's Wave manifesting itself near Table Mountain. It was early in the year for cold fronts and there was still a lot of blue sky about. While I was gazing out the window, thinking that there must be better ways of spending the day than designing computer systems, the phone rang and suddenly the possibility of flying the wave became very real. I had 88 hours experience and had recently

been cleared for wave, so was looking forward to my first solo wave flight.

A handful of other pilots were already at Fisantekraal ready to go when I took my place in the queue with the Single Astir. It was a long tow behind CKU before I was given the signal to release by the tug pilot and found myself slowly and smoothly climbing the face of an imposing lenticular cloud. This is where I started going wrong, as instead of facing directly into wind, I must have been about 60 degrees off and was steadily drifting sideways into the cloud. There was no excuse for this other than my failure to grasp the extreme importance of matching the glider's forward speed to the wind speed and staying directly into wind so as to maintain a steady position relative to the cloud.

Having released at about 4000' I was now passing through 8000' but also rapidly losing visibility as I penetrated the cloud. Suddenly my world consisted of swirling grey fog and the limit of my visibility was the cockpit canopy. Things were not going according to plan or previous experience. I wasn't timing the proceedings, but it couldn't have been more than a minute or two before I had completely lost all sense of orientation. To my horror I noticed that I was flying at somewhat more than red line speed and had a dreadful fear that the wings might come off. I pulled the stick back to slow down and was pretty disturbed to notice that the speed increased instead of decreasing (my heart is pounding and I've developed a cold sweat just remembering this as I type). Obviously I must have been flying inverted, so I tried pushing the stick forward and sure enough, I slowed down very quickly and the next thing I knew I had stalled and somehow got into a spin. Thanks to the spin-recovery training which had been drummed into me, I automatically went into recovery mode and as I pulled out of the ensuing dive I spotted a patch of clear blue sky at the base of the cloud. I had momentarily re-entered the misty world of cloud, but was clearly aware of the direction to head in order to get back to that little blue patch.

Within seconds I was below the cloud and then the next drama started to unfold. As I looked down, I realised that I was flying over the sea. My really lucky break was that I was also pointing towards the coastline, though I just wasn't sure which coastline. After a few moments thought and the sight of an island to my right, which looked to me like Seal Island in False Bay, I was able to tell the tug pilot, who was still airborne, where I was and "Yes, I'm sure it's not a dam".

It was suggested that I might try landing at DF Malan (now Cape Town International), but the wind was still blowing strong NW and I was flying straight into it. Also from the 4000' that I still had left it looked as if I'd be lucky even to make the beach at Strandfontein. Well, of course I did make it although I had to do a cross-wind landing in fairly strong wind down the length of the rather narrow stretch of beach - it was probably high tide as there wasn't much room to spare. I'd been airborne for 55 minutes and by now, as it was

after 5pm, there was fairly heavy traffic on Baden Powell Drive, which runs next to the beach. This was why I couldn't risk landing directly into wind, as landing across (up) the width of the narrow beach might have brought me up onto the road, and I'd had enough excitement for one day.

Strangely enough not a single car stopped after I'd landed to see what I was doing there and the only reaction I got from anyone on the beach was from what looked like a retired couple who offered me a cup of tea from their Thermos flask and suggested that it wasn't all that wise to be sitting alone on the beach at that time of the evening. I was perched on the end of one wing to keep the other one out of the water.

The retrieval team duly arrived and I subsequently flew easily and uneventfully to 19,000' in my ASW 19 three years later.

Shirley Carter, ex CGC instructor

Farewell to Barographs, Cameras and all that stuff, or...

An Introduction to Flight Recorders

In the beginning, there was the Official Observer, and his word constituted *The Truth*. Those wishing to claim flights officially, also had to carry a barograph to record flight continuity as well as heights. Fortunately the clockwork barograph was already around when gliding started - it had been invented for meteorologists to record changes in atmospheric pressure over time.

To reduce the burden on Official Observers and aid subsequent flight validation, the camera also played an important role together *with* the barograph - the serious pilot carried at least two of each to avoid the flight being nullified due to an equipment malfunction! With this equipment being used, life was easier for the Official Observer, who then had only to be present to see the glider depart and arrive, and to check the authenticity of the on-board equipment. The camera recorded the Declaration of the intended task, recorded the rounding of the turnpoints and the arrival at goal, the barograph recorded the continuity of the flight as well as the height at release and along the way. These photographic recording methods were still in regular use even at competitions, till fairly recently, and are still acceptable for validating most flights. But it is all rather tedious and sometimes difficult for an independent evaluator to be certain whether the aircraft was in a particular turnpoint observation zone or not. Especially at competition venues it's also a lot of bother having to provide skilled personnel for photographic processing, providing the necessary equipment, and to set up temporary darkrooms. For the pilots themselves, all this clobber is an awful burden to prepare before every flight, to say nothing of messy ink styli and unhealthy and smelly smoke-making procedures! But times have moved on, even here in the Third World, so please don't arrive at your first competition expecting to use all this gear, as the organisers will not be impressed! Paper flight

declarations, together with expensive barographs and cheap turn point cameras are now destined to join the old cosim variometer in the bottom drawer or the gliding museum, though some pilots still use these items (no, not the cosim, unless you're flying a T21!). Now enter the era of the electronic data logger, or to give it the correct name, the Flight Recorder (FR), or even more accurately, the FAI/IGC-approved Secure Flight Recorder.

The advantages that came with the development and introduction of affordable global positioning systems (GPS) for use in aircraft are well known to most pilots (more correctly termed Global Navigation Satellite Systems or GNSS). One of the resultant developments derived from GNSS for the gliding movement was the development and introduction of the electronic Flight Recorder. The use of these devices has eliminated the carrying of bulky and sometimes unreliable on-board analogue recording equipment, and provides instant and far more accurate digital electronic flight records to be made. Moreover, in addition to merely making a record of the flight, the digital flight data they collect and store (log) can be utilised later and presented in all manner of representative and graphic ways. This is achieved by downloading the recorded flight data to a PC, using simple to use off-the-shelf gliding software. Quite a few of these "packages" are now available, and while they're designed especially with competition enthusiasts in mind, they are definitely also a great boon to any aspirant cross-country pilot. Flight planning has been moved into a whole new realm through the medium of these packages. But the gliding software manufacturers have also facilitated a vast array of analytical statistics to be generated from the flight file, thus assisting pilots to improve their techniques and develop better flying strategies. Coupled to all this, Flight Declarations, still a requirement for badge and record claims, can now be made either directly into the FR, or downloaded to it via a PC. After flying, multiple flight records can be downloaded from different pilots' FR's and viewed together for comparative assessments. Animated re-enactments of entire flights can also be studied this way.

When Flight Recorders first made their appearance, the International Gliding Commission (IGC) of the Federation Aeronautique Internationale (FAI) recognised the need to form a special Flight Recorder Approval Committee (GFAC) to test, evaluate and certify different manufacturers' Flight Recorders as complying with previously laid down FAI standards. The result is that we now have three groups of flight recorders – those *without* FAI approval (such as an off-the-shelf GPS which has a recording facility – like as a hiking one), and Flight Recorders with FAI approval in so-called classes A and B. Three groups; only two officially FAI/IGC approved for gliding claims.

Firstly, the hardware components of both classes A and B have to be encased in a sturdy, sealed, tamper-proof case. Both types incorporate internal electronic barographs. In addition, both classes of Flight

Recorders comprise a logging device and storage facility.

But the fundamental difference between class A and class B Flight Recorders lies here: the class B Flight Recorder reads its positional flight data (x and y co-ordinates) from an *external* GPS receiver, mounted somewhere in the glider. While these Flight Recorders can be used for badge claims up to Diamond, they may not be used for claiming records or the 1000km diploma.

The class A Flight Recorder, *on the other hand*, while containing all the above components, *also* has a *in-built* GPS receiver. These units are therefore completely self contained, though it is possible to link their output to an on-board flight computer, and some might even form an integrated element (though a separate removable piece) of a complete variometer and glide-computer system. This however has no bearing on the actual data they log from the satellite sources. The class A units can be used for any type of gliding claims including world records.

Apart from their logging facilities, many class A Flight Recorders can be programmed via a PC with hundreds of different way points as well as dozens of pre-determined routes or tasks, and it's a simple matter to activate whichever task is going to be flown. The flight declaration is usually uploaded via a PC, though it can also be entered by the user directly into the logger before the flight. The procurement of all these turn points no longer means a tedious scaling of co-ordinates from maps either. Through the Internet, we have amazing resource sites such as the *Worldwide Turnpoint Exchange*. From here gliding turnpoints for almost any gliding region in the world (including all over South Africa), in various electronic formats to suit almost any make of logger, can be downloaded free of charge.

The electronic crux of the issue is that both the approved classes of "secure" Flight Recorder produce digital flight files which are *tamper-proof* – in standardised, so-called **.IGC format**. These files are all based upon a standard **WGS84** (World Geodetic System of 1984) world-wide latitude and longitude datum. This *datum* is a standardised theoretical "whole world" model from which the co-ordinate values for any point can be referenced. Previously, different regions around the globe utilised different systems for their own particular map bases, but WGS84 is universal and can be used with GPS wherever you are on the surface of the earth. This is something to bear in mind when scaling your own co-ordinates from maps, which in South Africa have in the past been based on the Cape Datum, which in turn is referenced to the so-called Modified Clarke 1880 ellipsoid, first introduced in 1866 and modified in 1880 (I've tried to cover this all in an article which should appear elsewhere in this newsletter). The WGS84 datum is more accurate than the Cape Datum, but varies with up to 300 metres in latitude and 70 metres in longitude from the "Clarke", though agreeably this is not much for our navigational purposes. Just a point - if the small-print on your map

refers to the Haartebeeshoekt94 Datum, then it is also WGS84.

Back to the Flight Recorder files... In downloading these .IGC files from a Flight Recorder to a PC for validation, the computer software adds certain algorithmic codes to part of the flight file, forming a kind of electronic "key" which after downloading and concurrent validation, will confirm whether the data is authentic or has been subsequently tampered with. This does not mean that your separate, off-the-shelf gliding analytical software can't use the .IGC files after validation, it can. It's just that the "beauty" of the .IGC file is that it is a *true* record that can't be altered in any way without it being noticeably corrupted.

So to sum up very briefly, if you hear someone talking about a "secure" Flight Recorder, you will know it is one which is mechanically tamper-proof and produces electronic flight record files in .IGC format.

Most of the manufacturers of electronic glider instruments have joined this growing FR market, including others who specialise only in Flight Recorders. Some of the present generation class A Flight Recorders are smaller than the old instamatic cameras, but can still be pre-programmed with a database of hundreds of turnpoints, dozens of routes (tasks), and can log up to 80 hours of flight time, depending on the rate of gathering satellite "fixes". This logging rate is usually every 12 seconds in straight flight and every 1 or 2 seconds when in the turnpoint observation zone. The shape of the observation zone can also be pre-set (either standard photo-sector, cylinder or a line feature), and an audio signal can be generated once sufficient "fixes" have been recorded within the turnpoint zone, so the pilot hardly has to be aware of terrain features below. In fact, with satellite navigation, there is no longer a need for any recognizable turnpoint terrain features at all. One can even have a turn point positioned over an area as featureless as a large body of water. To illustrate how this frees pilots to concentrate on their flying, I once asked an experienced CGC pilot what his favourite "remote start-point" at Apiesklip actually *looked* like - he replied that he didn't know as he had never in fact ever needed to look down at it! (heaven help him when his GPS fails!)

Many of the class A Flight Recorders display a comprehensive range of GPS navigational data as well – altitude, speed, distance to next turn point, bearing to the next turn point, and the actual track which the glider is making over the ground. So if you get the bearing and track figures to co-incide, you'll be well on your way to reaching the target turnpoint, lift excepted. Directional data with FR's is always referenced to true north, not magnetic. For self-launching gliders, FR's can sense and record exactly when the engine is deployed, by means of an engine noise level (ENL) sensor. When carrying a FR on an important flight, it may therefore be better not to eat beans beforehand!

So there you are in brief; and yes, we still need the Official Observer to do his bit. Which FR you buy

depends on what you are expecting to claim, what you want it to do with it as far as flight analysis is concerned, as well as how much you have to spend. Hopefully, as is deserving of members of an expensive club such as ours, the new committee will be buying at least two or three of these class A Flight Recorders for use in the club Singles, to replace our ancient and battered Winter barographs.

(But remember, flying is more important than the equipment, so even if you are still using the old analogue flight documentation system, that's no reason not to attempt your Diamond Flights from Worcester!)

Keys! An appeal!

An effort is being made to register all club keys to their respective users. Herbie Oberhofer has been supplying club keys to members over the last 30 years, at the same time keeping a register of key numbers which is linked to member names. It seems that some keys have been made by members themselves and it is those keys which Herbie would like to know about, as security at the airfield seems to be becoming questionable. It is only as a last resort that the existing locks will be altered, as this will necessitate the expense and trouble of everyone requiring new keys.

If you have an unnumbered club key, please inform Herbie Oberhofer (685 2681 all hours) so that he can register it. Also, if you would like to **obtain a club key**, he can arrange one for you for about R25.

Enter now!

The "low-cost" SA Nationals to be held at Magalies Gliding Club, **Orient Airfield, between 22nd and 29th September**. Entry forms, for completion by mid-July, available from the CGC secretary (487 2451).

Next Krautkoerant

Thanks to **Shirley Carter** for her article on Betty's Wave; also the office-bearers for their contributions to this *Krautkoerant*. **Deadline** for the June *KK* is **31st May**. Most of the views expressed in this month's *KK* are those of the committee. All errors are deliberate for the satisfaction of nit-pickers and other critics.

Editor: Peter Wooley, ph 686 3883 (h), 487 2451 (w) or fax 487 2592; e-mail pwooley@cmc.gov.za

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