

TRUST ME ON THIS...  
IF I SAY IT'S PINK,  
IT'S PINK!

VICTORY!

# THE VOTE

THE ORGAN OF THE WOMEN'S FREEDOM LEAGUE  
NON-PARTY.



GARRY, TREVOR AND ALLBUTTS  
GET IT WRONG... AGAIN...





Welcome to the Pink Issue of Keep Soaring. The reasons behind this name should become clear as you read.

There are lots of excellent articles in this issue. A gang of contributors have put in a heap of work, so make sure you read what they have written! They're sure to ask at the club what you thought.

Brian Du Rieu has written a good long piece about flying from Morocco to Germany in his Stemme which shows how adventurous adventure flying can be. We're also reprinting a piece Brian wrote for Altitude magazine promoting gliding and Keepit as a great place to fly.

Garry Speight has contributed the rest of his article from the last issue of Keep Soaring and it's another great CROC.

Dave Shorter has done a great article on Assigned Area Tasks... AATs. We may re-print this on microfilm so you have a cockpit version... it's quite a big article.

Geoff Neely has contributed a nice piece on the somewhat enigmatic Sam Clift which I read with great interest. Sam is one of my flying heroes. He appears to be a natural flyer... at least he flies everything and probably doesn't read any of the instructions!

Geoff's articles are always an interesting read. His subjects have the most interesting backgrounds. It's amazing how far we all come. I say "we" because he did a profile on me too, but I haven't got around to reading it!

You may feel that your "life story" as presented by Geoff is not going to make interesting reading but I can assure you that for other people *it is!* So when you get the call from Geoff, don't hang up! If you feel embarrassed, just don't read the story yourself.

The Flying Doctor has been going from strength to strength and this month we have a signature article on how you can improve your flying and save yourself some money with Do-it-Yourself home surgery. I contributed some of the illustrations and may have to provide the background story at another time.

Mr Pink himself has also written a few words... without which the Pink Issue might have been not quite so pink after all. It still would have been moderately pink because of Mizz Jenny's notes about her plane.

In connection with that, there are some notes about colour blindness and a useful test chart.

What's the point of all this? Probably like gliding itself, there's little point other than to have fun!

## 5 STAR FLYING- ALL YEAR ROUND

What's your idea of a perfect thermal day? And how do you go about finding it? One problem with Blipmaps is that they

take some knowledge and interpretation. In an effort to make them easier to understand, Paul Scorer, who runs the UK RASP forecast web site, has suggested that days be simply scored by stars. If the day scores five stars, then miss it at your peril.

Paul suggested that a perfect UK thermal day met these conditions:

- Thermals of 2 knots to at least 3500'
- Cloud base greater than 3500'
- 20 percent cloud cover.
- Winds less than 15 knots at flying height
- All the above to apply for at least 5 hours.

Based on that evaluation, the conditions we get at Keepit are perfect all year round. We should be flying about 320 days a year! I'll leave it up to Speight-o-san to work the actual numbers.

In the early '80s there was some graffiti in Sydney which read "Brian Westlake likes people you wouldn't". I used to wonder what terrible sort of people they were since I had some pretty weird friends back then. Anyway, the UK 5 star rating suggests that "the Brits like thermals you wouldn't."

On of the things you are forced to learn on the Safari and on comps is that there's lift out there which you would never dream existed unless you're airborne and have no other options but to find it. Really, there's very very few bad days at Keepit.

Like all the un-ridden perfect waves down at the beach, it seems a tragedy to let a thermal go to waste. There are a lot of good thermals out there, waiting for you.

What are you waiting for?



## PRESIDENTS REPORT

The cooler winter months provide a perfect opportunity for glider pilots to reacquaint with their families, replenish the brownie point tally for next season by doing all the odd jobs you have been putting off around the house, all the while looking up at the sky and daydreaming of 8 knotters over Kaputar at 10,000 feet! Well - that's what I have been doing anyway!

The Committee has been busy over the last couple of months on the following activities:

### UK PROMOTIONAL VISIT

Todd Clark and Chris Bowman visited Dunstable and Lasham Gliding Clubs in the UK during June. A presentation and discussion on the delights of gliding at Keepit was warmly received, and we have already had bookings coming through.

A great effort from Todd and Chris to give up their time to undertake such important marketing - Thanks guys. See Chris's report later in Keep Soaring.

### 2011 KEEPIT REGATTA

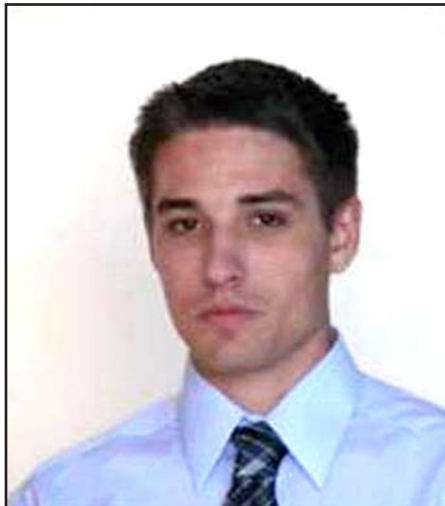
Details for the 2011 Regatta are now up on the website, and I have already received 18 entries. With a limit of 30, if you would like to participate, I would suggest you let me know asap on [comps@keepitsoaring.com](mailto:comps@keepitsoaring.com)

### SUMMER TUGGIE

With Juho being unavailable next summer, the Manager & Tugmaster have been actively looking for a replacement.

We are pleased to announce that Tomas Munk will replace Juho for next season. Tomas is Slovakian and comes highly recommended following several years towing at various European sites.

Tomas will be joining us at Keepit from October, so please make him feel welcome. Also, after two years towing at Keepit, a big thanks to Juho who has been a big asset to both Jenny and Ian in keeping out operations running smoothly.



*Tomas Munk*

### LOCAL PROMOTIONS

Ian and the Committee have been spending considerable time and effort in broadening our membership base throughout the local community.

Currently work is underway to establish a UNE gliding club (operating out of Keepit and utilising Keepit equipment), local schools to build a regular gliding weekend into their sporting activities, AAFC - attaining more AAFC weekends at Keepit, and the potential of again holding their cross country training weeks at Keepit, PCYC club events etc.. The list goes on.

No doubt Ian will be raising his hand in coming months to get additional assistance to make these events a success, so please dig deep and offer to assist. Obtaining a strong, vibrant and committed junior member base at Keepit is one of the best ways to ensure our membership base flourishes.

### TRACTOR REPAIR

A big thanks goes to Sam Clift who has very quietly undertaken the repair of the gearbox on the chamberlain tractor. All the work is now complete, and it should be back at Keepit shortly. Thanks Sam!

### UPGRADE OF JUNIOR COCKPIT

John Trezise and Todd Clark have undertaken a full upgrade of the Junior cockpit. You will need to have a look to appreciate all the work done, but I understand this took over a week of full time work. Thanks John and Todd - you have transformed this glider to as new condition.

### 3RD HANGAR

We will once again have construction going on at Keepit during August. The 3rd hangar is to be constructed up the hill from the most recent 2 hangars, and will be essentially the same design.

However it will be a little lower in overall height, but have a higher door height to allow access for tow planes etc. We will have contractors on site during this construction period who will be staying on-site, so please make them feel welcome.

## NEW CLUB SECRETARY

As recently communicated, Wendy Medlicott has stepped down from the Club Secretary role due to ill health. A big thanks go to Wendy for her fantastic efforts over the last couple of years and we wish her a speedy recovery after recent surgery. Chris Bowman has kindly offered to take on the Secretary role in addition to the Booking Manager role. Thanks Chris! Chris can be contacted for Secretariat matters on [secretary@keepitsoaring.com](mailto:secretary@keepitsoaring.com)

## NEW MEMBERSHIP SECRETARY

Due to family and work commitments, Ian Sawell has stepped down as Membership Secretary. A big thanks go to Ian, who has done an excellent job ensuring that the membership records are all up to date and all the lodgements with the GFA are completed. We look forward to seeing you back at Keepit this season. Dave Shorter has kindly taken over this role. Thanks Dave. Any membership enquiries, please contact Dave on [membership@keepitsoaring.com](mailto:membership@keepitsoaring.com)

## FLARM IS MANDATORY FROM 1ST JULY

Just a reminder to all Keepit glider owners that the Committee voted last year to make Flarms mandatory at Keepit from 1st of July 2011. Can you please ensure that your flarm is functioning correctly and has the current software update. The Club will have 2 Flarms available for hire for visitors.

## FORM 2 WEEK

John Trezise and many members of the Keepit Team will be holding the Keepit Form 2 week during the week commencing the 16th August. This is a big job, and hence any volunteers would be most welcome. Thanks John and all those who are assisting. Anyone who can assist can contact John on [airworthiness@keepitsoaring.com](mailto:airworthiness@keepitsoaring.com)

## AIPA ARTICLE

We are placing a article written by Brian Du Rieu on gliding at Keepit, into the AIPA magazine this month. The AIPA magazine is the Australian International Pilots Association which represents commercial pilots in Australia. Thanks Brian for taking the time to pen this article, and we wait with baited breath for the influx of pilots coming to taste the delights of gliding at Keepit. A copy of Brian's article appears later in Keep Soaring.

## GFA OPERATIONS ASSESSMENT

The Club has recently undergone a GFA operational safety assessment, and we have passed with flying colours.

The only items noted in the assessment were that the Junior didn't have placards in the cockpit (which were out because John and Todd were waiting for the paint to properly cure after its recent paint job), and that the Callair windscreen was beginning to show signs of crazing.

Coincidentally, we had already identified this and had purchased a replacement windscreen and were only waiting for the next 100 hourly to do the installation. Great job everyone!

## FURNITURE DONATION

We have received a kind donation of office furniture from Michael Shirley, which will come in very handy during the upcoming competition season. Thanks Michael, and also a big thanks to Graham Holland for doing the delivery to Keepit.

## KEEPIT SPEED WEEK

Paul Mander is running the Keepit Speed Week from the 5th to 11th of September. Paul has a great line up of

briefing topics, and has a couple of spaces left. If you would be interested in joining in, or require further information, please contact Paul on [paul@mander.com.au](mailto:paul@mander.com.au)

## AGM

Just a note that the AGM is scheduled for the 11th of September at the club. Please put this date in your calendar and join in the meeting and the BBQ. Further details will be circulated closer to the date.

*That's about it for now.  
Tim Carr*

## WENDY ON THE ROAD TO RECOVERY.

Wendy Medlicott had extensive neurosurgery last month, 28th July, to remove a meningioma from her head.

The reports from the Professor of neurosurgery who performed the delicate operation, at the new Macquarie University Hospital, assisted by a team of skilled surgeons from Royal North Shore, have given Wendy the all clear, with the tumour being found to be benign.

Great news and this has brought a great sense of relief to Wendy and Harry, as it does for us all.

After a couple of days she was already walking around the hospital and preparing to return home as soon as possible. Harry's been camped in the local Travelodge motel.

We all wish Wendy a speedy return to her fully healthy state and back into that lovely LS8 of hers which is itching to get back into the air.



## NEWS FROM MAURICE "MOOSE" PONTT

Maurice is reluctantly resigning from the club as he's moved to Hervey Bay. He says "I will still be calling in from time to time as I have had a lot to do in setting up the club when it started at Keepit and still have a very keen interest in the progress of the club, the BEST CLUB IN OZZY AND THE WORLD."

Many of the older hands remember the involvement of Moose in the early days, and he taught some of our present instructors how to fly.

Moose rejoined last year and got back into it after a few years break. We'll look forward to having you with us again Moose when you can get to Keepit. Enjoy your new lifestyle.

*Peter Sheils remembers Moose...*

I first met Moose in 1969 at Belatta (Namoi Gliding Club) at the time when I was learning to fly. Moose was then an installation tech with Telecom and a member of the Armidale GC. He was working in or near Moree at the time.

He flew with Namoi for a while as I recall, before returning to Armidale I think.

He was still a member of that Club when they merged with the Tamworth & District GC to form the Lake Keepit SC in 1979- 1980.

I left the Club shortly after we started at Keepit (1980) and did not return until 1996. I understand in the early 1980's, during the time when LKSC expanded rapidly, Moose was quite active within the LKSC and was an active instructor.

Although a "big man", Moose had a nice touch and was well regarded as a good pilot. I did not, however, have much contact with him nor the Club after 1980.

I returned to LK in 1996. Moose had been living in Tamworth for some years but I believe due to marital problems (?), had given gliding away until well after he remarried. In the mean time he had gained his power pilot's licence.

## SOME GOOD NEWS TO SHARE.

Some may remember Roger Woods, a past president of the NSWGA and the GFA who played a valuable part in the establishment of the airfield at LKSC (before my time).

Wendy and I have stayed in touch with his widow, Brenda.

After reading the article about Juniors at LK in a recent issue of SA Brenda has offered to donate \$500 annually towards assisting juniors at LKSC.

In the first instance this will assist 5 AAFC juniors aged between 15 and 18 y.o. to meet their GFA membership expenses which stand at \$135. This will enable juniors who are still at high school and unable to earn much to get started.

Coupled with our offer of \$60 for up to 3 winch training flights and \$40 annual membership, they stand a chance of becoming members of the flying community.

I hope to put together an article in SA if the project is a success.

This will not be a burden on LK as \$60 on the weekend is a standard offer to all and a winch launch at \$12 gives a net return to the club at least as much as an aerotow and additionally extends the time when the tug will need an approx. \$50,000 engine overhaul.

The idea is that the juniors will drive the winch and retrieve and all the club will need to do is provide an instructor.

Hopefully they will form a cadre of younger pilots which will become self sustaining. Of course any juniors who prefer aerotow would be welcome to use it.

Am still working on obtaining a subsidy for junior membership from GFA and NSWGA.

Any Baddams who is in charge of Tamworth AAFC is very enthusiastic and expects that the offer will be taken up by her cadets and there could be more than 5 keen to apply. Anyone interested in sponsoring a cadet if more interested?

Junior members can yield unexpected benefits. Wayne Page the enthusiastic president of CCSC, drove his son to the club, liked what he saw and joined himself.

The more exposure we can achieve in the local area the better for the future of the club.

*Harry Medlicott*



## MORNING GLORY TRIP 2010.

We have a team and the trip planning is well underway!

Accommodation in Burketown is always very tight in this key time of the season for Morning Glory Clouds in the Gulf. But we have secured a cabin at the Savannah Lodge.

The plan so far is that the crew will be departing Lake Keepit on Tuesday 21st September for an overnight at Charleville.

Next day Flying on to Longreach or Winton, then next leg arriving in Burketown.

Ken Flower and Justin Smith will be taking the G109 and Justin and co-driver will be towing the Pik20e up in a trailer. There is also a possibility that a team will travel up with Greg Smith in the Maule.

There are 2 or 3 motor gliders from Byron Bay planning to be there at the same time plus a great number of other gliders and aircraft from all over the east coast of Australia.

We will spend several mornings chasing the wave and days touring the area and the swimming pool and BBQ. Travelling back to be in Keepit on Sunday 5th October.

This trip is very challenging and exciting so please think about doing it one year.

Any other club members interested should contact Ken or Justin about details.

*Ken Flower.*

## KEEPIT SAFARI 2010 EDITION

The Lake Keepit Safari is your chance to do some real Gordon Blue adventure flying. And like any adventure, it has its ups and downs.

The first recorded Keepit Safari was held in 1994, all of 17 years ago and there have been 11 Keepit Safaris in that time. Of the missing years, 4 were not held because Keepit was hosting State or National Championships and 1995 was the year of the 'Heart of Australia Tour' where 9 gliders circumnavigated the Simpson Desert.

So that leaves only one Safari which was actually cancelled due to bad weather. That was in 2000. It started with a dual tow of the Twin and the ASH from Keepit to Narromine under a low cloud base and was abandoned there a few wet days later. Our batting average is not as bad as is sometimes suggested!

However, the other statistic is that virtually all of the Safaris were affected by weather in one way or another ... we have had our share of strong winds, heavy overcast, floods and drought breaking rain... all character building in the best possible way.

The start was delayed a few times due to poor weather at Keepit. We got stuck at Temora due to strong winds one year, and we used the trailers a lot in 1998 getting to Charleville.

We have tried on two occasions to get to Brown Brothers at Milawa and have been thwarted by the weather both times. Last year a solid cirrus cover required a prolonged stay in Lightning Ridge.

Nevertheless, we are going to give it another go this year. Keepit is hosting the NSW Championships again this year finishing Saturday 4 December. However the demand is such that the Safari will depart the day after, on Sunday 5 December. We plan to be back at Keepit of Saturday 11th.

Even though we are hosting the Comps, there are some keen Safari devotees who will probably compete or help out in the Comps and then follow up with a relaxing adventure over new territory. At this stage there are 12 pilots with 7 gliders who have said they are participating.

Where to go? We have probably worn out our welcome in Lightning Ridge ... we were stuck there for two days last year, and know the menu at the Bowling Club by heart. So a strong suggestion this year is the make our way down the Darling River. We're negotiating an arrangement with a property owner on the Darling, where there is flexibility of our arrival and departure dates. The proposed route will be revealed later.

The Safari is an adventure, but it's a fun adventure. The legs are not too arduous... the longest last year was 300 km... and you can go at your own pace. In most cases, you can take off and land when you want and in most cases the airstrips are good bitumen airfields.

There's something special about landing somewhere new each day... something you will remember for much longer than flights which end up back at your own clubhouse.

If you would like more details about tasks and the adventure, get in touch with Ian Barraclough. Don't worry if he doesn't get back to you right away... he's out on the road, surveying the Darling route!





## THE PINK PAGES

*Randomly Selected Ramblings On Topics of Aviation by Pilot Officer Pink.*

I'm putting pen to paper, in a style, I hope, of entertainment and enlightenment.

The subject "Aviation" sells millions of periodicals, guides, manuals and general journalistic articles on a monthly basis, so this little snippet is designed to help ab-initios get an idea of what matters and what might hurt.

Over a few years of aviation (is it really 37 since the cadet walked out to the Winjeel Beast?) I have been very lucky, very silly, very fast, very low and very fortunate to have started by being very well trained! After a few of the "verys" above I developed a set of sort of rules to fly by.

Read on at your own risk, all the standard waivers apply about seeking independent advice etc etc ad nauseum.

### BACK TO BASICS

Wilbur and Orville are attributed with saying the 3 steps in flight are;

- Aviate
- Navigate
- Communicate.

Each of these sub-headings opens tomes of anecdotes and lessons and lead to forming survival skills and some rules.

Starting with Aviate (which only covers every nut, bolt and washer of flying), after LOOKOUT, I consider the next essential is SPEED!

To an old fighter pilot it may mean leaving the fight at 850 knots (only got to 750 myself) but to us soarers it is really "Safe speed near the ground"... say 55 knots nominally.

Now what helps us to be aware of this safe speed?

Several prompts spring to mind; sound or noise, this works at the high end as well as the low. Not many people come to grief at the high end, however we see the odd death on base and final. So the low end is deadly.

Next for me is feel... mushy, unresponsive controls should really get the hackles up and if height is sufficient it should prompt a lower nose attitude.

A few really helpful people like Smiths, have, over the years developed pretty foolproof Air Speed Indicators (ASIs). These chaps are really great and outside of icing and the odd insect nest, they will tell you how fast you are flying.

All that is needed is a good scan every now and then according to priorities. The nearer the ground the higher the rate of scan, up to a point.

#### **RULE! Develop a good scan.**

A few unhelpful things are; Terrain, sloping horizons, gentle uphill slopes or downwind, sloping runways. These all trick the eye and lead to false instinctive control inputs.

#### **RULE! check the ASI regularly.**

Drift. At glider speeds you can appear to be "FANGIN" downwind or "PARKED". If you're FANGIN,

**RULE! don't go far past the approach end fence!**

**RULE! Don't ease back on the controls to slow down, for gusts.**

Add the gust speed to the safe speed near the ground of the glider you're flyinh.

If you're PARKED, YOU'RE GOING THE WRONG WAY!

A downwind landing may not be as dangerous as trying to orbit or change direction, but be aware of how much of the runway the ground roll and final will consume.

**RULE! Look at the windsock on joining. Windsocks cost money (and generally show wind direction and strength).**

Further thoughts; Bank angle is associated with stall speed.

**RULE! Don't blindly pull the aircraft around a tightening base turn, look at drift on downwind and increase speed if you have to overbank.**

Further further thoughts; Don't run into the guy joining the circuit in front of you by concentrating on all the above to the detriment of LOOKOUT!

SUMMARY;

Speed is life! Know the speeds on the placard. Apply the speeds in the air and never, never, get slow on the winch (or anywhere else that it might cause the ground to come up and smite you mightily).



# KEEP SOARING

JULY-AUGUST 2010

## A VISIT TO DUNSTABLE & LASHAM

In the middle of June, Todd Clark and I enjoyed a weekend visiting two gliding clubs near London – the London Gliding Club at Dunstable, 40kms to the NW and Lasham Gliding 60kms to the SW.

Our objective was to examine their operations and promote LKSC to their members as a great place to advance cross-country skills. Both Clubs are large and extremely active and seemingly deal with the restrictions of a very crowded airspace with an easy aplomb.

Dunstable, with 300 members, 11 club gliders and 5 tugs and about 200 gliders on site, operates from an undulating 40 hectare grass field bordered closely to the north and east by a 50 meter high chalk ridge that is a favourite haunt of paragliders.



Every landing is akin to a short outlanding in a paddock full of obstacles. If you don't believe me have a look at the London Gliding Club on Google Maps. The field's saving grace is that its entire surface is a vivid green lawn mown to bowling green smoothness.

And for the brave the ridge provides winter soaring. It is a very busy place. While we were there they had 2 tugs and a 5 drum winch operating side by side continually.

There were aircraft everywhere all being managed from a mobile control tower inherited from the military.

Golf Buggies are used for retrievals. Training continued throughout the day and mixed with experienced pilots departing on and returning from tasks of typically 250kms with what seemed a relaxed professionalism.

Complicating Dunstable's existence is the proximity of the busy Luton International Airport. When they described the complexity of their airspace with its time, geographic and altitude limits it left us stupefied.



They have a vertical limit of 3,500 ft above the airfield and 1,500ft above the ridge with only a couple of corridors through which they are able to escape on cross countries.

And their controlled airspace doesn't just require radio notification as at Keepit – outside the limits, it is simply closed.

I have included a diagram lifted from their agreement with London Terminal Control to illustrate further.

We were there on a good day - warm and sunny with some nice streets



Dunstable Airspace... the magenta area.

stretching away to the west and a cloud base which they considered normal of 2,500ft.

No “cease manoeuvres at 1,000ft AGL” as we do. They search for thermals down to 500ft and then do an abbreviated circuit to land. In fact all day I never saw what we would call a normal circuit.

*(Note: According to people like Derek Piggott, the legendary English instructor, the relative lack of big thermals and the associated big sink makes what we would call ‘low circuits’ acceptable in places like the UK. In southern France, they start circuits at 1000’ and then always fly the approach with full air brakes because the wave-sink can be massive.)*

We don’t appreciate just how good we have it!! Dunstable’s hospitality was warm and friendly. We had a great lunch in their canteen and drinks in the bar after flying. Daniel Jarman, a French Instructor outfitted in an Australian rugby jersey in honour of our visit, introduced us widely.

We each had a flight in their Slingsby T21, a spectacular experience in an open cockpit that gave stunning views across the Chilterns, although we didn’t dress in period costume as one part owner did.



The T21 was just one of a number of vintage gliders present and mixing it with the latest.

In the evening we gave a presentation on Keepit to about 25 members, a good audience considering we clashed with England playing their first match in the soccer world cup.

The presentation seemed well received, albeit with envy, and can’t have been that bad as next day we got an enquiry from a member about a November visit.

Lasham is an even bigger club with 800 members, more than 500 of whom are active and 20 club gliders, 5 tugs and 2 two drum winches. They too own their airfield, a 200ha site which is a former RAF airbase magnificently equipped with a 1,800m commercial runway.

The rest of the airfield is a smooth grassed surface similar to Dunstable except it is completely flat. The Club is doubly fortunate to have a large commercial aircraft maintenance business as a tenant that generously funds the upkeep of their infrastructure and only operates aircraft about 3 times per week.



If only we had a similar source of income! At Lasham all the aircraft and ground equipment was very smart. The focal point of operations was a large red double deck bus placed a third of the way down the runway, near which Gavin Dale directed activities from a lectern.

Many of you will remember Gavin at Keepit - he has an enviable lifestyle, being Deputy CFI at Lasham during the summer and moving to Omarama for the northern winter.

Operations were as busy as Dunstable. There were 2 tugs and a 2 drum winch working flat out side by side. However the airspace seemed less crowded. Winch launches were to a higher altitude –according to Wikipedia up to 3,000 ft - reflecting the larger airfield and a less restricted airspace.

It is still not a perfect site as being closer to the coast it get a regular influence from the east in the afternoon which displaces lift to the west. The atmospherics of the Club seemed more commercial than the friendly clubbiness of Dunstable, which made us want to go back there.

But that may have had more to do with our Dunstable connection being better developed. We made good contacts at Lasham during our visit. Paul Roche, who has spent the last four Januaries at Keepit, drove 3 hours to spend the day with us.

Lasham has a winter lecture series and Gavin offered to help Todd secure a spot on the program. Paul has offered to help with the presentation. Dunstable runs their very professional operation with just 2 permanent employees.

Lasham is by comparison lavishly furnished with 15 employees including 2 full time on maintenance – one of the advantages of having a large commercial tenant I suspect. Both clubs appear to maintain their equipment to a high level. All aircraft we inspected were in very good condition and the support equipment operated without a hitch all day.

Our conclusion? Well at LKSC we may not have the scale or resources of these major British Clubs or the proximity to major population centres that provide a large membership. But our wide open spaces and superb thermalling conditions promise UK visitors an extraordinary gliding experience.

To benefit from these advantages by attracting foreign visitors we have to make sure we provide flawless operations, aircraft that are well presented and maintained with everything working and the sort of welcome and assistance we received at Dunstable.

[www.londonglidingclub.co.uk](http://www.londonglidingclub.co.uk)  
[www.lasham.org.uk](http://www.lasham.org.uk)

Chris Bowman





## MEMBER PROFILE SAM CLIFT OATS BEANS AND BARLEY OH



Looking through a local history at the library I saw the name Samuel Clift of Breeza Station among the earliest settlers. Sure enough, this was the forebear of the Sam Clift that we know.

The extended Clift family has owned property across the Liverpool Plains and at Caroon, Nundle, Walgett and as far away as Dysart and is now spread across the district. Just look in the phone book.

Sam thinks the first Clifts in Australia left their country for their country's good but these days that is a distinction.

The Liverpool Plains were first approached from the north west by John Oxley in 1818 after a journey from Bathurst via the Warrumbungles. The country was very attractive after the poor country his party had traversed so far.

The Liverpool Range remained a barrier to settlement of this attractive land until a route from the Hunter Valley through the Liverpool Range was found by Allan Cunningham in 1823.

The Keepit run is mentioned in a document dated 1848. Henry Dangar, after whom a street in Armidale is named, examined land on the Peel River for the Australian Agricultural Company in 1841. The town of Tamworth was laid out in 1849.

Samuel Clift was among the first of the squatters. He operated a ferry across the river at Maitland before he crossed the mountains to the Liverpool Plains.

Samuel Clift is mentioned in a document dated 1849 as occupying land on the Mooki River. He signed his name with a cross.

Our Sam, with his father and a brother farm wheat, sorghum, sunflowers and canola. 150 Ha is irrigated from bores. The property includes 1600 Ha on Lake Goran.

As you fly over this country you will see that there are no major streams west of the ridge that runs between Breeza and Gunnedah: drainage soaks into aquifers and sometimes into Lake Goran.

The Clifts at first avoided the black soil country and farmed the red soil but now all the land is farmed. They say that on this country you can fatten a walking stick. Plant a nail in the black soil and it becomes a crowbar.

Sam was schooled by correspondence for four years and then went to Caroon Public School. The old school is no longer there. He then went to school in Armidale.

Sam thought school was fantastic: no doubt this was because he was House Captain and played football in the first 15 against the GPS group of Sydney schools. He was also in the shooting team. He did well in every subject but English.

In about 1975 Sam went on to – naturally – Orange Agricultural College where he obtained a Diploma in Farm Management. He visited a number of farms in NSW for practical work and he found this both enjoyable and instructive.

For 15 years he managed the family's property Ellerdale near Nundle, which grazed sheep and raised horses. When wool prices fell in the 1990s he went share farming at Walgett.

At one time they tried fish farming but they found that to be labour intensive and therefore not profitable.

Sam would have liked to be a RAAF pilot but that didn't happen. He took a TIF at Gunnedah with Judy McKenzie, who is still the instructor there. He gained his Private Pilot Licence in about 1983 or '86 at Quirindi. He soon bought a Cherokee 235 and did his navigation exercises in it. He used to fly to the farm at Walgett. He got his Night VFR rating in about 2004.

Sam made some long, relatively slow trips in the Cherokee 235. Most of us prefer a TAS of 170kt over the Great Western Desert between Uluru and Halls Creek but in 1998 Sam hung in there.

He has been to Kununurra, Tindal (three days from Ayers Rock in the little Cherokee), camped at Balgo and crossed the top of Australia to Mornington Island in the Gulf. All this by map and compass, before GPS.

There are occasional NDBs in the outback but the more remote ones such as Hooker Creek in those days had a rated coverage of 15 nm. You had to just about find the destination before the NDB became of any help.

Sam is very interested in the different forms of country you see on trips like these, and impressed by the great age of the outback landscape.

Between Uluru and Halls Creek for instance, there are a number of salt lakes lying in a channel, that looks about three metres deep, between the Tanami Desert and the Great Western Desert.

He flew to Lindemann Island but he says he was scared of the water so he flew above cloud. He arrived to find a strong tailwind and heavy turbulence and rotor. His lifebuoy fell out and was retrieved by a helicopter.

The Cherokee gave way to a Piper Comanche with retractable undercarriage and in this version,

400HP. This history of flying amounts to 2,000 hours.

Sam began gliding with a lesson with Garry Speight in his Twin Astir. He says gliding improves and maintains his flying skills and makes him a more comfortable pilot. He enjoys the club life and the friends he has made.

He gained a helicopter licence in December 2009 and bought a helicopter on eBay from USA. He says that after ten hours he is still coming to terms with the helicopter.

Sam is now Club Captain of Gunnedah Aero Club, responsible for keeping members together and organising such events as the recent successful fly-in and barbecue.

He is a member of the Angel Flight scheme in which private pilots ferry people to and from medical appointments and has made 25 Angel

flights. All this in his spare time from running the farm.

Sam is no longer married. He has a 19 year old son with the Clift family names of George Cameron Clift, and a daughter, Madelaine Clare Clift, in year 2 at Calrossie School in Tamworth.

Several lifetimes of farming will come to an end soon when this land on which you could fatten a walking stick is taken over for mining.

You may have seen the "No mines" posters but we all consume electricity and the only way to generate it for the foreseeable future is by burning coal... then of course there is the resources boom. In 2012 or '13 Sam Clift's land will be taken and put to another use.

*Geoff Neely*





# KEEP SOARING

JULY-AUGUST 2010

## SOARING AT LAKE KEEPIT

*Captain Brian Du Rieu*

There are few types of flying that are truly competitive and racing sailplanes is one of them. Modern sailplanes perform!

Regularly every summer in Australia there are flights over 1000km, average speeds around closed circuit tasks at competitions often exceed 150kph and have exceeded 170kph.

That's under 3 hours for a 500km circuit; not bad and all without an engine! Thermals during the Australian summer can give rates of climb of 1000fpm to above 12000'; combine that with a 'long' day and inter-thermal cruise speeds in a top sailplane of 100kts + and the potential to fly long distances is high.

Sailplanes are pilots' aeroplanes; designed to handle, perform and above all be a buzz to fly. Success when flying cross-country depends solely on the pilot and his skill in reading the macro-meteorology pre-flight and the micro-meteorology in flight, maximizing the rate of climb in each thermal and then finding the best line of energy in the cruise before the next climb needs to be taken.

Even on a poor day with weak and scratchy lift the sense of satisfaction when completing a cross-country task is fantastic. And the elation when doing something really great is special.

As airline pilots we learn to manage our aircraft efficiently, but actual manual flight probably only amounts to a few minutes each sector.

Gliding is at the opposite end of the handling spectrum. I can fly my LS10 for hours without any discomfort. It has beautifully harmonized controls, is light to handle and goes like hell! GPS is common and most nav kits will record an electronic trace of the flight for post flight analysis.

Great during competitions when downloading competitors' flight traces and running the 'maggot race' to compare tactics, errors and successes.

Many sailplanes also have sustainer engines to avoid outlandings and others have full self-launching capability.

At the entry level, high performance pure sailplanes can be acquired relatively inexpensively and if private ownership isn't your bag then most clubs have a spectrum of sailplanes ranging from 2

seat trainers to high performance single seaters.

Lake Keepit Soaring Club (LKSC), a short drive from Tamworth Airport is one of the few clubs in Australia that operates 7 days a week with a professional manager.

This makes the sport totally accessible to the professional airline pilot. The club has a fleet of dual and single seaters and uses both winch and aerotow for launching. LKSC members can also choose a bulk flying rate that gives unlimited flying for a very modest fixed price.

Lake Keepit is a beautiful area to fly in with a lot of variation in the terrain; mountains, lakes, flats and scrub. The airfield next to the lake is a virtual nature reserve.

So remember why you got into aviation in the first place. If you love flying, gliding will take you back to the basics. There's a sheer beauty and joy of being airborne and engaged with the environment in such an intimate manner. Combine this with racing and it's addictive.

*This article was originally written for Altitude, the AIPA magazine.*



## ACCEPTING AND REJECTING LIFT

This article is a continuation of Garry's "Finding and Centring Strong Lift" which was printed in the last issue of Keep Soaring.

### THE WEAKEST LIFT THAT YOU WILL ACCEPT

Again, this is all about the rule: **At all times you must know what is the weakest lift that you will accept.**

The weakest lift that you will accept is an important idea. Platypus (Mike Bird) called it MAIROC: Minimum Acceptable Instantaneous (i.e. known RIGHT NOW) Rate Of Climb. The Armchair Pilot (Anthony Edwards, statistician) called it CROC: Critical Rate Of Climb. You should always use CROC in MacCready Theory.

### MACCREADY THEORY

If a glider is to be flown around a course as quickly as possible by circling in thermal lift and gliding between thermals, then the best speed to glide depends on:

- (a) the glider performance polar,
- (b) the rate of climb in thermals,
- (c) the lift and sink found during the glide.

The best speed-to-glide is higher with higher performance, with higher thermal rate of climb, and with heavier sink.

Paul MacCready won a World Championship by using the MacCready Ring, which is an analogue computer he invented to make practical in-flight use of this theory that was discovered by others.

The MacCready Ring has a pointer that should be set to the thermal rate of climb, but the actual rate of climb is not known until after the event. To avoid getting too low, it pays to set the pointer to the weakest lift that you will accept (CROC).

How weak a climb should you accept? Being "almost certain".

There are logical rules for deciding when to accept and reject thermals, that is to say, when to stop to circle in a thermal, and when to leave it.

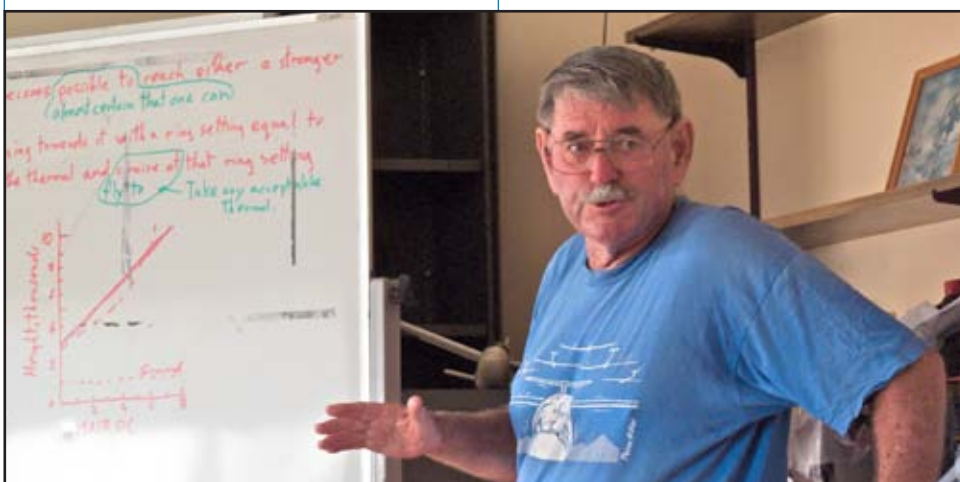
I developed a rule for leaving a thermal based on work by Litt and Sander who used a model with thermals of known strength: **When thermalling, as soon as it becomes possible to reach either a stronger thermal or the finish line by cruising towards it with a ring setting equal to the present rate of climb, leave the thermal and cruise at that ring setting.**

Again, since we may meet a stronger thermal at any moment, rather than "cruise at that ring setting" (forever?) we should "fly to that ring setting" with the intention to circle any time a stronger thermal is met.

The rule becomes: When thermalling, as soon as it becomes almost certain that one can reach either a stronger thermal or the finish line by cruising towards it with a ring setting equal to the present rate of climb, leave the thermal and fly to that ring setting.

As it stands, this rule would cause a heavy mental load. It implies that you must constantly review many urgent decisions.

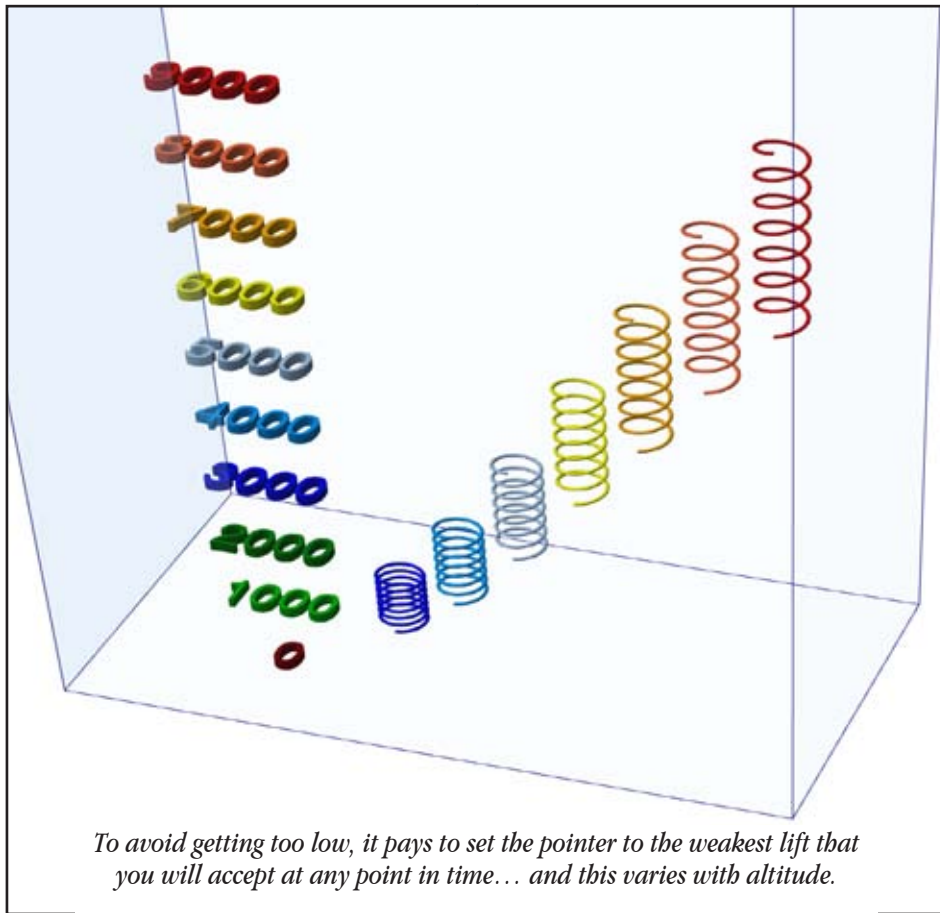
This is not the case if you stick to the basic rule: At all times you must know what is the weakest lift that you will accept (CROC). Then, decisions become automatic.



Since we do not know the position or strength of thermals, we must cautiously assess the risks. I propose that "possible to reach a stronger thermal" should become "almost certain that one can reach a stronger thermal".

The time to leave a thermal is simply the moment when the rate of climb falls below the CROC and the time to accept a thermal is the moment when the rate of climb rises above the CROC.





Your task is to choose the CROC so that you can be almost certain of finding a thermal as strong as your chosen CROC.

The CROC goes up with height above the ground.

Everyone knows that the MacCready Ring setting goes up with thermal strength. Few take to heart Anthony Edwards' advice in "A Stochastic Cross Country" (1963) that the setting MUST be reduced if the strong thermal is out of reach.

At a great height the CROC may be set high for three reasons: big days have strong thermals, running out of height is not yet a problem, and there is a lot of range to choose the strongest of the thermals.

Down near circuit height the CROC must be set low: nearly all thermals are weak down there, there's no height to be wasted, and any lift at all is worth taking.

For a given glider/pilot performance in ordinary Australian soaring weather,

it is possible to work out a curve relating CROC to height so that, no matter what the height, one can still be ALMOST CERTAIN of finding a thermal stronger than the CROC.

A rough rule-of-thumb for Standard Class gliders is: CROC in knots equals height in thousands of feet minus two. Late in the day, when the thermals are further apart: CROC in knots equals height in thousands of feet minus three.

For Lake Keepit, where most landing areas are near one thousand feet altitude, add that thousand, so the CROC for a given altitude is one knot lower.

Sometimes, when my competition scores become depressing, I set the CROC one knot higher, hoping to improve my speed by using only strong thermals.

I find myself grovelling in no time at all.

On April 26 I completed my 15,000th glider flight with a ground-loop in the long grass at Rangari. It was a 52 km flight that brought my total to 218,892 km.

I feel sure there must be lessons there. Perhaps old dogs don't even remember their old tricks. As recently as 1978 I landed in wild oats two metres tall without ground-looping. GS

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Geoff Sim







## COLOUR ME PINK

Around four women and six hundred and seventy men in every thousand is colour blind. And a much greater percentage of musicians is colour blind than non-musicians.

Dr Alex Wade writes; “Apart from making terrible strawberry pickers, people who are colour blind are excluded from certain jobs for safety reasons. For example, they cannot be airline pilots, policemen or ship’s captains”.

Well, Alex, that’s not exactly true for pilots. In fact restrictions may be placed upon a pilot’s medical certificate to mitigate any concern for safety. For instance, colour-blind pilots are typically issued a restriction reading, “Not valid for night flight or by colour signal control.” Obviously this still rules colour blind people out as glider pilots where all cockpits are colour coded.

Dr. Wade goes on; “Colour blind pilot’s everyday lives are also fraught with occasional minor hazards: how to match socks, how to decide whether the power indicator on the stereo is red or green, how to find red golf tees in the grass and how to choose an appropriate colour scheme for decorating their new aeroplane.”

Dr. Wade is a research fellow at Stanford University and probably like a lot of university types, doesn’t get out a lot because the “hazard” of un-matching socks can be easily avoided in a number of ways... if un-matching socks are really a hazard;

- Buy socks of the same colour. Black or white for example.
- Wear loud and distinctly patterned socks.
- Wear Ugg boots without socks.

His other noted hazards can be avoided by;

- Get a stereo which only has only a red LED ‘on’ indicator.
- Don’t play golf. (sic)

Which brings us to the hazards of decorating your aeroplane.

If you own a GRP glider, you have two choices: Mainly white (Bruce Taylor) or: Not quite so white (the rest of us). Easy.

If you own a power-plane, your scope for colour activity is a lot wider. In fact the palette is almost unlimited and you can let your imagination go wild.

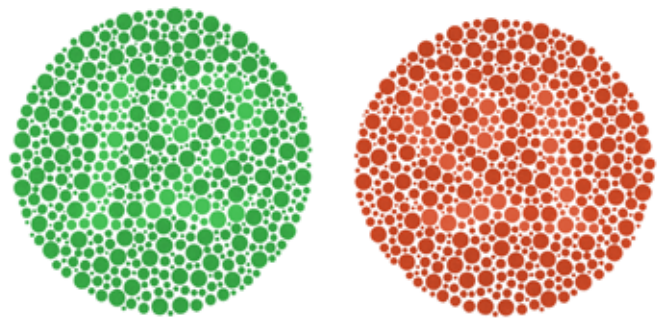
A number of LKSC members are currently building or fitting out their own planes including Phil Anderton, Allan Buttenshaw and Jenny Ganderton and some are letting their imagination go wild. Which brings us to the question of PINK.

It’s difficult to know how many pink planes a club such as LKSC has room for. No doubt, Allbutts would feel that he’s got a monopoly on pink. His relatively weak claim that his trade-mark terry-towelling hat got “dyed pink by mistake in the washing machine by his wife” was blown away by his admittance that he has six matching pink hats, effectively cornering the market in this rare commodity. There’s nothing really wrong with this. It’s OK for a bloke to like pink. Just.

What’s perhaps more disturbing is Jenny’s “pink” plane. It’s possible that she is that most rare of things, a colour blind woman pilot and thinks the Brumby is actually painted pink. Or it’s possible that she is just calling it pink to stir Allbutts. The Brumby has a great colour scheme but it’s not really *PINK*.

Keep Soaring has been in contact with *leading scientists* and some less reliable graphic artists about the problem of pink and colour blindness and we’ve come up with a simple test.

Stare at these two shapes for 30 minutes. Then close your eyes and carefully think carefully... what do these shapes mean? Is there anything hidden in the dots? Do the shapes represent anything recognisable to you? And if not, why not?



Send in your answer to the CFI at Lake Keepit Soaring Club in a plain brown envelope containing \$50 in unmarked bank notes, shortly before your annual flight review.



# KEEP SOARING



JULY-AUGUST 2010

## XMAS IN JUNE

Although the eater's list looked a lot shorter than last year, almost all the usual suspects turned up at the Christmas in July dinner, 24 in all. Only the Carr's were significantly absent after providing pudding and eaters last year.

As usual, the dinner was expertly organised by John Hoyer and Pam helped by Marga and Fiona and enjoyed by all who ate it.

Vic Hatfield posted this to the committee, so I thought it should be passed on to all:

*Just home from the Baked dinner at LKSC, an excellent dinner cooked by the Hoye's and assisted by Fiona Singer and Marg Tilley. The 'bonfire' was a bit ordinary [just a fire in the washing machine] but it kept us warm whilst outside.*

What Vic means is that the bushfire brigade did not have to be called to put out the club again. Fortunately the night was not too cold and the fire in the washing machine proved to be fine.

All the spectators stood almost shoulder to shoulder and rotated rotisserie style around the adequate fire as they talked so that all sides were evenly warmed. Which worked out fine like the Goldilocks principal.

Had the fire been any hotter or colder, the circle would have bigger or smaller and either there would have been too much space between the talkers, or not enough... I won't carry on with this other than to say I would love to see Vic's idea of a decent fire!

Jenny turned up in her "pink" Brumby. Which was more like a magenta. Actually magenta was good since a Barbie-Doll coloured Brumby would not have seemed a good fit for our Jenny.

Flights of 2 & 3 hours were made - Nick Singer, Jay, Jenny, Chris Carr, Al Giles and John Clark had good flights topping out at 5500'.

On Sunday, the thermal was over the hills near, in fact very near to the Tamworth air space. You had to either be very brave or use a motor to get to the patch of clouds which were there almost all day. Once up, the cloudbase was real fluffy white stuff, unusual over this weekend, and just over 5000' with the occasional 3kt climb to get you up.



This gave enough height to cruise for 15 minutes in each direction proving that there was really no lift anywhere else before rejoining the thermal of the day. Happily the it stayed put under the patch of cloud for the duration.

It's a nice time of year for a fly because you can wear clothes, shut off all the vents and experience really quiet flight.

The club was busy enough for all rooms to be occupied. Pam and John Hoye slept on the sofa in "room 4." Is it common knowledge that John H has a pink dressing gown? Nice too!

Thanks to all who helped make the weekend a success, especially Pam, Marga and Fiona. I forgot the pudding I had made this time last year, but I promise it will only taste better next time.



One of us looking as if too much Vertical Destabilising Fluid has been added.

# FLYING ASSIGNED AREA TASKS (AAT)

Flying Assigned Area Tasks provides a fair way for gliders and pilots of very different performance levels to race together and compete in similar conditions and time of day.

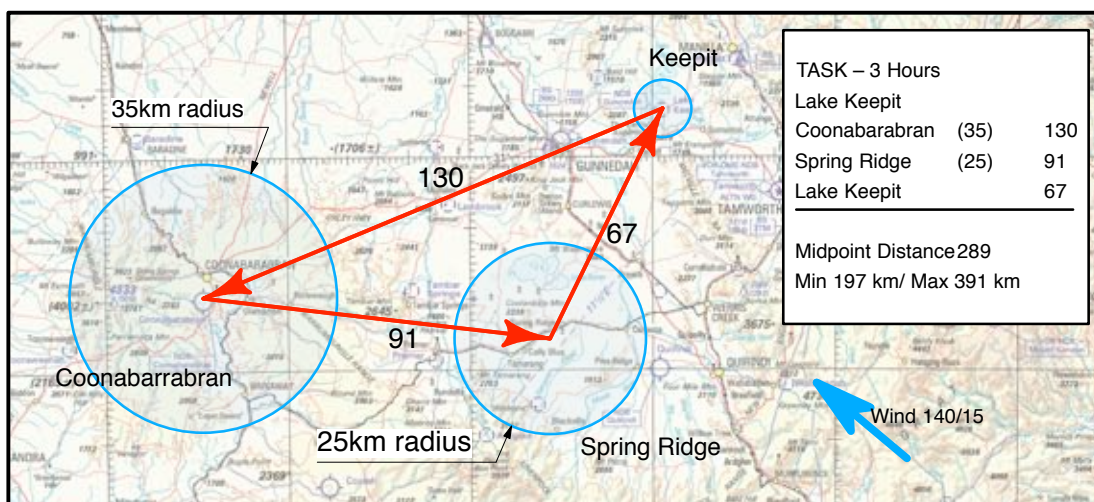
However, to fly an AAT task effectively requires a lot more decision making than the much simpler point-to-point FAI or racing task.

## THE BASICS

A standard FAI or Racing task is a point-to-point task which requires a pilot to visit each specified turnpoint in turn, by rounding that turnpoint, or passing through a small “beer can” around each point. There is a fixed distance for that task. Speed achieved is simply the task distance divided by the time to finish.

**An Assigned Area Task (AAT) comprises**

- A series of areas, normally circles of typical radius 5-50km, through which the pilot must fly in turn, and
- A specified minimum flight time for the task.



*A typical Assigned Area Task (AAT).*

The distance for the task can vary considerably – from a minimum where the pilot just touches each circle in turn (197 km in this example), to a maximum (391 km in this example), where the pilot flies to the far edge of each circle.

The pilot is scored on the maximum sized triangle (or polygon if more than two turnpoints) that can be constructed from the flight log trace. The speed achieved is then this distance, divided by the time to complete the task.

If the task is finished in less than the minimum time, then the minimum time is used for the speed calculation. So, for a 3 hour task, if the distance travelled is 300km and you finish in 2 hours, even though your actual average speed is 120 kph ( $300 \div 2$ ), you are scored on the minimum time of 3 hours – ie 100kph ( $300 \div 3$ ).

## PREPARATION AND PLANNING

With a standard FAI or Racing task the decisions about where to go are all specified by the task. Decision making is pretty simple – when is the optimum time to cross the start line? After that it's just *go, go, go*.

With an AAT there is much more decision making required. Where in the circles to go? How far each leg? When to turn for home? Preparation in advance, and planning the route to be flown are essentials for any successful AAT.

Essential equipment required to assist in this planning are a plastic laminated map (on which you can draw with a spirit based marking pen), a marking pen, metho and cleaning rag, and ruler. If you like nice round circles throw in a compass.

Time is a very important ingredient in an AAT and it's a good idea to buy a \$20 digital watch with a stopwatch function, and stick this onto your instrument panel. Start the stopwatch when you cross the start line - it's a lot easier when you're under pressure to work out how long to go before finishing using the stopwatch, than calculating that 2½ hours after 12:50 is 2:20pm.

At briefing, draw the task on your map, mark the minimum time in large letters, draw the wind direction and strength, highlight the preferred start points, and write down any preferred directions you wish to fly.



## STARTING AATS

Normally there will be nine start points available, in 3 groups of 3. Each point separated by a minimum of 5 km. You will be allocated 3 points from which you can start.

1. Your first consideration should be to use the start-point which is furthest upwind, particularly if the wind is blowing across the direction of the first leg.

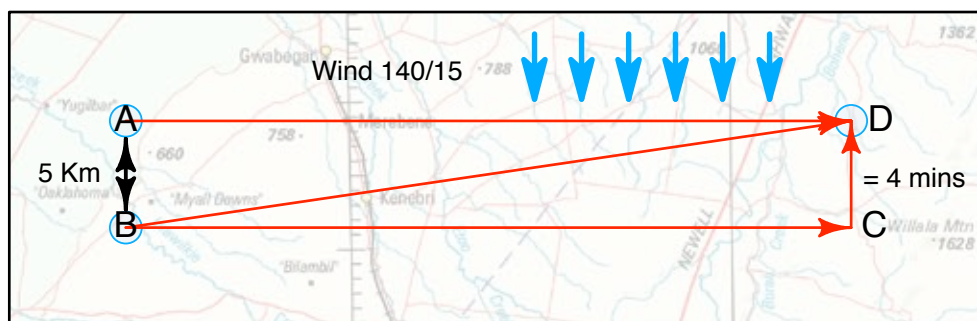
2. If you have the choice of start-points A and B, choose the upwind point A. (see diagram below). Time to fly parallel paths AD and BC is identical, but to get to the first turnpoint D from start-point B, you need to fly the extra upwind equivalent of CD which, against the 15 knot crosswind will take approximately an extra 4 minutes.

Interestingly, if the wind is in line with the first leg, then the penalty for starting downwind is not quite so dramatic. But there is still a small benefit in time by taking the upwind point.

3. Start as high as you can. If there are no clouds over the upwind point, it may be better to choose another point where you can get higher to start. On an average day, 500' extra height will gain a minute or two in time or 2 to 3 k in distance.

4. Remember that a restart is always allowed. If you start and shortly after hit a boomer thermal which gets you appreciably higher, it may be worthwhile going back and restarting, or taking another start-point on your way.

5. When you start, remember to start your stopwatch if you have one, and write down your start time and start-point on your map. You need to save this information, as later on you will probably forget.



*Choose the upwind start point.*

## WHAT IS THE EFFECT OF FINISHING TOO EARLY VS TOO LATE?

Let's assume 3 hour task, average achievable speed through the flight of 100kph, and final glide of 20 minutes at 150 kph.

This following table shows a comparison between finishing 10 minutes early and 30 minutes late.

<u>X-C Flight – Av. 100kph</u>	<u>Final Glide – 150kph</u>	<u>TOTAL</u>
<u>CASE 1 – Finish On Time</u>		
2 hrs 40m	20 min	3:00 hrs
267 km	50 km	317 km
	Scored Speed	105.7 kph
<u>CASE 2 – 10 Minutes Early</u>		
2 hrs 30m	20 min	2:50 hrs
250 km	50 km	300 km
	Scored Speed @ 3hrs	100 kph
	Speed penalty	5½%
<u>CASE 3 – ½ Hour Late</u>		
3 hrs 10 min	20 min	3½ hrs
317 km	50 km	367 km
	Scored Speed	104.8 kph
	Speed penalty	1.0%

So arriving home 10 minutes early is VERY costly – costs over 5% versus a perfect timely arrival. Getting home exactly on time is not very easy to perfect – only possible if there is a large circle close to home, where you can time your last turn very accurately.

As the penalty for arriving late is very small, comparatively speaking, it is very much smarter to aim for a finish around 5-10 minutes over time for a penalty of less than 1%.

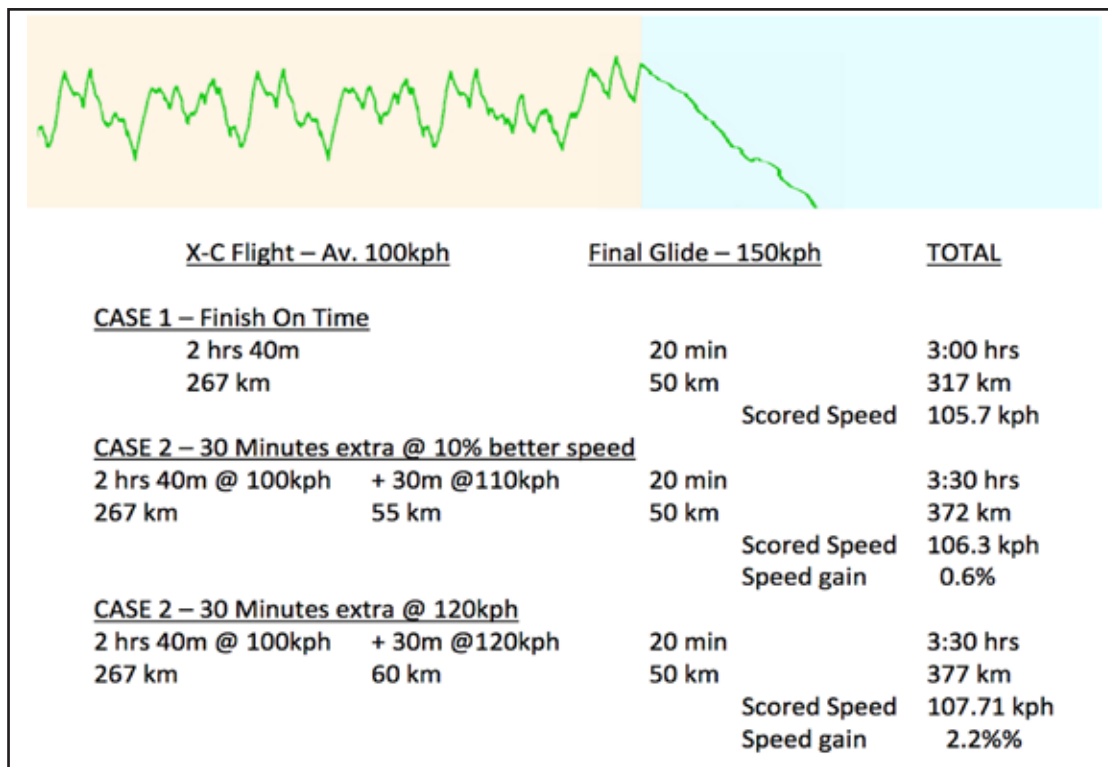
Even coming in ½ hour late is less costly than two (2) minutes early, provided that as the day gets later the conditions stay as strong.

CAUTION – very often conditions weaken towards the end of the day, and may even shut down in that last hour, so you may not be able to maintain the average 100kph and the cost penalty may be much higher. But it's only when conditions really fall apart that the cost penalty can get as bad as coming in 10 minutes early.

## WHEN DOES IT PAY TO PURPOSELY RUN OVER TIME?

When conditions improve at the end of the day, it very often pays to fly longer to pick up your average speed. Conditions boom and thermal strength is increasing, you find a beautiful line of energy or a cloud street, or you have excess height you need to burn off.

The same applies if your average speed has been badly affected by a low point. If your average speed for extra time can be more than 10% better than your average till then, go the extra time. Take our previous set of conditions, and compare the effect of an extra half hour at various speeds.



*BUT ... If conditions are falling apart, get home as quickly as possible!*

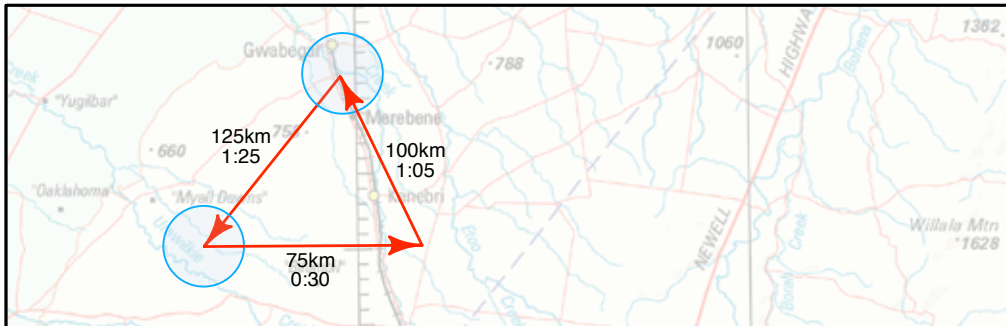


## PLANNING WHERE TO GO

I like to budget my time for each leg of the task. Knowing how far to fly on each leg can be difficult to work in advance as you're not sure in advance what speed you'll average. But if you ratio out the time to be spent on each leg, then you can make your turns based on the clock.

Now, instead of doing 100kph, you may achieve only 80kph and fly well short of each turnpoint, or do much better at 120 kph in which case you'll need to fly much further than each turnpoint. But in all cases, the budgeted time will give you a good guide of when to turn onto the next leg.

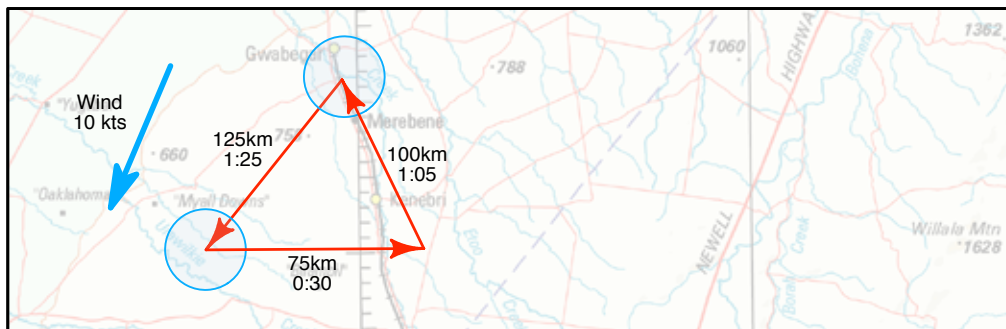
A. No wind, no other considerations.



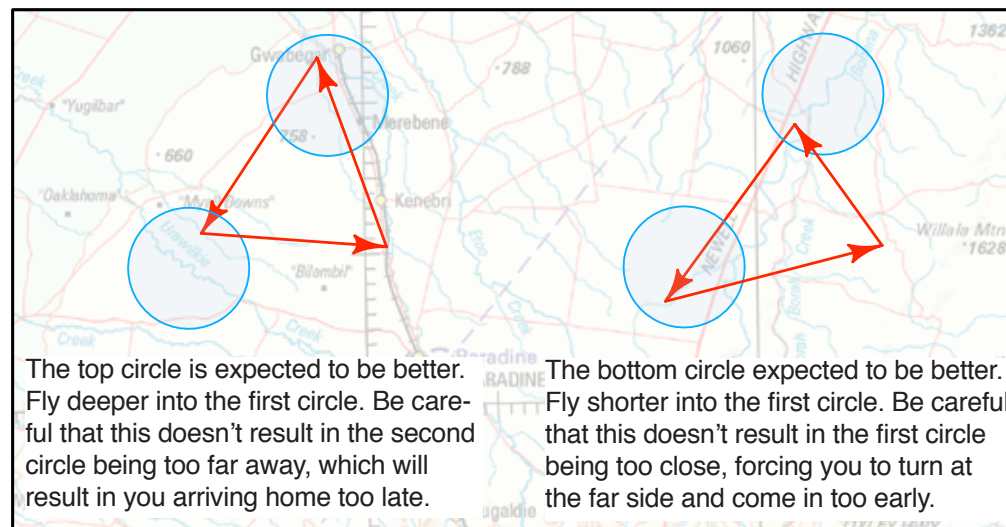
This time the wind of 10 knots (approx 20kph) will mean that on the first leg you'll average 20 kph less flying into wind, so your time will be more like 1:25, and the tailwind on leg 2 will increase your speed and you'll spend less time, something like 1:15.

BIAS the task to a better side. The conditions one end of the task are expected to be better than at the other end – hotter, drier ground, more clouds etc.

B. Same task but with wind from the NNE at 10 knots.



C. Bias the task to a better side. The conditions one end of the task are expected to be better than the other end... hotter, drier, more clouds etc.



Again, budget your time for these cases and write the budgeted times on your task sheet, and use this as a guide for when to turn onto the next leg

## WHERE TO FLY

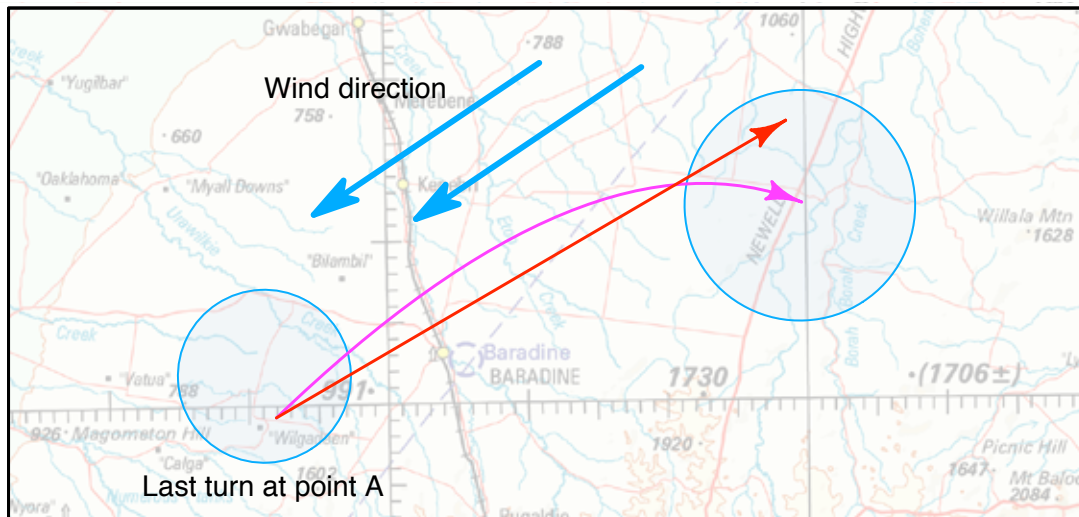
If there is wind, there is likely to be streeting. Plan your task to try and align the legs you fly as close as possible to the wind direction to take maximum advantage of streets of lift.

This may mean you fly a long way to the side of a circle. You then need to ensure you don't fly a big curved path. So you need to fly a constant compass bearing, or fly to a distant landmark.

Another good way to keep you flying on a relatively straight path is to mark each point where you turn, then set your GPS

backwards to this point, and fly 180 away from your last point. With a Garmin GPS you just point the arrow backwards.

Straight course from point A aligned with the wind to follow streeting. Curved course results from steering a course a constant 10-15 away from the centre of the next circle. To correct for this, after travelling half way along this leg, point your GPS back to point A and travel directly away from A.



## HOW FAR TO DEVIATE OFF COURSE?

These days with GPS navigation there is a strong tendency to follow the arrow, and fly straight to the next turnpoint. However, that will often take you through dead, or even worse sinking air, and you lose the advantage of using streets of lift, or picking up a big thermal off to the side.

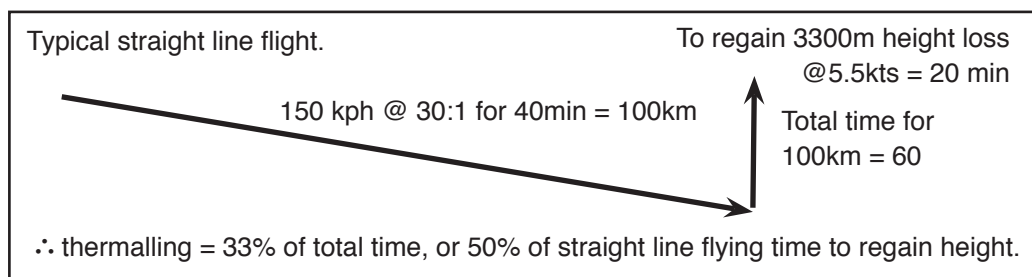
Streets of lift may take you off course, but what you save by not stopping to turn can easily offset the extra cost penalty in distance flown.

Consider these figures which show the penalty you pay for flying off course.

Now compare these with the time you spend regaining height by flying straight through dead air. (Typical time spent thermalling will be 30-35% without the benefit of any streeting.)

I.e. The comparable penalty for flying straight through dead air is 50% !!!

Course Deviation	Extra Distance Flown %
10°	1.6%
15°	3.5%
20°	6.4%
25°	10.3%
30°	15.5%
35°	22.2%
40°	30.1%
45°	41.4%



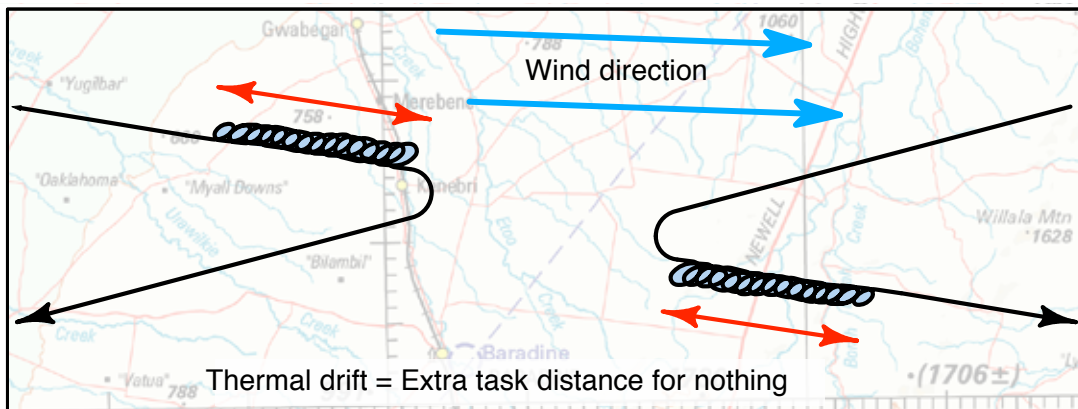


So, IF (IF IF IF) you can maintain comparable speed 150kph (80kts) by flying along a street, AND maintain your height, you could afford to deviate 45° and still be in front. However maintaining your height at an average of 80 knots along a street requires a pretty good street, not often encountered.

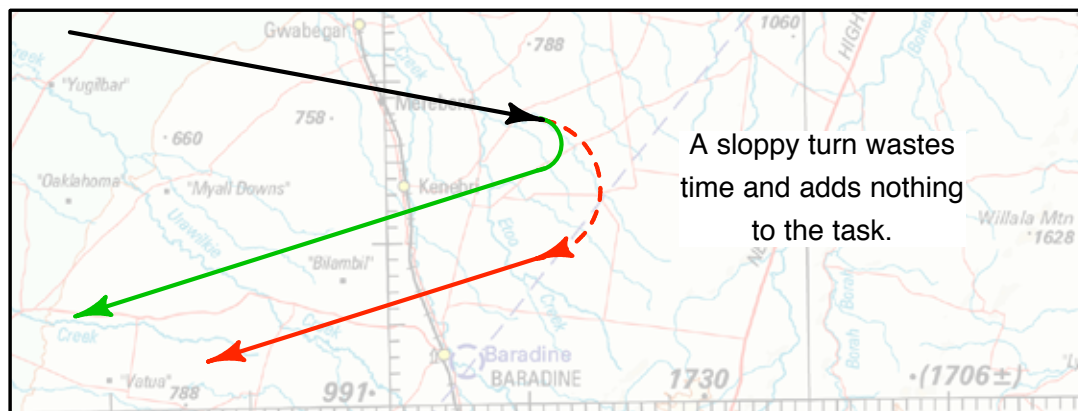
As a general rule of thumb, 30 deviation off course to get better air, or to fly under other clouds makes sense. For the BIG thermal or a fantastic street a bigger deviation may be worthwhile.

## TURNING ONTO THE NEXT LEG

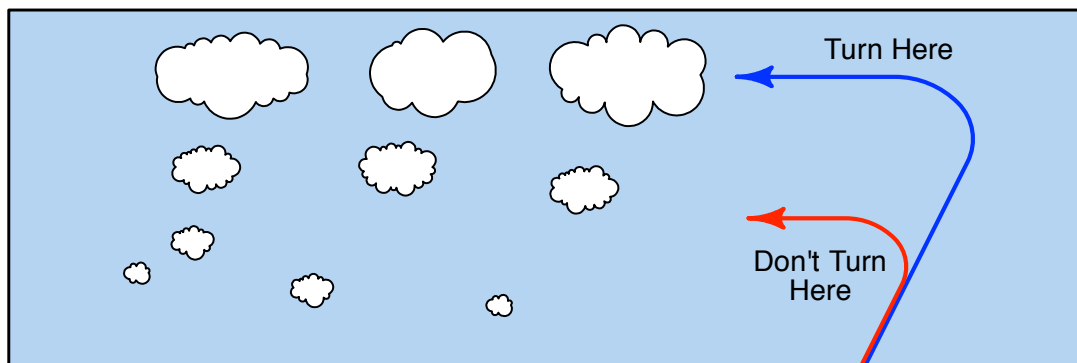
- A. If there is any wind, particularly if it's in line with either leg, turn at a thermal. The thermal drift will add extra distance to your task.



- B. Make the turn decisive. If you wobble around in a wide turn, the extra distance flown is wasted.



- C. Look for another line of thermals in the direction of the next leg *before* making the turn.



## THE FINAL LEG AND FINAL GLIDE

This leg should be your fastest, as you fly off all your height. The decision on when to turn for home is very critical. Turn too soon and you'll arrive under time and cop a significant penalty – too late and you struggle in dying conditions at the end of the day.

- If at all possible, it's a good idea to plan your task to minimise the distance you need to fly on the last leg. This makes the calculation of when to turn a lot easier. If the last leg is just 40 to 50km, you'll probably be on final glide all the way – a much easier calculation.

- Good task setters should set the last circle to make this possible – called a "time soak". This enables you to run into this last circle, maintaining around 30 to 50km off to the side to get home.

- Plan to finish 5 minutes over time. This will give you a bit of leeway if you come in faster than you anticipated.

- Remember to allow for your arrival height at the airfield. With a final glide calculator you can set your arrival height in the instrument. If you want to be conservative allow 1000' above the field – if you want to be more competitive set 500'.

- With a 4 knot MacCready ring setting in a modern standard class glider you'll be coming in on your final glide at around 80 knots (150 kph) or more. From 5000' (above your arrival height) you'll cover 50 km in around 20min.

- Without a final glide calculator, allow 1000' per 10km, plus 1000' plus field elevation. So to get home to Keepit (1000' elev) from 50km you'd need  $5000 + 1000 + 1000 = 7000'$  QNH.

- You'll need to add or subtract an allowance for wind.
- I normally plan the final glide on the basis of an average speed of maybe 180kph. This may be faster than I achieve, and will mean I come in a few minutes over time, but if you encounter a lot of lift on the way home, you could well be 100knots or more, and allowing for that to happen prevents an early arrival.

- If you have excess height, it normally pays to fly further into the last circle and use that height, until you get down to final glide height. Flying this height off will be at a higher speed than your average for the day, so coming in an extra 10minutes later won't matter – you'll lift your average speed for the task.

- Once you're on final glide, continuously monitor the distance to go and your elevation. Slow down if you're losing ground, speed up if you're gaining.

- Don't forget to fly the clouds on the way home. There's a great temptation to point straight once you're on final glide. Getting extra lift on the way home will result in finishing earlier.

- And remember, the task finishes at the finish circle, normally 1½ to 2 km from the field. You can slow up gradually once you approach the finish circle, a beat up across the field and sharp pull up into circuit gains you nothing and may endanger other gliders. Once you're within 4-5 kms of the field there's no longer any need to rush. Take your time and ensure your landing is safe.

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## FINALLY – THE SCORING

The SeeYou program is normally used for scoring tasks. In a competition this requires nothing from you, except for you to download your log trace and hand it over to the scorer.

BUT, there is a bug in SeeYou which can result in you being short changed. The SeeYou program will optimise your result – it draws the best possible legs that fit inside your trace to maximise the distance travelled.

It also optimises the start-point used. So, even though you thought you started at point A, but flew through point B, and the use of B would give you a faster speed, SeeYou scores you on point B.

**Now here's the trap. Look at this example.**

3 hour task.

Starting at A you travel 305 km in 3:03 – Av. Speed 100kph.

Starting at B you travel 290 km in 2:46 – Av. Speed 105kph.

SeeYou uses start-point B because it's the higher raw speed.

BUT, after correcting the speed to the minimum task time of 3 hours, your average speed using B is reduced to  $290 \div 3 = 96.7$  kph.

The score sheet will show your corrected speed of 96.7 kph!!!

This is a bug in the SeeYou program, and doubtless one day it will be corrected. In the meantime, check your score. If you thought you finished in excess of the task time, and the score sheet shows you with the minimum task time, you may have been short changed.

*This article was originally presented by Dave Shorter as a talk to pilots at the Lake Keepit Regatta in February 2010.*

*These talks were a feature of this regatta, and similar instructional talks to early solo pilots continue at Keepit's regular monthly 4-day weekends. For more info on these weekends and next year's regatta see [www.keepitsoaring.com](http://www.keepitsoaring.com)*

*For a copy of this article printed onto handy cockpit sized cards*



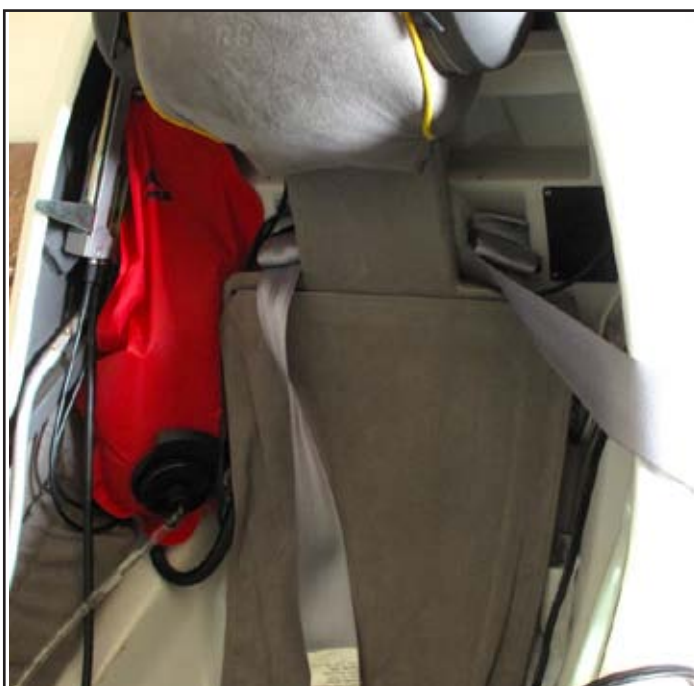
## INSPECT A GADGET

After loosing the end of my water bladder thing and spraying water all over the cockpit, I went out looking for another water system. The first thing you realise with all this hydration equipment is that *they see you coming!* 99% is probably made in China by someone earning \$1.50 and the landed cost in the western world is about \$3. So the simplest hydration bladder (with a brand name) retails for \$60+.

At work, we import things from China and an invariable rule of thumb is that something you can buy here is going to cost about 10% in china. A \$1.30 ball race is 13 cents. A \$79 air cylinder is \$6.90. A \$60 backpack is \$4.20. Don't let anyone kid you... people moving manufacturing to China from the western world are making a huge killing.

Back to the bladder. I got an MSR Dromedary bag made of a tough Cordura fabric shell and laminated with a BPA-Free and food-grade polyurethane lining. You can freeze it, jump on it, fold it or roll it into a tiny tube... and it costs no more than the other overpriced bladders.

The good thing about the MSR Dromedaries is that they can be hung almost anywhere the cockpit and come in huge sizes up to 6 litres... enough for the longest flight. They're recommended by StaniforthJim so you know they must be good!



As the waiter in the Hungarian restaurant said "It's a like a sausage, but is no like a sausage." We mainly went there for the waiter's dialog rather than the food. The only other thing on the menu was "like a sausage but like a hamburger." We were never surprised by the food. His description was exact.

Anyway, the above picture is of the LK 8000 software running on a Windows CE touch screen navigator. Yes, that's right, not LX 8000 but LK 8000. In fact, almost all the screens look close to identical to an LX 8000 for about 5% of the cost.

LK 8000 appears to be a "fork" of the open source X-Soar software rejigged for touch screen computers. A bad thing about open-source is when everyone goes in different directions, but there's no doubt that the direction it is going is touch screens. You can pick up something which will run the LK 8000 software for under \$200 or you can buy the whole thing ready to run with a 125mm diagonal touch screen for under \$500.

Don't expect the earth though. There are plenty of rave reviews but they are mainly from paraglider pilots. If you carry one of these things in a hang or paraglider, the instrument is going to be mainly in the shade and the lack of screen brightness is not going to be a big worry. But don't expect to have LX 8000 screen brightness.

That being said, you have a lot of change left from an LX 8000. There are apparently some software licensing problems at the moment and you can only get the software as a beta tester. Possibly worth a look if you want to save an enormous amount of money and don't have the space for an iPad!



JULY-AUGUST 2010

## THAT'S NOT A RACING FINISH. THIS IS A RACING FINISH!

*In the interests of improving our racing finishes & stories of same, this story by Chris Golds is reprinted from Quiet Flight magazine.*

RAF Sylt was at the very northern end of West Germany and was an airfield at which our 6-monthly air gunnery camp took place. Good weather combined with good food and drink and not-so-good girls, with loads of flying and air gunnery made our 6 weeks a time of great fun for young fighter pilots.

Late in 1958, we had the added advantage of Belgian, Dutch and the newly reformed Luftwaffe to compete with, not only with flying scores but also with competitive drinking too.

The Wing Commander in charge of flying (and shooting and drinking) decided to run an aerobatic competition between the air forces of NATO represented at Sylt at the time in question.

I have definitely told you only some months ago about the pilot who had bent a Meteor Mk.8 tow plane by using his rudder-bar too strongly thereby twisting the whole tail section to one side.

But this little story concerns a rather incautious pilot of the newly re-born Luftwaffe, who decided that he wanted to become an aeros champion in a jet, which was definitely NOT suitable for the task... the Republic Thunderflash.

As we all stood outside one morning to watch proceedings, this crazy soul

entered the arena from the south at an extremely low level... probably about 30 feet... at warp snot time ten in his RF84F fitted with numerous underwing stores and drop tanks.

As he flashed past, this was counted as manoeuvre number one (we had to do six different things each). Away he roared in a giant circle to the west in order to re-enter the fray. Out of sight! We looked once more as we heard him arrive... again at warp snot times ten but this time INVERTED and again at extremely low level.

In fact, so low was he that as he realised his plight he pushed mightily on the stick and... you have guessed it... stuck the top of his fin into the runway and raised sparks and smoke.

Lucky for him that his push had lowered (raised?) his nose sufficiently for his wings to lift him clear of the runway and allow him to climb away with his fin and rudder showing a distinctly different shape from when he had started.

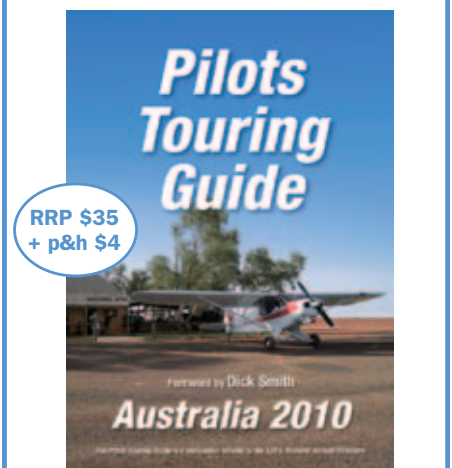
The Wing Co barred him from continuing and he was grounded in disgrace. He was lucky not to be in 'disbox' and at lunch time we found him, a very young lieutenant, in the Mess downstairs bar drinking some anti-shaking liquid.

As it was Saturday with no more flying for the weekend (not even the battle flight got in the way at Sylt)... we joined him in some North German Laughing Fluid.

They really were fun filled days for me... with enough flying to fill your boots... both of them.

*Those of you who have been paying attention will almost certainly realise that the aircraft depicted here, inverted over the Keepit strip is not a Thunderflash but a Thunderbolt. The Thunderbolt has to be close to winning the prize for the World's Ugliest Aircraft (next to the Wirraway). The Thunderflash was in fact an attractive jet from the period after the US realised that you had to sweep the wings back.*

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JULY-AUGUST 2010

## VFR FROM MOROCCO TO GERMANY

*Brian Du Rieu - LKSC*

Some of you won't think it's any great feat to fly a Touring Motor Glider (TMG) VFR from Europe to Morocco and return but it's all a case of perspective. My previous light aircraft experience goes back to initial training at Point Cook in the RAAF, circa 1976. That short phase in my aviation career lasted a matter of months and yielded less than 60hrs flight time.

I spent the next 30 years flying everything from the Mirage 3 to the B744, so when I took delivery of my Stemme in 2005 I was reaching back into the past to dredge up old skills. Couple that with basing the aircraft in Germany, flying VFR in Europe and gliding in the Alps, the learning curve was always going to be steep even without the language issues.

In France the Stemme is classified as a Self-launching Motor Glider (SLMG) and mandated training is minimal, but in Germany it's more appropriately categorized as a TMG.

One of the few joys of European JAR standardization is that I could do a TMG rating in the UK and then pickup my German registered Stemme from the factory in Berlin and legally fly it pretty much anywhere.

At that time, despite having 16,000hrs in a pile of log books and three ATPL licences, the British CAA offered me a JAR-PPL provided I passed a couple of exams and a skills test! I found a flying school that specialized in TMG training at Enstone airfield, north of Oxford and spent a few fun days flying around England doing visual nav in a Super Dimona, followed by a flight test with a genial retired RAF test pilot and examiner.

The weather varied between awful and picture postcard 4/8 Cu at 3000'. Navigating visually in the UK is not necessarily easy even when the weather is fine, there are just too many ground features and lots of airspace.

The 1:500,000 maps are chock full of information and have way too much clutter. 1:250,000 scale is better but then folding and re-folding the chart requires above average origami skills and a large cockpit. Massive disused cold war airfields dot the landscape but are barely discernable on the charts. They seem to be used mainly to park cars.

The locals know all the lead-in features for their particular airfields (and there are lots of them) and when the visibility is poor that's a big help.

In the end the most difficult part in getting my rating was trying to convince the licencing clerk at the CAA office in Gatwick that I was a native English speaker and shouldn't have to sit a language proficiency exam. Strine in Blighty!

The story now really jumps ahead to May and June last year when I flew the Stemme to Morocco for a month's gliding in the Atlas Mountains. I've previously written about that brilliant experience in the November 2009 edition of Gliding International but only alluded to the 'interesting' return trip to Germany.

My departure from Ouarzazate, Morocco on the 20th June followed 5 days of unprecedented wet weather. The German contingent was far more prescient than I and had departed in a convoy of trailers on the last day before the rains began and the French group, the day prior to that.

I had been hoping for a few more 'big' gliding days but with my approval to fly in Morocco due to expire and feeling a bit lonely on the airfield the decision to leave was easily made.

I'd had 5 days sitting in my riad listening to the sound of rain and thunder outside while preparing for the flight home. I was keen to get going, so on the day of departure I arrived at the airfield early to load the glider for an 8am take-off.

Without a passenger (Kim, my wife, had previously departed on Royal Air Maroc to return to work) the right hand seat of the Stemme can really be stacked with a lot of luggage and equipment right up to the max AUV of 850kg.

The flight plan had been filed the previous night and I was assured the proposed routing from Ouarzazate to Granada in Spain was acceptable, but when I revisited the Tower that morning to pay landing and parking fees I was told it was now necessary to stop at either Tetouan or Tangiers to clear customs.

Bureaucracy, oh well, so much for the careful preparation. That put me under some time pressure as the en-route forecast looked suitable only until early afternoon when the thunderstorm activity over the mountains would become a problem.

After re-writing the flight plan nominating Tetouan as the destination I waited while it was submitted and then accepted by Casablanca.

I amended the task in the LX7000, made a rapid but careful preflight, jumped in, started and then checked the route again while waiting for the oil temp to come up to the green band.

After take-off I tracked directly north towards the Atlas Mountains and the intended point of crossing above 9000'. Conditions were stable with a 5kt tailwind and while the local peaks are over 11000' I'd soared in this area many times during the past weeks and for the moment I just enjoyed the view.

The Stemme takes a little while to settle in cruise. The prop pitch change



*The blue line is the planned route... the red line the actual route.*

occurs over two minutes so a few hundred feet before level off I'd select the pitch to 'Cruise', continue the climb 150' high then pitch down to accelerate from about 70 to 105kts, trim fully forward, select the flaps to -10, level off at the intended altitude and wait for the CHT and oil temps to come back to 85° before adjusting the cowl flaps. Simple!

Once stabilizing at FL105 I changed to Casablanca Radar and was immediately given a re-routing to my destination on the Mediterranean coast. About then

I wished I had an autopilot! With my fairly aft CofG the Stemme runs out of trim above 90kts and requires constant forward stick pressure.

Flying with the stick between the knees is fine for short periods but that's all. After a couple of queries to ATC I had the new waypoints written down but couldn't find them on my chart. When I asked for an initial radar vector the female controller merely directed me to turn through 180° and return to Ouarzazate!

Arguing (in my most professional manner) that I had to load the GPS she eventually gave me a radar heading towards the Atlantic coast to keep clear of military areas that weren't supposed

to be active at my level. After about 10 minutes I admit I started sweating when I still hadn't found the points on the chart and my flying accuracy was suffering as well.

I then remembered that Denis Flament had given me a list of turn-points that I had saved to my iPac SD card months before and halleluiaah, when I eventually managed to open that file using the tiny stylus there were all of the required points. A few minutes and a few altitude gyrations later I had the new route loaded in SeeYou Mobile and ATC left me alone.

The visibility on the maritime side of the Atlas was much poorer and it was difficult to see if there were any buildups developing ahead. After 2¼ hrs en-route I started a gradual descent and changed to Tetouan Tower now that I had line of sight over the local mountains.

The controller reported 8/8 at 500' with a strong easterly wind. Nothing like the forecast and not ideal for a visual approach! Changing frequency once again I requested a diversion to Tangiers, conveniently about the same distance away but on the Atlantic coast and importantly, free of cloud with the strong easterly.





What could possibly go wrong?

40km out I closed the throttle to descend. The engine gave a small bang, the cockpit filled with an acrid burnt fuel smell and despite the rotating prop the engine rpm indicated zero!

I didn't feel any panic as I was at 6000' and easily within gliding range of Tangiers airport, it was more a case of '\*!%\*!' and thinking 'how long will it take to get out of this place?' I tried two re-starts but to no avail so I advised the Tower I'd had an engine failure and then just concentrated on the approach and landing.

By now I could see the airport and fortunately there was little traffic. I had aimed to land well down the 3700m runway so I could coast off at a suitable exit and not block the strip, however the wind was howling and my ground roll was all of 50m. A fire truck was quickly on the scene and the crew helped me to push off the runway and then about 2km

to the general aviation ramp. Pushing that glider in the direct sun was hot work. My clothes were soaked, I was out of energy, dehydrated and would have preferred to have been somewhere else!

The gendarmes arrived next and after going over the glider with the usual sniffer dogs I was escorted to the airport briefing office to file an incident report. An ancient mechanic later emerged from the aero-club next door and offered his assistance.

We took the cowls off, couldn't see anything obvious and tried a couple of starts. The engine would turn over but not fire. OK, I was going to be here for a while.

I unpacked, tied the glider down in what looked like the local aircraft graveyard and headed for the terminal. After a long wait at immigration and an interrogation my passport was stamped and I was free to leave the airport.

I took a taxi downtown thinking I deserved to stay in a nice hotel while I got my stress level down, but the Moroccan King, Mohammad VI (or M6 as he is commonly known) was in residence and all of the decent places were booked.

The taxi driver was very understanding as we drove around being knocked back at hotel after hotel. So we went down market and found a small local establishment that wasn't full.

At that stage I would have accepted just about anything. The room was straight out of a French film noir; Tangiers, overhead ceiling fan barely moving the stifling air, a small window overlooking an alley, a cacophony of street noise and no internet.

I called Kim (immediately raising her stress level) and then arranged a rescue. My engineer Peter Schmidt, at Aircraft Service back in Trier picked up the call.

After discussing various options we realized there were no cheap solutions and agreed he would arrange travel to Tangiers for one of his team.

There was no Rotax agent in Morocco, the nearest being in Malaga, Spain. Phone hookups followed with Franz Rotax in Germany and Stemme's chief engineer, Hartmut Winter in Berlin, who thought it most likely I had a stuck needle valve in one of the carburetors. He mentioned that a restart might have been possible if I had closed the Fuel Valve to reduce fuel pressure.

Being a former Interflug Flight Engineer during the communist era Hartmut always had resourceful fixes up his sleeve! I did find an internet café that evening and made an online booking at the airport Ibis Hotel for the next day. That provided a significant upgrade to both my environment and morale; swimming pool, airconditioning and a wine list!

Two days later Stephan the mechanic arrived from Frankfurt with a seriously large tool box and lots of carby parts. We met at breakfast and then I optimistically checked out of the hotel hoping for an afternoon take-off. Getting the toolbox through airport security looked as though it was going to be difficult initially but then the same plain clothes officer that had interrogated me the previous day came over and waved us through.

We spent a couple of hours in the steaming heat while Stephan disassembled both of the carbys, replaced the needle valves and gaskets and then reassembled the whole kit. The engine started first time. We did a full power engine run right there in the graveyard and to complicate matters the turbo outlet hose blew off.

That problem was fixed after removing some oil residue within the hose. I loaded my gear and then headed

for operations to order the fuel truck and file a flightplan. Stephan signed and stamped the aircraft log book, operations staff took photocopies of everything imaginable and we waited while the chief airworthiness officer in Casablanca decided whether to clear the incident or not.

I did mention that I'd be doing a brief engine test sequence on departure but back-pedaled as soon as it was pointed out that a test-flight would require special approval from, you guessed it, Casablanca! The afternoon thunderstorms over southern Spain were developing as forecast so the delay was frustrating.

Word eventually came down that I was clear to leave. ATC wouldn't approve a visual departure because of the Prohibited Area around the King's Palace, so while the engine warmed I loaded the Standard Instrument Departure into the LX.

Airborne in the mid-afternoon, I climbed to 3000' and when crossing the coast fairly well out of sight and sound of the airport I did two engine shutdowns and restarts in succession while still within gliding range. All the engine parameters looked normal and I continued the climb to FL65 to cross the Straits.

Gibraltar Approach held a departing British Airways BAe146 at lower altitude as I tracked to the south which was very nice considering I was on a VFR plan. I also took a hint from Stephan who had suggested I request the coastal VFR transit overhead Malaga airport rather than my longer track to the north circumnavigating the zone.

That not only saved me about 10 minutes flying time but more significantly avoided the thunderstorms that were building to the West. Visibility along the coast wasn't bad and as soon as I had a track clear of both the Malaga

CTA and the storms, I turned directly NNE to Granada. The arrival was very picturesque as I descended through a gap in the mountains 35km out; the city ahead and the Sierra Nevada's towering some 10,000' to the east. Southbound a month earlier the highest peaks were still snow capped, but no longer.

The only available parking was on a concrete ramp without any tie-down points... not ideal. Once I'd unloaded, refueled and had all of my documents examined (pilot's licence, medical, radio operator's licence, aircraft registration, insurance, CofA, noise certificate, log book and passport) I left the airport in a taxi and headed for town.

The thunderstorm tops were just visible in the distance and I was content in the knowledge that although the aircraft was untethered, it was well insured!

This was my second stay in Granada and the town has a really nice feel. Good food and wine, colourful people and hardly a tourist in sight. Too bad about the 'brown out'.

Due to the heat, most of the city was without electricity. I needed some Euros and was concerned that I wouldn't find an operating ATM. The one near the hotel was dispensing cash, so no problem. A restless night followed; a hot room and windows that would only open a sliver. The next morning a cold shower and a couple of 'café con leches' kick-started the day.

I headed for the airport at 7am as it was my plan to fly two four-hour legs all the way from southern Spain to home base at Trier in Germany provided the weather behaved.

I filed the flight plan and checked the met which looked good except that Perpignan, close to the French border at the eastern end of the Pyrenees forecast a vicious wind from the NNW at 40kts, gusting 50.





My intended first stop was actually Lezignan 20km NW of Perpignan but it was too early to telephone the Tower for a weather and wind update. I had assumed that being a weekend, fuel would be available to support local flying but didn't know at the time that facilities were only open mid-week and never at all during lunch. Vive la France!

I was airborne by 9am after waiting at the holding point for several commercial arrivals and with my planned ground speed I expected to cross north of the Pyrenees by 1pm, hopefully avoiding the thunderstorm activity.

Right from the start the needles on the fuel gauge started to drop. Usually with full tanks they don't move for quite some time, so I knew that I likely had about 90L on board probably as a result of refueling on the sloping ramp in Granada. I should be able to make Lezignan, but had Girona and Perpignan up my sleeve on the way as well.

After a couple of hours I was to the west of Barcelona's CTA and then from abeam Girona I could see a magnificent

lenticular between me and my destination. It looked to be well above 20,000' and had perfect structure.

I tracked west of Perpignan to avoid the poorer visibility over the water and tucked in close to the mountains to avoid the control zone. There was no visible rotor and in the end the turbulence wasn't too bad.

At this stage I was only 40km from Lezignan as I listened to the Perpignan ATIS and confirmed runway 33 in use with the strong surface northerlies. I asked Approach if they had an actual weather for Lezignan but with no luck.

The wind direction was a major concern because of the runway's 08/ 26 orientation. I didn't want to go all the way there only to find the crosswind excessive and then backtrack to Perpignan.

A couple of minutes later however the decision was made for me when the Fuel Low Pressure Light came on. It was quite turbulent so the indication wasn't necessarily accurate, but as I didn't want to risk a second engine

failure on the same trip I turned directly towards downwind leg for runway 33 at Perpignan, closed the throttle to descend and requested a diversion to land.

The wind was very strong but almost down the runway so I landed with plenty of speed and then taxied in with flaps at -10 and full speed brakes. It was surprising that when turning directly crosswind on the ground, the Stemme hardly raised a wing provided full into-wind aileron was applied.

ATC advised fuel wasn't going to be available until late afternoon as the bowser was temporarily out of action and I was directed to park at the defunct gliding club hangar.

Aside from the commercial ramp lined with 737s, this was the only apron that would accommodate the Stemme's 23m wingspan.

While jumping out I was careful not to fully open the big canopy as the aircraft was parked pointing south with the wind directly behind.

After having lunch in the terminal and walking over to the briefing office the fuel bowser was back on line. Perpignan is one of Ryanair's major regional airports so it took some time to backtrack through the security checkpoints and find my way out to the apron and the aircraft.

I taxied nose-in to the fuelling station on the southern end of the airfield and shutdown with the wind about 450 off the abeam. As the canopy opened it was wrenched sideways out of my hands by a strong gust.... all it took was a momentary lapse of attention.

The gas strut on the left hand side was dislodged and now fully extended which made it impossible to close the canopy. I waved frantically to a nearby helicopter crew with my free hand and they came over and held the canopy frame while I managed to reposition the strut and climb out through a 30cm gap!

I couldn't see any other damage and luckily the canopy would close and lock, although it would only partially open. The two guys, who were actually the duty Air Rescue crew, steadied the Stemme's wings during refueling and this time I was satisfied the tanks were full.

At this stage of the afternoon I thought remaining on the ground was more of a risk than getting airborne. The weather was forecast to be good as far as Beaune, 500km to the NNE, with lower cloud and rain closer to Germany. Even though I had flight planned for Trier I headed off directly on track thinking that Beaune for the night would be a good result.

I wouldn't have to push either fuel, daylight or weather, and would be within an hours flying time of home. The decision was made. The turbulence on departure made accurate flying difficult but around 100km to the north the atmosphere settled down and the sky became dominated by fair weather Cu.

This part of the trip went as advertised. Beaune is the administrative capital of Burgundy, famous for its great wine, food and medieval buildings. The airfield's hangars were chock full of interesting aircraft, especially Jodels and Robins, ULMs and Trikes. In fact it is common in France and Germany to find all the different types of sport aviation including parachuting and gliding peacefully co-existing on the same airfield.

When I landed, the aero-club crew had just finished flying and insisted that I have hors d'oeuvres and champagne with them in the clubhouse. It was a Sunday evening and that sounded good to me! By the time my taxi arrived I was feeling the effects and we headed into town and Hotel Le Cep; old, beautiful and full of history. I spared no expense at dinner that night. With an improving forecast for the next day morale was the best it had been for quite a while.

Take-off was delayed until 11am the next morning waiting for the cloudbase to rise above 2000'. I'd flown this part of the route to Trier many times during numerous transits to and from the Alps so I relaxed and watched the scenery roll by. Kim was on a day off and I was very happy to see her waiting for me on the tarmac when I taxied in.

Two days later the canopy was fitted with a new gas strut and only the bill for the whole saga remained to be settled. Ironically within a few weeks I had sold the Stemme to one of my hangar mates when preparing to ship it to Australia. D-KKAH now has a German owner for the first time and we are left with several years of great memories and a multitude of .igc traces.

Just about everything we did in that glider was an adventure and often a leap into the unknown, especially my first flights in the Alps and in the end the expedition to North Africa.

The last flight Kim and I did together in the Stemme was also our last cross-country in Morocco, a nice 506km in under 5hrs. It was a patchy day at the start and we managed to get low in the mountains near the northern turn point at Tilmli.

Persisting at ridge level with 9,000' on the altimeter, none of the likely thermal sources gave anything but barely enough to keep moving. We crossed a gap and I flew towards a perfect bowl shape sculpted into the rocks. It looked good, faced the local wind and being in full sunlight was just going to work.

Sure enough, bang! The thermal gusted to 10kts and we were bodily lifted up the rock face. After 180° and above the ridge, I could keep the turn going and just concentrate on staying centred in the bubble.

A few minutes later topping out at 14,000' we jumped one valley north to the main range, connected with the convergence and then flew straight for 100km before an easy final glide home. We did run out of oxygen on the way back, but that's another story!

Our last cross-country over that beautiful desolate landscape is a more abiding memory of Morocco than the engine failure into Tangiers and I guess that's the point; it's usually a lot more fun without an engine!

*Postscript Morocco: Bernd Dolba was back at Ouarzazate this year (2010) in his EB28. During May and June he claimed six OLC flights, five of them over 1,200km, and one of 1,310km. Morocco is a car-ferry ride from Spain.*





## THE BRUMBY STORY (SO FAR...)

The Brumby has been out of the air for a month or so because in an effort to get the undercarriage right, they wrecked the firewall and had to replace it and strengthen it. This does seem to have fixed the problem though and it does now feel as if it will go where you point it on the ground. The nose wheel is attached to the firewall, and we think it was flexing too much, causing the steering to be unpredictable at times.

While the firewall (and engine) was out, we had the opportunity go through all the avionics wiring and I found that the OAT probe (which I had thought was faulty so I bought a new one) had been wired to GP2 but programmed to exist on GP1. (GP stands for General purpose input) I thought I had tried that, but obviously not, because when programmed correctly it worked perfectly.

Also got them to wire a signal from one of the GPS's into the Dynon, so that now, with the OAT working it gives me the wind speed and direction aloft, which is really handy as you know. I also have a spare OAT probe.

The Garmin GNC300 GPS/Radio (ex Geoff Sim's Lancair) had been wrongly wired to the autopilot, hence no signal was getting from the GPS to the AP. That has been corrected - and the GPS now appears to be talking to the Autopilot. But it wasn't saying anything! No satellites! Just "acquiring".

I asked if the aerial could have come adrift, and they had a feel under the panel and said that it was connected - but still no

satellites. Its all back together again now by the way, and I flew it yesterday.

I just could not think of anything other than an aerial problem that could be causing it not to be able to get satellites, so I undid the panel (which is easy to do fortunately) and unplugged the aerial lead from the GPS and it fell apart in my hands! The other end that was attached to the aerial also fell apart! Once discovered it was an easy problem to fix fortunately. Now getting good satellite reception.

During the down time I sent the autopilot controller off to TruTrak in South Australia as it had a faulty screen - which turned out to be a known problem. They replaced the screen and upgraded it to the latest specs, and said it was working perfectly, and that if it was scaring me it was probably a problem with the servos.

Had a quick try of the autopilot yesterday, but it still scares me! May have to send the servos away. Still some instruction reading and experimentation needed in that department.

While the firewall out was a large amount of fuel disappeared from the plane. I have remarked upon this occurrence, and am hoping that it will reappear again before I go flying. The moral of the story - never send an aircraft to maintenance with a full tank!

I feel we are making progress gradually, and I know a lot more about avionics wiring than I did. Next on the agenda are wheel spats, and a fairing

over the undercarriage attachments. Hopefully this will increase the speed a bit - then a trip to Arnie Hartley to remove the crackle from the radio. Oh and cabin heat.

Meanwhile, the Jabiru has been having a thorough check up prior to cross hiring it to the aeroclub. When the cylinders came back from a top overhaul, they looked at the bottom part of the engine, and found it needed doing too. Crankshaft reground and everything.

One of the flywheel bolts was broken, and one of the through bolts that hold the cylinders on had a crack - only detected by some fancy testing machine, not visually noticeable. So it was not far off failure!! Anyway the engine has been done up, and is back, and all we are waiting for is for new bolts to come from Jabiru. Should be here on Monday.

It is a terrible thing owning two aeroplanes and neither of them in flying condition! In desperation, it have been doing a few circuits in a Cessna 210 owned by two of the aeroclub members.

I plan to get my constant speed and retractable endorsement in it but I'll have to do some weight training first I think. But even the Cessna is not available not as it has gone away for its 100 hourly :-)

Will have to drive next trip to Keepit, as I have to take KW to Temora for its Form 2. Undercarriage doors need attention, O<sup>2</sup> installation, and a weight and balance.

All the best... *Jenny*



## Winning with Woitjec!

*Keep Soaring is honoured to have the legendary Polish soaring champion Woitjec Bziktk writing for the newsletter. Countless are the numbers of members who have been imploring Woitjec for clues and tips to his enduring success in the air and on the ground.*

B.W. Of Mona Vale asks: Woitjec, I've been watching the recent gliding championship. How did you find Chile?

Woitjec: Please ask to the cooking questions to my mother.

B.W. : No, how did you find *Chile*... the country?

Woitjec: Is not so hard. Just fly to the USA and turn left. Unless you come from Australia, then you turn right.

B.W.: Was it dangerous?

Woitjec: It was a normal competition where government say for US pilots is illegal to fly in gliders where Flarm is fitted. People die, but it's not dangerous. Is land of the free... USA is.

B.W.: Are you at home, flying in the mountains?

Woitjec: No, my home is Czdyna.

B.W.: I mean, do you enjoy flying in the mountains?

Woitjec: Is OK. I don't like flying so high. You fly too high is difficult to see how fast you fly. In the mountains, you don't fly higher than 50 metres over ridges and it is easy to see how fast you fly.

B.W.: You don't like flying in flatlands?

Woitjec: There are no mountains in flatlands. I prefer mountain flying.

B.W.: How many competitions have you won.

Woitjec: I don't know. Who is counting? You ask my mother. Counting too much is confusing.

B.W.: Does it get boring, winning all the time?

Woitjec: Ha! Is better than losing. No, really I don't know. Is a long time since I lost.

B.W.: Why aren't you as popular as Polish rock star Tadeusz Nzpl.

Woitjec: Tadeusz is so famous! With his sister Dgmyr, Tadeusz won Eurovision song contest in 1957! Every shop has many many records of their band "Decapitated Behemoth." Have you heard?

B.W.: No.

Woitjec: Ah! Is always the same. Polish Death Metal rock is too strong taste for foreign people. Very extreme and many chickens die... even though people eat chickens after so nothing gets wasted.

Me, I dream of becoming rock start and getting groupies. You don't get groupies doing gliding. Do you?

*Wow! Thank's Woitjec! Can't wait until next month's tips!*

*It is to be remembered when reading Woitject, that he does his own translations and refuses to accept hints from Keep Soaring editorial staff..*

## COOKERY CORNER

Do you know the memorable quote by Douglas Adams, he of the Hitchhiker's Guide to the Galaxy fame about dead lions?

"I love deadlines. I like the whooshing sound they make as they fly by."

This is not so much an excuse about dead lions here but dead guinea pigs.

While Woitjec was in South America (see to the left), his mum took a hiking trip to Machu Puchu along the Inka trail... quite an effort for a someone of her age. Apparently she kept herself going by eating coca leaves (50c a bag) and guinea pig.

On her return, possibly fuelled by the leaves judging by the emails, she got to work finishing off the definitive Polish variation of various guinea pig dishes. It's not just that we ran out of space for these, nor is it that she missed the deadline...



Exhibit 1: Guinea Pig saltado con taco taco, fried bananas and an egg, sautéed with onions and peppers.

Exhibit 2: Guinea Pig thigh with green rice and extra onions. Oh, that's lime coloured jelly in the small glass. All washed down with a glass of Inca Cola.



## MAINTENANCE MATTERS

The Maintenance season is now upon us and planning is well underway for the annual inspection of Club gliders. These include the Standard Jantar and the Duo Discus to bring their annuals into line with the rest of the fleet and to move their annuals away from the peak utilisation period. The AAF kits for all Club gliders have been received at LK and are in the safe custody of Ian Downes.

The annual maintenance week will commence on Monday 16th August. We still need inspectors and helpers so if you can help out and have not yet indicated your availability to me, please email me at [trezco@ozemail.com.au](mailto:trezco@ozemail.com.au). I will be advising teams and tasks over the next week and would urge responsible Form 2 inspectors to do as much preparation as possible before the helpers arrive.

Following a week of intensive airworthiness training at Warwick, our maintenance resources have been boosted by the certification of Bob Dircks and Geoff

Neely as Form 2 inspectors, Ian Downes as a component replacement qualified, and Graham Holland and myself as FRP, Minor Repairs qualified.

All attending the course found it worthwhile, and with 10 gliders being stripped down and many defects discovered, there was much to see and learn. The course also provided a good opportunity for contacts to be made with members of other gliding clubs and, as a result, we should expect quite a few visitors over the season.

A group from Darling Downs is looking at a flying visit from around 14 gliders over summer if the weather co-operates. Feed-back from members of other clubs who had visited Lake Keepit recently (particularly for the comps) was very positive with most keen to return at the earliest opportunity.

During inspection of the two Puchateks at Warwick, cracks were found in rudder attachment brackets on the fin. These may be the subject of an

AD, but in any case, we need to check this area carefully during the Form 2. In one case, the cracks had been painted over during a recent re-spray. Repair should not be too difficult, but would be a major repair and have to be carried out at an accredited aircraft sheet metal shop.

Still, the Puchateks are not as bad as the Blaniks which (with the exception of those incorporating the so-called "Llewellyn mod") have been grounded world-wide following a catastrophic failure overseas.

It is worth noting that both Warwick Puchateks have a nose skid and the instructors I spoke to there were not in favour of modification to a nose-wheel because the current system works well, and the set-up of the wheel brake is such that a solo pilot can only activate it by letting go of the air-brake lever (which causes the brakes to immediately close).

*John Trezise*



## TRAILER PRE-FRIGHT INSPECTION

Each time you hook up a trailer have a good look at the bit that sticks out the front (also known as the tongue).

I have returned home from a long drive to discover a broken bolt on the strap which was supposed to hold the tongue to the 1982 Pfeiffer trailer (the Nimbus that was at Keepit for a few years). Not good, but could have been worse. More recently, I discovered

a crack from the underside of the Alko-Kober round trailer tongue on my 1997 Cobra trailer. It started at the weld at the front of the bracket for the brake handle, and became obvious after driving on a particularly bumpy road. A friend welded it back together and added some "splints". This will work for a short while until the new tongue arrives.

JS.

Round tubes have a problem when used in applications like this... all the up/down bend tension is taken by the top and bottom of the tube, just where it's thinnest. If a square tube is used, there's more metal to take the bending stresses.

Another old motorcyclists fact is that if you stiffen up tubes by welding on gussets, the tube will often break at the gusset... (the triangular attachments in this picture would act like this).



## DOING IT FOR YOURSELF

As your steamed editor foretold in our last edition, this month's column is about home surgery for glider pilots.

It's long been observed that sailplane designers have some odd notions of the structure and function of the human body, or at least the average pilot's.

The rear cockpit arrangements of the Twin Astir come to mind, and also the seating in the Grob 109. However the peculiarities of the Jantar Standard have them all beat, since it is designed for a 2 metre tall Pole with two elbows in either arm.

Ask Peter Shiels, who provoked one to spin just by trying to put the wheel away, or Garry, who took a week to work out the cockpit ergonomics so he could win the day.

Ask Gerhardt, who is still trying to translate the POH from something resembling the instructions for driving a Polish tank so he can get comfortable in his.

Obviously either the glider or the pilot must be modified to suit, and EASA certification requirements for modifying

gliders are now punitive to the point where it is easier to modify the pilot.

First, decide whether you want the surgery done for you or if you are going to do it yourself.

Anyone who has watched a few episodes of 'ER' or 'Grey's Anatomy' will know there's really nothing to it, it's just a closed shop by doctors protecting their mystique that makes surgery appear difficult.

Nonetheless, if you are lack a cordless drill, power saw and/or sewing skills, you can have it done either by an orthopaedic surgeon or by someone with conversation and ethics.

There's quite a good butcher in Manila by the way, cousin to Thomas at the Royal so you can have the anaesthetic and the procedure done as a package deal on a non-flying day; ask about home visits.

If you are picky or have been seduced by the notion of 'surgical precision', you may want an orthopaedic surgeon to do the job. (For an example of surgical precision, see: [http://www.check-six.com/Crash\\_Sites/VH-KBZ-ShreddedSeminole.htm](http://www.check-six.com/Crash_Sites/VH-KBZ-ShreddedSeminole.htm))

If so, you again have two choices - you can go public or private.

Should you go public (aka 'Experimental' category), you will be placed in a queue. Nothing will happen for seven years, but you will receive a nice letter before each election, reassuring you that your health and/or call is important and your place in the queue is safe.

Should you go private, everything will be done for you by the surgeon, the hospital and their lawyers.

This column is for the enthusiast who wishes to do it themselves at

home, and let's face it, glider pilots are determined amateurs and love to do their own maintenance and procedures.

Again, decide whether you want a close friend, medical student or your wife to assist the surgery, or if you wish to do it entirely yourself.

Should you wish to do it unassisted, bear in mind that it gets tricky doing the second arm if you want them both done on the same day - I recommend doing the non-dominant arm first, as it gets awkward tying the suture knots otherwise (ask me how I know this).

For technical reasons I won't bore you with (that's the orthopod's job), it is easier to put the extra elbow in the upper arm, not the forearm, at least if you still want to operate the airbrakes.

Again you have a choice - you can either get a replacement titanium/ceramic elbow from a surgical supply company, or a hinge joint from Bunning's.

Bunning's is more expensive but you can comparison shop and they have some nice styles which make the post-op Xrays a great conversation starter.

As a Jantar pilot myself, I need this mod done also, so I'll demonstrate the procedure and get you to follow me through.

After selecting your hardware and lining up your assistant (if any), prep the arm with Dettol and apply the tourniquet.

Tourniquet time starts now - note the time on the kitchen clock.

Any prolonged pauses from here on will only be me mopping up any overflowing blood; hope you're not squeamish but it's quite OK to squeam - keep that airsick bag handy.

Pick up the breadknife and with a (continued, page 94...)





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## DOING IT FOR YOURSELF

The accompanying illustrations are provided to demonstrate the humero-hingeal procedure. Bear in mind that although most humans have a lot in common, there are important variations and you should ensure that you fully understand any self-modifications you intend to do.

*Illustration 1.* This picture shows the initial stages of the procedure. The humerus has been sectioned diagonally in preparation for the insertion of the new hinge joint. Unlike with woodwork, it's not necessary to file the ends of the bones to a nice flat since they will grow back nicely during the recuperation phase.

*Illustration 2.* This picture shows the final appearance of the hinged humerus bone. The hinge has been well secured in place by screws with clean twisted fencing wire added for good measure.

Careful observers may note that a scalpel blade appears to have been left inside the arm. It's important to make sure that nothing is left inside! Count all the screws and nails and measure the fencing wire before and after the procedure to make sure you can account for all the tools and hardware. Any good Form 2 inspector can advise you on this.

It appears that the hinge used in this modification is a low-cost Chinese item. It's getting difficult to find decent hardware these days and galvanised Chinese hinges may be all you can get locally. If this is the case, consider one of the architectural or marine hardware outlets who should be able to provide good quality brass or stainless steel items for a reasonable price. You won't regret the extra time spent on this important preparation!



## ARE YOU INTERESTED IN A SEAT IN THE DUO FOR NEXT SUMMER'S GLIDING COMPETITIONS?



Our Duo Discus will be attending all the gliding comps later this year, and we have a seat available for each of the comps.

The dates and venues for the comps are;

- Keepit Speed Week - 5/9/10 - 11/9/10
- Qld State Comps - Kingaroy 27/9/10 - 3/10/10
- Corowa Classic - Corowa 22/01/2011 to 29/01/2011

We also have a 1/6th share in the Duo available for sale.

If you are interested in competing in one (or all) of the comps with an instructor, or getting a share in this first class glider, please contact the Tim Carr: [president@keepitsoaring.com](mailto:president@keepitsoaring.com) for full details and costs.

## GLIDER TELEMETRY SPOT & APRS

Lately there has been some discussion of telemetry. Using SPOT trackers in gliding competitions is fun for the crew and helps enormously with landouts or pilots who are running late. Many organisers have a SPOT page set up for the comp which will display all the SPOT trackers at once.

There is what could be described as a high-tech version of the SPOT tracker called APRS, or Automatic Packet Reporting System. It operates over the 2m radio band through digital repeaters to log your GPS position on a website. Information includes position, altitude, direction and speed. The website which my unit reports to is in Finland, but there is APRS in Australia too.

The 2m radio band requires an Amateur Radio Licence. I took the test with a dozen other hang glider and paraglider pilots in Los Angeles a few years ago, as US hang gliding radios are on the 2m band and the FCC (Federal Communications Commission) has decided on a ten thousand dollar fine for unlawful radio use!

APRS can be set up to log at whatever interval you please, and be filtered to only log above certain speeds and / or turn rates. This is a free service. It's considered bad etiquette if you log at high rates, so three minutes seems to be the most common. If the device does not receive confirmation that the log was received, it will try again.

The most common radio set for APRS is the Yaesu VX-8R with GPS module. There are other units, including the Micro-Trak RTG with Byonics GPS3

which I have (a friend assembles and sells the package for US\$325). It ties directly to the avionics bus in the glider, so it starts logging when I turn on the power and it locates GPS satellites and a digital repeater.

It will send out one log, then wait for the speed to increase above 3 miles per hour before continuing at once every three minutes.

I have mounted the device in the baggage compartment, strapped on top of the Oxygen bottle. This is one of the few mounting places where an antenna can see the sky, as most of the fuselage is carbon.

The Micro-Trak has a fixed frequency, which is set for the USA at 144.390MHz. In Australia, the APRS frequency is 145.175MHz. The Micro-Trak is also fixed at 10W transmit power, so I didn't want to put it in the instrument panel.

To compare APRS to SPOT, you could look at my APRS link and SPOT shared page. On the APRS page, set the time window (Show Last) to a week and then either expand or shrink that if you see track logs. I'll list both my SPOT shared pages, one week and 24 hour.

APRS: <http://aprs.fi/?call=KG6UNS-7>

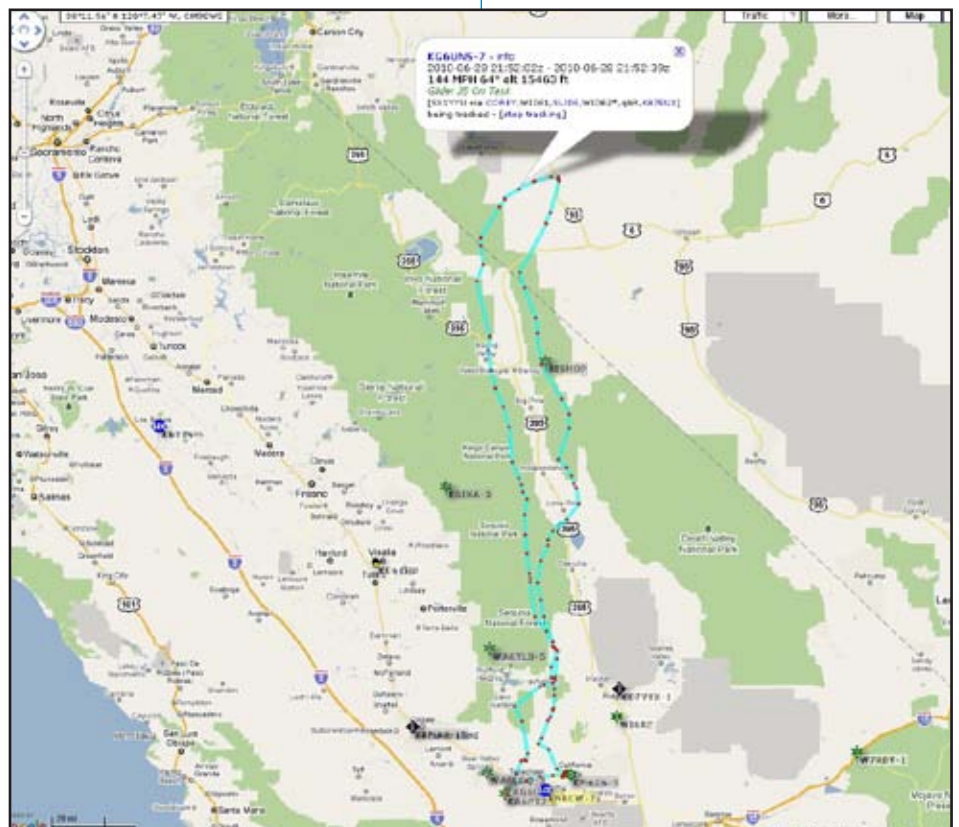
SPOT 1-week:

<http://share.findmespot.com/shared/faces/viewspots.jsp?glId=0lhqj65AppxxOzPTijtTedbxxmmKgduL2>

SPOT 24 hour:

<http://share.findmespot.com/shared/faces/viewspots.jsp?glId=0Miah42lfqXzyfQaYqUhZ83Y9MuFJdoY7>

My Amateur Radio Licence is KG6UNS, and the 7 indicates a portable station. With APRS, it is easy to view multiple tracks on one web page. Just separate the call signs of the trackers with a comma and a space.





So to add Marty Eiler to the page, type KI6RFQ-7 in the "Track callsign" box after my callsign. Of course, it helps if we both flew on the same day.

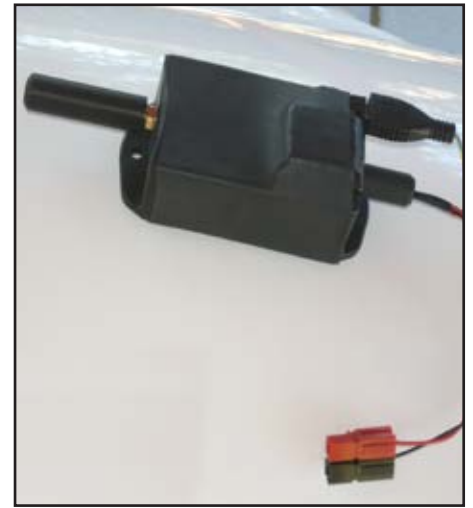
Watching APRS in real time has become quite the sport. When I fly during the week, a few people will be watching at their work (using the term loosely) computer. With the SPOT tracker, the ten minute log interval is a bit long. Three minute log interval plus altitude, direction and speed gives a much better idea of what's going on.

For more information, the Australian APRS website is <http://www.aprs.net.au/>

*Jim Staniforth*



*The APRS installed in a glider... strapped to the top of an oxy cylinder.*



*Outside the glider... the APRS unit is weensy... no bigger than a SPOT 1 device.*

## QUIET FLIGHT

There's nothing really wrong with having a propellor somewhere on your glider, assuming you can fold it away when you need to and especially if it doesn't make any great amount of noise. There's been a bit of traffic on one of the local news groups about jets. Unlike petrol engines, these are both noisy and use heaps of fuel. If and when the battery problem can be solved, electric offers a good alternative.

You may be surprised to learn that self launching ultralight gliders with electric motors have been on the market for over 5 years, most offering the equivalent of three take-offs to 2000' on a single charge. This has been made possible by the revolution in small electric motors, much of it kick-started by model aircraft motors.

It all started with miniature indoor models, where some bright spark decided that the tiny motor used to power CD-Rom drives would make a good powerplant. These motors are incredibly simple... basically a set of coils radially mounted on a shaft surrounded by a ring of powerful magnets. It's the outer ring of magnets which spins, leading to the name "outrunner" which is used to describe this type of motor. The flat shape of the motor gives it terrific torque for its size.

There are no brushes. The three wires leading into the motor are switched by a solid state speed controller which detects the position of the coils in relationship to the magnets and switches the input voltage accordingly. A motor weighing under 2kgs can deliver 15 kilowatts of power and cost about \$1,000.

If 15KW is not enough, then you can run two motors ganged together or mount several motors radially around a large gear ring which gives a good degree of redundancy... 4 motors, 8 kgs, 60KW.

The speed controller needs to be a good bit of gear... it's got a huge current flowing through it. But the biggest problem is the batteries, most of which are the LiPoly type at the moment which have a well earned reputation for bursting into flames while on charge.

"The Predator 37 bribes with his incredible Power. It is currently the first and single engine on the market, that brings with only 1900g a Power of 15 KW. The engine has 3 ball bearings, 20 poles.

No warranty/liability by the use of the Predator motors on devices for the transportation of persons. When using a fixed propeller sufficient cooling, inside the motor, must be provided."



*Mechanical simplicity makes push-me-pull-you designs easy to do.*



*15 KVA in the palm of your hand; or entirely inside the spinner of your plane.*



## THE CONTINUING STORY OF AN EXPERIMENTAL IRON THERMAL

Phil Anderton, Owner-builder Vans RV-7 VH-XPA

*Note: Just because the word "thermal" appears in the title, does not mean this has anything to do with sailplanes. )*

The engine is the heart of any powered aircraft. They do not glide well! This is as true for my Experimental Vans RV-7 as it is for any heavier-than-air powered craft. Early in the planning stages I considered adapting a Subaru car engine, with a special engine mount and gear drive ([www.eggenfellner.com](http://www.eggenfellner.com)).

In the end, I am glad I took the safe easy road and opted for a new standard Lycoming O-320-D2A driving a boring old fixed-pitch Sensenich metal propeller. The unit came from Aerosport Power, a family company in Kamloops Canada which builds modified Lycoming engines (balanced crankshaft, polished inlet manifolds) for Experimental aircraft.

It arrived in early 2006 fitted with Desiccant Silica Gel spark plugs and pads, all enclosed within a massive sheath of glad-wrap, and with cylinder bores lined with a thick-gluggy oil. All of this was designed to minimise corrosion in storage for up to 2-3 years.

The engine was stored only for about 12 months. Ultimately, it was lifted into position and bolted in place in mid-2007 by John Wakefield and myself... the whole operation only took about 40 minutes, thanks to John's experience.

So the engine sat in the engine mount for about another 2-3 years, with a big "DO NOT TURN" sign posted to the propeller... this was to ensure that the preservative oil remained intact on the cylinder bores. There were also silica-gel plastic dummy spark plugs inserted and these were not removed until late 2008, when they were replaced with the real sparklers.

Before starting I borrowed a mini-



video system from Country Capital Airways (thanks Bill) and carefully inspected the inner cylinder surfaces. They were perfectly shiny with visible hone marks and no sign of rust. I could also see the preservative oil still lining them.

Over the past three years or so, the various different systems have been connected up to this little engine, and buried in the city of wiring, tubes, cable ties, fuses, switches and instruments which lies beneath the upper fuselage, between the front panel and the engine fire wall.

My nightmare scenario was that, when the day came to light the fires, none of these systems would work and I would have to rip them all out and start again. Well the engine was started two weeks ago and how did these systems all perform? Here is a detailed list..

**Electronic tachometer.** My Tachometer is an EI RPM R-1 unit which is totally electronic. It is driven by the 12V bus and it measures engine revolutions by counting magneto impulse spikes. These counters are connected to the left and right magnetos by long wires and a couple of isolation resistors. They suggest adding extra isolators if the engine rev reading is "high or

jumpy". Fortunately my unit performed faultlessly on startup... it gives an LED-based analog reading and an accurate digital readout. One neat feature of this unit is that it has a clock which logs the time the engine spends over 1300 RPM.

Given that most engines are idled at 1000RPM and hardly ever taxied at more than 1300 RPM, this clock is a convenient "flight time" logger, much like the "airswitch" used in other systems. I will use this as my indicator of "flying time".

**Vacuum pump.** Other builders with fancy Electronic Flight Information System (EFIS) displays look scornfully at my suction-driven "steam gauge" Artificial Horizon (AH) and Directional Indicator (DI). Why did I elect to stay with old vacuum-driven steam-gauge technology, instead of joining the herd installing hi-tech video based EFIS systems?

Three reasons... the first is that I was trained with the good old "six pack" instrumentation found in most general aviation light aircraft (Airspeed Indicator, Artificial Horizon, Altimeter, Turn Coordinator, Directional Indicator, Vertical Speed Indicator... see the Figure below).



The second reason is CASA compliance. My units are reconditioned TSO'd units that would satisfy any CASA requirement for an IFR (instrument flight) category of use. I might go that way, and why not invest in known quality.

The third reason is redundancy and simplicity. Those with fancy EFIS systems depend on their 12V system for all instrumentation (unless they install backup systems). If the main 12V power fuses blow, the EFIS system would expire and leave a pilot literally "in the dark" with no instrumentation... no thanks. If my 12V system drops out, my vacuum-driven flight instruments will still work as long as the engine is operating.

When I fired up the engine, the suction gauge immediately read in the green range and the AH and DI both dutifully spun up their gyros and began normal operation.

**Engine instruments.** You don't really know if the Oil Temp/Pressure and Alternator Current/Volt meters will work properly until you fire up the engine. Similarly, the Cylinder Head Temperature (CHT) and Exhaust Gas Temperature (EGT) meters sit there for months dutifully displaying ambient temperature. When at last the engine was fired up, all these units operated perfectly.

The Alternator current started out very high (11 Amps) but rapidly reduced as the battery charge accumulated. There is a bright red light on this unit which warns if the alternator voltage regulator fails, in which case all expensive avionics must be switched out of the circuit, and the aircraft landed for repairs of course.

This unit also has a clock which logs the time at which the voltage exceeds 13.0V. This is, of course, when the engine is running and the alternator charging... so this is a convenient "total engine time" clock.



*"Six-pack" flight instruments with ADF indicator and Switch/Breakers... Suction gauge above. It is not really a "Beechcraft" despite the Artificial Horizon logo. Yes that red line IS at 200kt (grin)*

**Fuel Pump.** Fuel is stored in two leading edge wing tanks in the RV-7. They feed to a fuel switch via 3/8" aluminium tubing connected with expensive blue aluminium "AN" pipe and tubing connectors.

I bought an expensive 37 degree tool which is used to flange the tubing for all these connections. The big worry here is leaks. These tubings are connected to the fuel tank in the wing roots, and they pass through the fuselage sides and under the pilot's and co-pilot's legs, suitably supported by grommets and supports. The experts all tell you not to over tighten these units... "finger tight and then one more flat" etc.. etc.. After a few initial problems, I was able to secure all these connections, except for one between the feed pipe to the electronic auxiliary fuel pump (at the base of the firewall, cabin side) and the pump itself.

The problem here is that right-angle fittings are used, and the final position of the fitting has to line up with the required direction of the tubing from the fitting.

Murphy's law says that when you tighten up this fitting to the required

direction, it will always be too loose for a leak-proof fit, but too tight to allow another full turn of the tapered thread into the receiving hole. I fixed this by making up a longer replacement feed tube which allowed the right-angle fitting to be tightened to leak-proof status. A little dab of thread sealant Loctite was also useful.

**Brakes.** It is not a good idea to start the engine in an aeroplane when the brakes don't work. So I had to fill the brake lines with "aviation" brake fluid. You do not "bleed" aircraft brakes from the top. You pump fluid into them from below. I have brakes on both pilot and co-pilot side, and there is a nest of high-pressure plastic tubing connecting all the Master Cylinders.

The idea is to make sure all these Master Cylinders are fully released, and then just loosen the bleed screws on the Slave Cylinders and pump away with a suitable oil can.

I did, this and nothing happened because the Master Cylinders were not totally disengaged. Eventually, I figured out this problem and, with the aid of a medical 10cc syringe, I was able to fill

the brake lines and allow the overflow to almost fill the brake fluid reservoir on the fire-wall. It was a messy job... it will be less messy next time.

Anyway the brakes are firm and solid and they held the aircraft still during the first engine start.

**Auxiliary fuel pump and fuel pressure gauge.** Low-wing carburetted aircraft need an auxiliary fuel pump to pressurise the fuel flow into the carb. Avgas does not flow up hill. Mine is Van's recommended unit, and I have a fuel pressure gauge which measures pressure in the fuel gascolator. The gascolator is a sealed reservoir with a filter at the top and a drain plug at the bottom.

Dirt and water should accumulate at the bottom and not enter the carburettor. So I connected the fuel pump up, but did not know if it would work until it came time to pour avgas into the tanks. To cut a long story short:

- The fuel tanks did not leak.
- Unusable avgas is 700ml on one side and 1100 ml on the other;
  - Initially the empty fuel pump made a lot of noise until it finally sucked avgas into its innards, when the fuel pressure gauge immediately sprang into the green and stayed there.
- Switching from Right to Left tank caused a momentary stutter, but the fuel pressure soon recovered.

**Engine controls.** There are three controls to a carburetted aircraft piston engine... a. Throttle b. Mixture c. Carburettor heat. The throttle makes it go harder, the mixture is for leaning at altitude and the carb heat is used to avoid carb ice under the appropriate conditions. To start the engine, close the throttle, set mixture to rich and pump away. You don't know if they are going to work properly until first engine start

**Battery.** My battery is a tiny "Odyssey" 12V unit. It is the one recommended by Vans, but it just looks too small to my

eyes to do the job. Mine arrived with the "Finish" kit in late 2005 (FIVE YEARS AGO).

I was sure that it would not be able to turn over the engine, being old and not used for years. I expected it to "die" when I first tried to start the engine. As best I could, I kept it charged up over this time.

### START-UP DAY

On the 6th of July I was happy that all the systems had been tested as much as possible, and that it would be safe to attempt an engine start. I decided to start up and idle for a few minutes to check that all of these systems were working properly. Gerhardt Stuck stood by with a radio and a fire extinguisher.

We agreed that "ALL GOOD" would mean no fire, no oil spurts, no need to stop the engine, and that "STOP STOP STOP" would mean stop the engine and vacate the cabin pronto, for whatever nasty reason. I sat in the left hand seat with a fire extinguisher close and wearing a head set.

Master ON, Throttle closed, Mixture rich, Fuel pump ON.. check Fuel Pressure GREEN. Apply FOUR slow pumps of the throttle.. "ALL CLEAR!!" wait three seconds.. and immediately attempt start. The propeller turns so fast and easily that I am amazed... the battery works after all! After the third turn .. Varroooooom!! One of the easiest engine starts I can ever remember... Check Oil pressure... already in the green, reading 60 PSI..check alternator charge 11 AMPS and declining. Check voltage 13.8 Volts... nice.

Check Tachometer... reading 800 RPM... both analog and digital stable and sensible. Adjust throttle to 1000RPM idle.

Turn on radio master... "Gerhardt, how does it look?" Gerhardt indicates 'thumbs up' and says "ALL GOOD".

Check suction gauge... reading between 4 and 5 PSI... as specified. Artificial Horizon is repositioning to normal. Look/sniff for leaks... none... all good. Check Cylinder Head Temperature... 80 degrees F and climbing... Check EGT... I forget the reading but it was hot and appropriate.

Finally, sit back, relax, enjoy the noise, marvel at the smooth operation of the little motor... wow, it really IS an aeroplane!!

To finish up, I advanced to the revs to about 1600 RPM, and she started to edge away. I did not have the tail tied down so did not apply full power.

**Since then...** Over the past few weeks I have "swung" the magnetic compass by adjusting it as closely as possible to read true North/South and East/West, and noting minor compass errors to be placarded in the cabin. I have also taxied up and down the strip twice, to test this adjustment and get a "feel" for the rudder/brake combination... all is good. Since the engine is not yet "run in" I have to refrain from too much taxiing... it needs to be run flat out for a few hours to bed in the piston rings and reduce the risk of polishing the cylinders. What a shame.

**Next...** Ultimately it will need to be inspected by a CASA designated person, and hopefully they will issue a Preliminary Certificate of Airworthiness.

This will allow a 25 hour program of flight testing in a restricted zone (20 nm from Keepit I hope, outside of built-up areas) and the results will need to be written up in the Flight Manual and submitted to allow final issue of an Experimental Certificate of Airworthiness. The main problem here is getting the Aircraft Log Book entries finalised and acceptable. This is a big job and will take a while.

However it should not be too long before the first flight. I can't wait!

*Phil Anderton.*



# KEEP SOARING

JULY-AUGUST 2010

## Coming Events at LKSC

For detailed and up-to-date information on club events such as 4 Day Cross Country Weekends, State and National Competitions, the AGM, Christmas in June (or July), the Annual LKSC Dinner and Dance, the Safari and the Morning Glory trip, please have a look at the club web site...

[www.keepitsoaring.com](http://www.keepitsoaring.com)

Down on the left hand side, you'll see a list of all the current club events.

Click on the calendar to see weekly, monthly or year views.

You'll also find the current tug pilot and instructor roster in this area.

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Chat Group & Car Pooling: There is a Yahoo chat and message group (not officially sanctioned by the Club) for Club members.

To join, either visit the chat group web page at

<http://groups.yahoo.com/group/lksc>

or email

[pjanderton@optusnet.com.au](mailto:pjanderton@optusnet.com.au)

with your email details and he will fix it.

For member's contact details, see the Member's Downloads pages on the club web site