GLIDING AUSTRALIA

Issue 51 March - May 2020 www.glidingaustralia.org

WWGC LAKE KEEPIT

MULTICLASS NATIONALS TOCUMWAL

SOARING SAFARI - WA BOOMING SOARING SEASON

GLIDING AUSTRALIA

No. 51 March - May 2020

COVER: JO DAVIS AT WWGC LAKE KEEPIT IN HER ASW20A
BY MICHAEL ZUPANC

Sean Young
Editor
sean@glidingaustralia.org

Adriene Hurst
Deputy Editor
adriene@glidingaustralia.org

EDITORIAL SUBMISSIONS
We invite editorial contributions and letters.
email sean@glidingaustralia.org
Other large files and photographs and can be uploaded at
www.glidingaustralia.org/ga

DISPLAY ADVERTISING & MAGAZINE ENQUIRIES
sean@glidingaustralia.org

GLIDING AUSTRALIA
www.glidingaustralia.org

Tel 0490 502323

GLIDING AUSTRALIA

MEMBERSHIP & CLASSIFIED ADVERTISING
AIRCRAFT REGISTRATION & related
Tanya Loriot tanya@glidingaustralia.org

AIRWORTHINESS & GFA TRAVEL
Fiona Northey **fiona@glidingaustralia.org**

RETURNS
If you are sending documents they must be emailed to
returns@glidingaustralia.org

SHOP The GFA Online shop has a range of useful products including a Form 2 kit,
www.store.glidingaustralia.org

GFA OFFICE
Before calling the GFA office, please check out our website www.glidingaustralia.org to buy items, find documents and other information, and renew your membership.

9am-5pm Monday - Thursday 9am-3pm Friday

Tel: 03 9359 1613 Fax: 03 9359 9865
C4/ 1-13 The Gateway
Broadmeadows VIC 3047

SUBSCRIPTIONS
Non GFA members are welcome to subscribe to Gliding Australia.
1 year is $47 inc. GST. www.glidingaustralia.org/shop1

WS Media Design & Publishing Services info@westsunsetbooks.com

Official publication of Gliding Australia - Gliding Federation of Australia Inc.
ABN 82 433 264 489 (GFA).
The Gliding Australia ia a member of the Féderation Aéronautique International (FAI) through the Australian Sport Aviation Confederation (ASAC)

Print Post Publication Number PP 381712/02675

FROM THE PRESIDENT

As members may understand, the past six weeks have been anything but normal, not only for myself and the Board, but for many others as well.

Sometimes life comes with a sideswipe and somehow, we just need to attempt to get on with it, do the right thing as far as possible and then move on.

It is during these times that you get to see the innate honesty and integrity of people. You see people who work as hard as they can to achieve good outcomes, to identify a best path, indeed to make a path where none existed before, for the betterment of all.

These are also the times when you see those self appointed keyboard trolls who wallow in the misery they generate, unable, unwilling or both, to understand the hurt they cause and the social and personal ramifications that result.

I am sure that many members, like myself, sometimes want to lash out at such people but don't because we try, with our whole being and fibre, to act with integrity, honesty and respect. I would like our members to remember that the vast majority show those attributes and are good people who show respect and support where and when it is needed and really, the others don't count.

So what's been happening?

WWGC

All members should know by now what has happened at the Women's World Gliding Championships, a great contest that was very well supported by the Lake Keepit Club and its members. The consequences of the events now under discussion have now been nearly completed and there will, of course, be further fallout. Unfortunately, when an investigation of this nature is conducted, no one and nothing comes out clean. Everyone gets tainted by it whether they have acted on purpose or not. As I have said before, I fear we will lose some good people and be the poorer for losing them.

Spare a thought also for those running the competition and the pilots. Neither deserves condemnation. They all attempted to do their best on behalf of Australia and got caught up in something they had no or limited control over. Think about how you would have acted in their place and please be sympathetic, be reasonable and be supportive.

There are a number of other articles about this subject in this issue of the magazine, so that's all you will get from me on the subject.

CASA

A Senate enquiry into CASA has started. Scheduled to complete in 2021, it won't be short but they are currently asking for submissions. If you feel you can contribute, feel free to make a submission. There will be an interim report by the end of the year. I spoke to Senator Patrick last week and discussed a number of relatively recent issues we have had with CASA to give him some background, and he asked if we had made a submission. My answer was – not yet. The investigation is largely about the unfettered bureaucracy and paperwork that is strangling the aviation industry across the board. If you feel you have something to add to a proposed GFA submission, I am happy to take that on. Just send it with details to -

president@glidingaustralia.org

PART 149

Part 149 was initially designed and intended to allow sporting organisations like us to have actual control over our activities, with a minimum oversight by CASA. A win-win, as we can (and do) manage GFA much better than CASA in so many areas. However, at some point around July last year, the Parachute Federation of Australia submitted their Part 149 application after putting $100,000 and numerous volunteer manpower hours into it.

CASA has now come back to them and said that close to one-third of the document was OK, one-third needed revision, and one-third was unacceptable. This was their response to an application that has used previously approved manuals. Don't quote the numbers – they are approximate – it's the principle of it being 'our document'.

Historically, we have contact with various levels of CASA at different times, and sometimes this works well. On the Part 149 front, the Board has designated three people to review and watch what is happening in this space. The Board is concerned, and will definitely continue to review the situation and ask if we should even be part of this.

THE GFA FORUM

Recently, the GFA forum seems to have turned into a focus for discontent, with a small number of people having a go at anything and everything. It has included vitriolic and intemperate calls and some unreasonable demands.

Luckily, there are more reasonable and moderate people around as well, but the fact is that the forum was set up because earlier on, there had been an independent forum outside the GFA that was a cesspit of abuse. The GFA Board felt a forum should not be like that and we subsequently set up our own. It would seem that some people from the original forum have migrated to ours.

The Board will be reviewing the GFA forum in the near future, with a number of options, including removing it, requiring regular 'bad' contributors to submit their articles ahead of publication, or simply removing these people from the forum.

I am sure we all want to be able to talk to each other in a positive and progressive manner, but we cannot and will not stand by while some people denigrate others with unverified and incorrect assumptions.

CHANGES TO THE VOTING SYSTEM

A recent call on the forum was to change the system of voting for the leaders of our organisation. While I am sympathetic to that idea, I'm not sure how it should be done. I do know that I have a maximum of one more year remaining of my term as President. Like the Vice President and Treasurer, I must be elected by the Board every year. All other Board members are recommended from the regions and approved at the Annual General Meeting.

We do seem to be having problems with nominating people for positions in the last few years. Currently, three positions on the GFA website are vacant, but various people have advised me that it's getting harder to find people willing to put up their hands and volunteer.

I have suggested over the last few years that we have many people doing work that is potentially unnecessary, but still have to identify that. We have administration entities such as regions that could be handled more smoothly and in a more streamlined manner and, like RAAus, we could allow selected members who are not also club members - that is, genuine independent operators.

I don't pretend to know the answer but those calling for changes need to work out what they want and start advising their recommendations, because to change the voting system effectively requires a change of our structure.

SAFETY

The specialist group looking after the initial review of SOAR reports seems to be doing a great job. Where to now with our safety culture? Well, I will say it again – have a look at some of Sidney Dekker's books, not to boost sales, but to boost safety. I will loan you one if you are around Adelaide and can't afford it. See what he says. It's a scientific and documented approach using well researched methods of safety.

The Board will be discussing it in the near future.

MARKETING

A basic marketing plan has been produced. It gives priority to five areas as the priorities for 2020, which are to deliver a consistent message, improve communication, target clubs and events, develop internal marketing such as the forum and so on, and combating negativity.

All are worthwhile and important, and we all need to be part of this plan as it is rolled out. It's as exciting and vibrant as our sport. Let's get on board and assist those priorities as they take shape.

Fly safe, make good decisions, and remember how much fun you have when you fly.

PETER CESCO,
PRESIDENT
president@glidingaustralia.org

FROM THE EO

NEW LOGO AND NAME FOR GFA

The Marketing team in GFA has been reinstated with a great group of younger members – and a few older ones – led by Sarah Thompson, who is also President of the Darling Downs Soaring Club in Queensland. Their focus has been to develop a plan for the promotion and growth of our sport, and to increase the number of young people and women joining and remaining active members.

When developing a marketing plan, you quickly need to decide what image will be attractive to the target audience.

Those of us who have been around for a long time in gliding know what GFA is and accept that our logo is important, but from a marketing perspective the current logo does not reflect how dynamic and modern our sport is, or what we even do. The GFA Board have approved the introduction of a new logo and name that we can use to promote our sport, and are reviewing the marketing plan developed by the new team. This plan had to address the long-standing argument over what to call our sport - 'gliding' or 'soaring'. The decision is that we will now market ourselves as Gliding Australia, with a new logo.

We will remain the Gliding Federation of Australia Inc and official documents will retain our historical logo, but we will trade as Gliding Australia and use the new logo to create a new image of our sport.

In line with this plan, the Regional Associations are discussing proposals to update their logo and name to mirror the GA change.

The Board will review the proposed Marketing Plan and decide on how to effectively launch our new image.

CLUB PROMOTION

Clubs will be able to access a range of brochures, stickers and flags to support their own club promotion. These will be available on the GA web page and if you need help, the Marketing team will be happy to discuss what support can be provided. If you have suggestions for promoting gliding, please let them know.

GETTING VALUE FROM GOMEMBERSHIP

Most members have now taken the first step into GoMembership (GM), which is our new membership database. If you are still a novice regarding GM, there are quite a few 'how to' documents on the Gliding Australia web page to help you. Look under Docs/Forms, then select Administration and then GoMembership.

Most members just have access to the Member Area, where they can check and update their personal details and Qualifications/ Credentials. Members who have club responsibilities and are Club Administration personnel can also access the My Club area where they can update Club Officials data and Affiliation and access a range of Reports. Club Admin staff can add administration rights to additional members who need access to club data and reports – CFI, Airworthiness staff, Admin staff, etc.

For members, the key sections will be My Profile and Memberships – both are blue tabs.

MyProfile: Lets you make changes to your contact details. If you select Opt Ins you can ask to join the various forums. If you click on Credentials and Qualifications, you will see what Qualifications you have achieved and courses/approvals that you have completed. A Qualification usually requires completion of several Credentials. When you look through the list you will see that some are active and some may have expired already.

The philosophy of GM is that members are in control of their data, with a self-service approach. If you want to claim a Credential or Qualification you can do so, but you have to provide evidence that you meet the requirements. It is worth a short scan through the range of available Credentials and Qualifications, you may be surprised by how many you have.

The other important point is that you cannot update your Credential – you have to apply for a new one. The old Credential stays in your record as expired and the new one will be active. At the top of the list of Credentials you will see a box that says Add Credentials.

☛ *continued over page*

Click on this and a drop down box will let you select from a long list of available Credentials. When you select the one you want, you will be asked to upload evidence to prove that you qualify for the credential. Typically this would be a certificate or confirmation letter, or a photo of your logbook. Example: Many clubs are now asking you to apply for the Flight Review Credential so that they have a record of when your next review will fall due. The evidence is typically a photo of your logbook.

In GoMembership, you will see a green tile called Documents. If you click on this you will see a range of useful information including an item titled 'Qualification and Credential application and evidence', which explains what evidence you need to provide. For example, to claim a 'Radiotelephone Operator's Endorsement' you need to upload a copy of the actual logbook endorsement - the exam certificate is not sufficient. If you only provide the exam certificate the credential cannot be approved. Members who have a Credential that remains 'pending approval' should check the Notes tab to see whether the office has reviewed the credential and provided guidance.

Memberships: This lets you see what type of membership you have and what other membership options are available to you. You can renew your membership by clicking on Add. When you click on your current membership type you should see a new picture with a green download button. Click on this and it will download your member's profile – a summary of your qualifications and credentials and ratings. It will include your GPC if completed, airworthiness ratings and so on and is worth saving to your phone if you want to visit another club where they don't know you.

CLAIMING BADGES AND RECORDS

If you want to claim any of the performance badges and certificates, or plan on flying a record, important information and documentation is all available on the GFA web site.

1. Find out what flights you have to complete, either by reading the FAI Sporting Code or talking to an Official Observer (OO). A list of OOs is posted under Gliding Info on the web page. Any flight for a badge or record must be supervised by an OO so talk to them early on. Many pilots have completed excellent flights but they were not approved because the OO was not involved.

2. Locate a Flight Recorder suitable for your flight. Talk to your OO and make sure you know how to use the equipment.

3. All flight declarations must be done electronically. Pen and paper is no longer acceptable. The easiest approach is to enter your pilot name and flight details into the Flight Recorder. You may use the online flight declaration but that is a second choice.

4. After the flight, and after your OO has confirmed that you have met the requirements, you can now claim the badge or record. You must use the online claim form found in MyGFA on the web page. Do not take shortcuts by failing to fill out the form fully. If we don't know who you are or what you are claiming, then the claim will stop. When you submit the form you will be asked to pay. There are no refunds, so if your claim fails then you will have to reapply and pay again, so be careful.

5. Once you receive the email that advises that your claim has been successful, you need to apply for the relevant Credential or Qualification. Copy the email and attach as evidence to your credential application.

FLIGHT REVIEW CHANGES

On 5 July 2019 an email was sent to all members with a 'Flying' category of membership inviting comment on a proposal to move from an Annual Flight Review regime to a Biennial Flight Review regime for pilots meeting certain conditions. The email contained a link to a detailed consultation document, and members were asked to comment on whether the proposal was acceptable, acceptable with changes or unacceptable. Some 2,282 emails were delivered successfully, of which 1,870 members (82%) opened the email. Of these, 696 members (31%) clicked on the link to view the consultation document. A total of 195 members (9%) responded with useful feedback.

The overwhelming majority of respondents were in favour of the proposal as submitted, but some minor changes were made based on the feedback received. An amendment to the GFA Operational Regulations is currently with CASA for approval, and members will be informed when the new process will be implemented.

TERRY CUBLEY AM
EXECUTIVE OFFICER
eo@glidingaustralia.org

INDEPENDENT OPERATOR RATINGS

Those pilots who hold a GPC, and are therefore trained to GPC standard, have demonstrated the flying skills and judgement necessary to safely deal with any flight situations that could reasonably be expected to be encountered during unsupervised operations. Therefore, a need for two levels of independent operator endorsement is no longer evident.

The previous two levels of Independent Operations have been replaced by a single Independent Operator endorsement that aligns with the previous Level 2 standards (See MOSP 2 section 13). Those members who previously held a Level 1 Independent Operator rating can now operate truly independently and are responsible for their own safety.

However, with the additional freedom to operate entirely independently goes additional responsibility. Proven failure to meet accepted standards of responsibility and airmanship, including accident/incident reporting, may result in loss of the rating. A logbook endorsement will provide final evidence and members are encouraged to use this as evidence for the credential for Independent Operator within GoMembership.

2019 MEMBER SURVEY

All GFA members were invited last September to complete a short survey to give feedback on our sport and organisation, and to suggest opportunities for improvement. A similar survey was used in 2015 and in 2017 and comparative figures are provided in the published documents.

The report and raw data are available on the GFA web page and you are encouraged to view the range of comments made by members. With up to 1,000 comments on any one topic, it is impossible to list them all in this summary document and I hope that I haven't missed too many key points. The documents can be found in Docs/Forms – Documents – Administration-Admin Docs – Member Survey.

I have included some individual, unique comments, just for interest's sake. You can find many more if you look at the spreadsheet. My Favourite is for the Board to "improve the weather in Victoria".

The Board will use this data in implementing its Strategic Plan and members are encouraged to offer suggestions as to how to implement some of the proposals or to question what progress is being made.

KEY MESSAGES

There were 450 responses from 2,300 members, yielding a 20% return - 92% male, 8% female which aligns with our flying membership ratios. Input from junior members was low again. Although 15% of GFA members are below age 25, only 7.5% of respondents were in this age bracket. This is a problem because we need to grow our junior membership but us older folk don't know how to do it, so you really do need to tell us.

GFA OBJECTIVES

Support was high (90-95%) for each of the GFA Objectives: Freedom to Fly, Safety Improvement, Increased Participation, Developing Skills and providing Services to Members and Clubs.

Support for members was positive regarding support provided by fellow members, clubs and the GFA, but only 43% say they get valuable support from their Regional Associations.

Quality of training: Typically only 60-66% of members thought the quality of training (AW, Instructing, Coaching) was Good or Very Good.

MEMBERSHIP GROWTH

When asked what should the Board focus on to grow our membership, Individual Freedom and Responsibility and Improved Safety were the favourites. Targeting Youth and Having Fun were next; Supporting Clubs, Reducing Costs and Targeting Women were the least supported.

COMMENTS & SUGGESTIONS FROM MEMBERS

What factors encourage you to continue gliding?

- Satisfaction / Success
- Challenge / Learning
- Challenge of going further and faster, beating mates in a race
- Lower cost flying
- Coaching and mentoring
- Freedom
- Excellent club facilities
- Good social atmosphere within club
- Freedom, lack of red tape
- I have a large financial investment in equipment, hangar & gliders
- I like flying
- I look cooler in a glider than a foxbat

FACTORS THAT COULD RESULT IN YOU DECIDING TO LEAVE GLIDING

- Age & health
- Cost
- Conflict
- Slow progress
- Shrinking club
- Politics
- Excessive rules
- Poor leadership
- Poor instructors and training
- Loss of freedom
- Loss of airspace
- Club tensions, inhouse fighting

HOW CAN CLUBS BECOME MORE EFFECTIVE?

- Allow true independent operations (free of club requirement)
- Being a soaring gliding club, not a flight training club
- 1-week courses
- Post solo programs
- Introduce a glider/instructor booking system
- Improved clubhouse and facilities
- Provide hangars
- Reasonable access to good workshop facilities
- More organised social events
- Camps and local flyaway
- Promotion in the local community

WHAT BARRIERS DO YOU FACE WITH PROGRESSION?

- Too many - Too few instructors
- Too much control, too little encouragement
- Too much focus on rules
- Politics
- Cost
- Instructor soaring skills
- Lack of 2-seat gliders
- Need more airworthiness courses
- No aerobatics pathway
- No progress beyond solo
- Club system is too restrictive
- More camps needed

HOW COULD WE IMPROVE THE QUALITY OF TRAINING?

- Better training for instructors and coaches
- A national syllabus and training resources
- Update the instructor's manual to reflect current training methods and competency assessments.
- Use of videos/Youtube in instruction
- Clubs not using the published manuals
- Monitor how clubs are actually training their pilots
- Allocated time slots for students
- Student review of instructors
- Cross country early in training
- More instructors should fly cross country at camps or on weekends at the club
- More simulator training
- Provide courses in the regions and more remote areas
- Provide an airworthiness training syllabus/package.
- Recognition of training from TAFE, other aviation organisations
- Regular schedule of courses
- Shorter AW courses

HOW SHOULD THE GFA BOARD IMPROVE OUR SPORT?

- Review Board composition/structure
- Fight to retain or expand Airspace
- Streamline and standardise complaint and appeals process
- Further adoption of technology (Go Membership a good example)
- Reduce / Simplify airworthiness admin
- Continue / Expand / Stop S2f
- Re-introduce Centralised instructor training
- Promote Flying Start and Flying Further courses
- Promote use of simulators
- Improve the weather in Vic
- Improve culture - no bullying
- Encourage individual responsibility
- Help to reduce conflict
- Halve the GFA fees
- Clubs to pay the regional fee, not members
- Seek member feedback
- Remove the requirement for clubs – more independence
- Remove regions
- Establish and support Regional training centres
- All member to help Grow GFA and Club membership
- Increase advertising/promotion
- Target schools and universities

CONCOURS D'PIGBUCKET

Wouldn't it be a great idea …

That's exactly how the conversation started one wintery morning while on duty in the Eagles Nest (aka the pie cart) at Beverley, with the suggestion from Roger to the rest of the Saturday 2 roster Dream Team that someone should start a fun, simple and friendly competition for our recently soloed pilots who were flying our club Astirs.

For those who may not know, the Astir is commonly referred to with affection over here in WA as the 'Pig Bucket', which is a nickname that emerged when the WAGA Flying Pig Bucket Trophy was created and presented for the first time nearly 20 years ago. In addition to the two club aircraft, there are also several private Astirs at Beverley (making six in total) and so we had our inspiration for a name and the Concours d'Pigbucket was born.

It was decided that a 'pig-point' would be awarded for every 50km achieved on an OLC flight and bonus points awarded for the fastest/highest/longest flights, and for personal best speed/distance. Banter and competitive spirit would be encouraged with a weekly 'CDPB Update!' with the ever-changing scoreboard emailed to all members with a commentary highlighting all of the highs and lows, the near-misses, as well as a random sprinkling of google-translated French and ever-evolving pig references (sometimes both together!) just to keep everyone on their toes.

The CDPB has now been running for four seasons and has taken on a life of its own! It certainly seems to have engaged our membership and the feedback has been that everyone finds it a lot of fun. It may or may not have also boosted our OLC kilometres a bit! We now run three separate classes – for the first time this year at the suggestion of President Geoff - Piglet Class for the newbies, which involves laps within gliding range; Bacon Class, nearly called Kevin Class at one point, for all the semi-serious xc pilots; and Boar Class for the retired people who fly far too much. We actually had so many requests to allow other gliders to compete that we had to relax the rules in order to avoid a mutiny, and even allow Jantars, Cirri and Hornets to compete … no LS8s, JS3s or motorgliders, though!

We also decided to allow coaching flights in two seaters, with half-points scored and no bonus points, in order not discourage coaching activity in favour of piggy ambition. Another early tweak was 'the dreaded 7 day rule' (TD7DR) which only allows two scoring flights in any 7-day period, so that the working class who have non-gliding spouses/children/non-gliding lives, and therefore can't fly all the many midweek comps and regattas that Beverley enjoys, have at least half a chance of winning.

This is primarily all about the banter, and encouraging those first ventures across the fence, but there actually is a rather spiffy prize awarded at the BSS annual dinner, which is a lovely shiny bucket with pink pig ears that squeals quite realistically! CDPB tradition dictates that the winner must pose for a photo with it upside down on his or her head, simultaneously activating the appropriate squealing sound effect. The BSS committee also awards a monthly $50 'most meritorious' prize, which is wonderful support and recognition of our little bit of semi-serious competition. Who would've thought one little idea would provide so much fun?

RICHARD MCLEAN
BEVERLEY SOARING SOCIETY

GFA APPROVED MAINTENANCE ORGANISATIONS

AEROSWIFT COMPOSITES	BALLARAT	JOE LUCIANI	0428 399 001	comcom2@bigpond.net.au
AUSTRALIAN AIRCRAFT KITS	TAREE	OLE HARTMANN	0429 165 498	aircraftkits@bigpond.com
AVIATION COMPOSITE ENGI	TOCUMWAL	PETER CORKERY	0439 842 255	corkerys@bigpond.com.au
AVTEC AVIATION	BOONAH	ROGER BOND	0409 763 164	avtecaviation@bigpond.com
CAMDEN SAILPLANES	CAMDEN	MIKE DUGAN	0418 681 145	camdensailplanes@bigpond.com
GVC WORKSHOP	BENALLA	GRAHAM GREED	0428 848 486	gcvworkshop@benalla.net.au
HOLMES HOLDINGS	BRISBANE	PETER HOLMES	07 5464 1506	holmbros@gmail.com
JONKER SAILPLANES	SOUTH AFRICA	MARISKA NORTJE	+27 82 879 8977	mariska.nortje@js1.co.za
KEEPIT GLIDER TECH	LAKE KEEPIT	GRANT NELSON	0417 843 444	keepitglider@outlook.com
LOCKWOOD SAILPLANES	BENDIGO	PHIL ORGAN	0407 315 511	
MADDOG COMPOSITES	IPSWICH	ANDREW MADDOCKS	07 3143 3131	andrew@maddogcomposites.com.au
MORGY'S GLIDER WORKS P	WAIKERIE	MARK MORGAN	0427 860 992	morgans@sctelco.net.au
NORTH EAST AVIATION	LACEBY	DIANNE	0408 440 172	neaviation@optusnet.com.au
SL COMPOSITES	TEMORA	SCOTT LENNON	0438 773 717	scottl@internode.on.net
T & J SAILPLANES	TEMORA	TOM GILBERT	0427 557 079	tnjgilbert@internode.on.net
ULTIMATE AERO P/L	BOONAH	NIGEL ARNOT	0437 767 800	nigel@ultimateaero.com.au

Test Instruments

Conrod Bearing Clearance Tester (CGCT) required for 50 hour maintenance of 2 stroke engines
John Amor jbamor@optusnet.com.au 0408 178 719 03 9849 1997
Bert Flood Imports david@bertfloodimports.com.au 03 9735 5655

FAI GLIDING BADGES
TO 25 FEBRUARY 2020

BERYL HARTLEY
FAI CERTIFICATES OFFICER
faicertificates@glidingaustralia.org

A BADGE

JONATHAN WEBBER	DARLING DOWNS SC
CHEUK YIN LEE	SOUTHERN CROSS GC
MICHAEL GRANT	GCV
MARCUS SVENSSON	DARLING DOWNS SC
JU MING WANG	MELBOURNE GC VMFG
JU MING WANG	SOUTHERN RIVERINA GC
NING SHEN	CENTRAL COAST SC
EUAN COLES	ADELAIDE SOARING CLUB
ALEXANDER BOLEK	GEELONG GCI
CHEUK YIN LEE	SOUTHERN CROSS GC
ANDREW DAVEY	GEELONG GC
BENJAMIN DODD	WARWICK GC

B BADGE

HONG FOO YONG	GCV
MICHAEL GRANT	GCV
JAMES HOBSON	ADELAIDE UNI GC
CHEUK YIN LEE	SOUTHERN CROSS GC
NING SHEN	CENTRAL COAST SC
NICHOLAS WHITE	LAKE KEEPIT SC
NICHOLAS WHITE	HUNTER VALLEY GC CO-OP LTD
EUAN COLES	ADELAIDE SC
ALEXANDER BOLEK	GEELONG GC
GRANT ANDERSON	NT SOARING PTY LTD
GRANT ANDERSON	ALICE SPRINGS GC
ANDREW DAVEY	GEELONG GC

C BADGE

ELISABETH DRIESSEN	NARROGIN GC
ERIK JOHANNESSEN	902 SQUADRON AAFC
ERIK JOHANNESSEN	KINGAROY SC
MICHAEL GRANT	GCV
SAMUEL PETO	HUNTER VALLEY GC CO-OP LTD
SAMUEL PETO	NARROMINE GC
CHEUK YIN LEE	SOUTHERN CROSS GC
PETER BREW	SOUTHERN CROSS GC
YUMING SHI	NARROMINE GC
EUAN COLES	ADELAIDE SC
ROBERT DOCHERTY	TEMORA GC

SILVER C

GUY WILSON	LAKE KEEPIT SC
SAMUEL PETO	HUNTER VALLEY GC CO-OP LTD
RICHARD WILLIS	SOUTHERN CROSS GC
IAN NORTHEY	MELBOURNE GC/VMFG

GOLD BADGE

STUART USHER	GC OF WESTERN AUSTRALIA
BENJAMIN SPOOR	BATHURST SC
SAMUEL PETO	HUNTER VALLEY GC CO-OP
SAMUEL PETO	NARROMINE GC .
IAN NORTHEY	MELBOURNE GC/VMFG

750 KM

SCOTT LENNON	TEMORA GC
TIMOTHY CAUSER	TEMORA GC

GFA CALENDAR

Use the Contact GFA menu at www.glidingaustralia.org to send event details to the GFA Secretariat for publishing online and in GA

EASTER REGATTA
Darling Downs Soaring Club
5 - 12 April
Entry Form: bit.ly/2HP4i9H

MASTERS GAMES
Bordertown - Keith GC SA
16 - 20 April
As a part of the **Tatiara SA Masters Games** tatiaramastersgames.com we are organising a sports class style gliding event. Bring your Astir, Libelle, Cirrus type sailplanes for some old fashioned fun. There will also be a model sailplane competition run at the same time - while the full scale gliders are away, the models will play.
Contact K.Willis gliderkeith2@bigpondcom or Peter Brookman peter.brookman@bigpond.com

CANBERRA GLIDING CLUB 2020 WAVE CAMP
Canberra Gliding Club - Bunyan Airstrip, Monaro Hwy, Bunyan NS
12 - 19 September 2020
Contact: David McIlroy
dmcilroy@me.com

AUSFLY 2020
Narromine NSWA
8 - 10 October 2020
AusFly is a relaxed, traditional Aussie fly-in event where aircraft owners, pilots, builders, industry supporters and enthusiasts come along and soak up the true spirit of Australian general aviation. AusFly is a non-commercial event, focussed on all aviation supporters, wherever you come from, to get together and have a tonne of fun. ausfly.com.au

F1GP
Leeton NSW
28 December 2020 - 5 January 2021
Club & Old Open Class
info@f1gp.com.au

JOEYGLIDE 2021
Leeton NSW
1 - 16 January 2021
Junior Nationals & Junior Coaching Program
Contact: admin@juniorsoaring.org
See: joeyglide.juniorsoaring.org for more information.

S2F

THE THREE BEST IDEAS OF 2019

FLYING FURTHER COURSES

These five day intensive courses teach Solo students, who also hold a B certificate and an Outlanding check, the post-solo coaching elements of the Glider Pilot Certificate (GPC) training syllabus. Running the course requires a minimum of a launch method, two aircraft and two coaches. Ideally, this will produce four new GPC qualified pilots.

TOPICS COVERED INCLUDE:

- Thermal structure
- Thermal centring techniques
- Thermal entry
- Soaring with other gliders
- Thermal sources and selection
- Flight preparation
- Soaring instruments and flight computers
- Meteorology and flight planning
- Navigation and airspace
- Cruising speed to fly and height bands
- Demonstrated cross country capability

Feedback from these courses has been very positive and we are using feedback to fine tune and refine the delivery to produce an even better product. These courses give pilots the independence, confidence and authority that they need to make safe cross country flights with confidence and are a great way to improve retention. We have good data to tell us that we lose 80% of club members post-solo due to frustration with lack of progress. This course addresses that issue, which we believe will greatly improve member retention and satisfaction.

If your club is interested in running a Flying Further course and would like more information, let me know.

The Discover Soaring website will soon contain detailed information on the course structure and how best to deliver the course material.

TRAILER TOILETS

Narrogin Gliding Club has purchased a trailer toilet that can be moved to the active launch point or club camp as needed. It uses an eco-friendly chemical process that produces an inoffensive liquid, which can be drained weekly. It does not need to be emptied. The total cost, including the road-worthy trailer, is around $5,000.

(SQUARE) CASHLESS PAYMENTS

An increasing number of payment options are available, but feedback from S2F clubs suggests that cashless payments are a reasonable option. The software allows for stock control, account management and many other controls.

At the time they implemented the cashless system, one club found a large fraud in progress that may not have been uncovered otherwise.

MANDY TEMPLE **CHAIR S2**
s2f@glidingaustralia.org

NARROMINE CUP 2019

ABOVE Pete Smith, Dave Thomas, David Meredith, Guy Barr, Alex Bolec, Hamid Nazari, Armin Kruger, Andrew Davey and James Stevenson
BELOW: Cup winner Richard Traill

DROUGHT AND FLOODING PLAINS

Though no mention was made of the smoke and waves of red dust at Narromine Cup, this year has proved to be a challenge for all with raging fires, thunder and hail storms, high wind, dust storms and snow storms on the higher peaks – all in one day and all in one state.

The faithful who attended the 22nd Narromine Cup were stoic in their battle with the blue days and dusty, dry conditions on the field at Narromine. The search for the elusive cumulus clouds went unrewarded. However, good flights were achieved. The early cross country pilots completed a number of Silver badge flights and the serious pilots flew 300 to 450km triangles.

The smoke from the fires in Queensland and northeastern New South Wales eventually made its way to Narromine, where the visibility was reduced to the airport boundary.

It was very pleasing to welcome the group from the Southern Cross and Hunter Valley clubs and the new young pilots from the Central Coast club. Their participation is mainly due to the work of the senior members of these clubs, especially Dave Boulter and Mick Webster.

Day winners this year were Richard Traill, Ed Marel and Richard Frawley. The overall winner was Richard Traill.

GEELONG CLUB EXPEDITION TO NARROMINE CUP WEEK

Around 6 months ago, it became apparent that Geelong Gliding Club had a good group of fresh post-solo pilots coming through their training system, and they didn't want to lose them. These pilots were encouraged to get through their A, B and C certificates over the Bacchus Marsh winter and start working through the fleet.

David Meredith started suggesting to them that participating at Narromine Cup Week would be a good launching platform for their cross country careers. This further galvanised them into action, making sure that they had the initial C certificates and conversions to the single seat fleet. Narromine Cup is ideal for such pilots as it caters for everyone from pre solo to hotshot. Once the club understood this, the pilots received some great support.

Nine pilots ended up making the trek up the Newell Highway for the week. They took the club's four single seaters and the Duo Discus. A long time mate of David's, Armin Kruger, was keen to coach from the Duo back seat, so David was able to bring his Jantar, hoping to manage some lead and follow.

At the start of the week, three pilots with Silver Badges, three with a C, one with a B certificate and two pre-solo pilots were ready for flight. The weather was challenging and the event was off to a slow start, but the awards started to be achieved. At the end of the week the B and C certificate pilots earned Silver Badges and five of the six Silver pilots planned their first 300km flights. Unfortunately, the smoke stopped any further achievement, but the keenness remains.

The Narromine team Beryl, Arnie and Fiona Rowe, Damien Pasin, as well as the hard working ground crew Maja and Frank Holkamp, Martin Cicvarek, Jan Cerveny and Klara Teichmannova welcomed the visitors. The social atmosphere was enjoyed by all.

NARROMINE CUP 2020

This year the 23rd Narromine Cup will return to its regular week and will run from 22 to 28 November. Book now for this fun calendar event.

2 SEATER CHAMPIONSHIPS
NARROMINE

Beryl Hartley with 2 Seater Champions Bruce Taylor and Brad Edwards

In the closing stages of the Australian 'annus horribilis' soaring season, the two seat championships were held at Narromine. Since October 2019 Australian clubs have battled smoke, dust, hail and flooded airfields. Two weeks prior to the start of the championships Narromine was once again covered in millions of tons of outback Australia. Then the rains started, and in the week prior to the competitions, rain bought much needed relief from the dust storms although very little green to the airport.

Ten 20m sailplanes gathered to contest the championships in challenging February conditions with one practise day and five competition days from seven possible. The range of entries were a demonstration of how this class offers opportunity for high ranking championship pilots along with coaches and students experiencing the excitement of competition soaring.

Daily winners Brad Edwards/Bruce Taylor in the beautiful new ASG32Mi, Richard Traill/John Buchanan in the Duo Discus T, Adam Woolley/Keith Gateley in an Arcus M, and Mick Webster/Boris Jovanovic in the Hunter Valley Duo Discus XL.

Mick Webster has flown in all the 20m championships as a coach and in this event he was able to fly with three future potential competition pilots. All the competitors gave Mick a genuine round of applause on his day win. John Buchanan introduced Richard Traill to some days of staying airborne in challenging conditions. The words 'Master Class' were mentioned a few times during the morning presentation on how the day was won.

There was a bit of a panic as Adam Woolley was caught up in the travel ban, but fortunately was able to turn up on time and team up with Keith Gateley again to win two of the five days.

Husband and wife team David and Lesley Jansen and brothers Justin and Greg Smith were there along with international visitors Guido Dalla Rosa Prati flying with Steve Hedley and Jorgen Thomsen with Lumpy Paterson.

The competition ended on a high note with the best day saved for the last and all pilots and crews gathered in the clubhouse for a buffet presentation dinner and entertainment with Brad and his trusty guitar. Special presentations were made to Klara Teichmannova and Bill Bartlett as tow pilots and 'Go fetch' tuggies for the few outlanders. John Rowe was weigh master and tasksetter with Klara. Mick Webster also took on the unenvied task of attempting to work out the weather. Jan Cerveny and Arnie Hartley ran the flight line. Thank you was extended to Chris Woolley as the remote scorer.

The goal for a fun, fair, safe championships was achieved.

BERYL HARTLEY

AUSFLY
8 - 10 OCTOBER
NARROMINE

AusFly is a relaxed, traditional Aussie fly-in event where aircraft owners, pilots, builders, industry supporters and enthusiasts come along and soak up the true spirit of Australian general aviation. A non-commercial event, AusFly focusses on all aviation supporters, wherever you come from, to get together and have a tonne of fun.

AusFly 2020 will take place on 8 – 10 October at Narromine Airport (YNRM), a short distance from Dubbo in NSW.

The event will include static and flying aircraft displays, educational sessions and industry exhibitors. This is the opportunity to get up close with the aircraft, discover an amazing part of Australian aviation history at the Narromine Aviation Museum, and simply catch up with fellow aviators and like-minded people. The planning for 2020 has already begun and we expect many exciting announcements over the coming months about what to expect.

We encourage all young future aviators to come along and enjoy the thrills of flying with a free joy flight!

We also encourage flying schools, clubs, aircraft owners and all aviators to participate by flying into Narromine Airport. Accommodation nearby is plentiful and includes the option of camping under your wing!

Come along and celebrate the 65th birthday of the Sport Aircraft Association of Australia (SPAAA). A range of social events will include an arrival evening BBQ and the highlight, Dinner Under the Stars. Tickets to all social events will be available through the registration page in the very near future.

AusFly Narromine 2020 is a gold coin donation-on-entry event for all participants and spectators. Food and drinks will be available to purchase from Narromine Gliding Club, Narromine Aero Club and food vans on site.

Whatever you fly, are building or are thinking of building, or if you are thinking of a career in aviation or just interested in aviation – you are welcome.

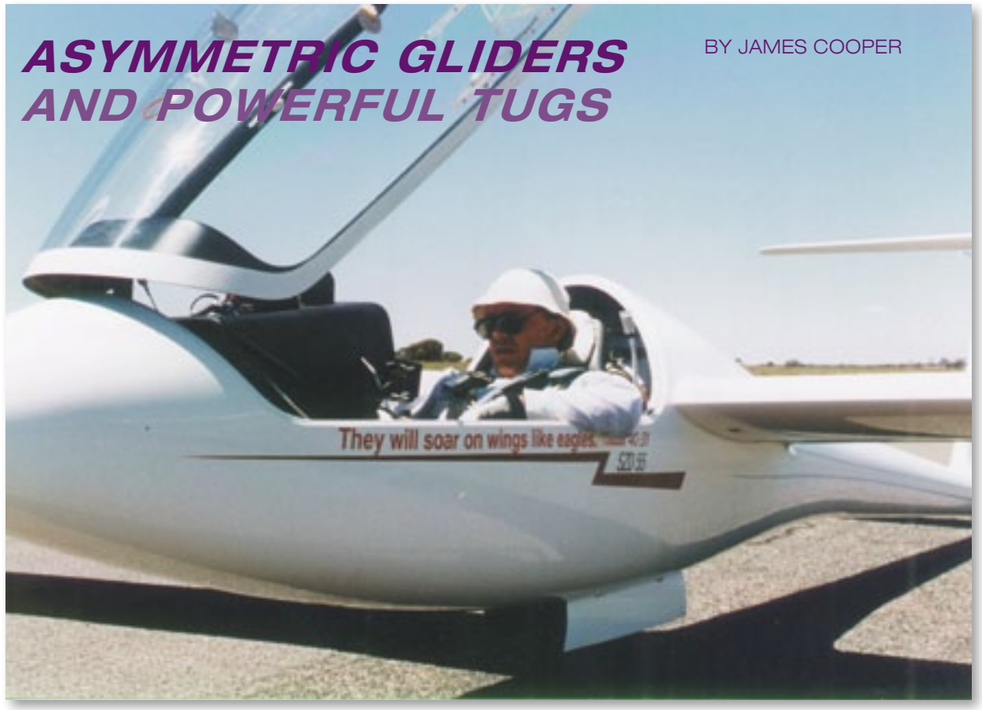
Come and join in the fun. Soak up the true spirit of Australian general aviation at work!

AusFly Narromine registrations will open soon so 'like' our Facebook page for further updates.

ausfly.com.au

ASYMMETRIC GLIDERS AND POWERFUL TUGS

BY JAMES COOPER



Over many years, I have been aware of gliders spearing off to one side at launch and on a couple of occasions being written off, while some others did not achieve quite such a drastic start to the flight. I once stopped within a metre of a tree when launching at a local club where they used a Pawnee 260 as tug.

Our club has launched with the less powerful Pawnee 180 for many years and we never had issues with gliders spearing off to one side that I am aware of.

I have many years of experience flying an SZD 55 with a tendency to drop a wing on launch, potentially giving grief to the pilot. After spending some time thinking about this issue, and much more time putting the writing of this article into the too hard basket, here are my thoughts.

AERODYNAMIC ASYMMETRY

Asymmetry appears to be the problem in all cases of launches when gliders spear off to one side of the direction of launch. There are two types of asymmetry in question – aerodynamic and mass. I will deal with aerodynamic asymmetry first as I have more personal experience with it.

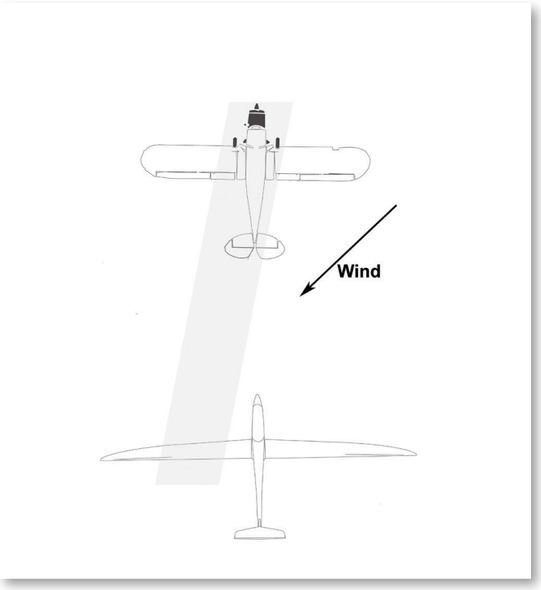
As I mentioned, I used to fly an SZD 55. Looking at the 55 reveals a high undercarriage, allowing good ground clearance when outlanding in other than perfect paddocks. This gives the wings a high angle of attack when on the ground but created issues on launch, particularly when there was a cross wind as the prop draft at the time of launch would go over one wing – the left wing, as in the image on the right.

With the high angle of attack, the wing receiving the prop draft would lift, pushing the right wing, in this case, into the ground and making for an unpleasant launch. If the glider had water in the wings but was not full, the water would now rush to the downwind wing, making the launch even more unpleasant. Only after some time of full rudder and aileron, would things get themselves under control.

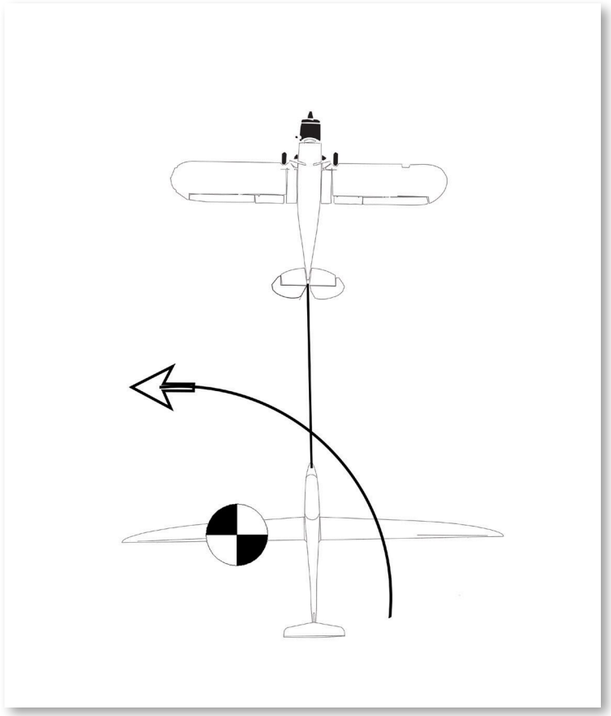
PREVENTION

So how to resolve this issue? The first thing that I learned was to keep the air breaks open at launch. The reason for this was that it reduced the amount

☛ continued over page



Cross wind



Weight Asymetry

of lift over both the inboard and outboard part of the wings, thus leaving the outboard part, where the ailerons were, to control the horizontal stability of the glider. During pre-take off checks, when I got to Air Breaks I would close them until I was hooked on and only at that point open the breaks. Most members of the club were aware of my launching method.

Once the glider reached about 30kts, full aerodynamic control was available and the air brakes were closed and locked. The reason for the initial close and lock was to ensure the air breaks worked and to be sure they were closed and locked if for some reason I forgot to open them during the launch procedure.

A secondary requirement to prevent a wing drop was to fully ballast the glider, as per SZD's instructions. It did make me slightly overweight but my feeling was that being slightly overweight was better than having water sloshing in the wings, which would very quickly make one side of the glider heavier than the other. Once I was flying, I would drop as much water was necessary to bring me to the weight I needed for the flight.

One final issue that resolved the wing lift with the prop draft was the fact that we had a Pawnee 180 as tug. As it was a little less powerful than the more common 260, it created a milder blast of air over the wing that would otherwise have caused the downwind wing to lift.

LAUNCHING OUT OF PADDOCKS

The high angle of attack of the wings on the 55 did give an advantage when launching out of paddocks. If the paddock launch had a slight crosswind, I would be sure that the downwind wing was the one on the ground. The prop draft would have a tendency to lift the wing on the early part of the take-off roll.

If I was launching straight into wind, I would set the glider pointing in the same direction of the tug but with the ground wing straight behind the tug, again so that the prop draft would assist in lifting it during the start of the take-off. The best method, however, was to find some sticks from the edge of the paddock and put one under each wing, so that there was no wing drag.

MASS ASYMMETRY

Having looked at aerodynamic asymmetry, let's now look at the second type, mass asymmetry. Certainly one of the glider write-offs that I am aware of was caused by this type. The glider for some reason had more water in one wing than the other which occurs, as mentioned earlier, if the glider is not full and the water sloshes to one side of the glider due to a wing drop.

Now, imagine pulling your glider, by hand, with a tow rope attached to the nose. As you pull, the glider will dutifully follow you because the main wheel is pointing in the same direction as you are pulling. In addition, the tail wheel that should be equally aligned is maintaining directional stability.

Now consider what would happen if one wing only – say, the left wing – was full of water and therefore heavier, and supported by the wing walker. As you pull the glider by hand it will still obediently follow behind you. The problem occurs when you try to accelerate the glider rapidly. The centre of gravity that is no longer in the centre of the glider but somewhere in the middle of the left wing. During rapid acceleration behind the tug, the glider will naturally rotate around the centre of gravity, rapidly turning to the left.

What is staggering is how rapidly the glider rotates. It's no wonder the GFA has a ruling stating that there should be no objects in a zone 45° either side of the take-off direction.

MYTH AND REALITY

Let's look at the myth and reality of the first few seconds of take-off. The myth says that if the tug accelerates quickly, aileron control will be reached sooner. The fact is that things go pear-shaped well before any aileron or rudder control is achieved.

In contrast, a slow initial acceleration by the tug gives neither a strong prop draft under one wing nor a high acceleration where the glider wants to rotate around an offset centre of gravity. If asymmetry exists, the tail wheel's desire to keep the glider moving straight will overrule any desire to rotate.

So, if clubs want to resolve the issue of gliders spearing off to the side of the launch direction -

DO NOT USE FULL POWER ON THE TUG UNTIL THE GLIDER IS ROLLING AT A SPEED THAT WILL ALLOW RUDDER AND AILERON CONTROL GREATER THAN ANY ASYMMETRY THAT MAY EXIST.

GA

SOARING SAFARI

BY BILL MUDGE

The idea of a soaring safari has always appealed to me. When the offer came to join a trip from SA through Victoria, New South Wales and finally to Lake Keepit, I was only too eager to be part of it.

Earlier in 2019, Theo Newfield of New Zealand and Graham Parker had purchased an ASH25 Mi and invited Bernard Eckey to join them with his ASH30 Mi for some flying out of Waikerie. Bernard kindly offered the back seat to me on the best day of the week. We flew a leisurely 500km in 4 hours under cu based at 7,000ft.

Later that evening over a few beers, the idea of the safari was floated, and it seems that one extra person was required for the chase car. Theo's brother Steve, a New Zealander resident in Canada and owner of an ASW27, was already on board. Did I know anyone else who would be interested in driving the chase car on alternate days? Silly question! So the last week of November 2019 was promptly earmarked for the adventure.

EASTERN SAFARI

Bernard and Graham were put in charge of organising and planning the trip. On the first day the plan was to fly eastwards as far as Robinvale with Renmark and Mildura airfields as possible landing options along the way. Steve, the Canadian, flew with Bernard in the ASH30 and I volunteered to drive the car and keep in touch by radio. Our chase car was Graham's Ford Everest, towing Bernard's ASH30 trailer, which was loaded with all our gear.

Robinvale was easily achieved, but we found that the gate to the airfield was locked. When our car arrived we tied our gliders down, climbed over the fence and settled down for a nice dinner at the only available motel in town. Luckily, we discovered an unlocked back road gate allowing us to use the car to position the gliders on the runway the next morning.

On Saturday, it was my turn to fly with Bernard to Narrandera. The trip was planned via Balranald, Hay and Leeton. At Balranald, we left the Murray River and followed the Murrumbidgee across the Hay plains. If you'd said I'd fly across these plains below 4,000ft I wouldn't have believed it, but the long legs of these ASHs made it possible.

We tied the gliders down at the end of the main strip at Narrandera, only to discover afterwards that we had landed at a secure airfield with locked gates and high fences all around. There wasn't a single soul to be seen but Graham obtained the code for the pilot's gate by calling the airport manager while we were waiting for our chase car.

By the time Steve arrived he had also arranged suitable accommodation. The evening was spent at the Fig Tree Motel with a nice dinner and a good bottle of red at the local pub. This turned out to be the trend for the rest of the trip.

FAVOURABLE WINDS

Narromine was our goal for the next day. Although the weather reports indicated late storms and the possibility of smoke haze from the many bushfires along the east coast, fortunately the wind was such

ABOVE: The country was clearly in the grip of the drought.

☛ continued over page

ABOVE: Bill Mudge - 'Did I enjoy it? You bet!'

BELOW: We came across this gold mine north of West Wyalong

that we only needed to turn the gliders around and take off in the opposite direction to our landing.

It was my turn to drive again but I was given a 50km head start. Once again the day began slowly with average climbs and heights, but once past Forbes it was apparent that the predicted stormy weather was cooking up further north. Initial dust devils in the blue and later climbs under cumulus got both gliders safely to Narromine. Within a minute or two of landing, a downburst near the field dumped heavy rain but fortunately no hail.

I arrived with the chase car and the trailer about 30 minutes later. Bernard was able to secure a spot in a hangar, but Graham and Theo decided to test their brand new all weather covers and leave the ASH25 tied down outside. Graham promptly booked us rooms on the airfield and we enjoyed Arnie Hartley's famous steaks for dinner. The salads weren't bad either – thanks, Beryl and Fiona!

DUST STORM

The following two days were a wipe out as a dust storm came in from the northwest followed by another from the southwest on the next day. I was able to catch up with Beryl and Arnie Hartley and John and Lee Rowe. John was one of my original instructors over 50 years ago. I hadn't caught up with either Beryl or John since 1975.

A trip to Dubbo and a good look around the Aviation Museum on the airfield helped fill in the time. Our original plan to fly to Lake Keepit was shelved as the conditions weren't amenable and the long-range forecast meant we had to get back south to beat a forecast front passing through the southern parts of Australia. Our plan was to return to Narrandera once again with several airfields as options along the way.

It was my turn in the ASH30. Conditions were weak again with narrow thermals topping out around 4,000ft. Many times we left lift below 3,000ft – something I wouldn't attempt in a 15m glider! Some better climbs to 5,000ft later in the day got us comfortably into Narrandera once again. We tied down in the same spot as last time and went back to the Fig Tree Motel.

SPORADIC CONDITIONS

The next day's forecast looked better with predicted heights up to 11,000ft but the approaching front from the west was to be preceded by high cloud later in the afternoon. The task was to get to Mildura – our longest run so far – so that we would only have a shorter flight back to Waikerie the following day.

It was my turn to drive again and I got half an hour head start. It was a tiring and boring 5 hours especially across the Hay plains. I'd rather fly over them than drive but when I looked up at Hay I could see both gliders above. The conditions had been sporadic with initial climbs to 8,000ft in the blue and long glides down low.

The high cloud was pushing in from the West, but both gliders climbed to 11,000ft before and just under the overcast, which gave them final glides into Mildura, landing at the Sunraysia Gliding Club. The drought had left its marks on the large airfield. "This looks like the Botanical Gardens of Baghdad," our Kiwi friend exclaimed on landing, but the warm welcome of the club members more than made up for the dusty airfield.

LAST CHANCE

The club happened to be holding a cross country course, so they promptly greeted the airborne crew with a cold beer on landing. I arrived much later but still caught up with a lot of the members I knew from the past and from the 2019 JoeyGlide at Waikerie. Overnight was at the Inland Motel with a nice dinner at a Thai restaurant.

ABOVE: Stuck at Narromine by a dust storm there on two consecutive days!

BELOW: On the ground at Narromine.

Friday looked like our last chance to get back to Waikerie but the forecast wasn't all that inspiring. Bernard and I went first and our initial climb to 3,200ft was to be our best height for the next 100km! Graham and Theo experienced the same and we tip-toed towards the SA border, many times getting below 1,500ft – Graham and Theo twice got away from 1,200ft.

The ravaging effects of the drought were apparent across this stretch with nothing but blown sand and bare paddocks below. Once we reached the scrub near the border a climb to 5,000ft gave us a breather and from then on, a few more similar climbs got us back to Waikerie. Phew!

NEXT TIME

Our soaring safari had been a terrific experience. Both gliders performed flawlessly and Bernard thinks he burned less than 10 litres of fuel for the entire trip. We had a great time with no engine air starts or unpleasant surprises, but with lots of laughter and plenty of opportunities to exchange views and opinions with an international perspective on different aspects of our beloved sport.

Safely back at Waikerie, we had a few beers together and agreed that we'll do it all again later this year. This time we will make it two weeks instead of one and hopefully make it into Queensland. Would I be interested? You bet!

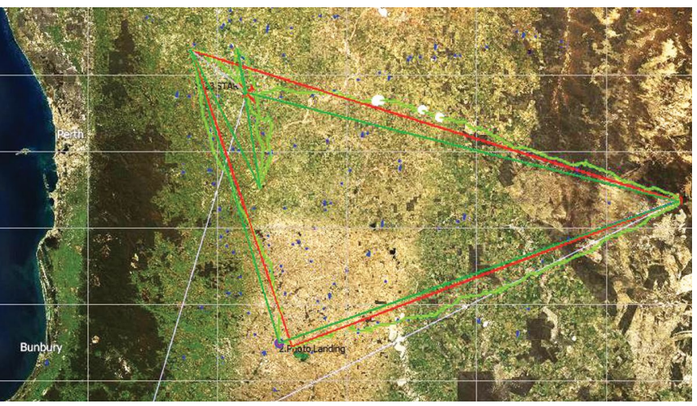
GA

BOOM TIME IN WESTERN AUSTRALIA

BY JAMES COOPER

I have been asked to write a perspective on the West Australian season. However, as I tend not to fly comps, I cannot figure out why people sit on the ground waiting to launch when they could be soaring, and then race to get back on the ground. So here is my view on the conditions we have been dealt, which have helped my OLC flights.

To fill you in with the basics, I fly from Cunderdin, about 160k east of Perth. I fly a self-launching Schleicher ASH 31 Mi, which was delivered in December 2016. It gives me two great advantages -- I can fly whenever I am able, and I can make multiple starts. Earlier on when I flew the SZD 55, I had to be a little more conservative on launch time, resulting in about 125 outlandings, many 25km from home. Furthermore, the 31 will happily motor up to 10,000ft,



again allowing an early start on a shorter day. The disadvantage with the 21m glider is that you have to fly larger tasks and thus contend with unfavourable weather and geography when attempting large triangle flights.

THE GREAT DIVIDE

In WA we have a dividing line, the Great Eastern Highway that passes through Cunderdin. Generally, on the booming trough days it is better to go to the north where temperatures get hotter and thermals get higher. In addition, 200km to the north the Wheat Belt runs out but the cu's are more predominant over the bush. The Great Eastern Highway dividing line creates a different division in post frontal days, as we will get cumulus to the south and blue to the north. This often allows early starts but sometimes the day will go blue by mid-afternoon.

One of my friends tracked the temperature of the Indian Ocean, and suggested that we had better soaring when the ocean was warmer. Well, this year it was warmer and I looked forward to a good season, while my friend took a season off. What a mistake!

On 15 November, it was time to fly north, leaving at 9.30am and flying in survival mode for an hour getting 30km on track. Cu's eventually reached 15,000ft over the bush, but I never got super strong climbs and the day just switched off at 5.30pm, so I headed home and had 920km and 982 OLC points. Nice, but to win OLC I need to average about 1,070.

I spoke earlier of the Great Eastern Highway being a dividing line for the weather. The following day proved to be a perfect example. We had the Carter Cup at Cunderdin and conditions proved very poor for them in more ways than the weather. To the North, it was going to be booming, to the South you may as well have stayed in bed. I motored 80km to the north and started at 10,000ft and flew a 750km triangle at 136 kph, a state record but not a flight that would score well on OLC.

FIRST 1,000KM

I managed to fly my first official 1,000km in mid-December during competition Enterprise. As I approached the second turn, there was a fire that I thought may switch up the heat. It proved not to be a concern.

I had flown 1,000km before on my first cross country in the 31, but I missed the last turning point by 60m because the LX screen failed 50km into the flight. The following day I managed another 1,000km. Although I only flew an 800km triangle, the sea breeze helped me add another 300km. It was seriously rough with everything flying around the cockpit. I was concerned about an interesting landing but the front had passed by landing time.

By now I was leading OLC by quite a margin but I was aware that my fellow competitors in the Eastern states were suffering with poor conditions brought on by the fires that covered the country. WA fires were not affecting our flights. I developed a goal for the season to score as many points as I had when I won OLC. That year's points were 6,428.

Although I had some more interesting flights, including another 750km at 142 kph, the most interesting flight broke no records but gave me a good haul of points.

EARLY START - LONGEST DAY

The flight took place on Friday, 3 January. As it was a post front day, I knew that it would be an early start and SkySight confirmed that.

SkySight suggested a flight from Cunderdin to Lake Johnson, located 120km to the Eastern edge of the wheat belt. I had never been anywhere near there before. From there, it was down to a TP short of Manjimup and back home.

I had the glider ready early as per usual and towed out to the launch point by about 7.45am when the cu's started to pop. Now, we all know the rule to calculate the cloud base -- (Ground Temp - Dew Point) * 400. At 8am, it worked out to 4,000ft.

I gave It 5 minutes for a few more cu to develop so I could string them together and by 8.15 I was on track and within an hour I had covered 90km. The first track was about 120° but SkySight had suggested that I fly due east to contact a strong cu line and this proved to be worthwhile. When I reached the edge of the wheat belt I went into conservative mode, staying high. I did not like the idea of doing a Beecroft and flying down to 2,000ft with nowhere to land, although there was Mt Holland Mine, Lake Johnston Air Strip and Forrestina on the way back out.

Going into Lake Johnston I was flying between 5,000 and 7,500ft but things became overdeveloped half way down the second leg. At Lake Grace, I could see rain ahead near Kojonup. After a chat with Dave Ellett, who was in Albany and able to look at the rain on the radar, we thought it would be possible to go around the rain but I could see my speed decaying and my priority was to get OLC points. This demanded that I get home to complete a triangle, in addition to gaining as many kilometres as possible. So I gave up the 1,050km task and a chance of getting a State record triangle.

I headed for home, keeping a bit West of track to fly a larger triangle, passing near to Beverley where pre comp practice appeared to be going on. The sky was getting bluer to the north and I turned for 50km northwest of Cunderdin. There were some cu's to the south but these got more interesting as I approached Cunderdin where I completed the triangle. They were lining up quite nicely into streets to the south where I travelled 60km south of Cunderdin. Then some more kilometres were added till I finally turned for home about 30km north of Cunderdin.

By now, there was no lift apart from one sniff that I hoped would give me an extra minute to give me a total of 11 hours of soaring. I stretched my circuit and landed at 19.18, having been soaring for 11 hours and 5 minutes with an OLC distance of 1,101km and 1,133 points.

This was certainly one of the most interesting days that I have flown. For those who think OLC is easy because you don't have to complete a fixed task, with OLC, you do need to keep deciding when to continue on track and, if not, where to go.

At the time of writing, I have not totalled above the 6,428 points I had in 2014, but 6,278 indicates great weather in 2019/20.

As a footnote, I love using SkySight. It has sent me to areas I would never have gone before and discovered weather that, likewise, I would not have flown before. Although once it did tell me to go over Perth -- and that was not going to happen – as well as not always getting the rain prediction right, but I did get some flights I would not have attempted without its suggestions.

GA

MULTICLASS NATIONALS TOCUMWAL

BY BERNIE SIZER
PHOTOS BY SHARON DENNIS

Tocumwal Soaring Centre hosted the 2019/20 Multiclass Nationals from 9 to 21 December in Tocumwal. Just under 50 of the best pilots from Australia and around the world entered this historic competition, which several of the Australian ladies used as a warm-up for the WWGC in Lake Keepit in January.

The weather is usually warm to hot this time of year, often with CU at 9,000ft, when pilots can extend long tasks well into the evening.

We got off to a slow start as Day 1 was cancelled due to poor weather, strong southerly winds and low convection, all due to a strong high pressure system in the Bight and a blocking high in the Tasman. These two systems would be an influence for most of the competition.

BELOW: Bernie Sizer won his first National trophy in 15m Class.

FIRST EVER DAY WIN

Day 2 was better. 15m/Standard Class had a 214.4km racing task out to the east, then south before coming home via Corowa. Open/18m Class had a very similar task that went slightly further but also turned at Corowa before the run home. My flight on this day went well as I managed to stay with the LS8s until just before Corowa, where I encountered a thermal street that no one else seemed to find and for approximately 5km I climbed in a straight line while the LS8s continued to descend.

Once at what I believed to be the core, I racked my Pik20 into a tight turn and climbed about 1,000ft before heading for the turn point, bypassing the large gaggle that had lured in all my fellow competitors. Once around the turn point I took off towards another gaggle of big wings who looked to have a better climb. Thermalling with these guys wasn't my preferred option but they clearly had a good climb and I rolled in while the higher gliders rolled out.

I had my own thermal for a few minutes until four or five 18m gliders joined me at my height. I knew this relationship couldn't last and I left it after only gaining 1,000ft to avoid any conflict. I pushed on, joining other 18m gaggles but the climbs were never as good and, as we got closer to home, the lift got weaker and wind stronger. I thought I would outland but managed a good climb that saw me nick the control point and hurry home. I finished equal 1st with Mike Durrant for my first ever day win at a Multiclass nationals and 747 points, 10 points clear of Peter Trotter in 2nd position.

WEST TO CONARGO

Day 3 was another racing task of 243km to the north, west to Conargo and home from there. I intended to go with the gaggle but needed to go behind the start line first, and while there I found a climb and headed off. I caught the gaggle with approximately 20km to run on the first leg. Once with the gaggle, it was very difficult to get past it. Staying with the gaggle was a good option for me as I am flying the lowest performing glider in the fleet - other than the LS4, of course.

Getting close to Conargo, we started to spread out due to a few guys putting their foot down to get away from the likes of me. Once around Conargo I realised I was a bit low but decided to bypass the first climb and hope for something better. Contacting a good climb at around 2,000ft and turning the Pik on its wingtip in what felt like the core, about 7kts from bottom to top, I was set up for a good run home with Andy Maddocks and Claire Scutter. David Collins won the day with a speed of 104.6km/h, Tobias Geiger 2nd 110.8km/h and James Nugent 3rd 106km/h. I came in 4th with 100.5km/h which saw me hold on to top spot overall by a small margin.

DOWNWIND DASH

Day 4 was a 3hr 45min AAT on a windy day with high cloud forecast in our area of operations. The first leg was way out east, a downwind dash that was difficult to curtail due to the high crosscountry speed. The downside is a larger distance into wind on the way home. The return leg was brutal once we contacted the cirrus and the temptation to simply land back at Tocumwal was just too strong for some people.

I pushed on to the third turn point despite getting down to 1,000ft a few times. It was very depressing to see one's speed drop below 70km/h when it had been up at around 120km/h only an hour before. By now, several people had outlanded or retired and I was surprised to see gliders in paddocks in front of me near the third turn point. I followed the tree line where many small, weak thermals kept me between 1,800 and 2,500ft.

Touching the turning circle, I headed for the fourth turn point running downwind. I decided to slow down and float along, taking a turn on all but the weakest lift, as every turn got me closer to the next turn point. At this stage the big wings caught up to us and I shared a few climbs with them. Fortunately, I was much lighter and turned well inside them.

☛ continued over page

ABOVE John Buchanan, winner of 18m /Open Classes in his JS 3.

On reaching the fourth turn point, I found a 3kt climb to 4,400ft which felt high and I thought I could possibly get home from here, which would have been OK if I was headed directly home. Unfortunately, I needed to touch the final control point, which added about 16km to my journey and all of it into wind. The ground in front of me was only just now coming out of the shadows and I hoped that there would be some convection to get me home.

Despite my best efforts, I touched the control circle and landed in a paddock 13km from home. First place was Peter Trotter at 88.4km/h, 2nd was David Collins at 70.5km/h and 3rd was Mike Durrant at 73.3km/h. I finished 7th but was the highest scorer of all those who outlanded and now found myself in 5th position overall and only 116 points behind Mike Durrant, who was on top.

INTO A TRAP

After Days 5 and 6 were cancelled, Day 7 was a racing task out to the east to Coreen, then to Jerilderie, Pretty Pine, Deniliquin, the north control point and home. I started immediately after the gate opened, as did most of the pilots, not wanting to get caught out with the southerly winds and cutting the day off early.

By Jerilderie, I had caught up to a few guys in LS8s and so on, but then lost them soon after the turn point as they took a line north of track. I stayed south of track where I could see dust devils and while I had no great climbs, the lift was regular, if broken. I fell into the trap of chasing the Ventus 2 of Tobias into and out of Pretty Pine even though I was getting low and needed a climb.

Heading for Deniliquin, I could see a large gaggle of gliders and thought that I could possibly get there, and I did, after getting down to 900ft before pulling up into the lift and climbing away slowly. Once around Deni I caught the gaggle but had trouble climbing in the now weaker lift. Baffled, I checked my ballast and found that I was still full of water.

With my weight reduced, I charged for home and came in slowly with the big wings passing close by at high speed. Tobias won the day at 99km/h, I finished 2nd at 90.2km/h and Peter Trotter 3rd at 93.7km/h. This put me back in equal first with Mike Durrant again on 3057 points, 127 points clear of 2nd place.

GOOD COMPANY

Days 8 and 9 were cancelled due to smoke from the bushfires in NSW, and Day 10 was a late start on the B task - a 2-hour AAT up north, across to the west and back home. Since we had southerly winds that were forecast to increase later and cut off the lift, my plan was to get out early and get home before this could affect my day.

I climbed to 6,000ft off tow and thought that we were in for a great day. Down to 3,000ft when the gate opened, my plan to start on time was in tatters as I had to gain height before starting. I finally started from 5,000ft, 37 minutes after the gate opened with several others, so I wasn't the last to start and had company all the way up the first leg, which was downwind. I continued to find good climbs on the second leg, being careful to only take the better climbs and extend my glides while flying as fast as I dared.

I turned south before anyone else with the knowledge that the headwind would slow us all down and that conditions would get worse with every passing minute. I again chose my climbs carefully as well as my task track, making sure that I did not fly directly into wind for any length of time. Peter Trotter joined me and we made the most of the conditions in getting home ASAP. I won the day with 111.2km/h, Andy Maddocks 114.7km/h came 2nd and Peter Trotter 3rd at 113.9km/h. This put me back on top by 57 points to Mike Durrant in 2nd and Miles Gore-Brown 3rd. Winning a day is hard work, and the prospect of holding onto the lead seemed almost impossible due to the forecast of big days ahead. The pressure was on as I knew the better gliders could easily outrun me in better conditions.

Day 11 was cancelled due to more smoke that was so bad we couldn't see the midpoint of the strip at times during the day. Day 12, the final day, was also cancelled due to poor flying conditions where the two sniffers couldn't stay aloft. A disappointing last couple of days left everyone feeling flat.

VICTORY

I was thrilled and excited to win my first national competition, and would like to thank SRGC for their support and encouragement.

A huge thank you to Tocumwal Soaring Centre for doing so much good work in the past 18 months to prepare for the competition. Lumpy and Sharon deserve every bit of congratulations for their huge effort to make the centre presentable and for the competition to run as smoothly as possible. We even had a pool to cool off in!

The competition was well run. competition Director Phil Ritchie and safety officer Greg Schmidt did a fantastic job in keeping everyone on the rails and pointed in the same direction, which was difficult at times, mostly due to hot, cancelled days. We had an army of volunteer rope runners who did their thing in hot windy conditions until well after we had started our tasks. Jenny Thompson handled the weather forecast while Matt Gage manipulated the tasks for us, both doing sterling jobs. Sharon and her helpers' efforts in the office to make sure every box was ticked was outstanding. Well done and thank you to all involved.

GA

ABOVE Team Trophy winners for Queensland, Adam Woolley, Mike Maddocks and John Buchanan

BELOW: Standard Class winner Mike Durrant

TOCUMWAL

The Multiclass Nationals were hosted in Tocumwal, NSW, from the WW2 hangar known as Sportavia. The organisers were Lumpy Paterson and Sharon Dennis from Tocumwal Soaring Centre along with volunteers from Southern Riverina Gliding Club, family and flying enthusiasts along with the support and promotion of sponsors.

Beginning with the Official Practice Day on 9 December, the contest continued through to the last day on 21 December 2019. As the competition began, so did the massive, ravaging bushfires across Victoria and NSW. The first week of flying was looking good for a tight competition, however, by the second week everyone soon realised the speed with which the bushfires were spreading, with reports of fires out of control and the loss of homes and lives. The drift of the smoke caused poor visibility, with only a short window of reprieve with a wind change, and then returned to cover the area again in an even thicker plume of smoke for the last of the competition days.

MULTICLASS NATIONALS
TOCUMWAL
10 - 21 DECEMBER 2019

18 M / OPEN CLASS

1 JOHN BUCHANAN	JS 3 18M	4,256
2 PETE TEMPLE	ASG 29/18M	4,241
3 DON WOODWARD	ASG 29/18M	4,157

15M CLASS

1 BERNIE SIZER	PIK 20 B	3,714
2 MICHAEL DURRANT	LS 8	3,657
3 MILES GORE-BROWN	LS 8	3,498

STANDARD CLASS

1 MICHAEL DURRANT	LS 8	3,729
2 PETER TROTTER	LS 8	3,570
3 MILES GORE-BROWN	LS 8	3,547

TEAM TROPHY

QUEENSLAND, ADAM WOOLLEY, MIKE MADDOCKS AND JOHN BUCHANAN.

SPEED TROPHY

NORM BLOCH 141.49. KPH

soaringspot.com or /tinyurl.com/ybaz2zs4

VINTAGE GLIDERS AUSTRALIA ANNUAL RALLY

BY DAVID GOLDSMITH

The first day of the 2020 VGA Annual Rally, held 5 – 11 January 2020 at Bordertown Airfield southwest of Adelaide, on Sunday turned out to be a social get-together as a strong southerly wind delayed flying. However, Monday's forecast was for a sunny day with light winds and 29 degrees, anticipating some good flying.

Attending the rally were -
Kookaburra Mk 4 GNZ with Brian McIntyre
Boomerang GQY with Bob Hickman
Chilton Olympia 'Yellow Witch' GFW with John Marshall
Ka6E GEA with Jenne and Dave Goldsmith
Boomerang GQO with Rosie and David Howse
Longwing Kookaburra GRN with Peter Butler
Boomerang GTL with Mike Renahan
Bocian GQT from Bendigo with Peter Raphael and Mike Williams.

Additional members and friends attending included Ian Wright, Ged Terry, Erik Sherwin, Peter Fietz, Colin Collyer, Peter Butler, Adam Howell, Gary Crowley, Geoff Hearn, Kim Van Wessem, Terry Ryan, Leigh Bunting, Ruth Patching, Dennis Hipperson, Keith Willis, Richard Geytenbek. Peter Bannister kindly provided his usual high standard of daily weather presentation.

Ray and Chris Whittaker, longtime members and administrators of the Vintage Glider Club, were welcome visitors from England, here to do some touring and attend our Annual rally.

Briefing for the first day's flying on Monday 6 January saw a unique weather forecaster, invented and presented by JR and Renna which produced amazingly accurate insights into the future weather – unfortunately, not at all backed up by Peter Bannister's official forecasts! As Renna's fly net seemed to be the main method of communicating the forecasts to the world-wide inter-net, this has not yet been picked up by the international media.

Peter Butler has been working on establishing a gliding club at Coober Pedy, SA, and has bought the Long-wing Kookaburra for that club. VH-GRN was purchased from Gary Ryan by Coober Pedy Gliding Club. It had been living at Waikerie for the last 3 years or so, and after a form 2 inspection we transported it to Bordertown for the rally. Until the

Coober Pedy club members build themselves a hangar, it will be staying at Millicent. Peter hopes to welcome glider pilots to the club in the future.

Monday turned out to be a good day with 15 flights, five of which were over an hour, to heights of over 6,000ft.

Tuesday the bushfire smoke moved in, and extended north as far as Alice Springs, although it was forecast to improve from the South. The only flight of note for the day was Leigh's kite, which disappeared on a downwind dash from a great height, not to be found until the next day, Wednesday, following some clever searching by a drone and a safari through the local forest to find it.

On Wednesday the smoke cleared to a beautiful day, and 14 flights of up to five hours duration were made. The VGA Annual General Meeting was held that evening, with Leigh Bunting retiring as Secretary and Bob Hickman elected as the new Secretary. All other positions remain the same. Ruth, our Treasurer, reported bank balances of $9,488 and $14,612 in our two accounts.

David Howse introduced a motion for us to include Classic gliders on a trial basis as these pilots do not have their own association. See more about this in a separate Vintage Times article. After spirited discussion the proposal was passed.

David was also the guest speaker and talked about his aviation career as an engineer, covering his experiences from his apprenticeship days with the airlines to his time working on Jet Warbirds and homebuilt aircraft. One of the projects he worked on was the construction of a full size, working DH88 comet for a movie about the great air race.

Unfortunately, the weather turned bad for Thursday and Friday. Thursday was hot and windy and rain was forecast on Friday, so many visitors derigged their gliders.

Saturday looked good so the Bocian, Brian's Kookaburra and the Yellow Witch launched, the Yellow Witch and JR Marshall having the longest flight with 1 hour 44 minutes.

The VGA Annual Dinner took place on Saturday evening and the following awards were presented -

The Schneider Award for the best maintained Vintage Glider went to Brian McIntyre for the Kookaburra GNZ.

The Renmark Trophy for the Best Distance at the National Rally went to Jenne Goldsmith for 215 km in the Ka6E

The Best two-seater was awarded to Peter Raphael for Bocian GQJ.

The Geoff Gifford Trophy for longest Vintage Flight went to Laurie Simpkins for 377 km in his Foka 5 GEF at Warwick, Queensland.

The Rally was well attended, having a strong emphasis on social activities, with the modellers quite active and many interesting models present. All round it was a lot of fun for all those present.

Thanks to the Bordertown Keith Gliding Club members who provided a safe and pleasant environment, as well as most of the catering, for our Vintage Gliders Australia National Rally. Your efforts are greatly appreciated!

OPPOSITE TOP: Peter Raphael helps Gary Crowley and Jenne Goldsmith launch in the Bocian.

OPPOSITE BOTTOM: Leigh's kite won the free distance award on Tuesday.

ABOVE: Ged runs the Boomerang wing for Rena, with the Longwing Kookaburra behind.

BELOW: John JR Marshall presents the Concours D'Elegance award to David Howse for Boomerang CQO 'Yellow Bird'.

WOMEN'S WORLD AT LAKE KEEPIT

PHOTO MICHAEL ZUPANC

BY THE AUSTRALIAN TEAM

PHOTOS BY MICHAEL ZUPANC, SEAN YOUNG

ABOVE: Jo Davis launching in her ASW20a at Lake Keepit.

OPPOSITE: Jo with Richard Hoskings after the last day's flight.

JO DAVIS

The 10th FAI Women's World Gliding Championships represented a lot of things for me. It was the culmination of years and years of training and preparation, and the result of the support people have invested in me. But ultimately, it was the opportunity to go toe-to-toe with the world's best at one of my all time favourite gliding sites – Lake Keepit.

The news that Australia would be hosting the Women's Worlds was exciting. Having flown previously in Denmark against these pilots, I knew exactly how much it would matter to fly your own glider, the right glider, at a site that was familiar. Lake Keepit was about as perfect as it could get for me. Big, big, fast skies that suited an Aussie flying style of pinning the ears back and driving hard - very un-European. Once announced, it just left the 'small matter' of getting myself onto the team and into Club Class so that I could fly my ASW 19 and be in the best flying shape I could when the time arrived.

GAUGING THE COMPETITION

Preparation involved racing every weekend I could and going to as many competitions as I could attend without being fired from my job. Prior to the Women's Worlds, the most significant of these events was the Club Class and Sports Nationals at Lake Keepit, which also doubled for the Pre-Worlds.

As a number of the more serious competitors would be making the effort to travel and race, it was a perfect opportunity to gauge the competition. Sabrina Vogt, Club Class World Champion at the time, would be there as would Sarah Arnold. It was my chance to see what a fierce, independent, capable pilot Sarah was. Sabrina identified Ray Stewart and Allan Barnes as local tour guides of choice and flew with them most days.

As the competition rolled on, my confidence grew. The bigger the sky, the more I gained on the Europeans. In the end, Sabrina finished just head of me, which left me thinking, perhaps I could give them a run for their money after all? It was enough to get me onto the team and lined up for Club Class where I was intending to fly my ASW 19.

WHAT TO FLY

Having flown over 2,000 hours in the '19, she was my second skin and a little cracker. We'd made it home together through more impossible skies than I cared to remember. I was convinced it was the perfect choice of glider. At a meeting in the pool after the Pre-Worlds at Lake Keepit with the potential Aussie team members and team captain Terry Cubley, the obvious question was raised about what gliders to fly.

In the big skies at Lake Keepit, a glider at the top end of the handicap range was the right choice. But that wasn't my '19. After much gnashing of teeth I reconciled to being in the market for a new glider. What I really needed was an

continued over page

ABOVE: The opening ceremony took place on a hot sunny morning.

OPPOSITE: Ailsa McMillan landing her JS1.

ASW 20, one of the hardest gliders to find on the market in Australia. Worse still, only the A and F model could be flown at the Worlds, which narrowed the market even further.

After scouring through the CASA aircraft register for '20s, I came across a registration I recognised immediately – IIC, the '20 Lisa Trotter had owned. I hadn't heard that IIC was flying, so called Lisa to see what she was up to these days. Lisa's response was that she didn't think Peter, the new owner, would hire IIC to me because it was currently up for sale. I said I could probably help with that. Before I knew it, I was the proud owner of a very classy '20. Perfect.

TRAINING IN EARNEST

The year before the event was spent training in earnest. The first of the many intensive sessions was Squad Week with the team at Lake Keepit in my brand new '20. The pilots put an enormous amount of time and commitment into preparing for the Worlds. But weeks like Squad Week typified the investment of time other people put into giving us the best chance possible, from Terry as team captain to our coaches Peter Trotter, Butch Buchanan, Mike Codling, Richard Hoskings and Matt Gage.

We received amazing support from many people contributing their knowledge such as Adam Wooley, and Bruce Taylor and Brad Edwards with their priceless local experience. Lots and lots of people generously contributed. Squad Week also presented me with my first not-so-straightforward sky in the new ASW 20, which ended with me going into a paddock. I would have made it home in the '19. It was clear I had a lot of work to do if I was going to do these people proud.

And work I did. Fitness was going to count at Lake Keepit with long days in the heat, so life was a steady diet of running and flying with my crew and training buddies, Richard and Mike. Monday nights were devoted to Condor sessions, gleaning what we could from Bruce's local knowledge. A couple of months leading into the competition were very sadly *sans alcool*. By the time I got there, I felt I had drawn a line under everything I could control, and felt ready to front up.

BUSH FIRES

Soon after I arrived I quickly settled into a daily routine that served me well and was supported by the tireless efforts of my crew Richard and Mike. This, combined with a daily coffee trip to what would be my oasis for the competition at Bob and Jan Dirks, meant I was ready to take on anything.

The competition was exactly what I was expecting – searingly hot and big skies. What I hadn't been expecting leading up to the event was the impact of the bushfires. The reduction in visibility was an obvious outcome of this, with me factoring the Flarm into my lookout scan more than I would have liked. However, it had other impacts as well. Not being able to see ahead made planning cruises difficult. Lining up thermal triggers required very last minute decisions as they appeared out of the murk.

There were atypical conversations over the radio, like "How landable is the terrain between X and Y locations?" Then there were the broader scale weather impacts to factor in, with the smoke acting like a layer of cirrus, suppressing convection. Of course, the weather models were none the wiser, which was all very apparent in what turned out to be my first ever Aussie 'distance' day.

HECTIC SKY

The forecast was for a blue start before transitioning into a lovely 9,000ft cu day if you were patient and started a little later. I duly waited for this theoretical window before heading to the first leg. Climbs were soft and before I knew it, I could see that the gliders ahead had hit the brakes and were low. The cu's that were promised hadn't materialised and it was all too apparent that the entire day was not what was promised.

Sadly for me, Club and Standard Classes had the same first three turn points. By the time I had turned the second, I had caught up to Standard Class – and I mean ALL of Standard Class. They were mixed into a fair portion of Club Class, which had started earlier but had been caught.

The leg to the third turn point was one of the most hectic skies I've encountered. All of Club Class and Standard Class were bunching up into an increasingly smoky, non-thermic sky. Anyone throwing half a turn was greeted by a gaggle of 20 to 30 gliders that would fan out on cruise into an impenetrable wall of fibreglass. By the time we reached the worst of the smoke, I'd been rewarded for my patience and found myself looking down on a sea of gliders, with just a handful of followers to lose.

LANDING OUT

It was clear no one was going to make it anywhere close to the end of task. I'd set myself a stretch goal of making it to Narrabri, the third turn. After eking out every sniff of energy I could find, I ended in a paddock just short of the Narrabri airfield. The furthest by distance but beaten on handicap by a Czech pilot flying an ASW 19! Like a number of the European pilots, she didn't want to spend the night alone in a remote Australian paddock. So, after seeing me in the paddock, she elected to land with me. Two Schleicher girls also landed just before last light.

Due to the high handicaps of my '20 and the Mosquito Jenny Ganderton was flying, we would invariably find ourselves patrolling around the start area waiting for the remainder of Club Class to start. Kerrie Claffey's handicap in the 55 meant she was forced to leave earlier.

After Jenny and I came first and second respectively on Day 1, we'd earned the attention of some of the team flying nations. On Day 2, we were both caught pre-start by the French and while Jenny lost her French friend, mine was more tenacious. The day was a scrappy blue day, so no chance of winding the '20 up to lose her. After towing her around the task, she'd beaten me on handicap. Lesson learned.

EARS PINNED BACK

Not all days were scratchy and awful, though. Some were more typical of Keepit, with regular cu's over 10,000ft and energy lines to make any '20 driver smile. On Day 5, Jenny and I became more proficient in our pre-start patrolling and were rewarded by the French finding the German team instead. This four went around as a rolling gaggle, much to the frustration of the Germans!

While it was a fast gaggle, it left us to fly freely. Our run into the first turn was a cracker. When we'd reached the second, I'd run under a promising cloud and was rewarded with 9.5kts. But when Jenny came underneath me I watched with a sinking feeling as she searched around. It had been a bubble. I was rocketing up and she was forced to move to the next. From that point, my role was to call climbs back to her while chasing down the pack.

The run up the Pilliga was more usual for Keepit, with clearer skies and strong energy lines. By the time I'd turned the fourth turn, I had the ears pinned back. The final turn was again obscured by smoke from fire at the back of Kaputar. This meant it wasn't easy to see ahead and pick the best line home. I'd anticipated that the range would be working and was rewarded by a cracking run down to the control point, passing a number of Club Class on the way. Turning the radio over to CTAF, I'd heard the Germans calling their glide home. I'd caught them and was rewarded by a day win. Jenny also recovered well and placed 3rd.

continued over page

INDEPENDENCE VS TEAM FLYING

It's fair to say that the Aussie Club Class was made up of some of the least likely pilots to successfully 'team fly'. Independent pilots to a fault, some would say all three of us could probably benefit from flying more 'tactically'. No wing to wing flying for these girls! Despite this, we'd found a way of cooperating and supporting each other that worked, relaying information between us while flying with more flexibility.

While team flying has been held as a model for success, it is interesting that it didn't result in winning Club and Standard Class. It was only in 18m that the French pilots picked up gold with their team flying. Independent flying won Sarah Arnold gold in Standard Class and me in Club Class. Elena Fergnani from Italy also flew as independently as I did in Club Class and was ultimately rewarded for it. Cooperative flying rather than team flying at these competitions could well be a future blue print for success.

In the end, all Australian pilots stepped up at this competition, put in the training and worked hard. More than one of us has invested in gliders specifically for the competition and are now deeply in annual leave debt at our respective work places! No stones were left unturned and they certainly gave everything. I'm proud of all of them.

JO DAVIS

PHOTO MICHAEL ZUPANC

ABOVE: Kerrie Claffey in her SZD55.

OPPOSITE TOP: Kerrie preparing for launch.

OPPOSITE CENTRE: Ailsa looking relaxed on the flight line.

OPPOSITE BELOW: Claire Scutter with devoted crew member Andy Maddocks

TERRY CUBLEY

The WWGC was a great event, well managed and enthusiastically supported by the local club at Lake Keepit. It was one of the largest Women's World comps run so far, with 47 pilots compared to the 48 who competed in the Czech Republic. When Australia was awarded the championship three years ago, a lot of negativity came from some European teams, telling us that not many would attend and trying to ensure we only offered two classes.

We persevered and offered three classes -- 18m, Standard and Club Class -- which were fairly equally supported. The standard of the pilots was high, resulting in some close battles for the top spots. Only 12 nations competed, which is disappointing, but fairly standard for the Women's event. There were 24 countries at the Benalla World Championships, and it is disappointing how few countries have a strong focus on women's gliding.

Australia has typically sent one or two pilots to the Women's Worlds, but with three classes and a maximum of three entries per country, it meant that we could offer nine places at Lake Keepit. Over the past three years, we approached our women pilots to see who could commit to a training and practice regime in order to compete at the World Championships. We were heartened by the interest shown and encouraged them to seek support from local coaches in order to prepare.

In the last 18 months, nine women attended national and regional championships and attended training camps and finally were rewarded with selection to the Australian team. Two others, Akemi Ichikawa and Diana Schuit were equally committed but, with dual nationality, they opted to compete for the Japanese and Luxembourg teams.

MAJOR PILOT COMMITMENT

This event demanded a major personal and financial commitment from all of our women, who entered many competitions and attended many training camps, all at their own expense. A few hundred dollars of GFA support was provided for the formal Squad week held at Lake Keepit in April. GFA International Teams Fund provided $14,000 and the team sought donations from GFA members, who generously provided another $5,000, so each pilot was supported with $2,000, which covered their entry fee and 10 tows each. A big advantage of a home championship is that you can bring your own glider and car, and costs for your crew are much less as airfares are not needed.

All pilots arrived by 29 December and during the first few days were involved with registration and technical inspections such as weighing and measuring gliders and checking for compliance. Then they fell into a routine of glider preparation and briefing and team meetings, ready for the competition to start. Most flew two to three days during this practice week – a fine balance with regard to flying practice and conserving energy. The temperature was hot from the very beginning and it looked like we would fly for 10 to 12 days, so conserving energy was important.

Lake Keepit was in far from its normal beautiful condition. The green grass and lake were missing, replaced by dust and a small river -- still pretty, but a harsh environment. Time to launch was indicated by the first dust devils marching across the runway, typically followed sometime later by the first cumulus.

The big question was, of course, "What about the smoke?" November and December down south saw many flying days lost to smoke, so all of us were worried that it would impact the comps. It did do that, but to a much lesser degree than the southern sites, and the competition only lost one day due to smoke creating problems in the task area, although a few other days were on the edge with reduced visibility creating some concerns.

The organisers did a good job in dealing with the poor visibility and put in place a process to determine visibility requirements before launch and before opening the start gate. They also used a Dimona, flown by David Conway. He could fly task setter Bruce Taylor into the smokey areas, allowing Bruce to advise whether to continue the task or cancel the day. This was a good idea but difficult in practice, as smoke is sometimes unpredictable. New fires were starting while the pilots were on task, and big weather meant big distances to cover.

The day that was lost was expected to bring good weather, but already had thick smoke to the northeast along the hills. Bruce reported that visibility was acceptable to the north but our pilots were further east along the ridges where it was quite thick. We were rapidly getting calls from distressed pilots unable to see landable fields ahead, and visibility in the air was reported as only 2 to 5km.

Bruce was re-tasked in the Dimona with concerns about increased smoke near to Mt Kaputar impacting on the track home. Just as our team moved out into better visibility, the decision was made to cancel the task. Our pilots were doing well on the task but we were happy with the decision as they weren't keen to head back into the heavy smoke.

The difficulty now was that they had to come back through the thicker smoke to get home, and the terrain is rather daunting in this area. The combination of heavy and increasing smoke and tasks set into the more unlandable sections of the terrain meant that the task could not be completed safely. In later days when the smoke was poor, they set tasks into the plains to the west where there are many suitable fields, so even if visibility became worse the pilots could still find safe landing options.

On Day 7, the smoke subdued conditions enough that the task was not achievable and we ended with 47 gliders either in the paddocks or coming home using their engines. Standard and Club classes had basically the same 400km fixed task and, unfortunately, a new fire started close to the second turnpoint. The pilots were commenting on the sudden decrease in visibility, which made it difficult with the gaggles.

The Dimona was sent out to investigate but as it was only a small area of fire, the competitors had been through the worst of it before the Dimona arrived. It was already late and the pilots slowly glided up that third leg with the occasional thermal extending the glide for the lucky ones. No one made the third turnpoint, but Jo Davis was second closest behind a Czech pilot, with Jenny Ganderton 5th.

On this day the 18m task was set well to the North and East before heading out West. This was over some quite high country, which would be tricky unless the thermals were better than forecast. They weren't.

Matt Gage's weather analysis was quite accurate and

☛ continued over page

KERRIE CLAFFEY

THANK YOU!

Justin Sinclair for offering his treasured SZD55 - sorry Justin, just too far to drive!

Mick Webster for offering his lovely SZD55, which was much closer!

Geoff Sim for stepping in to crew for me at short notice - helping install half my body weight in lead, fixing the wheel, retrieving and rigging, and being a great brolly dolly!

Macca for coming along on the retrieve - providing unique entertainment as only Macca can!

My awesome teammates Jo and Jenny - sorry I couldn't keep up, ladies!

My surrogate US teammates Kathy and Sylvia for inviting me along - and making flying fun again!

My housemates from the 'big house' at Sport & Rec for making it a great team house!

ABOVE: Lisa Trotter landing her LS8.

BELOW: Task setter Bruce Taylor hard at work.

OPPOSITE TOP: Lisa with partner and crew Peter Trotter.

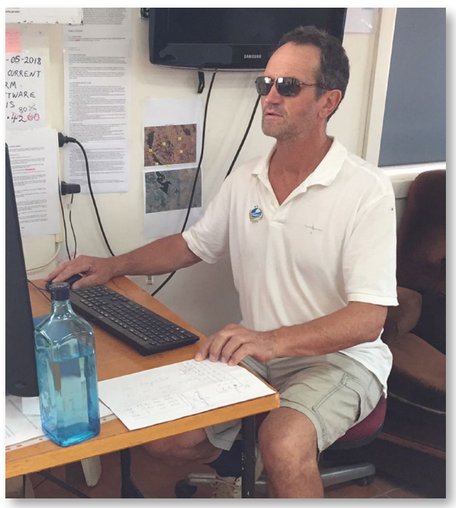
OPPOSITE BELOW: Lisa with Claire Scutter.

our team was advised to make a huge detour on the second leg to go around the higher ground and this really paid off. The distance was further but the pilots that flew on task had real problems down low over virtually unlandable terrain, with quite a few firing up their engines to get back to the better conditions and fields.

Jenny Thompson was caught by the wave influence near to the second turnpoint and ended up in a field, but Ailsa McMillan and Lisa Turner led the pack to the third and fourth turnpoint as the day slowly ended. Ailsa won by 40km over the German pilot and 50km ahead of the French and Lisa.

ROLE OF THE COACH

With nine pilots, a team meeting could become rather overwhelming and difficult to ensure the best outcome, so we took the decision to assign one or two coaches for each class. Matt Gage and Andrew Georgeson worked with 18m Class, Peter Trotter coached for Standard class and Mike Codling supported Club Class.



Our morning planning meeting, which was held just after the main briefing, would comprise Matt Gage giving us a weather briefing, comparing the different weather models and predicting possible changes. Then Brad Edwards spoke to the team to give his local interpretation and ideas of better tracks and so on. Then the three classes would break out to discuss specific details and tactics for their flights with their class coach. This approach worked really well and provided valuable information and discussion within an acceptable time frame before heading out to the launch.

THE CREW

The role of the crew is rather demanding. It starts early to prepare the gliders for the day's flying and check that all equipment is up to standard, and to then join the queue for the weighing scales and launch grid. They must wait quite some time while the pilots prepare their task, before joining the queue for the coffee van.

Then they need to get the pilot into the glider in time for the launch, race to the car to get the things that the pilot has forgotten, and meanwhile keep the visitors at arm's length. Post-launch, they wait for a possible re-light before reporting to Aussie base to assist with monitoring progress and the start. Wait and wait and wait – then burst into action as the pilot calls on final glide. If it was a long task, a trip to the swimming pool or an afternoon nap or shopping in Gunnedah or Tamworth may be possible.

We had a great crew who took their roles very seriously. They worked well together and supported whoever needed help.

Thanks to Sarah, Robert, Cooper, Keith, David, Cacilia, Chris, Nerida, Andy, Julie, Jack, Geoff, Grant, Josh, Richard and Rob. You all made it possible.

AUSSIE BASE

With a total of 23 team members, we needed a largish venue for our team base. This was required to hold the team briefing, and to monitor tracking and radio and to radio through messages to the pilots. With three classes we had three or four computers running to monitor each class and to advise weather and tactical updates.

We were very lucky that Keepit local Grant Nelson offered us the use of his house on the airfield as Aussie Base. Grant runs Keepit Glider Tech, the LK Glider repair and maintenance shop, and was also part of the crew for

continued over page

LISA TROTTER

I have flown many competitions at Lake Keepit but never before have I been so focussed and motivated to understand the weather and geographic features of the area as they apply to soaring competition until I started training for the WWGC. I developed a detailed appreciation of what I might expect from weather and terrain and what the best strategies might be to get the best speed out of the competition days, thanks to Squad Week run by Terry Cubley, a training week run by Adam Woolley, information about 'warm and cool spots' from Brad Edwards and flying Condor tasks weekly with the support of Mike Codling and Bruce Taylor.

The best known feature of soaring conditions at Keepit is the convergence that sets up over Mt Kaputar. It is obvious and predictable – you can see the development on the hills while on the grid, and once everyone makes a start they head in the same direction towards the convergence, even if it is 50 degrees or more off track. The tricky bit is making the most of this weather feature later in the day, especially on an AAT task.

This puzzle presented itself on Day 8 – which I happened to win – and the critical decision was choosing the right path on the third leg to put me in a position to get the most out of the convergence line. Very few competitors in our class turned at the top of the last sector and as a result missed out on a run of at least 100km under convergence.

The other major decision about making the most of the convergence at the end of the day is made at the start of the day when calculating the optimal time to start. If you get back too late, the convergence can be a sink trap of rain under the clouds with all the lift sucked out of the surrounding areas.

This was one of the major risks to consider in coming home too late. As it turned out, I was consistently more conservative than others, which meant I tended to leave earlier than the gaggle, resulting in lost points on a couple of days. Other risks to consider in coming home too late were sea breeze or storm gust front, both of which we could look out for, visually and with weather forecasts.

What I wasn't ready for was the severity of the gust fronts that combined with massive dust storms closing in quickly and creating complete IFR conditions. This happened on a number of days and weighed in quite heavily on my optimal start time calculations. Starting too early not only had the disadvantage of not having other gliders to help, but also meant that the part of the day with good conditions was a smaller proportion of the task time compared to others.

This effect was amplified by the large variations that occurred in soaring conditions across the task and day. On a number of days when we were tasked to the south, the day developed with convection over 10,000ft on the Liverpool ranges and around Coonabarabran early, spreading north as the day heated up. The later you went, the sooner you met the cu and high convection after starting.

Day 2 was a good example of this, when I had the first hour and ten minutes of the task under 7,500ft until I met the clouds and then flew the task between 10 and 15,000ft. On that day, I left early because of predicted storms with a few others – the gaggle left about 40 minutes later. Storms did not turn out not to be a problem after all, and the gaggle had the advantage of 20 more minutes in the high height band above 10,000ft than we did.

I had anticipated that storms were going to be problem for the whole competition, having frequently experienced stormy conditions at Keepit before, especially at that time of year. The sporting risk of storms can be high with a very real possibility of outlanding. So avoiding storms was high on my agenda. As it turned out, I was much too conservative. For the most part, the storms didn't eventuate and as a result I left too early on many days.

The competition did have one classic storm day, though, on the last flying day. Negotiating storms to make the most of their energy is difficult without being caught with large dead areas ahead. As it turned out, all the competitors flew the task at a similar speed on that day but took very different tracks, some making quite radical divergences from the task.

With many interesting weather conditions and well set tasks, the competition delivered top competition soaring fun. We have access to such amazing soaring weather in Australia and there are opportunities for many gliding adventures, which are made all the more exciting when shared with fellow pilots.

PHOTO MICHAEL ZUPANC

ABOVE: Claire Scutter in her LS8.

OPPOSITE TOP: Lisa Turner landed her ASG29 at Burren Junction airstrip on the mass landout day.

OPPOSITE BELOW: Lisa with Ailsa McMillan and Jenny Thompson, who flew with Lisa in 18m Class.

Jenny Ganderton and tech expert for the team. His house made an excellent base – located up on the hill, which helped our radio reception, air conditioned and a good size for the daily crowd. Thank you, Grant! We really enjoyed your support.

TEAM FLYING

Team flying is difficult and requires a lot of training and practice, and the team decided very early that this was just too hard given where they lived. Instead, our focus was on co-operative flying. This meant group pre-flight planning and co-operation around the start and first leg, where co-operation could overcome any early difficulties. The pilots spoke a lot and compared how they were progressing and gave feedback on opposition gliders close to them.

When an individual decision resulted in splitting up, they still maintained a close connection through this technique. It certainly helped with the relationships within the team as all felt well supported by their colleagues. It also helped develop their skills in flying with pilots from other teams when the opportunity arose, knowing when to follow and when to lead out at critical times during the flight.

SOCIAL INTERACTION

Five of the pilots were living at the Sport and Rec facility, a 10 minute drive to the north of the field. Two were living on the airfield/State Park and two others lived in Gunnedah, a 30 minute drive to the northwest. Having been in close contact for the morning and for the flying, sometimes people just needed a break, so we didn't arrange to meet every evening for dinner. A few stopped for a drink after flying and had a chat to their coaches, and some arranged dinner with or two of the others. The team did have a team dinner each week either at the Sport and Rec or at Jan Dirks' restaurant, which was good fun. Lots of happy pilots and crew.

CLUB CLASS GLIDERS

IGC has changed the handicaps for Club Class over the past 18 months and the higher performance gliders now have a small advantage. Jo Davis flew her ASW20, which is the highest performing Club Class glider, and Jenny Ganderton flew her Mosquito, which is only slightly behind. These appeared to be the best options. Kerrie flew the SZD55, which has a good handicap although its performance is a little less, so she was not able to glide with Jo and Jenny.

Most of the Europeans flew LS4s, which is not a bad choice and certainly enabled them to team fly well. On the stronger days our team had an advantage, but some of the weaker days saw the LS4 just hanging on and gaining the handicap advantage. Overall, I believe that the choices our pilots made were good ones and helped their outcome.

In European conditions, the ASW20 is still a good option but the advantage is a little less. You certainly won't see many world comp pilots flying Cirrus and Libelle any more.

RESULTS

Our team pilots gave a great performance with a large number of podium finishes on a daily basis, including 11 day wins.

- 4 day wins by Ailsa McMillan
- 3 day wins by Jo Davis
- 2 day wins by Lisa Trotter
- 1 day win by Jenny Ganderton
- 1 day win by Lisa Turner
- Podium places by Claire Scutter and Cathy Conway helped to make green and gold a common colour on the daily podium.

Prior to the penalty issued -- see Tracking section next page -- Jo Davis was 1st in Club Class and Lisa Trotter 3rd in Standard. It was the first time that Australia has had two podium final placings.

LISA TURNER

For me, the most memorable day of the competition was the distance day when we all outlanded a long way from home, aka 'Epic Retrieve Day'.

On a clear distance day with a turn point 230km away in a straight line and 3 hours driving from home, I choose the safe option of landing on a good gravel airstrip at Burren Junction. I figured my crew would be able to find me, the derig in the dark would be fairly easy and perhaps some other pilots might land at the strip, too. I had been flying for about 7 hours, including our massive deviation to Round Castle Top north of Kaputar from the west, the long way around.

Given that I knew that 100km out, I was probably going to land there, Andrew Georgeson was already on the way and eventually got to me about 9.30pm after stopping and helping Ailsa derig at Narrabri on the way. We had the glider derigged in 10 minutes. Easy.

However, we knew the French 18m pilots were in a paddock about 5km past me and their crew were a long way away. The farms out here are massive and houses a long way apart. We unhooked the trailer and navigated several kilometres of farmers' tracks bordering irrigation canals in the dark to find them. The farmer was naturally on holidays. That was the easy part. We convinced both pilots to come with us as it wasn't a good idea to leave one alone in the paddock with the gliders. We left no pilot behind! Leaving my strobe light on the French glider, we collected my trailer and prepared to leave for town.

It took some coordination to arrange to meet the French crew in town, and when we were finally about to leave, the local lads rocked up half tanked in their ute – it was Friday night, after all. We left Andrew to talk to the three boys, who were about his size. It could have gone good or bad, but turns out they were trying to help the other French car, which had gone to their cousin's place at the farm next door. We followed them to a meeting point, and by this time half the town was out for the excitement at midnight...

Eventually, everyone was reunited. The crew left with all my torches following the locals to the glider and we took two tired pilots straight home with us.

But wait – there is more. It turns out that the 24hr McDonald's in Narrabri isn't really open 24 hours and it's the same with the big Shell truck stop. We didn't have enough fuel to get home but Google saved the day and we found a servo with a credit card payment pump. We finally made it back to Keepit just before 4am, tired and hungry but safe.

All that for 7 points more than I got for the safe and convenient landing at the airstrip. I have suggested they consider that option next time.

The performances were excellent and show that our pilots are world class. All pilots had a mix of good and not so good days as you would expect at this type of event, and all will be happy with what they achieved.

This performance augers well for future championships and hopefully all will take opportunities to demonstrate this.

TRACKING: APOLOGY

We identified an opportunity to help the team when we discovered that we could openly access the live tracking data from the tracking web site.

There has been a long history of IGC (International Gliding Commission) failing to take action to stop teams from using Private OGN stations (Open Glider Network) thus gaining real time tracking data to assist their pilots. We reasoned that the data we identified provided similar benefit and, as we expected other teams to be using private OGN stations at Lake Keepit, made the decision to use the data.

This was a major mistake as, in retrospect, it was determined that although it did not break any rules and we did not contravene any laws in accessing the data, it was Unsporting behaviour. As Team Captain, this decision was my responsibility and I deeply regret this choice.

The Competition Director issued a penalty for unsporting behaviour, which was targeted at me as the Team Captain, but the other Team Captains insisted that a penalty should apply to the Australian pilots, so the CD was forced to issue a 225 point penalty to each of our pilots. The size of the penalty meant that Jo Davis and Lisa Trotter lost their podium places. It was expected that the Jury would hear the case and determine if the penalties should be withdrawn. Unfortunately, the protest we made was not heard correctly and we were not able to present our argument to the Jury members, and a letter from the Jury President to me when I asked for a review indicated that she had already made her mind up, so the protest was dismissed.

The GFA Board has issued a report to GFA members, competitors and IGC and this includes my apology. This apology is issued willingly and is a true reflection of my regret in relation to this incorrect decision.

TERRY CUBLEY

ABOVE: Cath Conway in her Discus 2b in Standard Class.

WEATHER FORECASTING

One of the greatest contributions to our pilots was the weather analysis and predictions, which were made predominantly by Matt Gage with input from the different coaches. On quite a few days, Matt's prediction and monitoring of weather data enabled much better decisions by the pilots. Our approach was to explain what the possibilities were and then to update the pilots with reference to the different weather models so that they could make decisions on their tactics. We didn't tell them what to do, but gave them enough real time information so that optimum decisions could be made.

All of the weather prediction tools we use such as XCSkies, SkySight and so on, are based on an underlying weather model, of which there are many. For soaring predictions, GFS from NOAA in the US and ICON from Germany are widely used. I believe that SkySight uses the GFS model as its starting point.

In the run up to the competition, Jenny Thompson had been finding that XCSkies, using the ICON model, was regularly producing very different predictions compared with SkySight. Additionally, none of the models were taking the effects of smoke into consideration.

During the competition, the organisation would produce a weather briefing each morning that they used to set tasks from, and then present both this briefing and the tasks to the competitors at the main briefing. Immediately after this, the Australian team met as a whole to review the weather, task area and individual tasks. Matt Gage presented his view of the weather using both models and Brad Edwards presented his view of the task area and his local expectations for the day.

Where the models differed, the pilots were shown the differences, with a discussion on why we thought those differences existed. At the same time, we discussed the potential smoke influence based on both satellite images as well as predictions of where and how dense the smoke would be.

We had all experienced that smoke resulted in weaker conditions than predicted, but hadn't really looked at why. During the competition, there was regular discussion on the ground about what we thought was actually happening, to try and work out how the conditions experienced would vary from the predictions.

Our hypothesis was that the smoke acted in several ways:

- Smoke stops energy reaching the ground, which reduces the heating
- Overnight, smoke acts much like clouds in reducing the temperature drop
- Smoke in the atmosphere absorbs energy, which is then radiated out, heating the atmosphere directly, making it more stable

Comparing actual observations from the task area with predictions from both models suggests that all of the above were taking place. The surface temperature was well above predictions until late morning, when they started to lag behind.

The broad impact was that thermals would be lower and weaker than predicted. However, on many days, the atmosphere was predicted to be extremely unstable with storms very likely. Half degree increase in temperature could move from a blue day to widespread storms. In this situation, the final impact of the smoke was dramatic. By

☛ continued over page

IN CELEBRATION OF VOLUNTEERISM

I have often been told, "It's really so to find volunteers willing to help nowadays." After my recent positive experience at the Women's World Gliding Championship at Lake Keepit, I beg to differ.

We realised pretty early on that we would need more help than the Lake Keepit Club could offer and we put out a few calls on social media, by email, in the magazine and by word of mouth. The response was astounding and overwhelming. We had several people who drove from South Australia and Queensland – at their own expense – just to be a part of the team of almost 100 people who worked long and hard to make the competition safe and fun for the pilots and crews. Some stayed for a few days, some for a week and others for longer.

We worked on Christmas Eve, we worked on Christmas Day, we worked on New Years Eve, New Years Day and more, but I never heard anyone complain. It was a truly humbling experience to see how freely, cheerfully and enthusiastically these GFA members committed their time and expertise to make the event run smoothly for the 47 pilots who flew in the competition.

We worked long and hard, but it didn't seem hard at the time. Everyone worked together with a smile and nothing was too much trouble. It was my habit to get up at 6am to take my Guide dog puppy for a walk in the cool of the early morning. I found others were always out and about before me. Club members would be out sorting the irrigation on the launch pad, the toilets and club house were being cleaned and the all-important coffee van was setting up.

After feeding puppy his breakfast, it was back to the Operations centre to find the task setter and weatherman sitting down to analyse the day's conditions and make decisions about the tasks for the day. Meanwhile the Safety Officer was meeting with the Steward to discuss issues from the previous day, while outside the tugs were being prepped, the hangar was set up for briefing and the grid was laid out. Another team took the trackers off charge to hand out to the pilots and teams, while others copied and checked the task sheets. Most days I'd then have some sort of radio or TV interview to do before briefing.

At briefing, as well as briefing the pilots on the upcoming task and safety issues, we would award the day prizes from the previous day. Here I must thank Mad Dog Composites for using their contacts and pulling in a lot of favours to arrange an amazing array of day prizes and final prizes for the event.

Launching in the heat tested our teams of volunteers but they passed the test – every day launching all of the gliders safely and efficiently in difficult, hot and dusty conditions. The evenings often finished late with outlandings, which included everyone on one of the days - for that, most of us were thrown into the pool. Then there was usually some scoring issue or other to address, some question or issue that had arisen, that saw us finish around 10pm, and even then, other club members were still busy manning the bar or cleaning the club house.

We had some lovely comments on social media and in team blogs, such as:

- While their country was burning down around them, they took time to find our team a fridge and a bicycle.
- Nothing is too much trouble. If you want a lift into town, no problem. If you need a spare tyre for your glider, a new windscreen for your car – easy, we can help – and always with a smile.

I won't make the mistake of naming names and risk forgetting some – but you know who you are and you should know that you are deeply, deeply appreciated. Your efforts are what made the competition a great experience and we could not have done it without you.

Thankyou. Thankyou. Thankyou.

MANDY TEMPLE CD

ABOVE: Deputy CD and Safety Officer Anita Taylor and CD Mandy Temple in their 'office'.

BELOW LEFT: Treasurer Chris Bowman and EO Tim Carr.

BELOW RIGHT: Greg Edwards and some of the many volunteers young and old who ran wings during the competition.

changing the actual environmental lapse rate to the predicted rate, making the atmosphere more stable, the chance of towering cu or storms was greatly reduced.

We were also potentially seeing an impact on the predictions from the drought. Some of the prediction tools make use of standard tables of surface moisture and vegetation type at a monthly or more frequent interval. This is usually a long term average figure from observations. Both of these, as well as some other parameters, have a big impact on the surface dew point, which has an impact on cu, the side of them as well as the chance of storms. Observations during the competition showed that the surface dew point was often well below the one predicted by either model.

This left us with a lack of confidence in the predictions as a whole, and meant that we needed to estimate how actual conditions were likely to differ.

ABOVE: Jenny Thompson landing her ASG29.

BELOW: Jenny Ganderton prepaing to launch in her Mosquito in Club Class.

The simplest way we did this was to compare the predicted temperature and dew point at each BOM station in the task area with the actual reported figures on an hourly basis, starting from before launch. This meant our pilots had a feel for which model was likely to prevail. Continuing updates as well as checking latitudes reached with predicted cloud base or top of usable lift gave another clue as to what was happening, both in terms of timing as well as the overall picture.

On top of this, we constantly monitored satellite images and the BOM rain radar to look for large areas of cirrus, cumulus fields, over development as well as developing storms.

Whenever we had an updated view of what was happening, even if it was to simply confirm our earlier thoughts, it was communicated to the team via radio in such a way that our pilots would understand, but hopefully the other teams who were listening in would not.

During and after the competition, many of our pilots have commented that this weather information, both at our team briefing and during the tasks was the most valuable information we were able to provide.

Example: It is well known that starting late is usually an advantage, providing you will be able to complete the task before conditions weaken significantly. The 8th of January was an interesting day. SkySight and the organisation were predicting widespread storms by mid to late afternoon. On this basis, the obvious tactic would be to start early to make sure you got home before the storms made finishing difficult. Instead, we were reasonably confident that storms would not eventuate and the observations through the morning and during the pre-start period backed this up. In 18m and Club Class, our pilots started late and achieved day wins. At one point, it was looking like we would achieve a 1-2-3 in 18m. In Standard class, everyone ended up starting late at about the same time, so no one had any advantage from the conditions.

MATT GAGE GA

WWGC LAKE KEEPIT

3 - 17 JANUARY 2020

18 M

1 MÉLANIE GADOULET	FRANCE	JS3	8,137
2 ANNE DUCAROUGE	FRANCE	JS3	8,123
3 KATRIN SENNE	GERMANY	JS3	7,829
6 AILSA MCMILLAN	AUSTRALIA	JS1	7,461
7 LISA TURNER	AUSTRALIA	ASG29	7,186
13 JENNY THOMPSON	AUSTRALIA	ASG29	5,861

STANDARD CLASS

1 SARAH ARNOLD	USA	DISCUS 2	7,998
2 AUDE GRANGERAY	FRANCE	DISCUS 2A	7,932
3 AYALA TRUELOVE	GB	LS8	7,601
7 LISA TROTTER	AUSTRALIA	LS 8	7,418
8 CLAIRE SCUTTER	AUSTRALIA	LS 8	7,325
16 CATHERINE CONWAY	AUSTRALIA	DISCUS 2B	5,943

CLUB CLASS

1 ELENA FERGNANI	ITALY	DISCUS	7,859
2 CHRISTINE GROTE	GERMANY	LS4	7,735
3 CÉLINE RAULT	FRANCE	LS4B	7,708
4 JO DAVIS	AUSTRALIA	ASW 20A	7,703
10 JENNY GANDERTON	AUSTRALIA	MOSQUITO	7,091
17 KERRIE CLAFFEY	AUSTRALIA	SZD 55	5,668

TEAM TROPHY

1 FRANCE
2 GREAT BRITAIN
3 ITALY

soaringspot.com or bit.ly/2vwryqf

TOP LEFT: Ailsa McMIllan won the day in 18m Class and Lisa Turner took 2nd place on 13 January, beating reigning World Champion Katrin Senne into 3rd place.

TOP RIGHT: Jo Davis in 1st place with Jenny Ganderton in 3rd on 8 January. German pilot Christine Grote took 2nd place on the day. Jo won three days and finished in top position overall before penalty points.

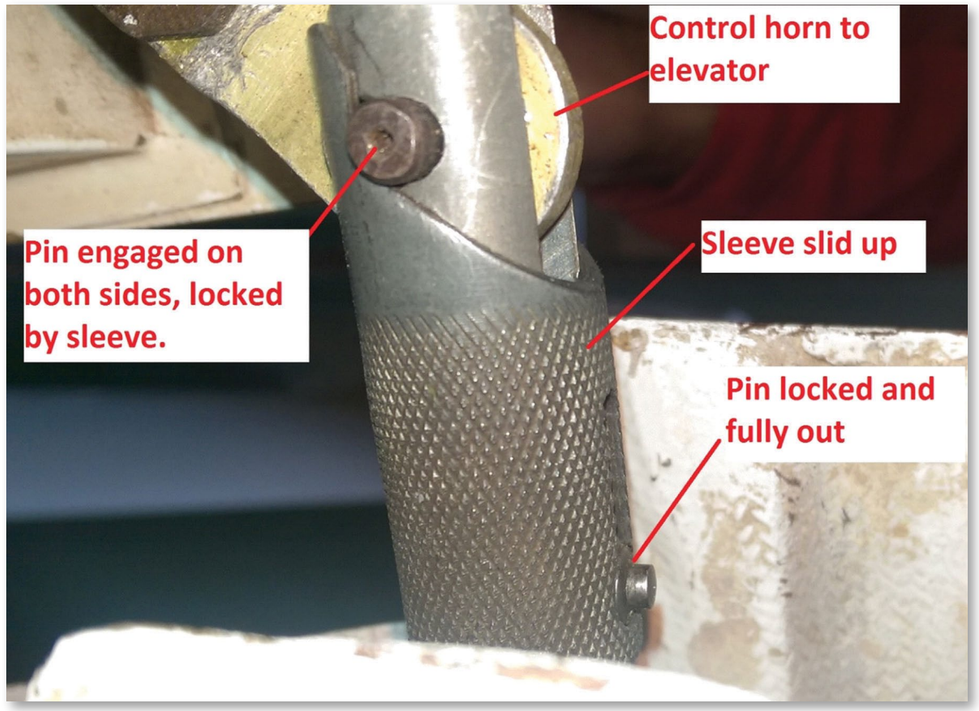
ABOVE: Lisa Trotter on the podium in 1st place for the second time, winning on 13 January with Claire Scutter in 2nd and French pilot Aude Untersee in 3rd place.

You can read about WWGC as it unfolded with pictures and video at
www.glidingaustralia.org

YOUTUBE GLIDING AUSTRALIA
bit.ly/2T3hX3ug

JANTAR SERIES CONTROL CONNECTIONS

DENNIS STACEY
Chief Technical Officer
CTO@glidingaustralia.org



There have been many reports over the years of Jantar sailplanes suffering rigging and flight control connection issues. Some reports detail serious consequences when complacency and failiure to follow GFA standard practice has led to serious consequences. Performing the Daily Inspection and/or the Independent Inspection post rigging must be carried out to the highest standard. The end result, if not carried out to the required standard, can hold serious consequences.

One such occurrence involved a Jantar pilot who elected to depart the aircraft in flight by parachute after an aileron disconnected, and another caused the pilot to suffer serious injury when attempting to land with the elevator control disconnected. Many other tales relate to similar mishaps that, only by luck or good management, did not lead to more serious results.

The Jantar aileron and elevator control connections, although well engineered and functional, are subject to connection and locking issues. Those unfamiliar with the control of quick connect assemblies need to exercise great care. The following is recommended for Jantar Operators, Daily Inspectors and Independent Inspectors performing rigging and/or daily inspections:

- **(a)** The aileron connections must be sighted to ensure that the control connections are correctly aligned / rigged. It is possible to connect one on of top the other. It is recommended to not only confirm alignment by feel but also by sight. Use a torch and mirror if required.

(b) Confirm both connection fittings are fully locked. The horizontally orientated fittings are locked when the button is out, locking the sleeve. The sleeve is locked when the button is popped and the sleeve cannot be retracted. To check the coupling is locked, attempt to slide the sleeve to the unlocked position only. DO NOT DEPRESS THE LOCKING BUTTON IN THE DAILY INSPECTION 'CHECKING' PROCESS AT ANY TIME. This applies to the pilot /rigger and the checker performing **INDEPENDENT INSPECTION.**

The GFA has received many defect reports over the years indicating that the member performing the DI, the pilot or the Independent Inspector, has in fact UNLOCKED the coupling while performing the checking process. Note that if depressing the button during the checking process, if at any time any side load or twisting of the sleeve occurs, the button if depressed can remain depressed. Check the locking of the coupling by applying an unlocking force to the **SLEEVE / SLIDING MEMBER ONLY.**

Note that various tailplane locking pins exist. Be sure of the orientation of your type.

Coupling picture for detail: Sleeve unlocked, pin depressed:

- The elevator has the same connection as the aileron but in this case, it is vertically orientated. Like the aileron coupling, if the connection is not locked (slightly twisted sliding member holding the locking pin down / in), gravity and flight forces can work the sliding sleeve downwards thus exposing the claw. The connection can now disconnect at any time.

Again, when the elevator control connection is connected and then inspected by the Independent Inspector during the tailplane rigging process, the person carrying out the independent or duplicate inspection must only check the connection by visually confirming the locking pin is out and by checking 'locked' by applying a force on the sleeve to unlock only. DO NOT PUSH AND TEST THE LOCKING PIN AFTER CONNECTION AND DURING THE DUPLICATE INSPECTION PROCESS. Subsequent daily inspections after rigging are inspected through the access hole on the fin starboard side.

The duplicate / independent control inspection is to check the control locking and flight control function after rigging. Refer MOSP / BSE for further details.

The pilot of a Jantar Std 3 in WA miraculously escaped death when the elevator of the Jantar disconnected in flight. The pilot controlled the glider to the landing place using weight shift. **THIS FLYING TECHNIQUE IS NOT RECOMMENDED!**

- The tailplane rigging pin must be inserted fully and orientated correctly to enable the locking pins/springs to engage. The pin consists of two load bearing sections connected by a smaller diameter shaft. The forward part has two vertical slots machined, into which the locking springs engage.

If the pin is either not pushed fully home or the locking pin is incorrectly orientated, the locking mechanism cannot engage engage.

IF THE LOCKING MECHANISM IS NOT ENGAGED, THE PIN CAN WORK FORWARD IN FLIGHT. If this occurs, the front mount will only be secured by the smaller diameter section and the tailplane leading edge will move up and down on control input with resultant controllability issues. This exact scenario was experienced by the author during the 1988 Bi-Centennial Nationals on Australia Day. It can happen!

GA

Sleeve fully engaged; locking pin fully out. Note the push rod lock nut is tight/secure and witness hole.

Sleeve and jaws open, ready for assembly. Locking pin just visible but depressed in unlocked position under sleeve

Sleeve locked, pin locked - fully extended

Sleeve locked, pin locked - fully extended

This is the risk: the pin and sleeve are almost correct but the sleeve is a little twisted and the pin is held in.

This is hard to achieve but is possible. MAKE ABSOLUTLY SURE THIS DOES NOT HAPPEN AS IT IS COMPLETELY UNSAFE AND UNLOCKED BUT THE CONTROL WILL FEEL AND ACT SECURE.

AS 33 MAIDEN FLIGHT

BY BERNARD ECKEY

It was a sunny but very cold winter's day in Germany when Schleicher's managing director took the long expected successor of the legendary ASG 29 for its maiden flight. Many invited guests braved the cold and the entire development team was also assembled on the little airstrip behind the factory.

The tug rolled into position well before lunchtime with Uli Kremer behind the controls of the new AS 33. As the chilly winter air didn't yield any lift he was back after less than an hour but the broad smile on his face said it all. "Only a few meters into the ground run I had full aileron control," he exclaimed. "We have equipped the prototype with our 'Es' sustainer engine, which also worked flawlessly. For the first few flights we are limited to a maximum speed of 160 km/h, so the focus was on the low speed handling and on testing the aircraft's agility.

ABOVE: Uli Kremer flying the AS33 for the very first time.

BELOW: The planview of the AS33

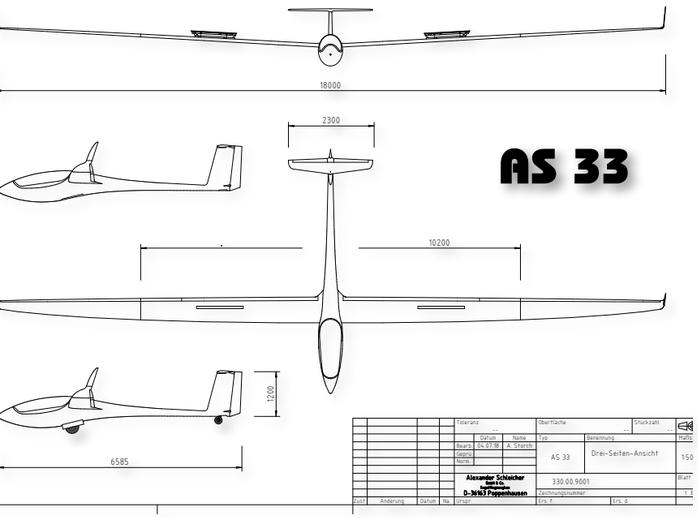
"I'm very pleased indeed! The AS 33 is not only very quiet and docile but its control harmony is also better than any glider I have ever flown. It even seems to trump the agility of the ASG 29. Our development team has done a brilliant job. No trim adjustments were necessary and at times the glider was flown hands-off. Slowly reducing the speed until the stick is hard against the backstop does not result in a sudden wing drop and even during the first landing I was confident enough to bring the speed right back.

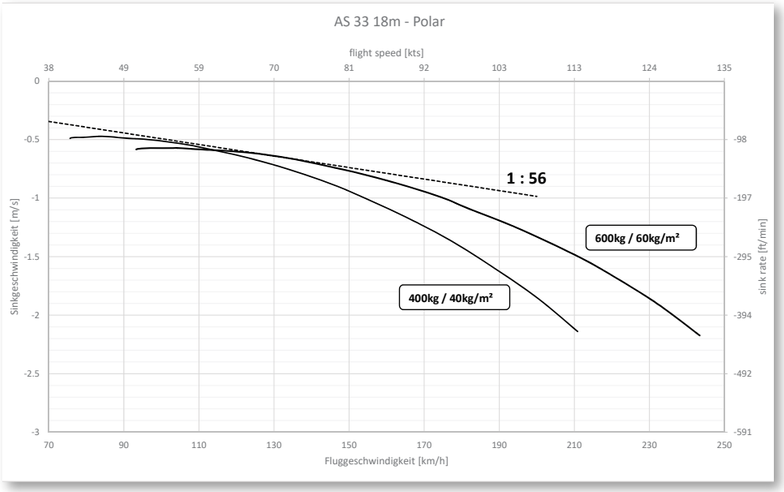
"This glider is suitable for early solo pilots and with all the improvements we have made, I'm sure that the AS 33 will soon regain pole position in both 18m and 15m Class. I'm now very confident that we will soon receive EASA certification. The ground frequency checks and the stress test of the new wing were already satisfactorily completed some time ago."

While Uli Kremer was still sharing his excitement with the many bystanders, Ulrich Simon – the brain behind the aerodynamic design – got ready for his flight in the AS 33. Back on the ground he was also full of praise for the newest 15/18m glider. "Most pleasing is that the stalling speed is clearly lower compared to the ASG 29," he said. "It endorses our theoretical predictions and confirms that the new wing is indeed as good as the wind tunnel tests and CFD (Computational Fluid Dynamics) software indicated.

"With the flaps in position 5 or 6, the new wing produces 7% more lift compared to the ASG 29. This is pivotal to our design as it allows the new AS 33 to operate at a wing loading of 60kg/m2 while still meeting the CS 22 minimum speed requirements. This is quite remarkable, given that the AS 33's wing area is only 10m2".

While Joschka Schmeisl, head of the development team, got himself ready for his flight in the AS 33, Ulrich went on to say, "Right from the beginning we were determined to fully realise what the current material technology permits but we were lucky that we were able to use the ASG 29 as our measuring stick. As many as 350 are already in operation around the world and the readily available performance data allowed us very accurate comparisons. Every component and every design change was analysed and thoroughly evaluated to arrive at maximum possible drag reductions.





Speed polar of AS 33

"Central to our design efforts was the computerised calculation of boundary layer behaviour as it clearly shows the transition from laminar to turbulent airflow. Especially where complex surface flows exist, this is of prime importance as an early transition to a turbulent airflow causes more drag and therefore has a detrimental effect on performance.

"In the past, various universities provided this service but nowadays we can use the company's own computer analysis tools, which has allowed us to conduct this work in our offices at the Poppenhausen factory. However, to play it safe we also conducted extensive wind tunnel tests, which confirmed almost all of our theoretical predictions and even led to some refinements."

According to Uli Kremer, the CFD review of the basic ASG 29 fuselage indicated an ideal fuselage contraction ratio and showed hardly any options for improvement. The external shape was therefore retained including the much acclaimed safety cockpit. For very tall pilots with extra large feet, the rudder controls were modified for a little extra room. Other internal improvements include a new instrument panel, an upgrade of the adjustable backrest and further crashworthiness advances.

Ulrich Simon continued, "We did, however, make some modifications to the wing-fuselage intersection after an extensive CFD analysis of six different configurations. A high wing attachment proved detrimental as it increased the wetted area by 0.26m2. Gerhard Waibel already experimented with a high wing configuration with the ASW 15 and ASW 17 but went back to a mid fuselage wing attachment on the ASW 20 and all his subsequent designs.

"It is interesting that today's highly sophisticated flow analysis has verified his decision. It shows not only the lowest amount of drag but also significantly less turbulent airflow around the tail boom and empennage. This made us adhere to the mid wing configuration but with changes around the wing-fuselage junction.

"This part of the work proved especially challenging as changing one parameter can negatively affect other aspects of the design. Different speeds, flap settings or angles of attack are only some of the variables to keep in mind. In the end we did, however, opt for a slight change of the root rip incident angle. It benefits high speed performance and improves in-flight visibility as a welcome byproduct.

"Another obvious drag reduction option was to integrate a fully retractable tail wheel. We did that and even opted for a sturdy, large-diameter 200x50mm wheel to provide plenty of ground clearance. An inside opening door eliminates damage to the little door cover, but we decided to offer the retractable tail wheel as an optional extra.

"Even minor improvements such as a CFD-optimised cockpit ventilation system with air extractor, an improved canopy seal, smaller control surface fairings and numerous lesser changes made a surprisingly large difference at the end of the day. All of them have contributed to an unprecedented best L/D of 56:1 for an 18m glider. A comparison of the polar curves speaks for itself. It shows a noticeable gain over the entire speed range, but especially in the mid to high speed range, the AS 33 will clearly be better than the ASG 29.

"Of course, the main performance contributor is the entirely new wing and the ability of the new profiles to generate slightly more lift. The combination of a modified wing planform and a total of 12 different wing sections got us very close to an elliptical lift distribution, which is essential when it comes to minimising induced drag.

"At first sight, the seven trapeze-shaped wing elements give the impression that the leading edge is evenly rounded. However, perfectly rounded leading edges render the use of sanding templates ineffective. Only wing elements with a straight leading edge allow precision sanding in order to achieve the profile accuracy required for long laminar airflow above and below the wing. This is crucial for fully realising this glider's performance potential. We also opted against kinks in the outer wing as they cause a small airflow disturbance and hence unnecessary amounts of drag.

"In comparison to the ASG 29, the wing area of the AS 33 is reduced by about 5%, which has increased the aspect ratio by roughly the same amount. Our 3D airflow simulations suggested a different shape of the outer wing as well as longer and pointier winglets.

"These new winglets deserve a special mention as they generate no additional drag at high-speed but significantly reduce induced drag while thermalling. As with all our other models, they are detachable for ease of ground handling and trailering and can quickly be re-attached with 'Snap-On' fittings. All of this ensures that the excellent climb performance of the ASG 29 is retained and that the aircraft can cope with even the weakest and narrowest of thermals.

"Equally important is a reduced sensibility to atmospheric turbulence and the aircraft's ability to provide good feedback from the air. We are now very confident that all these targets have been met.

"To enhance agility, we have further refined the ingenious AS flaperon mixer. It provides greater control deflections at the outer wing and minimises drag with positive flaps in circling flight. It also sets the ailerons to negative when landing flaps are selected. This ensures full aileron control almost all the way to the end of the ground run. In other words, changing to negative flaps after touchdown isn't necessary. Finally, we added a paddle to the airbrakes to allow steeper and even safer landing approaches."

Right from the start, the AS 33 design team was asked to implement a rigorous weight reduction program. The results are impressive! The pure 18m glider tops the scales at just 285kg and with a 75kg pilot on board the minimum wing loading is as low as 36kg/m2. When the 15m outer wing panels are fitted, the minimum wing loading increases to

☛ continued over page

40kg/m2 but both figures are still low enough to provide a definite advantage on weaker competition days.

With a total water ballast capacity of 170 litres, the maximum wing loading can be increased to 60kg/m2 in 18m and even to 62.5 kg/m2 in 15m configurations. Both inner and outer wing panels can carry water ballast and the tail tank holds an additional 5 litres. Fully ballasted and flown at a speed of 110kts (204 km/h) the sink rate should be an astonishing 0.5 m/s lower compared to the ASG 29, making this new glider a truly fearsome weapon in two different competition classes.

As most customers require an engine, the AS 33 is optionally available with the proven 24 Hp (18 kW) power plant, based on a Solo engine. The recent integration of an electric starter motor allows fully automated engine deployments and engine starts – all by way of a single switch. It has all but eliminated 'finger trouble' and in terms of weight and range this drive unit is ahead of jet engines or electric drive systems.

Although the AS 33 comes with 18m wings as factory standard, owners can tick the box for 15m tips on the option list if they like to compete in both 15m and 18m Classes. The outer panels are lightweight and just under 4m (2.5m) long and can easily be fitted or removed by a single person. Other optional goodies include LED flashlights in the leading edge of the fin, solar panels on the engine bay doors, a leather interior, an acrylic finish, bug wiper garages and oxygen equipment to name only a few. A tail tank and a second avionics battery are now included in the standard package.

It seems that a very good glider can be made even better and to date as many as 50 customers have already signed up for an early slot on the production line. The initial production rate was set at three gliders per month. It will keep the factory busy for some time but, according to management, the production rate might soon be increased to reduce waiting times.

As a 'thank you' to loyal early customers, serial production already started prior to the maiden flight to allow some pilots to compete in the new AS 33 at the forthcoming World Championship at Stendal, Germany. No doubt, the eyes of all keen competition pilots will be on this newest of 15/18m gliders.

This only leaves one question unanswered. Why has Schleicher broken with tradition and dropped the first letter of the designer's surname in the aircraft's designation. Uli Kremer has the answer!

"It is no longer a single designer but a whole team of specialists who work closely together to satisfy the ever increasing expectations of today's competition pilots. Yes, Ulrich Simon was responsible for the bulk of the aerodynamic design but Tobias Mörsel, Andreas Storch, Manfred Münch and Paul Anklam also contributed greatly, not to mention Joschka Schmeisl. Therefore, it wouldn't be fair to give credit to only one member of the design team."

It looks like we will have to get used to only an 'AS' (for Alexander Schleicher) in front of the running model number. It avoids confusion and - if you ask me – it is also a change for the better!

GA

SCHNEIDER AIRCRAFT TYPE CERTIFICATE HOLDER

ANTHONY SMITH
Chair Airworthiness Department
cmd@glidingaustralia.org

SCHNEIDER AIRCRAFT TYPE CERTIFICATE HOLDER

Following the passing of Harry Schneider, Cathy Conway has had discussions with the Schneider family to become the Type Certificate holder for the ES series of aircraft. The paperwork is currently being processed by CASA. While this happens, the task of sorting and collating all of Harry's paperwork and spares has begun.

WEIGHT AND BALANCE

GFA Airworthiness is currently working with CASA to gain a re-issue of the authority to conduct weight and balance testing on sailplanes. The original delegation to conduct weight and balance came under the delegation to issue the DA 1109 Inspector Certificate. This now needs to be updated to have a stand alone authority for weight and balance. Once the re-issue has occurred a new weight and balance training package will be rolled out.

However it has been brought to my attention recently of a number of examples in recent years where the weight and balance has been conducted incorrectly and clearly potentially dangerously.

In one example, a significant amount of fuel was in the fuselage tank of an aircraft when it was weighed. This increase in weight and the corresponding shift of CG was not accounted for in the calculations, nor it appears were the results compared to the previous weighing, which would have shown a significant change in the aircraft weight and CG location.

In another example, a two seat aircraft appears to have been incorrectly weighed resulting in a significant increase in the minimum pilot weight required. While the results were recorded in the logbook, the aircraft placards were not updated. A re-weigh some time later showed the earlier weigh results were wrong and that the original placards were in fact correct. It is extremely worrying that if the results of the earlier weigh had been correct, the aircraft could have been flown with the CG beyond the aft limit because the placards had not been updated.

A further example featured an aircraft where the 'a' and 'b' measurements had been conducted with the tail wheel on the ground and the fuselage not level. In this case it was only luck that other mathematical errors in the weigh calculations caused a near correct result in the end.

Until the new weight and balance training package is rolled out I urge everyone who does exercise their weight and balance authority to consider the implications of what they are doing and exercise due diligence when weighing aircraft.

Check that the weigh kit has been calibrated within the last two years.

Follow the correct procedure and use the correct forms.

It is good practice to compare the results of the new weigh to the previous weigh(s). If there are significant changes in either the weight or the CG position, these changes should be investigated and accounted for. If the cause of the change can't be found, a second weigh or checking by an independent person should be considered.

Ensure that the results are entered in the logbook and that the aircraft placards are updated.

178 SECONDS TO LIVE
A GLIDE INTO IMC

SIDNEY DEKKER
NATIONAL SAFETY ADVISOR

Where I learned gliding back in the 1980s, there was little bush and a lot of rain. Terlet, where I soloed at the age of 14, is in the Netherlands. It is a country known for (among other things) flat terrain, lots of people, many of them on bicycles, and the North Sea right next door. Bushfires hardly ever happen, and rain always seems to be just around the corner. So the Netherlands has IMC, or instrument meteorological conditions, for sure, indicating low cloud, drizzly haze and probably rain or mist. So conditions are, in that case, not soarable. A short hop on and off the winch may be all there is for the day - if cloudbase allows it.

KAPNOS (SMOKE)

So this past season here in Australia was a bit of a novelty for me - and probably for others as well. With bushfires raging all around, Warwick, Queensland, where I fly now, would not have been the only field to have cancelled operations due to IMC. Of course, calling them instrument meteorological conditions is a bit of a misnomer, as there is less meteorological about it than, let's say, kapnocological – kapnos is Greek for smoke. So perhaps it should be IKC, or instrument kapnocological conditions.

Continued, soaring flight into IMC is very likely to have happened during this season as some pilots flew on for many kilometres before abandoning their tasks. Some found conditions worse than expected on their way home, and others completed long cross-country flights without much visibility of the sky above or ground below. The visual flight rules that apply, of course, depend on the airspace you find yourself in.

Nevertheless, with smoke haze, determining what IMC should be can be pretty difficult. When are you no longer 'clear of cloud,' or when have you breached a certain vertical or horizontal distance from that 'cloud' if the cloud is made of smoke? Of course, with ground references available, you can estimate or, with GPS, even measure the forward visibility you still have. This can tell you whether you are still legal or not.

In my experience flying in the smoke haze this past summer, I stopped feeling comfortable a few kilometres before I would have stopped being legal. But where 'being legal' might have a sharp definition, 'feeling comfortable' is stretchable. With mounting frequency during bushfire season, I stopped counting on 200km horizons all around, and might have got somewhat used to flying inside a cone of orange and yellow and rusty red. The question is: what accounts for pilots continuing their soaring flight into IMC in these sorts of conditions? If it didn't somehow make sense to them at the time, they wouldn't be doing it. There must be some robust answers to that question, relating to human factors.

ABANDONING THE TASK

In hindsight, we can simply ask why a pilot didn't abandon the flight when they realised that they would not be able to complete it in sufficient visual conditions. We can ask this even if we ourselves were the pilot in question. Continuing a flight against written guidance or regulations happens quite a lot, and we know from previous studies, mostly in powered flight, that abandoning a flight is one of the best investments that pilots can make in safety to prevent loss of control accidents due to poor visibility.

Such advice may seem inane or even blatantly obvious, but shouldn't be confused with an explanation for why many pilots do not abandon their flights. Likewise, characterisations such as 'press-on-itis' (Khatwa & Helmreich, 1999) do little to explain why pilots do press on. Such words really only give a new label to a very difficult problem, without offering any deeper understanding.

Similar recommendations directed at pilots are, as a result, difficult to implement. Because even if pilots can be shown to possess such knowledge in theory – for example, acute awareness of the visibility requirements for their particular flight and airspace – becoming aware that the flight should be abandoned, hinges on a particular awareness of the situation itself.

A closer look at the data from continued flight into IMC – again, mostly based on powered flight – suggests that pilots do not primarily interpret situations in terms of visibility criteria, but in terms of their ability to continue the flight. A hard lineof 5km, for instance,

☛ continued over page

when set in context of the last leg of a long soaring flight after an intense, busy, cumulus-less, competitive day, becomes pretty meaningless – or pretty negotiable.

So, there seems to be little mileage in just reminding pilots of the (lack of) visual conditions that demand abandonning their flight. Almost all pilots are able to talk about such conditions, or look them up in guidance materials and regulations, and almost all pilots are able to offer advice about how to do the right thing – until they are players in an unfolding situation themselves.

Because then, pilots do not see primarily generic criteria, against which they can make some cognitive calculus of the legality and wisdom of continuing their flight. When on a soaring flight themselves, pilots see a situation that still looks doable, a situation that looks like they can make it, a situation that may hold a useful or desirable result.

This response is entirely consistent with decades of human factors research. Operational decisions in an evolving situation are not based on a 'rational' analysis of all parameters that are relevant to the decision. Instead, the decision, or rather a continuous series of assessments of the situation, is focused on elements in the situation that allow the pilot to distinguish between reasonable options. The psychology of decision-making is such that a situation is not assessed in terms of all applicable criteria, certainly not quantitative ones like 5km here or 1000ft there, but in terms of the evolving options the situation appears to present.

PLAN CONTINUATION

An interesting line of research has come from the NASA Ames Research Centre in Silicon Valley. A phenomenon that Judith Orasanu, a research psychologist in human factors, and her colleagues called 'plan continuation' captures a considerable amount of the data available from cases where a flight was continued despite cues that, in hindsight or in written guidance, pointed to the wisdom of abandonment.

In fact, in this study, three out of four cases in which pilots made tactical decisions that turned out to be erroneous in hindsight fit the plan-continuation pattern. There isn't even convincing data about some pilots having a predisposition to such errors. Human factors research from a number of decades strongly points to the generality of this issue, not its dependence on either personality or background.

The NASA research takes as its starting point the psychology of decision-making consistent with the last decades of research into it. Decision-making in complex, dynamic settings, is not an activity that involves a weighty comparison of options against pre-specified criteria. Rather, such decision-making is 'front-loaded', which means that most human cognitive resources are spent on assessing the situation and then re-assessing it for its continued do-ability.

In other words, decision-making on an approach is hardly about making decisions, but rather about continually sizing up the situation. The decision is often simply the outcome, the automatic by-product of the situation assessment. This is what turns a decision to continue flight into IMC into a continually (re-) negotiable issue. Even if the decision to continue is not made on the basis of an assessment of the situation now, it can be pushed ahead and be made a few or more seconds later when new assessments of the evolving situation have come in.

Orasanu's research shows that even more important than the cognitive processes involved in decision making are the contextual factors that surround a pilot at the time. The order in which cues about the developing situation come in, and their relative persuasiveness, are two key determinants for plan continuation. Conditions often deteriorate gradually and ambiguously, not precipitously and unequivocally.

In such a gradual deterioration, there are almost always strong initial cues that suggest that the situation is under control and can be continued without increased risk. This sets a pilot on the path to plan continuation. A strong cue could be the sighting of a mountain or hill top at some point during the flight, or the fact that others are also continuing the flight.

Weaker and later cues that suggest that another course of action could be safer, may then have a hard time dislodging the plan as it is being continued. After all, the pilot literally sits on evidence that the situation has been handled competently and safely, otherwise they wouldn't be there. So they might as well continue a bit farther.

Note how plan continuation differs from a 'confirmation bias'. Confirmation bias suggests that pilots seek out evidence that supports or confirms their hypothesis of the situation, at the expense of other evidence. But in the situations we are talking about here, there is little to suggest the pilots would have been actively avoiding evidence that spoke against the plan as it was being continued. Indeed, the bias in confirmation bias seems to be produced almost exclusively in the mind of the retrospective observer, the one calling it a 'confirmation bias', rather than in the mind of the person observed.

Once again, it is hindsight that makes certain indications more noticeable than others. It is only a hindsight interpretation against which decisions of others (or even yourself) can be judged to have been 'biased'. This, of course, is hardly a meaningful conclusion. Only hindsight would have shown which cues were more important than others, and pilots inside the situation don't have hindsight, so cannot meaningfully be judged to be biased relative to it.

DRIFT INTO FAILURE

In 2011, I wrote a book called 'Drift into Failure,' which shows that a pattern of plan continuation is recognisable even in the way entire organizsations – including, I suppose, gliding clubs – gradually shift their norms of what is acceptable or safe. Small increments, the fundamental adaptability of humans, and the dynamics and complexity of the situation that is apparently still being handled adequately, all conspire against a decision to break it off and give it up. That is why I have called this piece 'a glide into IMC' to literally capture the metaphorical 'glide' in what we as pilots still consider doable, acceptable or safe.

Regardless of a pilot's background, one promising countermeasure may be to not just remind pilots of the numeric criteria for visual conditions in their airspace, but to offer generic encouragement for all the cases in which pilots abandon a flight. of course, Such encouragement is difficult to uphold in the face of competitive or other pressures, and incredibly easy to undermine by sending subliminal or even overt messages to pilots that completing a task is all-important.

It is crucial, then, to communicate to pilots that breaking off a flight is not only entirely legitimate. It can actually be desired. It means getting pilots to buy into the idea that each landing at home base is a missed opportunity for practising an outlanding.

ADVICE FROM THE EMO

Every person is liable to make errors. Therefore, it is important that pilots identify the risks that deteriorating en-route weather could present, particularly when the route is associated with any high ground, surface obstructions or proximity to controlled airspace, and consider how to manage those risks before the flight.

Visual flight rules (VFR) flights that inadvertently or intentionally enter into instrument meteorological conditions (IMC) are a significant safety hazard to general aviation flights. Loss of control and controlled flight into terrain accidents by VFR pilots account for nearly three-quarters of all weather related general aviation fatalities. Fortunately, such events are rare in gliding but a glider pilot may still attempt to continue a VFR flight in IMC conditions for such reasons as:

- Placing priority on the wrong factors when making decisions, such as focussing on completing the task (plan continuation) or on getting back home at all costs (sometimes referred to as 'get-home-itis').
- Poor situational awareness, perhaps resulting from pilots' lack of experience in interpreting changing weather conditions once airborne.
- Over-confidence leading to poor risk awareness because pilots overestimate their own abilities and are complacent about flying into adverse weather.
- Internal (personal) and external (social) pressure may be allowed to bias pilots' decisions to continue the flight even when objective assessment of the situation suggests they should do otherwise. For example, during a competition or badge flight a pilot may feel a strong urge to complete the task.

PRE-FLIGHT PLANNING STRATEGIES

To reduce the risk of an accident from inadvertent VFR flight into IMC, pilots need strategies to avoid adverse weather and a framework of actions to assist recovery. The first step a VFR pilot should take to avoid encountering IMC is effective pre-flight planning. Pilots must be able to access comprehensive weather information to use at the planning stage.

For a typical glider flight, pilots should ensure that they obtain an area forecast covering the route and a forecast of the wind speed and direction valid for the duration of the flight. At the lower flight levels, local conditions can have a dramatic effect on the weather.

Where available, Terminal Aerodrome Forecasts (TAFs) and Meteorological Terminal Air Reports (METAR) for the destination and all other airfields en-route should be obtained. If the specific airfield or strip does not have these available, the data for surrounding airfields will still be a useful source of information to aid decision making.

ANALYSIS AND DECISION

All this information can then be comprehensively analysed and from this the pilot can make a holistic decision on whether the flight can be made safely and which route is most suitable. Such information is typically provided at a club or competition briefing.

Once airborne, the pilot should adopt pre-planned alternative courses of action as necessary to avoid flying into IMC. If the pilot enters IMC despite these precautions, the priorities are (1) maintain control of the aeroplane – spatial disorientation is the main danger, (2) fly safely back to VMC conditions, or (3) obtain appropriate ATC assistance.

IDENTIFYING IMC

VFR pilots should assume they are in IMC conditions any time they are unable to maintain aircraft attitude control by reference to the natural horizon, regardless of the circumstances or the prevailing weather conditions. In addition, a VFR pilot should accept that they are effectively in IMC anytime they are unable to navigate or establish geographical position by visual reference to landmarks on the surface. Such situations must be accepted by the pilot involved as a genuine emergency, requiring immediate action.

178 SECONDS TO LIVE

As gliders in Australia are not certified for instrument flight and only have basic instrumentation, it is unlikely the pilot will be able to fly solely by reference to flight instruments for any length of time before they become spatially disoriented. Spatial disorientation, if not corrected, can lead to both loss of control (for example, a spin or spiral dive) and controlled flight into terrain accidents.

For further reading, refer to
flightsafetyaustralia.com/2016/01/178-seconds-to-live-vfr-into-imc/

OR bit.ly/2PpKr5j

CHRISTOPHER THORPE
Executive Manager, Operations
emo@glidingaustralia.org

Occurrences & Incidents

All clubs and GFA members are urged to report all occurrences and incidents promptly, as and when they occur, using the GFA's occurrence reporting portal at glidingaustralia.org/Log-In/log-in-soar.html. This is always best done while all details are fresh in everyone's mind.

You can read the full SOAR report at http://tinyurl.com/ltmko56

Reports noted 'Under investigation' are based on preliminary information received and may contain errors. Any errors in this summary will be corrected when the final report has been completed.

From 01/11/2019 to 31/12/2019

Damage	VSA	GQ	SAGA	NSWGA	WAGA	Total
Nil	6	9	2	2	4	23
Minor	4	2	2	2	1	11
Substantial		1			2	3
Total	**10**	**12**	**4**	**4**	**7**	**37**

Injury	VSA	GQ	SAGA	NSWGA	WAGA	Total
Nil	10	12	4	4	6	36
Serious					1	1
Total	**10**	**12**	**4**	**4**	**7**	**37**

Phases	VSA	GQ	SAGA	NSWGA	WAGA	Total
Launch	2	4	1		4	11
Landing	7	3	2	2	1	15
ng		1		1	1	3
In-Flight		3	1	1		5
Thermal					1	1
Ground	1	1				2
Type of F						
	VSA	**GQ**	**SAGA**	**NSWGA**	**WAGA**	**Total**
Training/	4	3	1	1		9
Local	4	3	3	1	4	15
Competition		1			2	3
Cross-Co	1	4		1	1	7
AEF				1		1
Ground C	1	1				2
Total	**10**	**12**	**4**	**4**	**7**	**37**

Level 1	NAGA	VSA	SAGA	NSWGA	GQ	Total
Airspace		2			1	3
Consequential Events			1			1
Environment				1		1
Operation	6	8	3	3	9	29
Technical	1				2	3
Total	**7**	**10**	**4**	**4**	**12**	**37**

15-NOV-2019 WAGA
LOSS OF CONTROL
LAK-17A NEAR COLLISION

Under investigation Shortly after release from aerotow the glider was observed to enter a fully developed spin/spiral and descend rapidly. The glider crashed about 4kms southwest of the Cunderdin airfield. The pilot bailed out successfully and landed close to the wreck of the glider but suffered injury and was hospitalised for a few days. The pilot reported commencing a turn in a thermal when he felt the controls become less effective coincident with hearing a sudden soft but sharp noise. The aircraft entered a spin, and when the pilot found recovery action to be ineffective, he bailed out. The parachute deployed moments before the pilot contacted the ground heavily on his posterior. Investigation is considering the possibility that the left winglet may have disengaged in flight.

15-NOV-2019 WAGA
COLLISION WITH TERRAIN
DG-1000S

Under investigation The sortie was a mutual flight for practice between two experienced pilots, one of whom would conduct the take-off and the other the landing. After a 20-minute flight the crew elected to join circuit to land, as the aircraft was needed for an instructional flight. The pilot flying joined the downwind leg a bit high and used airbrakes to descend. The sink rate increased, and the pilot flying changed direction toward the airfield, but the glider continued to descend at a high rate. The pilot stated, "The sink intensified with the vario indicating fully down, so I turned onto base earlier than planned. The sink continued and I recognised we were drifting towards the tree line. I increased the angle of bank and lowered the nose to maintain safe speed 63 knots, levelled the wings close to the ground and rounded out as I approached the start of the bitumen touching down just before the three airfield end marking lights. The right wing struck all three lights and the aircraft spun about 50 deg to the right." Several pilots witnessed the accident from the ground and reported that the glider's airbrakes were deployed throughout the circuit instead of being closed to arrest the rate of descent.

5-DEC-2019 GQ
COLLISION WITH TERRAIN
SZD-48-3 JANTAR STANDARD 3P

Under investigation While on the first leg of a competition task, the pilot found himself continuing low over unlandable terrain in hope of finding good lift. Upon arrival on the other side of the unlandable terrain, the pilot was faced with limited outlanding options. The first selected paddock proved unsuitable due to numerous contours and SWER lines, so the pilot landed in an alternative paddock. The pilot stated that he relied on the program XCSoar for wind direction, leading him to land with a tail wind. This resulted in the pilot joining final too high, resulting in the glider landing well into the paddock. The glider struck a contour at the end of the paddock and the pilot initiated a low speed ground loop through 45 degrees in order to avoid the end fence. The glider came to rest with the wingtip approximately 1 metre from the fence, and the lower forward fuselage was substantially damaged.

GA

CLASSIFIED ADVERTISING

glidingaustralia.org

For members' convenience, Classified Ads can be purchased from the Gliding Australia website at glidingaustralia. org Go to Classifieds then click on the link and complete the online form where you will need to provide the text for the ad and any photos, if required. The cost for the ad will be determined by the number of words and any photos you wish to add. You will then be taken to a secure payment area to process your payment. Your ad will be placed on the GFA website for a month from the date of payment. Ads that are financial at magazine deadline (1st of every second month) will appear in the GA Magazine. For any enquiries please contact the GFA office on 03 9359 1613.

SINGLE SEAT

VH-GKW GLASFLUGEL 303 MOSQUITO

It's an early one, s/n 5 built 1976 from the first moulds, which means the wings are straight! Approx 2,000 hrs, 800 landings. Basic instruments plus Borgelt B800, Dittel FSG71M radio, MiniOz Flarm and Winter mechanical vario. Current form-2. Day winner at the recent women's worlds; great glider for club class comps. Large roomy cockpit. Empty weight 269 kg, mas AUW 450. Water ballast serviceable! Winch & Nose hooks. Nothing to be done - buy it now and start flying! Trailer is home build and well laid out. Currently based at Lake Keepit. **Jenny 0403 984019**

VENTUS 2B

$100,000NZ (15m with flaps), 1995, 2475 hours, oxygen, transponder, Cobra Trailer. Contact Chris Streat - selling on behalf Omarama Gliding Club who are upgrading to a Duo already purcahsed.
tel + 64 274 856 236

VENTUS2C(X)T

18 metre, airframe 980 hours, PU paint finish, new engine and prop fitted, 4 hours run time, excellent condition, all paperwork from date of order available. Card compass, Altair PRO/Vega/RU flight recorder, Tasman Vario, Filser AT600 radio, Power Flarm, Swiss Bat readout. Tow gear, wing walker. FG Avionic clamshell trailer matched and imported with aircraft. Further info, **Ray** at skysailing01@gmail.com. **0424 612 686 reasonable offers considered.**

VH-GAD SCHEMPP-HIRTH VENTUS A

serial no 9, manufactured 1980. 1,397hrs, 481 launches. ASI, ALT, Compass, Cambridge 301/302 Vario Nav. Sage vario and averager. Becker radio. New MH O2 bottle + regulator, dispenser 6years old. Mini OZ FLARM, Oudie 2. Blue tinted canopy, Tail wheel, approved winglets. Wing and tailplane covers. Gelcoat refinished at various stages during lifetime. Enclosed Aluminium/ steel frame dual axle trailer. Tow out gear. Pilot weight 68-96kg. Form 2 till May 2020. Price $55,000. At Bacchus Marsh Vic. Contact **Richard 0457366799** or email rc.callinan@bigpond.com

VH-IZW SPEED ASTIR II

1780 hrs 860 Ldgs . Retractable Gear , Flapped , Ballast , 40:1 glide , Very Tidy , O2 , Chute , Tow out Gear , and one person Rigger included . Clam Shell Trailer in very good condition . Fuse and Top of Wings repainted with Poly U in 2014 .Form 2 August Go Fast Stripes free. $28,000 at Kingaroy . **0409670243**

VH-JRG ASW20F

Youngest ASW20F in Australia, manufactured 3/81 with lift-up panel, tailwheel. 402hours/160launches. Refinished 2017 in high-grade PUR.

☛ continued over page

Removable panel with Altair, CI302 vario/IGC logger and new instruments (ASI, Alt, compass, PowerFlarm Core, dual-watch XCom). Winglets, mylars, air-extractor, hydraulic-brake, self-locking l'Hotelliers, Oxygen tube, circuit-breakers, new harness webbing and new forward release. 275kg empty, pilot 55-110kg. Excellent tow-out gear, basic Thompson trailer. **Contact John Ridge 0417 868 213**

TWO SEATERS

SCHLEICHER ASK 21 MI GLIDERS

FOUR (4) available for sale separately, 2-seater, Self-launching, Dual engine controls. Road transport trailer included with each glider.
For sale via Pickles auction. Bidding starts at just $1 with NO reserve. Register to bid onhttps://www.pickles.com.au/campaigns/ex-military from Friday 6th March 2020. Inspection held on 10th – 13th March 2020 at Avalon Airport. Email us for more information and attendance at the Inspection event: info@australianfrontlinemachinery.com.au

VH-XQY - PRICE REDUCED

Due to a fleet upgrade, Hunter Valley Gliding Club offers a Puchacz for sale. Purchased new in 1991 by HVGC. Fastidiously maintained and in great condition. LX V7 vario front and rear, Xcom radio with rear seat repeater, Flarm with displays both seats. 4652hrs & 10345 landings. Fresh Form 2. No trailer but we can assist with a trailer to get it to your site. $38,000 inc GST. **Contact Jeff Hunt – 0402 152 511**

MOTOR GLIDERS

VH-HNM SF25 Motor Falke

Sale driven by owner's illness. Scheibe SF25B, nil prangs, 1335 Hrs TTIS. Not currently airworthy. Last flown August 2009. Located at Balaklava Gliding Club – as is /where is. Make me an offer – "all offers considered". Additional details available. Email hudson@senet.com.au **Mob: 0419 803 093**

VH-GNM - LS4A TOP MORTOR GLIDER

2,389 hrs 747 landings 71 hrs engine/prop. Aircraft in Good Condition. MH portable EDS oxy. National 425 chute. Covers Fuselage refinished with Prestic 2381 in 1989. Wings refinished with Ferro in 1990. Aircraft always hangared. Private owner. Annual inspection completed Jan 2020. Enclosed Trailer. Tow out gear. Contact **Ron Brock** rkbrock5@bigpond.com $60,000

VH-VRG DIMONA H36

Approx. 2200 hrs total time. Engine and prop 22 hrs since new. Can negotiate to sell with fresh annual. Wonderful touring aircraft in excellent condition. **Contact 0428 722 066 f**or details Price $60000 ono

VH-DXN WHISPER MOTORGLIDER 16M

Limbach L200 80HP and Hoffman V62R 3-position prop. Engine and propeller 12 hours TSOH. This is the original manufacturer's prototype built in 2004. Now more than 30 flying in the world. Total airframe time is approximately 275 hours. Comfortable cruising at 90 knots with minimal fuel burn or sound gliding performance at 1:28. Currently located at Bindoon WA. Price $50,000 neg. Contact murray.dixon2@bigpond.com

VHF RADIOS - DITTEL, BECKER, ATR

All Bench Checked and servicable, Value prices. **Call Arnie 0418 270 182** or email arnie.hartley@gmail.com

NAVITER OUDIE IGC IN EC $1150 AND MOUNTAIN HIGH O2 SYSTEM-(AL-180)

also in as new condition, $1150. Contact: lanmar13@bigpond.com or call **Lance on 0427 536 736** for more info.