The Gliding Federation of Australia Inc

Occurrence Summaries

01/01/2021 to 31/12/2021

Region(s): All

Club:

Christopher Thorpe
Executive Manager, Operations
The Gliding Federation of Australia Inc.

27-Jul-2023

The Gliding Federation of Australia Inc
SOAR Accident and Incident Occurrences
General Statistics

Date From: 01/01/2021
Date to: 31/12/2021

Damage	**VSA**	**SAGA**	**NSWG**	**GQ**	**WAGA**	**Total**
Nil	25	30	23	34	8	120
Minor	16	6	7	12	3	44
Substantial	4	2	3	7	3	19
Total	**45**	**38**	**33**	**53**	**14**	**183**

Injury	**VSA**	**SAGA**	**NSWG**	**GQ**	**WAGA**	**Total**
Nil	45	37	33	50	14	179
Serious		1				1
Minor				3		3
Total	**45**	**38**	**33**	**53**	**14**	**183**

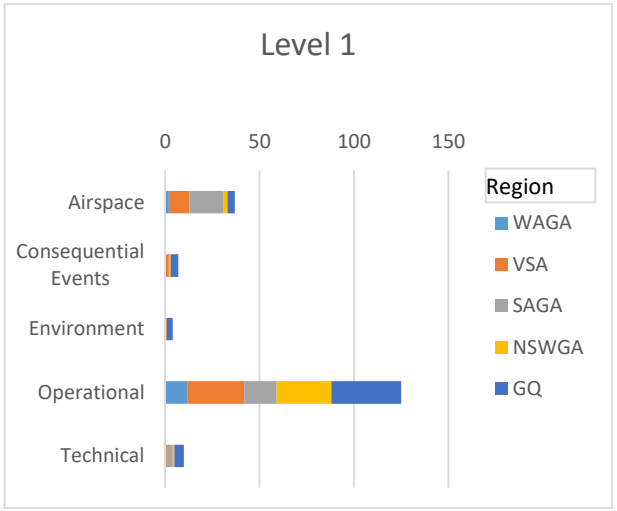
Phases	**VSA**	**SAGA**	**NSWG**	**GQ**	**WAGA**	**Total**
Landing	17	9	19	24	8	77
Ground Ops	4	4	3	4	2	17
In-Flight	9	15	2	9	2	37
Outlanding	7		3	4		14
Thermalling	2	3		1		6
Launch	6	6	6	10	2	30

Type of Flight	**VSA**	**SAGA**	**NSWG**	**GQ**	**WAGA**	**Total**
Training/Coaching	10	8	11	13	3	45
Cross-Country	8	8	9	12	1	38
Ground Ops	3	3	2	4	2	14
Local	13	17	11	22	7	70
Competition	10			1		11
AEF	1	2		1	1	5
Total	**45**	**38**	**33**	**53**	**14**	**183**

The Gliding Federation of Australia Inc
SOAR Accident and Incident Occurrences
Classification Level 1

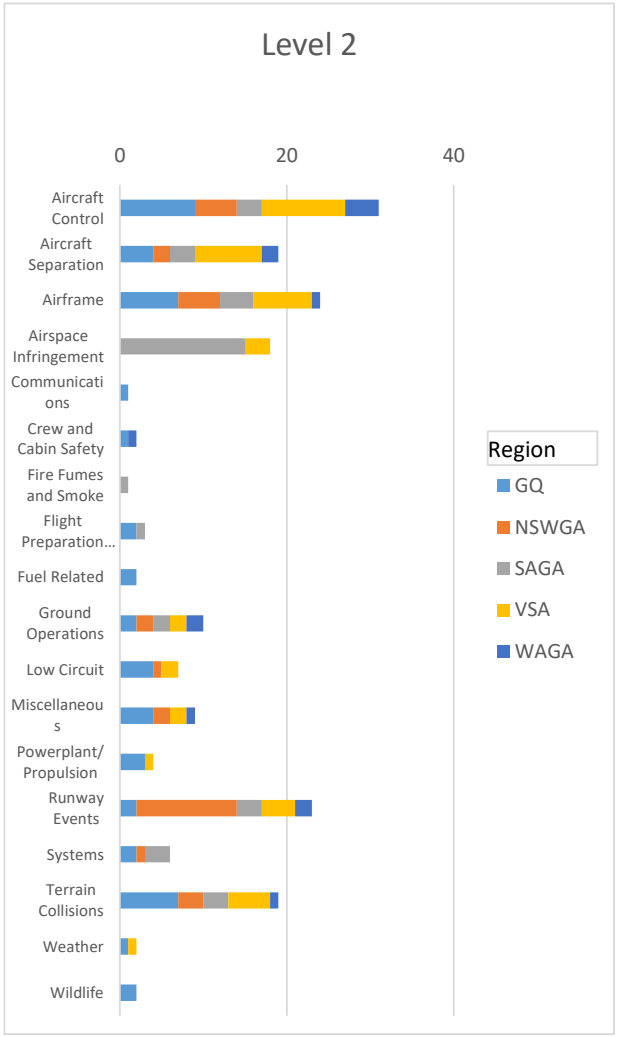
Date From: 01/01/2021
Date to: 31/12/2021

Level 1	WAGA	VSA	SAGA	NSWGA	GQ	Total
Airspace	2	11	18	2	4	37
Consequential Events		2		1	4	7
Environment		1			3	4
Operational	12	30	17	29	37	125
Technical		1	3	1	5	10
Total	**14**	**45**	**38**	**33**	**53**	**183**



The Gliding Federation of Australia Inc
SOAR Accident and Incident Occurrences
Classification Level 2
Date From: 01/01/2021
Date to: 31/12/2021

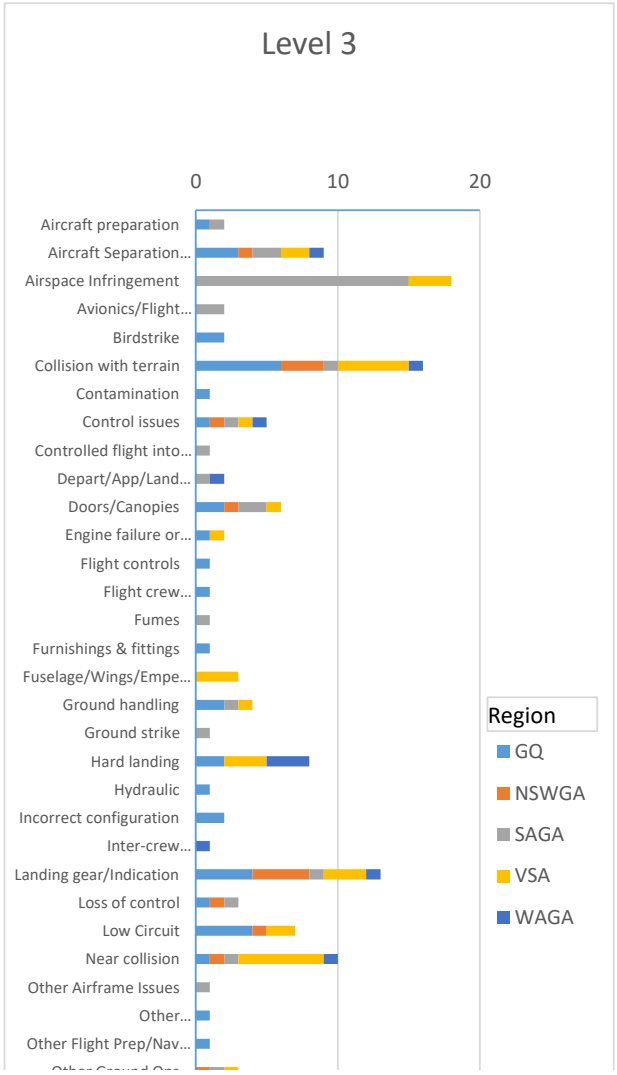
Level 2	GQ	NSWGA	SAGA	VSA	WAGA	Total
Aircraft Control	9	5	3	10	4	31
Aircraft Separation	4	2	3	8	2	19
Airframe	7	5	4	7	1	24
Airspace Infringement			15	3		18
Communications	1					1
Crew and Cabin Safety	1				1	2
Fire Fumes and Smoke			1			1
Flight Preparation/Navigation	2		1			3
Fuel Related	2					2
Ground Operations	2	2	2	2	2	10
Low Circuit	4	1		2		7
Miscellaneous	4	2		2	1	9
Powerplant/Propulsion	3			1		4
Runway Events	2	12	3	4	2	23
Systems	2	1	3			6
Terrain Collisions	7	3	3	5	1	19
Weather	1			1		2
Wildlife	2					2
Total	**53**	**33**	**38**	**45**	**14**	**183**



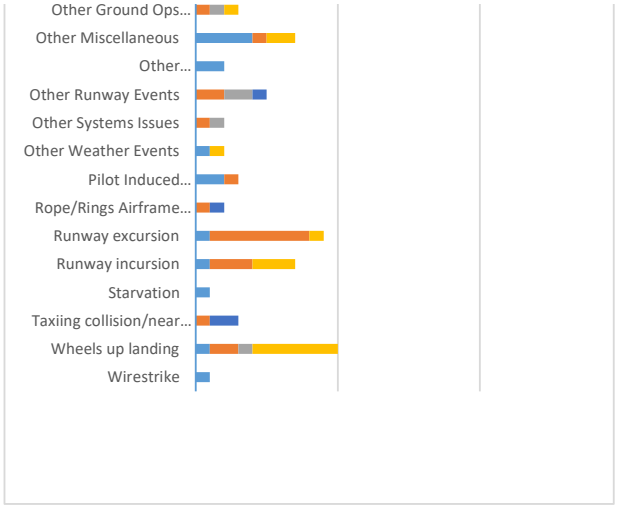
The Gliding Federation of Australia Inc
SOAR Accident and Incident Occurrences
Classification Level 3

Date From: 01/01/2021
Date to: 31/12/2021

Level 3	GQ	NSWGA	SAGA	VSA	WAGA	Total
Aircraft preparation	1		1			2
Aircraft Separation Issues	3	1	2	2	1	9
Airspace Infringement			15	3		18
Avionics/Flight instruments			2			2
Birdstrike	2					2
Collision with terrain	6	3	1	5	1	16
Contamination	1					1
Control issues	1	1	1	1	1	5
Controlled flight into terrain			1			1
Depart/App/Land wrong runway			1		1	2
Doors/Canopies	2	1	2	1		6
Engine failure or malfunction	1			1		2
Flight controls	1					1
Flight crew incapacitation	1					1
Fumes			1			1
Furnishings & fittings	1					1
Fuselage/Wings/Empennage				3		3
Ground handling	2		1	1		4
Ground strike			1			1
Hard landing	2			3	3	8
Hydraulic	1					1
Incorrect configuration	2					2
Inter-crew communications					1	1
Landing gear/Indication	4	4	1	3	1	13



Loss of control	1	1	1			3
Low Circuit	4	1		2		7
Near collision	1	1	1	6	1	10
Other Airframe Issues			1			1
Other Communications Issues	1					1
Other Flight Prep/Nav Issues	1					1
Other Ground Ops Issues		1	1	1		3
Other Miscellaneous	4	1		2		7
Other Powerplant/Propulsion Issues	2					2
Other Runway Events		2	2		1	5
Other Systems Issues		1	1			2
Other Weather Events	1			1		2
Pilot Induced Oscillations	2	1				3
Rope/Rings Airframe Strike		1			1	2
Runway excursion	1	7		1		9
Runway incursion	1	3		3		7
Starvation	1					1
Taxiing collision/near collision		1			2	3



Date	1-Jan-2021	Region	SAGA	SOAR Report Nbr	S-1779
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	DG-1000S	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	52

During the landing roll the glider's main wheel dropped into a depression in the grass runway. The impact caused the undercarriage over-centre to disengage, and the wheel retracted. The glider was on a training sortie and was being flown by the student pilot under the supervision of an instructor. Witnesses identified that the pilot conducted a normal approach with the wheel down. The glider touched down normally and then a loud bang was heard, which the instructor thought was the mainwheel striking a rock. It was only after the glider came to rest with the nose lower than normal that the instructor realised the undercarriage had retracted. Upon exiting the glider, the flight crew identified that the mainwheel had fallen into a depression in the grass runway just after touchdown. Subsequent inspection could find no mechanical fault with the undercarriage system but witness marks on the undercarriage frame made by the undercarriage doors suggest that the force of the impact with the runway depression may have cause the overcentre mechanism to disengage.

Date	5-Jan-2021	Region	NSWGA	SOAR Report Nbr	S-1776
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	Discus b	A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	58

What Happened

Following release from aerotow the pilot noticed the ASI appeared to be faulty and decided to join circuit for landing. Distracted by faulty ASI, the pilot did not perform their pre-landing checks and landed with the undercarriage retracted.

Safety Advice

It is likely the pilot had a general awareness of the inherent risks associated with distractions in the flying environment. However, like all humans, pilots are susceptible to becoming preoccupied and distracted with one task to the detriment of another task. As indicated in this report, a distraction can affect a pilot operating even a simple aircraft like a sailplane and can arise unexpectedly, during periods of high or low workload, or during any phase of flight. In essence, no pilot is immune to distraction. Because some interruptions and/or distractions may be subtle, the first priority is to recognise and identify them. Then, the pilot will need to re-establish situational awareness, i.e. Identify what they were doing, and where they were in the process when they were distracted. Determine what action you need to take to get back on track – prioritisation is key. Remember: Aviate, Navigate, Communicate, and Manage. Refer also to OSB 01/14 'Circuit and Landing Advice'

Date	5-Jan-2021	Region	VSA	SOAR Report Nbr	S-1817
Level 1	Operational	Level 2	Ground Operations	Level 3	Other Ground Ops Issues
A/C Model 1	Standard Cirrus	A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	77

What Happened

The glider had been taken to regional gliding site and rigged with the assistance of members from another visiting gliding club. A positive control check was undertaken, and the glider was then tied down. The following day while the pilot was preparing the aircraft, a member of the local club noticed that the tailplane was not properly locked in place and brought this to the attention of the pilot. The pilot locked and secured the tailplane.

Analysis

The elderly pilot had taken this glider to other gliding sites on several occasions over the preceding years and was familiar with the aircraft rigging process. On the day the glider was rigged, the pilot had driven two hours from his home to the regional gliding site. After positioning the glider trailer in the glider tie-down area, the pilot sought the assistance of members from a visiting gliding club to help attach the wings. The members assisting were not familiar with the rigging process and relied on the pilot's knowledge. The pilot fitted the tailplane himself but failed to lock and secure the tailplane. It is possible fatigue played a factor. This oversight was not identified during the subsequent positive control checks on the aircraft conducted by the pilot and another person who was unfamiliar with the aircraft. The following day, as the pilot was preparing the glider for flight, a member of the local club noticed that the locking lever was protruding through the slot in the upper surface of the tailplane and was resting against, and forward of, the safety pin and was thus unlocked. The pilot properly secured the tailplane, and a further positive control check was undertaken to ensure correct rigging. The following is a description of the Standard Cirrus 75 tailplane control system using photographs taken from AAIB Bulletin 6/2020 dealing with the investigation into a fatal accident in the UK on 27 July 2019 caused by similar mis-rigging of a Standard Cirrus 75 tailplane.

Tailplane control system

The tailplane (elevator) control system on the Standard Cirrus 75 comprises a horizontal pushrod which runs from the control stick quadrant, through the length of the fuselage to the base of the tail fin, where it is connected via a bellcrank to another pushrod running vertically through the fin. This pushrod is connected to the underside of a fitting mounted at the top of the fin (Figure 1 left image), which pivots around its axle in response to movement of the control stick. At the forward end of the fitting is a tapered bolt, which engages with a lug, known as the 'front fitting,' on the underside of the tailplane. The corresponding mechanism in

the tailplane comprises two locking hooks on a pivoting bar which is mounted on a bracket on the aft face of the tailplane spar (Figure 1 right image).

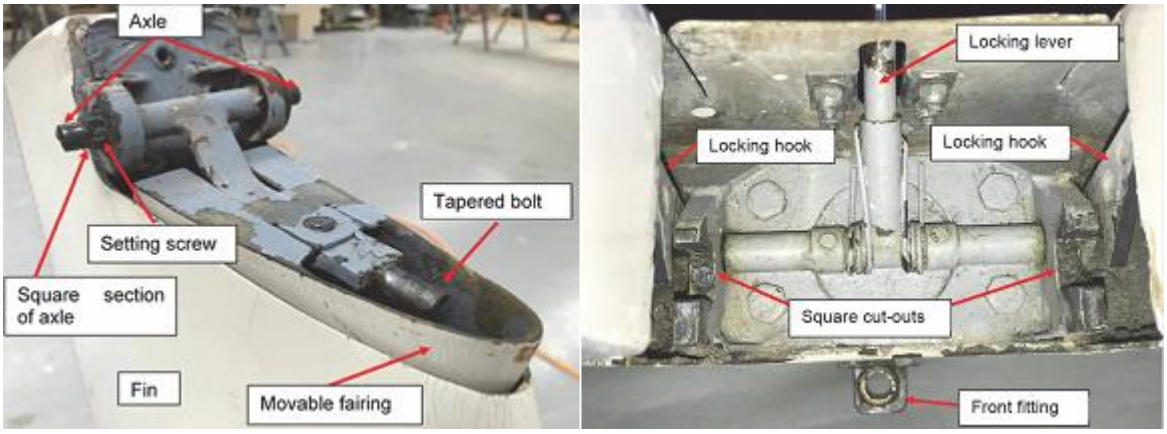


Figure 1. Standard Cirrus 75 tailplane attachment fitting at top of fin (left image), and tailplane attachment mechanism - view looking forward (right image).

When the tailplane is placed on top of the fin, square cut-outs in the mounting bracket engage with the square sections of the axle on the fin fitting, to locate the tailplane. Two adjustable setting screws on the square axle sections are used to remove any tangential play in the mechanism. The locking hooks engage with the circular ends of the axle. The hooks are spring-loaded to the closed position and are operated by a locking lever. When the tailplane is attached, the locking lever protrudes through a slot in the top surface of the tailplane. The locking lever is hollow, and a rigging tool can be inserted for ease of movement. To lock the tailplane in place, the locking lever is moved to the aft end of the slot. A safety pin is then inserted forward of the locking lever to prevent it moving forward towards the unlocked position (Figure 2). To de-rig the tailplane the safety pin is removed, and the locking lever is moved forward to release the locking hooks from the axle.

Figure 2. Locking lever when tailplane attached (left image) and when locked with safety pin inserted (right image)

Tailplane rigging on the day of the incident

When the pilot rigged the tailplane, he did not push the locking lever sufficiently aft to lock the mechanism and inserted the safety pin behind the locking lever. This resulted in the rear mechanism being engaged but not locked, as the pin prevented the lever from travelling aft to the fully locked position (Figure 3). In this condition the locking hooks were not fully engaged on the axle but the tailplane felt secure and could not be dislodged.

Figure 3. Position of locking lever and locking hooks with lever forward of safety pin. Note: only right hook shown.

Opportunities to detect the mis-rig

Other than the locking lever, the tailplane attachment mechanism is not visible once the tailplane has been fitted. Therefore, the only potential opportunities to detect the mis-rig condition after completion of the rigging is during the DI or a secondary rigging check, during a positive control check or during a full-and-free check of the controls prior to flight. Another club member assisted the pilot to carry out positive control checks, but they did not reveal any rigging anomalies. Although the tailplane was not securely attached to the fin, it must have had the appearance of being so. Additionally, it must have been attached in such a way that it was capable of moving in response to control stick inputs during the positive control check.

Action Taken in response to AAIB Bulletin 6/2020

On 07 August 2020 the glider manufacturer, Schempp Hirth, issued Technical Note 278-40 dealing with the application of colour markings for the elevator attachment and updated manual pages. The colour markings (Figure 4) provide a visual indication of the correct locking of the elevator attachment, viz.:

- if the locking handle is in the red area, then the elevator is not correctly locked
- if the locking handle is in the green area, then the elevator is correctly locked'

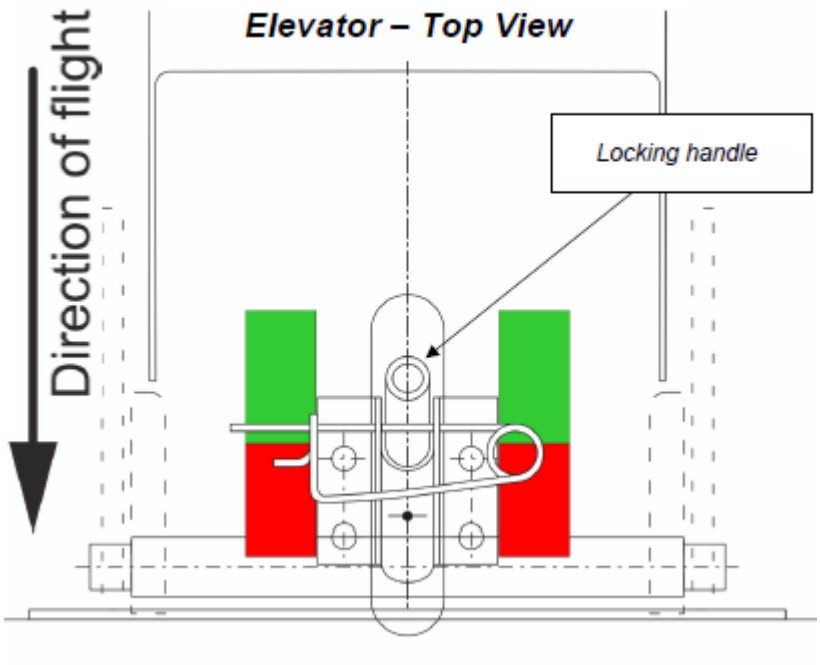


Figure 4. Colour markings

On 10 December 2020, EASA issued Airworthiness Directive AD No.2020-0260 requiring an optical indicator to be applied in accordance with the instructions of the Schempp Hirth Technical Note within 90 days from the AD issue date.

Findings

- The glider tailplane was mis-rigged in such a way that it passed positive control checks but was not secure for flight.
- It is possible that the pilot who fitted the tailplane was suffering from fatigue.
- The person assisting with the positive control check was unfamiliar with the aircraft and did not recognise the tailplane was unlocked and not in safety.
- The mis-rigging was identified by another experienced pilot by happenstance.
- The Schempp Hirth Technical Note was issued after the aircraft in this incident underwent its annual inspection, and the club had not yet applied the colour markings.

Safety Actions

The aircraft operator has since applied the markings in accordance with the Technical note and will take the following action:

1. Compile rigging notes with guidance for all club gliders that will be kept with the relevant trailer; and
2. Ensure members taking gliders away are current and competent at rigging and derigging the glider.

Date	7-Jan-2021	Region	NSWGA	SOAR Report Nbr		S-1790	
Level 1	Operational	Level 2	Runway Events	Level 3		Other Runway Events	
A/C Model 1		Various		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	72

What Happened

Several gliders landed on a closed section of the runway.

Analysis

The gliding club hosts a post-Christmas camp that covers a four-week period and involves pilots from several gliding clubs, including interstate visitors. During the camp a NOTAM was in force advising that gravel runway 09/27 AND grass RWY 09/27 were unavailable due to works constructing a new taxiway on the east side of RWY 18/36. Unserviceability crosses were placed on the gravel runway surface. The local Gliding Club approached Aerodrome Reporting Officer who agreed to mow the grass RWY 09/27 to the West of runway 18/36 in case of strong winds made the use of 18/36 or 05/23 unsafe. This left approximately 550 metres of safe usable landing area. However, the runway remained officially unavailable because it was not possible to formally allow gliders to land without also allowing use by other aircraft to use the runway, which would have required the aerodrome operator to calculate and mark the remaining distance available. Weather conditions during the summer period often feature either thunderstorm outflow gusts or strong easterly wind flows forming whilst gliders are airborne. This occurred on three or four days over the 4-week period, with several pilots electing on safety grounds to use the grass runway rather than incur a 20+ knot crosswind. On each occasion, other gliders landing on 18/36 experienced control difficulties or actual loss of directional control due to the wind. Other gliders landing on 05/23 (for which they can only use the sealed surface as the runway strip is unsuitable) also had difficulty but were able to cope with stronger crosswinds than those who used the "not available" grass. However, use of the grass runway for safety reasons whilst NOTAMed "not available" does constitute a formal "incident', hence this report on behalf of the pilots and clubs involved. There were no conflictions or damage incurred because of using this landing area.

Safety Advice

A runway will usually be closed when a portion of the movement area not available for use by aircraft because of the physical condition of the surface, or because of any obstruction on the area. In this case, the Gliding Club had made arrangements with the aerodrome operator for gliders to use certain sections of the closed runway, and pilots made their own decisions on the safest landing options given the prevailing conditions. Pilots should always remember that in cases of necessity, a glider may be landed in any place having adequate approach paths and landing surfaces, and landing at such a place is not considered of itself an accident or incident (refer GFA Operational; Regulation 7.1).

Date	10-Jan-2021	Region	SAGA	SOAR Report Nbr	S-1777						
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement						
A/C Model 1	AS-K 13	A/C Model 2									
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age					

What Happened

The pilot unwittingly flew into Class C airspace without clearance.

Analysis

The recently solo pilot took advantage of good thermal conditions and made his first solo climb to 10,000ft, oblivious to the fact that the lower level of Class A airspace in that area was 8500ft. the flight was also his longest duration while flying solo. When debriefing with his CFI after the flight, he was informed that his flight likely breached Class A airspace, and this was subsequently confirmed following review of the glider's flight computer trace. The CFI noted that there were no cross-country flights planned for the day, so the morning briefing did not specifically cover airspace requirements. The CFI identified probably causal factors as the pilots' excitement at achieving something for the first time, and that the airspace restrictions were not specifically addressed in the morning briefing. The pilot subsequently undertook supplementary training with their CFI.

Safety Advice

A violation of controlled airspace occurs when a pilot enters controlled airspace without a clearance. Unauthorised aircraft in controlled airspace present a potential collision threat to other aircraft. There are several ways to avoid controlled or restricted airspace:

- On the ground - A thorough pre-flight planning is the best defence against airspace infringements. Before you head out flying, make sure you have the current charts and have familiarised yourself with the area you will be flying in. You should do this even if you know the area well, because things

may have changed. Check for any temporary restrictions to airspace. You can do this by logging into NAIPS and checking NOTAMS.

- In the air - Always know your position relevant to the controlled or restricted airspace steps. Using an electronic flight bag with a moving map will help you keep a track on where you are in relation to controlled airspace. Pilots should create a buffer of, say, 2 nm from the edge of controlled airspace and 200 feet above (or below). If you are unsure of your position, it is better to ask ATC for help rather than infringe controlled airspace.

Date	10-Jan-2021	Region	VSA	SOAR Report Nbr	S-1814
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	ASK 21		A/C Model 2		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	73

What Happened

While conducting a reciprocal landing in a slight tailwind, the wheel brake failed resulting in the glider rolling into the post and wire boundary fence at low speed. The glider suffered minor paint damage.

Analysis

Reciprocal operations are conducted at this regional airfield on a common runway (14/32) due to rising terrain on the South end. Circuits and final approaches are from the North towards the take off point and over the winch. Pilots landing were I the habit of finishing their landing roll close to the launch point and there is an area to one side that a pilot can steer towards if overshooting. On the accident flight the pilot flying touched down midway along the length of the runway, closed airbrakes and coasted up to launch point. When he applied the wheel brake to stop glider, it failed to operate, and the glider rolled into the wire and post boundary fence at walking pace. The hydraulic wheel brake is activated by the last movement of the airbrake lever. Post-flight inspection of the wheel brake by the Duty Instructor confirmed the mechanism was not working, however pumping the airbrake lever about four times restored the functionality. The inspection identified the hydraulic brake fluid was at the correct level, but an air bubble was in the line.

Safety Advice

It has been noted over many years that a significant percentage of reported accidents and incidents indicate that Clubs and/or pilots have modified their normal operating procedures, or abandoned accepted best practice, for no reason other than convenience. Good operating procedures and flying standards are developed over time and built on the experience of many pilots and many mistakes. There is no doubt that convenience can be a seductive force, but pilots (and clubs) must resist the temptation and recognise that even slight departures from standard accepted good practice can have severe consequences. The Club now requires gliders to roll to a stop further into the airfield and well short of the launch point.

Date	10-Jan-2021	Region	VSA	SOAR Report Nbr	S-1825
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	Phoebus C		A/C Model 2	N/A	
Injury	Nil	Damage	Substantial	Phase	Outlanding	PIC Age	76

What Happened

During an aerotow launch and at about 700ft AGL, the towing combination flew through strong turbulence. The glider pilot, who was flying in the high tow position, reported that the glider initially climbed but then accelerated towards the tow plane resulting in a loop developing in the tow rope, which passed under the wing of the glider. The glider pilot released the rope to prevent breaking the weak link or potentially causing a 'tug upset'. The glider pilot then attempted to climb in a thermal but abandoned this action as the glider was in the tow plane 'climb out' area. The pilot flew parallel with the operational runway in search of lift but only encountered sink. Realising he would not be able to get back to the airfield, the pilot selected a paddock alongside a road and conducted an outlanding. Upon touching down the pilot found the grass was

higher than anticipated and after the glider had rolled about 30 to 40 meters a star picket was observed in close proximity. The pilot raised his arms to protect himself as the glider impacted the star picket and rolled through two wires of an electric fence concealed in the grass. The top wire passed over the glider's canopy and broke on contacting the fin. The bottom wire snagged the ring on the TOST back-release and broke. The pilot was uninjured, but the glider suffered damage to the wing leading edge and undercarriage doors.

Analysis

The elderly pilot was very experienced but had only had two flights in the preceding 12 months due to the COVID-19 restrictions, one of which was with an instructor the day prior who conducted the pilot's flight review. Investigation by the pilot's CFI identified that the pilot did not adequately assess the conditions during the flight nor react appropriately when options began to deteriorate. Upon release the glider had sufficient height to complete a normal circuit and landing. However, the pilot's decision to attempt to find a thermal after releasing at low height was inappropriate and placed the glider in a position where it was no longer able to reach the airfield. Once an outlanding became inevitable, the pilot had few safe landing options and did not have sufficient time to conduct a proper inspection for suitable landing areas.

Safety advice

Cognitive decline is most prevalent among aging pilots. Like the effects of fatigue, cognitive deficiencies are insidious, have a substantial negative impact on performance and are hardest to identify when the pilot is performing routine activities. One reason symptoms go unnoticed is that with practice and routine, the brain adjusts to mild to moderate cognitive impairment. In other words, normal activities can mask the severity of the deficiency. However, if the pilot's routine is interrupted by an urgent or stressful situation, then the extent of cognitive impairment may become more evident. It is well known that flight experience can compensate to some degree for age-related declines in cognitive function and that overlearned complex tasks such as piloting are less susceptible to age-related deterioration than abilities to perform in novel situations. Notwithstanding, recency of experience can have a dramatic effect on overall airmanship, regardless of age. It is known that older pilots who have long breaks between flying take longer to regain their proficiency. Older pilots should fly regularly and participate more frequently in recurrent training (e.g., flight reviews). Instructors conducting flight reviews of elderly pilots, especially those whose currency and recency is low, should assess the pilot's competency in handling stressful conditions in controlled ands safe conditions on more than one flight in accordance with the guidance in Operations Advice Notice (OAN) 01/20 – Flight Reviews.

Date	11-Jan-2021	Region	NSWGA		SOAR Report Nbr		S-1780		
Level 1	Operational	Level 2	Runway Events		Level 3		Runway excursion		
A/C Model 1	Grob G 103 Twin II		A/C Model 2						
Injury	Nil	Damage	Nil	Phase	Landing		PIC Age	64	

What Happened

The glider was landing after an Air Experience flight in a 5 to 7 knot cross wind from the left. The glider ballooned slightly after initial touch down and yawed a little into wind. As the glider settled back onto the ground the left wing, which was low, contacted tall grass and the glider conducted a 180-degree ground loop to the left. The glider was not damaged.

Analysis

The command pilot held a Level 1 instructor rating with a valid medical certificate and was in current flying practice. He reported that late on final approach he assessed the glider would land shorter than desired and reduced the airbrakes to flatten the approach to compensate. With only a minimal airbrake setting, the glider touched down while still at flying speed and ballooned back into the air; and weathercocked slightly into wind. The command pilot controlled the pitch attitude and the glider settled onto the ground with the port wing low. The port wingtip caught in long grass while still at speed, resulting in a rapid and uncontrolled ground loop. The glider came to rest after turning through 180 degrees. Investigation identified that good rainfall had led to rapid growth of the grass on all runways, and the pilot reported experiencing significant drag from the long grass during the ground roll on previous days. The grass was sufficiently high and thick

that it seriously retarded the movement of the wingtip through it, and the pilot could not prevent the glider rotating around the wing. The command pilot did not sufficiently hold off after the flare and this, coupled with the minimal amount of airbrake, resulted in the glider ballooning into the air after the initial touchdown. The command pilot also did not recognise the port wing was low as he was focussed on the runway ahead.

Safety Advice

The proper assessment of the runway condition is a critical skill for any pilot operating on any runway. With conventional gliders that come to rest on their wingtips, long grass poses a serious hazard. Pilots of these aircraft must ensure the runway surface is suitable for their operations, and if the grass is too long then flying should be avoided. Clubs and aerodrome operators should monitor grass growth, especially after a rainy period, and ensure the runways are mowed and suitable for the types of aircraft using them.

Date	12-Jan-2021	Region	GQ	SOAR Report Nbr	S-1778		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing		
A/C Model 1	Astir CS 77	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Outlanding	PIC Age	21

What Happened

The pilot Launched at 11:45 on a planned task along with several other pilots. After approximately two hours the pilot was unable to find a climb and was forced to land in a paddock north of Kingaroy. The landing was at approximately 10 degrees relative to the ploughed furrows. On the initial touchdown the glider bounced. Upon touching down again the glider yawed to the left causing it to skid sideways before coming to rest. Following the landing the main tyre was found to be deflated and may have been in this state before landing due to a leaky fixed valve extension.

Investigation

Discussion with the pilot and a review of the logged flight trace identified that the soaring flight was continued below normal circuit height, and that a proper evaluation of the outlanding paddock was not conducted. The result was a rushed low turn onto final, landing across the furrows causing the rough landing and minor damage to the undercarriage. The flat tyre may have contributed to the rough landing but is unlikely to be the main cause of the incident.

Corrective action / Recommendations

The instructor on duty spoke at length to the pilot about the necessity to terminate the soaring flight with sufficient height and time to conduct a proper inspection of landing fields and allow for a normal circuit. This was reinforced at a further briefing with all present on the day. On a closer inspection of the aircraft undercarriage, the damage found was limited to the displacement of a retaining circlip. With the circlip replaced the aircraft was thoroughly inspected and returned to service. Additionally the leaking extension valve was removed and the tube valve repositioned in the hub so that the extension was no longer required to inflate the tyre.

Date	16-Jan-2021	Region	SAGA	SOAR Report Nbr	S-1795		
Level 1	Operational	Level 2	Airframe	Level 3	Doors/Canopies		
A/C Model 1	AS-K 13	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Ground Ops	PIC Age	71

What Happened

The shoulder harness was inadvertently left hanging out of the cockpit and when the canopy was closed the harness buckle caused the canopy to crack.

Analysis

Investigation identified that to close the canopy with the harness buckle caught between the fuselage and the canopy frame, it takes a degree of force not normally required. The person who closed the canopy was in the habit of slamming the canopy shut, whereas such force is unnecessary. The investigator identified that

when the buckle was caught between the fuselage and the canopy and there was a resistance to the closing of the canopy, rather than opening the canopy to determine why there was a resistance to the canopy closing, the person has forced it closed and caused the Perspex to break.

Safety Advice

Canopies are quite easy to damage and most are difficult to properly repair, particularly the optical qualities. Canopies should never be forcibly closed, as even a slight distortion to the frame can cause the Perspex to crack. If a canopy is difficult to close, the reason should be investigated and the cause remedied wherever possible.

Date	21-Jan-2021	Region	VSA	SOAR Report Nbr		S-1788	
Level 1	Airspace	Level 2	Airspace Infringement	Level 3		Airspace Infringement	
A/C Model 1		Discus CS		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	58

What Happened

While returning to the home airfield from a cross-country soaring flight the pilot breached Class C airspace both laterally and vertically for short periods on two occasions. The infringements were identified by the pilot post-flight following analysis of flight log data.

Analysis

Review of the flight computer log file revealed the pilot breached Class C airspace the first time in an area where the Class C Lower Level (LL) steps down from 12500ft to 8500ft. The pilot entered Class C airspace at approximately 9500ft AMSL and remained above 8500 ft for five minutes and covered approximately 20kms. The second occurrence was a short time later when the pilot drifted into the next Class C step down from LL8500 to LL5500. On the latter occurrence the pilot initially entered Class C airspace at about 7700ft on climb to 8100ft and a few hundred metres inside the airspace boundary before tracking to exit the airspace about 3 minutes later. The pilot was not maintaining an appropriate level of situational awareness and failed to adequately monitor the airspace in which he was flying.

Safety Advice

Pilots should always navigate using CASA approved data and charts. Airspace files downloadable from the internet are unapproved and should not be relied upon. Pilots must always know their position relative to the controlled airspace (CTA) steps and must regularly verify their position by referencing external features to the charts. Unless an appropriate clearance has been obtained, the pilot in command of an aircraft operating in Class G airspace, or a VFR aircraft operating in Class E airspace, must not allow the aircraft to enter airspace for which ATC clearance is required or an active restricted area.

Date	22-Jan-2021	Region	NSWGA	SOAR Report Nbr		S-1793	
Level 1	Operational	Level 2	Runway Events	Level 3		Other Runway Events	
A/C Model 1		DG-1000S		A/C Model 2	Diamond DA40 Diamond Star		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	64

What Happened

The crew of a DG-1000 had just landed on Runway 23 after a cross-country training flight. Seconds later and before the crew could push the glider off the runway, a powered aircraft entered the runway and took-off behind the glider occupying the runway and passed about 50 feet directly over the glider and crew.

Analysis

On their return to the airfield the pilot flying the glider made the usual 10-mile inbound call. On approaching the circuit area, the glider pilot made relevant positional broadcasts and directed calls to a locally based C182 that was departing from RWY 23 for a local farm airstrip where it was based. The glider pilot broadcast that they would be landing on RWY 23 and joined base leg as the C182 departed. Runway 23 is not a preferred runway for gliders operating at this site, as the grass verge unsuitable for landing due to the

presence of visual approach aids (PAPI) and the surface is very rough- thus necessitating gliders landing (or taking-off) from the sealed runway surface. Standard practice is for glider pilots to manage the ground roll to stop opposite or as near as possible to a taxiway, and as soon as possible push the glider clear of the runway strip. Notwithstanding, RWY 23 was chosen by the glider pilot flying as it was the most into-wind runway, and that the winds were gusting up to 20 knots and well in excess of the glider's crosswind limit. Among the other radio traffic while the DG-1000 was in circuit, a Diamond DA40 called entering and back-tracking runway 18 for departure to the east. This aircraft was one of two DA40s that had flown in from Bankstown on solo navigation exercises and flown by students enrolled in the UNSW aviation degree course. Initially it had broadcast an intention to depart from RWY 18, but after the C182 had taken off from 23, the pilot broadcast "changing to runway 23". Review of the glider's flight logger trace showed the glider landed on RWY 23 and came to rest immediately opposite TWY B at 1745 EDT, and detailed examination indicates that it was at rest on the runway for between 55 and 70 seconds while the flight crew exited the aircraft, turned it through almost 90 degrees, and commenced pushing it off the runway. The flight crew reported that as they exited the glider, they observed an aircraft lined up at, or near, the threshold with landing lights illuminated. Before they were able to move the glider, this aircraft commended its take-off roll and overflew the glider, which was approximately 700 metres down the runway, at a height estimated to be 50-60 feet. The glider flight crew were unable to identify the aircraft at the time, but its identity was confirmed later from a review of Flightradar 24 history. The second pilot in the DG1000 reported the incident to the ATSB and later contacted the Flying School Operations Manager. The Flying School Operations Manager mentioned that the student had previously come to the attention of management and was suspended from flying duties pending remedial training. It is not known why the DA40 pilot believed his was an acceptable practice.

Safety Advice

While Glider operations are usually conducted from adjacent sites within the confines of an aerodrome, they can also be conducted from normal runways associated with an aerodrome and a landing on a normal runway is permitted. What is not permitted is for an aircraft to commence its take-off until a preceding landing aircraft using the same runway has vacated it and is taxiing away from the runway (AIP ENR 1.1). As AIP ENR 5.5 states: *"Pilots should take extra care when operating at an aerodrome where gliding operations are in progress."*

Date	23-Jan-2021	Region	NSWGA	SOAR Report Nbr	S-1787		
Level 1	Consequential Events	Level 2	Low Circuit	Level 3	Low Circuit		
A/C Model 1	SZD-50-3 "Puchacz"	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	59

What Happened

The incident flight was a site familiarisation for the second pilot. The pilot under check joined circuit at about 850ft AGL and turned towards the runway as the angle to the landing area was flat. The glider flew through an area of sink and the instructor had to prompt the pilot under check to further modify the circuit. The pilot under check did not recognise the angle to the airfield was deteriorating and this led to further prompting by the instructor to turn towards the runway threshold. The glider crossed less than a wingspan above the boundary fence and landed safely.

Analysis

The pilot under check had recently completed his 'C' Certificate and the flight was his first from this airfield and on type. Following a short flight, the pilot under check joined circuit at about 850ft AGL behind another glider. During the downwind leg the pilot under check recognised the angle to the landing area looked flat and made a positive correction toward the operational runway. The instructor noted the VSI was indicating a steady 4 knots sink rate and directed the pilot under check to further modify towards the runway. At this time, the preceding glider was established on a base leg for the operational runway. Shortly afterwards the instructor noted the VSI was indicating a steady 6 knots sink rate and the angle was getting flatter. The instructor directed the pilot under check to track directly towards the preceding glider that was now

established on its final approach and to position behind it. Once behind the proceeding glider, the instructor directed the pilot flying to aim at the runway threshold and maintain speed, and then later directed the pilot flying to aim for the centre of the landing zone between the gliders at the launch point and the previous landing glider. The instructor recalled the glider cleared the perimeter fence by approximately half a wingspan, although witnesses on the ground judged the clearance to be much less. A normal landing ensued, and the flight crew debriefed with both the duty instructor and CFI. The checking instructor noted: *"In hindsight the safest course of action would have been to conduct a midfield base turn to land down the field as soon as the heavy sink was encountered, thereby removing the potential conflict with the other glider which the pilot under check was concerned about."* Causal factors identified include the pilot under check's inexperience, unfamiliarity with the type of aircraft being flown (the pilot had trained on aircraft with much better glide performance), high workload, fixation on landing behind the preceding glider, and loss of situational awareness.

Safety Advice

Fixation often manifests in times of stress, which coupled with inexperience results in a failure to analyse information appropriately and loss of situational awareness. It is important to recognise that situational awareness must precede decision-making because the pilot must perceive a situation in order to have an outcome. Situational awareness also allows us to stay ahead of the aircraft. Pilots need to remain alert to the insidious nature of stress in a high workload situation and the need to avoid, as far as possible, becoming goal fixated to the detriment of situational awareness. To prevent the loss of situational awareness, pilots must implement proven best practices (circuit joining, radio procedures, lookout, etc.) and know the Rules and Regulations. Instructors must also be alert to the above factors and should take over control before a situation goes awry. This is particularly true of any flying close to the ground.

Date	24-Jan-2021	Region		SAGA		SOAR Report Nbr		S-1786	
Level 1	Airspace		Level 2	Airspace Infringement		Level 3		Airspace Infringement	
A/C Model 1		Grob G 103 Twin II			A/C Model 2				
Injury	Nil	Damage	Nil	Phase	Thermalling		PIC Age	16	

What Happened

During a cross-country flight the pilot infringed controlled airspace on three occasions. On the third occasion the pilot realised his error and immediately vacated the airspace and returned to the airfield. The pilot self-reported the breach upon landing.

Analysis

A review of the pilot's flight log revealed on the first occasion he most likely infringed airspace by just under 100ft while climbing to the lower limit of overlying Class C airspace. The pilot was relying on his pressure altimeter that showed he was below the airspace ceiling. The second breach involved clipping the corner of an airspace boundary during a turn. On the third occasion the pilot flew nearly 5000ft vertically and 3000 metres laterally into Class C airspace while thermalling. The pilot acknowledged that he lacked adequate situational awareness and did not adequately compensate for drift while thermalling. Investigation identified the pilot had low experience and a poor understanding of the complex airspace around the gliding site. The pilot was also unaware of the need to provide sensible buffers when flying in the vicinity of airspace boundaries (both vertically and laterally) and to account for potential navigation errors.

Remedial Action

The pilot subsequently undertook supplementary training with the Club Airspace officer, attended an airspace workshop and then conducted a flight under supervision to demonstrate his knowledge of the airspace.

Safety Advice

A violation of controlled airspace occurs when a pilot enters controlled airspace without a clearance. Unauthorised aircraft in controlled airspace present a potential collision threat to other aircraft. There are several ways to avoid controlled or restricted airspace:

- On the ground - A thorough pre-flight planning is the best defence against airspace infringements. Before you head out flying, make sure you have the current charts and have familiarised yourself with the area you will be flying in. You should do this even if you know the area well, because things may have changed. Check for any temporary restrictions to airspace. You can do this by logging into NAIPS and checking NOTAMS.
- In the air - Always know your position relevant to the controlled or restricted airspace steps. Using an electronic flight bag with a moving map will help you keep a track on where you are in relation to controlled airspace. Pilots should create a buffer of, say, 2 nm from the edge of controlled airspace and 200 feet above (or below). You can also now use a low-cost ADS-B unit to help you be more visible to other aircraft in the area that are equipped with ADS-B IN. If you are unsure of your position, it is better to ask ATC for help rather than infringe controlled airspace.

Date	24-Jan-2021	Region	NSWGA	SOAR Report Nbr	S-1791
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	Standard Cirrus	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Outlanding	PIC Age	41

What Happened

During a cross-country flight the pilot conducted an outlanding at a regional airport. The pilot elected to land on the grass between the runway lights and gable markers. During the landing roll the glider's main wheel struck a small concrete structure sunken below runway strip level resulting in the gear collapsing.

Analysis

The pilot advised they chose not to land on the runway to avoid wearing down the glider's tail skid on the bitumen. While they assumed the grass verge was suitable for landing, it transpired that the area was unsuitable and the glider was substantially damaged. The pilot's CFI emphasised that when outlanding the main objective should be to conduct a safe landing, and a properly prepared runway is preferable to an unknown surface.

Safety Advice

This type of accident comes under the broad heading of convenience accidents, where pilots have modified their normal operating procedures, or abandoned accepted best practice, for no reason other than convenience. Good operating procedures and flying standards are developed over time and built on the experience of many pilots and many mistakes. Pilots should always be aware that even slight departures from standard accepted good practice can have severe consequences. There is no doubt that convenience can be a seductive force and very many pilots have been tempted into bad decisions and choices for no other reason.

Date	25-Jan-2021	Region	NSWGA	SOAR Report Nbr	S-1789
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	Duo Discus T	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Outlanding	PIC Age	22

What Happened

During a training flight an outlanding became inevitable over inhospitable terrain. The instructor, who was flying, selected the only suitable paddock that was situated between two hills and about 300 metres long. The instructor landed downwind and upon touchdown had to manoeuvre to avoid obstacles. During the ground roll the right wing hit a fallen tree causing the glider to ground loop and skid sideways into the

boundary fence. The glider was substantially damaged, but the flight crew were uninjured.

Analysis

The command pilot was a recently trained Level 1 Instructor operating under the supervision of the Club's Duty Instructor. During a training flight the command pilot decided to fly cross-country to a town about 50kms South-East of the airfield and across hilly terrain. The command pilot had not been briefed for this exercise and did not have authorisation from the Duty Instructor to conduct a flight outside the training area. The command pilot, although assessed as competent to fly cross-country, was not experienced flying in hilly terrain. When about 23kms from the airfield the glider got low and the command pilot elected to return home. The glider descended below the glideslope and, although uncomfortable flying over the hilly terrain, the command pilot continued on a direct track to the airfield and did not consider diverting to fly over terrain more suitable for landing. When an outlanding became inevitable, the pilot was faced with conducting a landing in the best of several unsuitable paddocks. The pilot conducted three orbits near the selected paddock to determine the best way to approach and decided to make a downwind landing onto the 300-metre-long paddock due to high trees on the into-wind approach boundary. The command pilot reported flying through wind shear during the circuit and conducted a steep approach with full airbrake into the paddock. The glider touched down at speed and the command pilot manoeuvred to avoid obstacles while applying the wheel brake. During the landing roll the glider's starboard wing struck a fallen tree and the glider rotated 180 degrees and skidded sideways into the boundary fence. The glider suffered substantial damage to the starboard wing, fuselage and rudder, but the flight crew were uninjured. In the subsequent debriefing with his CFI, the command pilot accepted that his flight management and decision-making skills were inadequate. The command pilot was counselled, and his cross-country privileges were withdrawn pending remedial training.

Safety Advice

This incident provides a reminder to pilots to know their own limitations and those of the aircraft. This demonstrates the importance of thorough planning and preparation for every flight, of maintaining situational awareness, and by re-assessing when forced to deviate from the plan, such as when operating over unsuitable terrain.

Date	31-Jan-2021	Region	GQ	SOAR Report Nbr	S-1794
Level 1	Operational	Level 2	Airframe	Level 3	Doors/Canopies
A/C Model 1	Grob G 109	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	73

The pilot reported that immediately following take-off on RWY 06 the canopy came ajar. Their first response was to attempt to close it, but this action was unsuccessful. The pilot also considered landing straight ahead but elected to continue with the take-off. The pilot notified the gliding operation of his difficulties and then turned left onto mid-downwind for a landing on RWY 12. While holding the canopy with the right hand, the pilot made a successful landing. A post-flight inspection did not identify any anomaly, and the pilot believed the canopy had not been properly locked and suspected they had failed check its security by applying upward pressure to the frame. However, a more detailed subsequent inspection revealed the complete locking mechanism was damaged and worn, which required new parts to be manufactured under an engineering order. The aircraft was repaired and returned to service.

Date	3-Feb-2021	Region	VSA	SOAR Report Nbr	S-1798
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	DG-300 Elan	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Outlanding	PIC Age	63

What Happened

During a cross-country flight, an outlanding became inevitable. The pilot conducted his pre landing checks but did not properly lock the undercarriage down. Upon touchdown the undercarriage collapsed, and the glider suffered minor damage.

Analysis

The pilot advised that he was aware the locking mechanism for the undercarriage was difficult to engage, so when the wheel was lowered a check was made by pulling back on the handle and the mechanism felt secure. Despite conducting a check, the lock was not engaged. The pilot stated that “on previous landings, multiple checks were made to check the state of the undercarriage. In this incident only one check was made, and then full focus was on safe approach and landing…. When the wheel touched down and began to roll the lock slipped and the wheel retracted.”

Safety Advice

The Jantar undercarriage lever has an arrow on the lock button that should be clearly visible when properly locked. It should then be impossible to pull back the lever. This is a common issue with the Jantar undercarriage, and pilots must familiarise themselves with the locked position of the button and visually check it during the pre-landing checks.

Date	4-Feb-2021	Region	GQ	SOAR Report Nbr	S-1796
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	Astir CS 77	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	In-Flight	PIC Age	19

What Happened

After releasing from an aerotow launch the pilot attempted to retract the undercarriage but found the lever jammed 3 cm short of the fully retracted position. After trying again several times the pilot returned the lever to the down and locked position. A nearby glider visually confirmed the main wheel was fully extended. After a local flight the landing was uneventful and the undercarriage remained down. The glider was towed to the club hangar to investigate the cause of the jammed undercarriage lever.

Analysis

The cockpit panels were removed to gain access to the workings of the undercarriage retract mechanism. The actuating lever behind the pilots' seat was found to be misaligned on the connecting rod due to a missing circlip causing the lever to jam. The missing circlip was found on the floor inside the glider. The suspect circlip was compared to a new circlip and found to be deformed so that the fitment on the connecting rod would have been loose allowing it to pass over the shoulder of the retaining grove when sideways pressure was applied. The deformation of this circlip may have been caused during a recent outlanding where the glider skidded slightly sideways before coming to rest in a cultivated paddock. A new circlip was installed, the undercarriage fully inspected, and the operation tested in a cradle before being returned to service and test flown. The glider has now completed several flights without incident.

Date	5-Feb-2021	Region	GQ	SOAR Report Nbr		S-1799	
Level 1	Operational	Level 2	Airframe	Level 3		Furnishings & fittings	
A/C Model 1		Club Libelle 205		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	75

What Happened

When returning to the airfield after local soaring and at about 1600 ft the seat back collapsed. The pilot was still able reach all the flight controls conducted a normal circuit and landing.

Analysis

Subsequent inspection identified that the fixed end of the cable that supports the seat in position was loose and no longer attached to the fuselage. The screw and washer that attach the cable were found on the cockpit floor. There was no damage to any of the components, so the cable was re-attached to the fuselage using the screw and washer, and the assembly inspected. The Daily Inspection of the glider was completed by a competent person who very familiar with the aircraft. The screw was not detected as loose during the inspection and the glider was flown by that person before earlier in the day. The pilot conducted a pre-flight check and adjusted the seat before take-off. He did not check the security of the cable fixing as that was not part of his routine. It is believed the cable became loose in flight.

Date	5-Feb-2021	Region	VSA	SOAR Report Nbr		S-1797	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Hard landing	
A/C Model 1		PW-6U		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	59

What Happened

During a training flight the student mishandled the flare and the glider landed heavily. The instructor was too late to take control.

Analysis

The flight was a standard training flight for a student working towards solo. The student was conducting circuits and landings under instruction and had made several good landings in the preceding two days. On the incident flight the final approach started well, and the student had deployed about half airbrake. The student then applied more airbrake to maintain glide towards the aiming point and allowed the airspeed to increase beyond the calculated approach speed by 5 knots. The instructor prompted the student to slow down to the approach speed but the student did not respond. As the glider got closer to the ground and in response to the high rate of descent, the instructor closed the airbrakes and initiated the flare but was too late to prevent the aircraft from touching down heavily. As the glider rolled to a stop the flight crew could hear a ticking noise coming from the mainwheel. Upon exiting the glider, the instructor observed the pneumatic line for the wheel brake had sheared off.

<u>Causal Factors</u>

Upon reflection, the instructor recognised that due to the glider's high rate of descent he ought to have taken control much earlier. He also believed his verbal prompting could be improved, as his instruction to the student to *"check your speed*" was too vague. He also identified that the student did not have an

adequate understanding of the aiming point concept and that this led to the unstable approach. Fatigue may also have been a factor, as the student had been flying for five days straight.

Damage assessment

Subsequent investigation of the undercarriage identified that the brake calliper may have suffered prior damage when the glider was last loaded into the trailer. It was found that the fuselage dolly was not properly raised before it was loaded into the trailer, and this allowed the brake calliper to contact the edge of the wheel well resulting in it is bearing the weight of the fuselage during transport and potentially distorting the braking mechanism. After several days of flying, the heavier than normal landing was sufficient to finally shear the calliper retaining bolt.

Safety Advice

Aiming point

The aiming point is an approach aid. It refers to an area on the ground which will appear stationary from the cockpit when the glider is stabilised on the selected final approach path. If the glider is in an overshoot situation (i.e. it is above the final approach path), the aiming point moves downwards and tends to disappear out of view under the nose as the glider overshoots it. If the glider is undershooting (i.e. it is below the final approach path), the aiming point moves upwards in the canopy. This movement of the Aiming Point does not indicate whether the approach is high or low. Pilots must judge height by reference to the apparent size of objects, e.g. trees, hangars etc. If the glider is overshooting the aiming point, this can lead to the student "swapping" the elevator and airbrake functions, i.e. using the airbrakes to control the speed and the elevator to control the approach angle. In other words, using the aiming point like a dartboard! The clues for

the instructor are full airbrake, steady aiming point position, and the speed either increasing or above the chosen approach speed.

Instructor intervention

An instructor must constantly monitor the student's workload on final approach. If the student stops responding to the instructor's directions, this is a sign that the student is becoming overloaded, and the instructor must take over for safety and training benefit. For further information, refer to Operational Safety Bulletin (OSB) 01/19 – 'Avoiding Approach & Landing Accidents During Training' (https://tinyurl.com/53k2kbw8).

Instructor Patter

When a flying skill is demonstrated the instructor is constrained in what he can say by the rate at which the aircraft responds to the controls. Normally only a limited time is available, especially when winching or auto-towing. The patter must therefore be concise and timed accurately to coincide with what is actually happening. Importantly, every effort should be made to ensure that the trainee knows exactly what is meant by a particular word, term or phrase.

Date	6-Feb-2021	Region	VSA	SOAR Report Nbr	S-1808		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues		
A/C Model 1	PIK-20B	A/C Model 2	LS 8-t				
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	45

What Happened

During the final glide for a straight-in approach to RWY 26, the pilot of a PIK 20 observed the wings of another glider appear in his field of view directly ahead. The other glider, also conducting a straight-in approach to RWY 26, passed less than 100ft below the PIK 20 on the same heading. The pilot of the other aircraft did not sight the PIK 20 throughout the approach.

Analysis

The pilot of the PIK 20 reported making an inbound call on the CTAF at 10NMs10 mile out on CTAF 118.8. When about 7kms from the aerodrome the pilot of the PIK-20 observed another glider (LS-8) appear approximately 200ft below and rapidly overtaking. The LS-8 did not appear on the PIK-20 Flarm. The pilot of the LS-8 said he had not heard any radio calls from anyone in the vicinity and did not sight the PIK-20.

Fig. 1 Satellite image showing the position of several competing gliders at time of incident. The two gliders in conflict are circled.

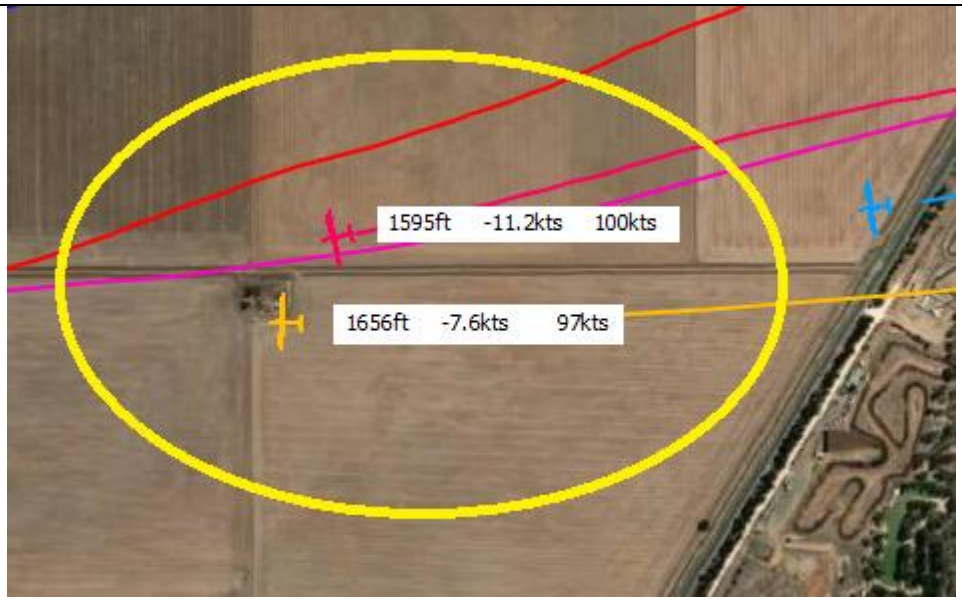


Fig. 2 Proximity, height, sink rate and speed of the two conflicting gliders. The LS-8 is converging on the PIK-20 from the right.

Review of the flight traces for all gliders competing at the time revealed there were four gliders occupying the runway as the PIK-20 and LS-8 were on approach (refer Fig 1). The PIK-20 pilot would not have seen the LS-8, as it was converging from below and behind and outside his field of view (refer Fig 2). On the other hand, the pilot of the LS-8 should have been able to sight the PIK-20, which was ahead and higher, but did not. It is likely the LS-8 pilot had focussed his attention on the runway and where he was going to land. The incident was debriefed with the Competition Safety Officer and discussed at the following morning's safety briefing.

Safety Advice

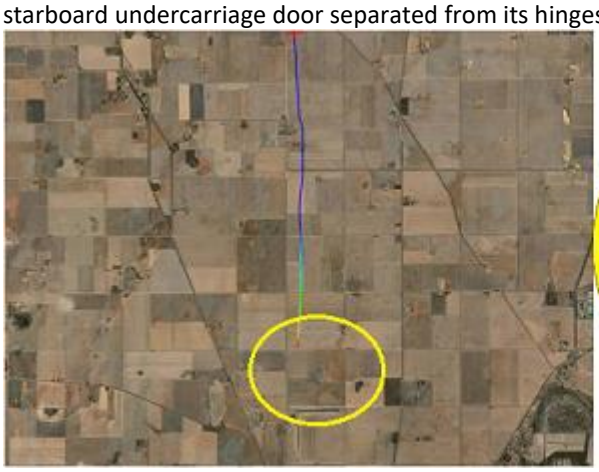
For competition pilots the race to the finish is a high workload and dynamic situation. Human factors including decision biases, goal fixation and cognitive tunnelling in competition often contributes to a breakdown in situational awareness. Concentrating on only one thing while flying, such as how the approach is to be conducted, can be dangerous, leading to loss of situational awareness and control. It is for these reasons that pilots conducting straight-in approaches at competitions must plan for the landing well in advance and ensure that they maintain situational awareness. Pilots must maintain an exceptional visual lookout, listen to the radio for clues to the position of gliders in the vicinity, and maintain awareness of the Flarm audio and visual display. As the aerodrome is approached, the threats will converge and can end up immediately above or below, having the dangerous capacity to be in blind spots and sometimes mutual blind spots. Maximum vigilance and exceptional lookout and situational awareness is therefore required to minimise the risk of collision. It is not a bad idea to make an occasional small clearing-turn to clear below the nose.

Date	8-Feb-2021	Region	VSA	SOAR Report Nbr	S-1801		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing		
A/C Model 1	JS1 B	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Outlanding	PIC Age	75

What Happened

While competing on day 3 of the Horsham Week gliding competition, the pilot commenced final glide at 2800ft AGL about 25 kms north of the airfield. The pilot's flight computer had calculated the glider would arrive at the airfield at about 1200ft AGL (700ft above the predetermined safety height of 500ft AGL). The

glide progressed without any periods of unusual sink or good lift, and the airfield was in clear view and looking to be sensibly within reach. However, as the glider crossed the finish line 5kms from the airfield reference point at around 500ft AGL, the pilot realised an outlanding would have to be made and began to jettison the water ballast and configure for landing. The pilot chose to perform a straight-ahead approach to land near the southern end of a large paddock that was about 2Kms north of the airfield. The glider touched down at speed and bounced several times. Towards the end of the ground roll the pilot decided to veer to the right to give himself more clearance to the fence ahead of him, at which point the undercarriage collapsed and the glider slid to a stop facing about 110 degrees to the right of the approach path. The starboard undercarriage door separated from its hinges, and a winglet fixing pin was bent.



Analysis

Thermal heights for this day were around 3500 ft and most of the task was flown below 3000 ft. When the pilot commenced the final glide, he was confident of successfully completing the flight. Despite narrowing safety margins on the glide, the pilot remained optimistic that the glider would reach he airfield at a safe height. When it became obvious that the glider was not going to reach the airfield, the pilot was too low to conduct other than a straight-in approach and landing. The paddock selected was approximately one mile long and sloped down in the direction of travel, yet the pilot elected to land near the far end boundary where he felt the need to initiate a turn to avoid the boundary fence. Inspection of the landing area revealed five ground scars where the main wheel contacted the ground, each with a gap of four metres. The fifth mark was much wider than the other marks that is likely the point at which the undercarriage collapsed. The aircraft slid for a further nine metres to the right before coming to a stop about 75 metres from the boundary fence. Ground marks show that water ballast was still exiting the glider after it came to a stop. Subsequent inspection of the undercarriage system did not reveal any mechanical fault that would lead to a collapse, and the pilot believes he may not have locked it down correctly. The pilot is very experienced but had not flown for several months prior to the accident due to a period of medical unfitness and then the COVID-19 lockdown. His lack of currency and fixation on his flight computer to provide performance indicators and forecasts are contributory factors. The pilot's experience flying from the site contributed to his complacency and willingness to conduct an outlanding from low height without performing a proper circuit.

Safety Advice

For competition pilots the race to the finish is a high workload and dynamic situation. In such circumstances, being near the ground at a height where it is not possible to assess and check an available landing paddock is a high-risk situation that must be avoided. Human factors including decision biases, goal fixation and cognitive tunnelling in competition may lead to pilots eroding safety margins more than in normal non-competition flying. Being aware of the dangers of continuing into marginal circumstances, setting boundaries, having a sound knowledge of rules and procedures, disciplined adherence to minima and performance requirements, prioritisation of options, and planning to deal with potential situations will act as defences against unsafe conditions.

Date	8-Feb-2021	Region	VSA	SOAR Report Nbr	S-1802
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues
A/C Model 1	SZD-48-1 "Jantar Standard 2"	A/C Model 2	LS 3-a		
Injury	Nil	Damage	Nil	Phase	Outlanding	PIC Age	

What Happened

While on the final glide of a competition task and about 1km short of the finish circle, the pilot of an LS3 elected to conduct an outlanding. As the pilot turned onto their downwind leg, they observed another glider (Jantar 2) pass within 100 metres laterally of the LS3 and about 130 ft lower (see Fig. 1).

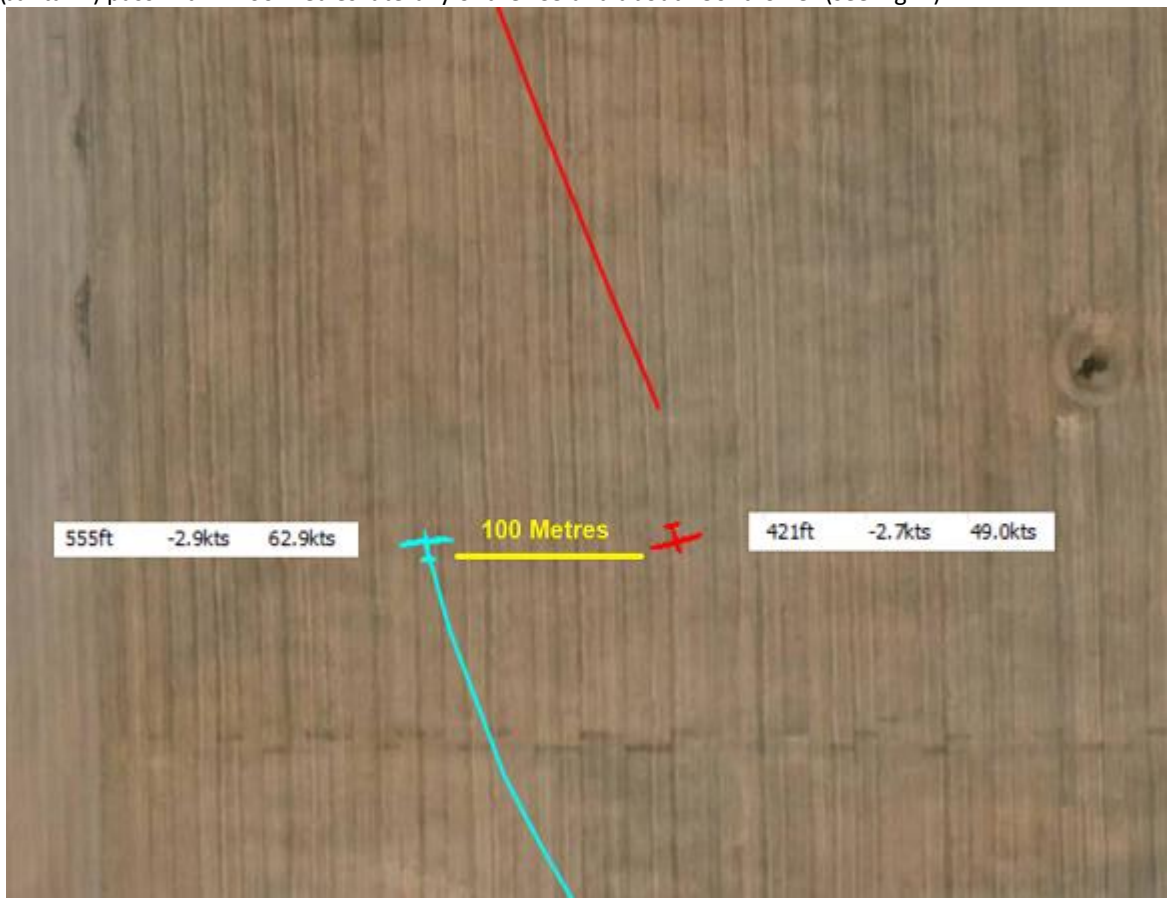


Figure 1. Proximity determined from logger traces.

Analysis

The two gliders were competing in the Horsham Week competition. The Jantar pilot was competing in Standard Class and the LS3 pilot was competing in Club Class. On this day both classes were flying the same Assigned Area task but with different class start times. Conditions on the day were difficult, and only one glider from each of the two classes managed to complete the task. Both pilots finished second in their class, having covered the furthest distance before outlanding. Review of the logger traces reveal the LS3 pilot broke off the flight at about 900ft AGL about 9 kms from the aerodrome and conducted four legs of a circuit around their landing area. While the LS3 was established on the downwind leg, its pilot observed the Jantar pass within 100 metres laterally and about 130 ft lower, and then continue on towards the airfield. The Jantar pilot did not sight the LS3. When about 6 kms from the aerodrome and at a height of about 100ft AGL, the pilot of the Jantar made a 90 degree turn to the left and landed in a paddock. Both pilots were

subsequently debriefed by the Competition Safety Officer and the incident was mentioned during the safety briefing the following morning.

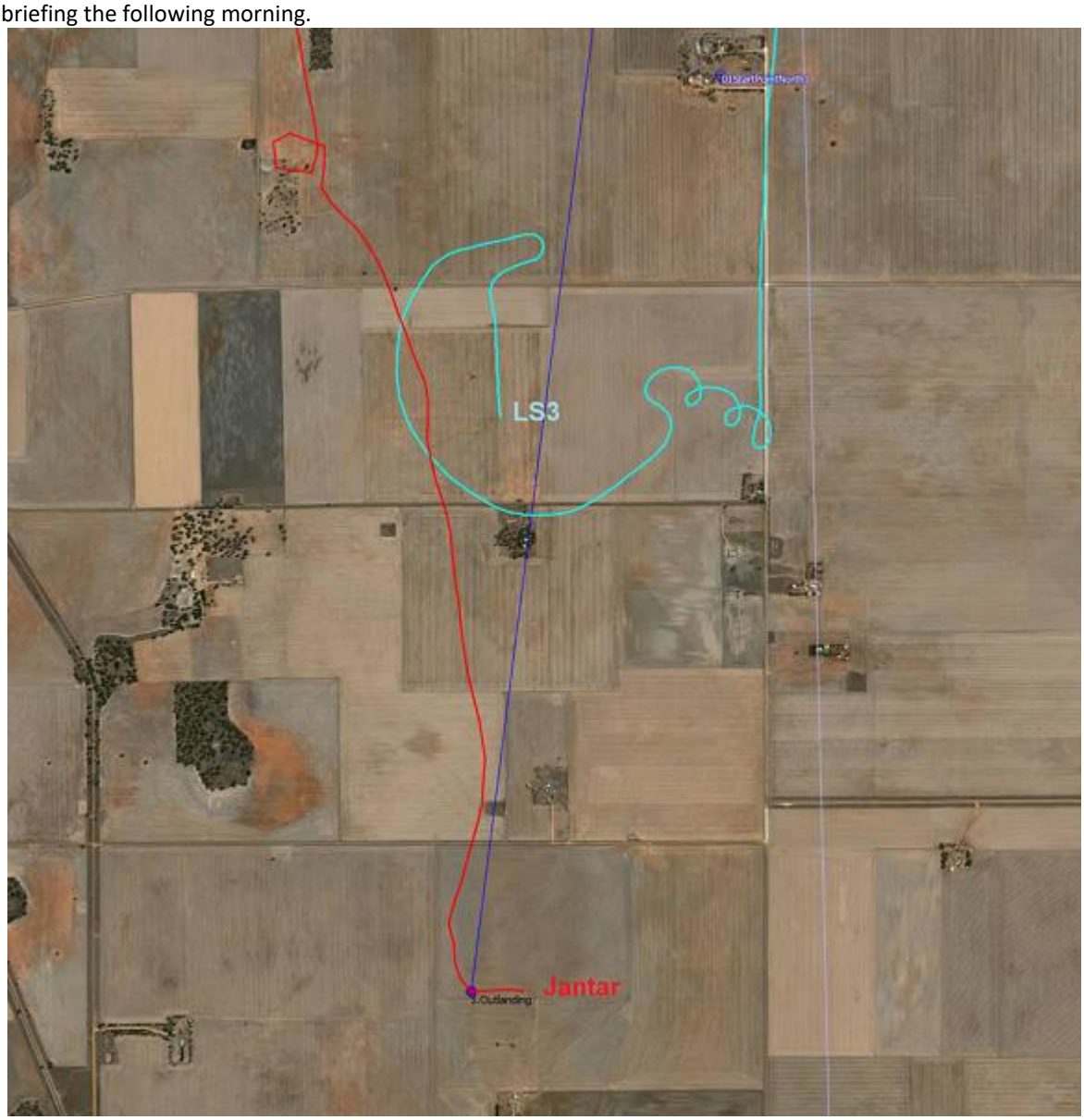


Figure 2. Flight tracks from logger traces.

Safety Advice

For competition pilots the race to the finish is a high workload and dynamic situation. Human factors including decision biases, goal fixation and cognitive tunnelling often contributes to a breakdown in situational awareness. Concentrating on only one thing while flying, such as looking for lift or paddocks at low level can be dangerous, leading to loss of situational awareness and control. It is for these reasons that pilots must maintain situational awareness by keeping a good visual lookout, listen to the radio for clues to the position of gliders in the vicinity, and maintain awareness of the Flarm audio and visual display. When getting low, pilots must remain alert to the dangers of continuing into marginal circumstances. In this case one pilot made the decision to break off the flight at sufficient a height to conduct a proper visual inspection of the outlining options – the other pilot did not, and essentially flew the aircraft into the ground. Pressing on with the flight in the hope that that all will be well is fraught with danger. Unlike landing at the home

airfield where the runway layout, ground features and hazards are usually well known, when landing in a strange paddock the pilot is faced with the unknown. Such a situation demands the pilot take additional precautions to ensure a proper survey is undertaken of the landing area so as to identify all hazards and ensure a safe landing can be accomplished. When flying cross-country it is important that pilots plan and think ahead so that they are always able to make a safe landing. At low levels, a pilot's priority will change from searching for lift to finding a suitable area in which to land. The absence of a base leg (particularly) but also of a downwind reduces the opportunity to examine the landing area and final approach. To avoid mishaps, pilots must set boundaries and stick to them. A sound knowledge of rules and procedures, disciplined adherence to minima and performance requirements, prioritisation of options, and planning to deal with potential situations will act as defences against unsafe conditions.

Date	9-Feb-2021	Region	VSA	SOAR Report Nbr	S-1803		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing		
A/C Model 1	SZD-55-1	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	60

What Happened

During a competition flight the pilot conducted a straight-in approach from the control point approximately 12km from the finish circle. The pilot omitted to configure the aircraft for landing and did not complete the pre-landing checklist before landing.

Analysis

The pilot stated that his focus on the final glide, energy management and other gliders finishing at the time contributed to missing the vital actions of extending the undercarriage and conducting the pre-landing checklist. He also noted that, in accordance with GFA training, he would normally do the pre-landing check during the downwind leg of the circuit but the straight-in approach broke his normal routine.

Safety Advice

Straight-in approaches are now commonly used to simplify the final approach under competition conditions. While they require more experience and energy management, they avoid complexity and exposure to collision risk. However, the chances of identifying an error while flying a normal, standard circuit is significantly higher than when on final glide for a straight-in approach. The absence of a base leg (particularly) but also of a downwind leg also reduces the opportunity to examine the landing area and final approach. Notwithstanding, none of this does more than add to workload and this procedure is, on balance, safer for experienced pilots. Despite this, landing mishaps still occur during a straight-in approach due to poor workload management, so pilots must take care to ensure that the pre-landing checklist is carried out. For further information, refer to OSB 01/14 'Circuit and Landing Advice'.

Date	9-Feb-2021	Region	VSA	SOAR Report Nbr	S-1804		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	LS 8-t	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	71

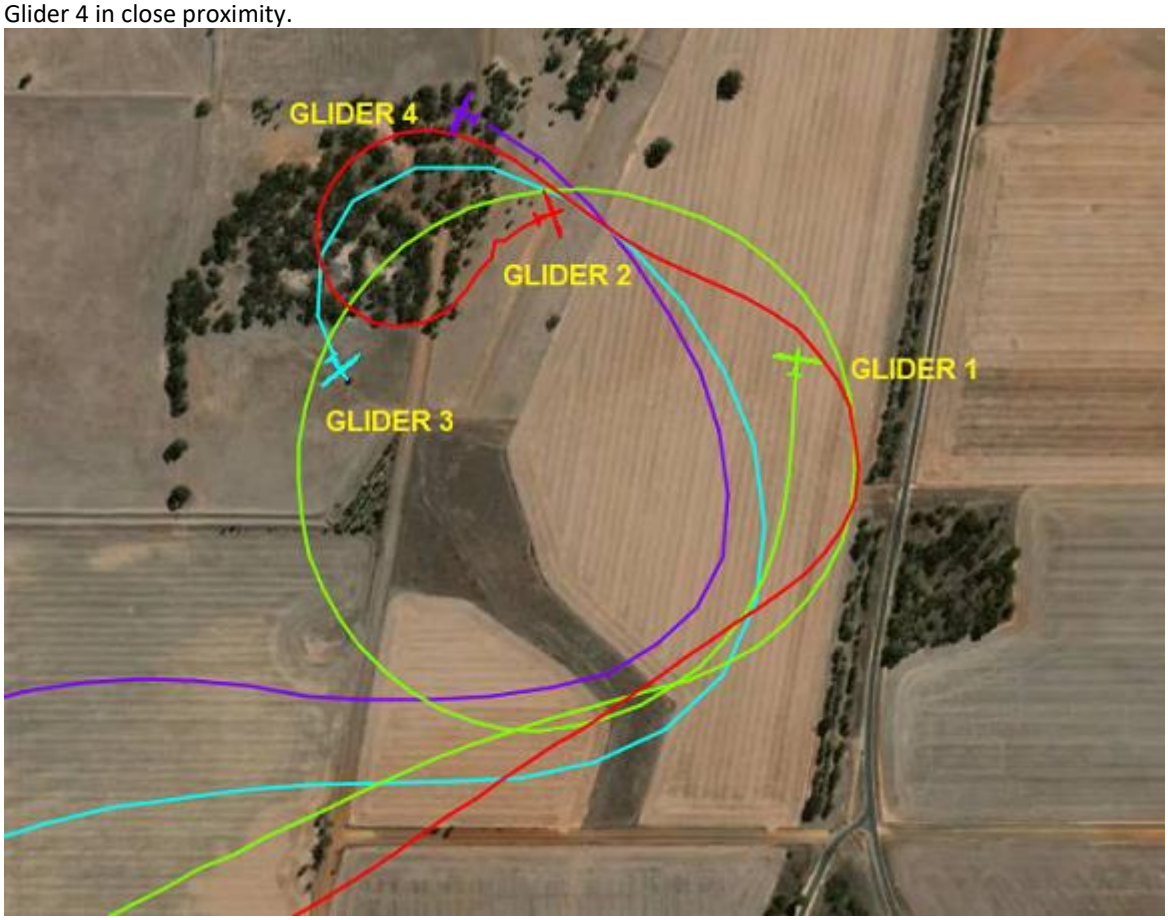
What Happened

While flying a competition task the experienced pilot entered a thermal at an altitude of approximately 4,000 feet. As the pilot completed the first turn, he observed another glider entering the thermal immediately in front. The pilot initiated a violent evasive manoeuvre that involved tightening the turn and pulling back on the stick that led to his glider entering a spin. The pilot recovered from the spin within one turn below the other thermalling gliders and completed the task uneventfully.

Analysis

The pilot was competing in the Open/18m Class on day 4 of the competition. A weak day with overcast skies and low thermal heights was forecast, so a racing task of three turn points for a scoring distance of 170kms

was set. Just prior to the start the competitors were getting climbs to nearly 6000ft (5500ft AGL), but on the first leg the pilots found themselves taking weak climbs and working a height band of about 2000ft to 5000ft. Four gliders in the Class were flying in close company. When about 12kms from the first turn point and at a height of about 3800ft, Glider 1 of the four-glider group turned left into a thermal that was marked by another glider about 1200ft higher, followed shortly afterwards by Glider 2. Glider 1 conducted a wide turn in the weak conditions whereas Glider 2 turned much tighter. Glider 3 joined the thermal and turned to follow glider 2 but flew slightly wider. As Glider 2 was completing the first turn in the thermal, the pilot came side-on to Glider 4 that had just entered the thermal and was about 100 metres away. The pilot of Glider 2 pulled on the control stick to tighten the turn to avoid colliding with Glider 4 and the glider immediately departed into a spin. Fortunately, there were no gliders below and the pilot recovered from the spin after one rotation and resumed the task. Somewhat shaken by the experience. Discussion with the pilots of Gliders 1 and 4 identified that neither pilot saw the other until immediately before the evasive manoeuvre was conducted. The pilot of Glider 4 stated that he was following about a half of a turn behind Glider 3 and had lost sight of Glider 2, but did not anticipate that the pilot of Glider 2 would turn as tight as he did. The pilot of Glider 2 was unaware there were gliders joining behind him, and so was startled when he observed Glider 4 in close proximity.



Safety Advice

Competition pilots understand they must sight all the gliders that are in the thermal they are about to enter, and to plan their method of arrival and entry to the thermal so that other gliders in the thermal are able to see them. However, when a group of gliders enter a thermal where there are no visible threats or other gliders, situational awareness can be difficult to maintain. This is especially so if the lead gliders are unaware there are gliders following. Furthermore, the situation with gliders thermalling together is quite dynamic, and pilots cannot always anticipate the relative movements of the other gliders involved. For this reason,

pilots should fly predictably when entering a thermal and must not focus on one thing (e.g., a glider immediately in front) to the exclusion of others. Pilots must always maintain a good lookout, and since alerted see-and-avoid enhances situational awareness, the radio can be used to good effect in these circumstances.

Date	12-Feb-2021	Region	VSA	SOAR Report Nbr	S-1864
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement
A/C Model 1	Discus CS	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	39

What Happened

The pilot reported inadvertently breaching Class C controlled airspace during a cross-country flight.

Analysis

The pilot had planned to fly to a major regional town about 60kms to the West and then head north before returning home. On departing the local area, the pilot flew below the 4500ft Lower Limit of the overlying Class C airspace to the West, where the airspace boundary changes to Class E and rises to 8500ft. The pilot stated: *"I was absolutely sure that I … was in the 8,500' step when I took a strong thermal to approximately 6,800'. However, upon checking my location on my flight computer as I rolled level and continued west, I was shocked to discover that I was in (Class A airspace). I immediately pulled out my airbrakes and descended ASAP to (below the Class C airspace) without incident. The result was that I was in controlled airspace …. for approximately 3 minutes to a maximum height of approximately 6,800'."* Upon completion of the flight the pilot reported the incident to the Duty instructor and then his CFI. The pilot was carrying relevant and up-to-date charts, and was using a flight computer for navigation. However, over reliance on the flight computer and insufficient cross checking to charts and visible landmarks had led a breakdown in situational awareness. The pilot completed remedial training on airspace and navigation.

Safety Advice

Violations of controlled airspace can be avoided by remaining situationally aware, ensuring you have current airspace charts, and by thoroughly familiarising yourself with local airspace and other aeronautical issues. Pilots should always navigate using CASA approved data and charts. Airspace files provided by competition organisers or downloadable from the internet are unapproved and should never be relied upon.

Date	15-Feb-2021	Region	GQ	SOAR Report Nbr	S-1806
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	Schempp Hirth Duo Discus X	A/C Model 2	Jabiru J230-D		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	63

What Happened

During competition launching a transiting Jabiru aircraft came within close proximity to a two-seat glider. The pilots of both aircraft turned right in accordance with the rules for the prevention of a head-on collision.

Analysis

The glider pilots were participating in the Two Seat National Championships, and a NOTAM detailing information concerning the gliding operations at the aerodrome was in place for the period of the competition. Shortly after launching commenced, the pilot of the Jabiru made a radio call advising they were inbound. Moments later the Jabiru pilot made a second call advising his intention was to be north of the aerodrome. A self-launching sailplane then made a radio call to advise the Jabiru pilot that he was "rolling on runway 11, heading 110 and will be climbing to 2800' staying to the south of the runway centreline." The Competition Director then made a radio call to the Jabiru pilot advising that glider launching had commenced, and that there were ten gliders launching for the next 30 minutes. Two position reports were made by the tug pilot conducting a glider launch to aid situational awareness. The Jabiru pilot did not make any further reports of position or intention. The Jabiru headed past the aerodrome towards a glider that had been thermalling in the drop zone about 1.6NM North-East of the aerodrome. As the glider pilot rolled out

of the turn at about 1400ft AGL, he found himself head-on to the Jabiru. The glider pilot immediately turned to the right and reported the Jabiru *"...was extremely close to the extent that even after my evasive manoeuvre I thought a collision was going to occur with our left-hand wing"*. Later that day the Jabiru pilot contacted the Competition Director to enquire as to the welfare of the glider pilots. The ATSB contacted the Jabiru pilot, who advised they had made a radio call when approaching the aerodrome but could not decipher the radio call in response (describing it as 'scratchy'); although he did hear the tow pilot's position broadcasts. He said he altered track to avoid the aerodrome circuit area, but this put him in proximity with the glider. He advised he had no prior warning of gliders in the area, which suggests he had not read the NOTAM.

Remedial Action

The Jabiru pilot has since completed a review with a CFI specifically focusing on the application of appropriate flight planning including awareness of: NOTAMs, avoidance of aerodromes where increased collision risk was likely, the use of correct radio phraseology when intending to transit non-controlled aerodromes, appropriate responses to radio transmissions with aircraft in possible conflict with a planned track, CAR 166C requirements for mandatory broadcasting, considerations of track or height mitigation to reduce the potential for conflict with other aircraft 'in the vicinity' of non-controlled aerodromes, recommended hemispherical cruising levels and reporting requirements with RAAus and ATSB.

Safety Advice

A notice to airmen (NOTAM) is issued to alert aircraft pilots of potential hazards along a flight route or at a location that could affect the safety of the flight. Importantly, a NOTAM states the abnormal status of a component of the National Airspace System and not the normal status, and is issued when there is insufficient time to be publicise in advance by other means. It is therefore important that pilots check for NOTAMs when planning a task or navigation exercise to inform themselves about what might be happening in the airspace being flown. Checking for NOTAMs only takes a few minutes, and it can provide valuable information. The National Aeronautical Information Processing System (NAIPS) provides a central database of Meteorological, NOTAM and chart information. The system is used by the Airservices Australia to provide pre-flight and in-flight Briefings and to accept and distribute flight notifications. Access to the NAIPS Internet Service (NIS) is available via the link on the Airservices home page http://www.airservicesaustralia.com or directly via the Briefing Home page http://www.airservicesaustralia.com/flight-briefing/. Pilots are encouraged to review Civil Aviation Advisory Publication CAAP 166 and the CASA "Be seen, be heard, be safe" information

Date	19-Feb-2021	Region	SAGA	SOAR Report Nbr	S-1809
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues
A/C Model 1				A/C Model 2	
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	

What Happened

An approved release of restricted airspace in which several gliders were flying was cancelled prematurely due to miscommunication.

Analysis

The Gliding Club has access to a gliding release of a portion of restricted airspace through a letter of agreement (LOA) with the RAAF and Airservices under LOA 3009. This LOA defines the procedures in the event of deactivation of the restricted airspace when there is a gliding release; in particular, 'Adelaide TCU will issue a Danger Area NOTAM for the affected airspace to cover the change of airspace classification'. On the day of this incident a NOTAM was in effect until 1700 local time releasing an area of restricted airspace to 6,500ft.. The RAAF tower closed early and deactivated the restricted airspace, which effectively cancelled the gliding release at 1530 local time and the airspace reverted to CTA. Investigation revealed that a controller form the RAAF tower phoned the Club at 1430 hours local time to advise of the tower closure but were not advised that there were several gliders in that airspace at the time. As a result, the tower controller

did not contact Adelaide TCU to issue a Danger Area NOTAM. When the problem was identified the club attempted to contact the gliders but only a few pilots received notification of the change. Fortuitously, there were no infringements of Class C airspace.

Remedial action

1. The RAAF base flight commander was contacted to discuss the incident. They are now aware that the club does not have staff or members available at short notice to request Adelaide TCU to activate a Danger Area. The flight commander agreed that it is the responsibility of the RAAF and this should occur unless it is confirmed there is no gliding activity planned.
2. Consideration is being given to updating the LOA to clarify responsibilities in the event of cancellation of a gliding release of restricted airspace.
3. A procedures sheet will be created and made available to Club staff and members for use in the event of cancellation of a gliding release of restricted airspace, including procedures in the event of an airspace recall.
4. The Club training panel will look at implementing a system of monitoring airborne gliders for the purposes of airspace recall, gliding release cancellation, and SAR.

Date	20-Feb-2021	Region	VSA	SOAR Report Nbr	S-1813		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	Piper PA-25-260	A/C Model 2	SZD-51-1 Junior				
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	42

What Happened

The instructor in a glider under tow on a training flight observed another glider approaching head-on at the same level. The instructor assumed control from the student, released from tow and commenced a diving turn to the right to provide separation from the other glider. The tow pilot had also observed the other glider rapidly approaching and, following the glider releasing from tow, banked the tow plane steeply to the right to avoid a collision.

Analysis

The investigation was limited to witness accounts as a flight trace was not recorded by the Flarm in the other glider because it was unserviceable. The reason for its unserviceability was not identified. The tow pilot recalled that while conducting a glider launch and at approximately 1600 feet AMSL, he observed a glider at the same height heading directly toward the towing combination. Moments before, the command pilot in the glider under tow had recognised the threat of collision with the other glider, and he immediately assumed control, released from tow, and dived away to the right. The tow pilot stated that upon release of the glider under tow, he banked sharply to the right to provide separation with the approaching glider. The pilot of the other glider, who had recently qualified for their 'C' Certificate, advised that they had been thermalling near the downwind joining area for the previous 15 minutes and had observed the towing combination take-off but had then lost sight of it. Compounding matters, the Flarm in their glider was unserviceable. All aircraft landed safely, and the pilot of the other glider was counselled by their CFI.

Safety Advice

This incident highlights the dangers of gliders operating in the vicinity of the live side of the circuit, and the importance of maintaining good Lookout and having a working Flarm to facilitate alerted see-and-avoid. Flarms can be unreliable and can fail or have degraded performance with age. In addition, a poorly positioned flarm antenna can reduce the performance and signal range. Expired firmware will also prevent a Flarm from functioning. For further advice on Flarm Maintenance, refer to the Flarm website: https://flarm.com/a-word-on-maintenance/

Date	20-Feb-2021	Region	GQ	SOAR Report Nbr	S-1816
Level 1	Technical	Level 2	Powerplant/Propulsion	Level 3	Other Powerplant/Propulsion Issues
A/C Model 1	PA-25 LS1 Pawnee	A/C Model 2	Nimbus-4DM		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	55

What Happened

Part way through the take-off run for an aerotow launch of a Nimbus DM, the tow pilot observed both the Alternator warning light and Master Caution warning light were illuminated (they were not illuminated before the launch commenced). At around the same time, the tow pilot felt a small bump on the tow rope and thought the glider had released. The tow plane reached take off speed very soon after and lifted-off at flying speed. The tow plane's high rate of climb was confirmation that the glider was no longer under tow, and the tow pilot throttled back and conducted a low right-hand circuit to land on the operational runway. After the tow pilot taxied clear of the runway and shut down, he exited the tow plane and spoke with the command pilot of the Nimbus 4DM. The glider pilot advised that he observed a drivebelt exit the tow plane from underneath and decided to reject the take-off and released the tow rope.

Analysis

Tow plane is a modified Piper Pawnee that has been retrofitted with an automotive engine and certified under the experimental category. The Auxiliary belt drives the alternator and water pump from a crankshaft pulley. As part of the engine modification, a dummy shaft and pulley was installed to replace the power steering hydraulic pump and pulley. Investigation revealed that this dummy shaft mounting had failed and allowed the belt to be dislodged. The tow plane had completed approximately 1000hrs of service in this configuration without fault prior to this failure. The failure was attributed to the heads of two of the three retaining low-tensile screws shearing. This allowed the "dummy" shaft to become misaligned resulting in the belt disengaging and all the pulleys fell to the ground beneath the aircraft.

Picture 1 misaligned dummy shaft

Picture 2 Dummy shaft mounting with new high tensile screws fitted.

Remedial Action

The screw holes in the dummy shaft mounting were rebored and countersunk, and high-tensile bolts installed. The right-hand side of the engine cowling was also modified to allow better access when conducting the daily inspection of the engine.

Safety Advice

Section 10.2.2.1 of the GFA Aerotowing Manual has this to say about possible engine failure while the tow plane on ground: *"In the case of partial engine failure during take-off, do not assume the engine will "come good". Release the glider. Apply the same philosophy and pilot actions as for a stop signal early in the take-off run, except that it may be more difficult to keep moving if your engine is not developing adequate power.*

Use whatever power you have to open up the distance between you and the glider or to manoeuvre out of the way. DO NOT take-off with a malfunctioning engine. If the engine failure is total, use the tow plane's inertia to get out of the way of the glider as best you can, turning in the direction most appropriate for the prevailing conditions".

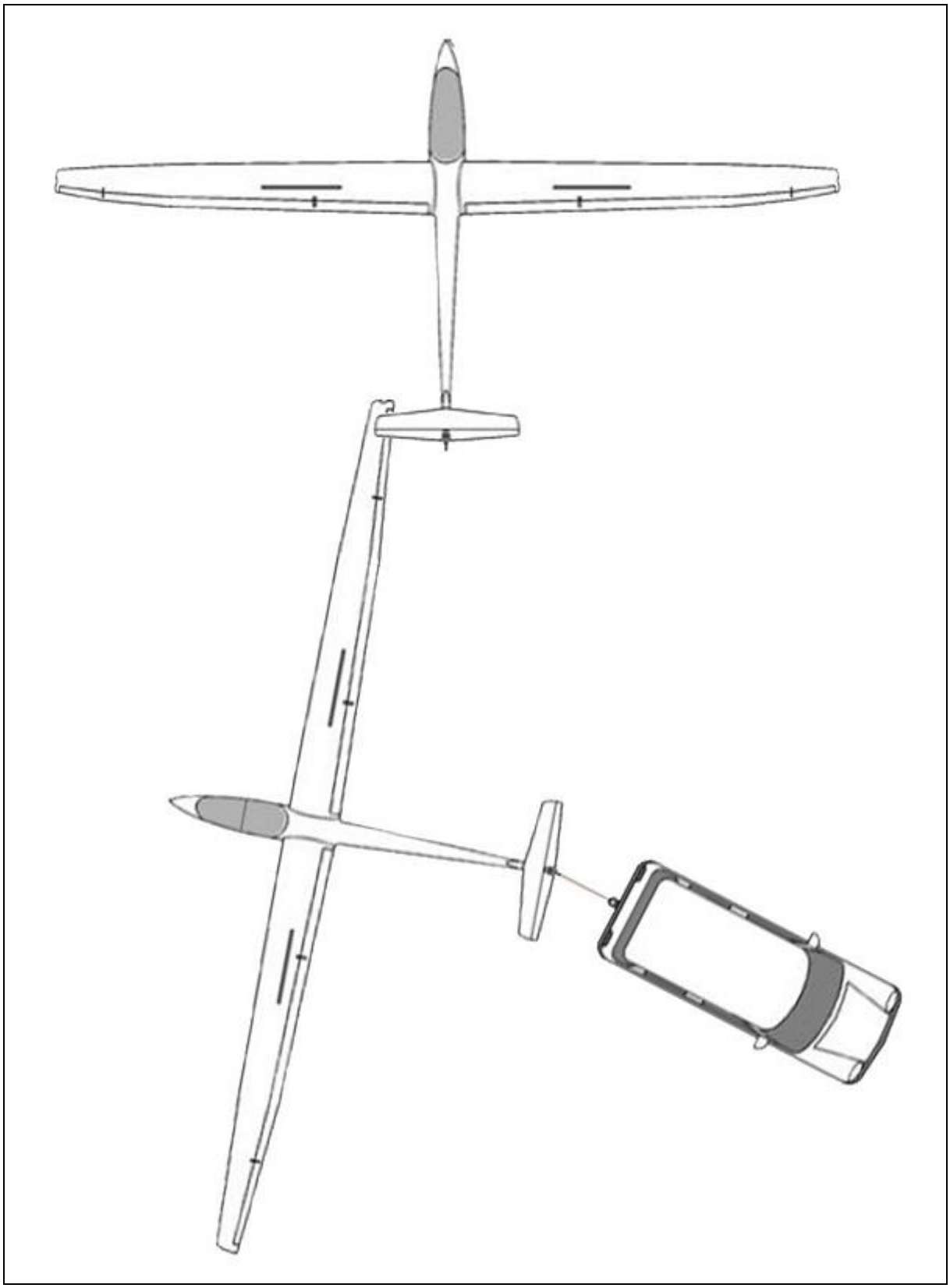
Date	22-Feb-2021	Region	NSWGA	SOAR Report Nbr	S-1810		
Level 1	Operational	Level 2	Ground Operations	Level 3	Taxiing collision/near collision		
A/C Model 1	DG-1000S	A/C Model 2	LS 4-a				
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	73

What Happened

While towing a glider with a vehicle, and during manoeuvring on the flight line, the outer starboard wing contacted the port outer leading edge of a single seater glider's tailplane. The vehicle driver reported *"The contact was soft as the tow car was braked almost immediately the contact occurred. The car was edging forwards at time to see if the wing would clear. Due to angles from the driver's sighting back to the starboard wing, the proximity of the other glider's stabiliser was misjudged."*

Analysis

Witnesses at the flight line observed the vehicle driver attempting to manoeuvre between a glider awaiting launch and the gliding operations control van. One witness recognised that the glider under tow was about to collide with the stationary glider and called out 'Stop' and signalled to the driver with both arms raised. The vehicle driver braked but not before the two gliders made contact. An Airworthiness inspector inspected both gliders, which included the removal of the tailplane that was struck and determined there was no damage apart from superficial chips in the gelcoat. Both aircraft were put back into service. The Club CFI wrote an article for the club magazine highlighting the risks of towing between objects and advised *"If the situation ends up looking tight in any way, stop! Get an experienced member or two and have the wing tips manned so they do not hit any obstacles".*



Safety Advice
Manoeuvring a glider with a towing vehicle in close proximity to other gliders and obstacles is unwise as the driver has a limited field of view. In such cases it is far safer to either have experienced persons external to the vehicle monitor obstacle clearance, or to unhitch the glider from the vehicle and move it by hand.

Date	23-Feb-2021	Region	NSWGA	SOAR Report Nbr	S-1815		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Loss of control		
A/C Model 1	SZD-55-1	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	66

What Happened
The pilot was undertaking a wing-down aerotow launch in an 8-13 knot crosswind as there was no crew at the launch point. The pilot put the into-wind (starboard) wing on the ground and deployed the airbrakes to improve aileron control at low speed. As the launch proceeded, the pilot found he could not raise the starboard wing due to the tug's prop wash and the glider began to veer to the right with the tail in the air. The pilot was about to release from tow when the starboard wing rose. Believing he could recover the situation, the pilot remained on tow. However, control inputs caused the port wing to strike the ground, and corrective action resulted in the starboard wing dropping back onto the ground. The nose of the glider dragged along the ground for a considerable distance. Unable to regain directional control, the pilot released from tow. While the pilot was uninjured, the glider was substantially damaged

Analysis
Although the glider is hangared locally, the pilot does not regularly fly at the site. Consequently, he is not familiar with many of the Club's members and chose not to impose on anyone to help him on the day. There were members available to help, not at the launch point, but available if he sought them out and asked. This aspect was central to the discussion between the pilot and his CFI, and the pilot acknowledged that he needed to make his presence and intention to fly known, and that he must have a wing runner. In addition, the CFI identified that the pilot persisted with the launch for too long and should have released earlier. With 13 knot gusts from the South-West on RWY 18, the glider was being flown almost at its maximum

demonstrated crosswind component of 9.7 knots, so this made the wing down take-off even more risky. The contributing factors were:

- Not using a wing runner.
- Launching at the maximum crosswind component for the glider.
- Persisting with a launch when directional control was not achieved.
- Infrequent attendance and flying from the airfield.
- Tow pilot not intervening when there was no wing runner.

Safety Advice

Although it sounds simple enough, aerotow launching without a wing runner requires careful consideration and considerable skill. The risks associated with such a launch method should not be underestimated. Such operations are fertile ground for accidents. For this reason, many clubs do not permit launches without a wing runner, and even ban aerotow retrieves from paddocks. Even with a wing runner, modern gliders often drop wings some considerable time after the wing runner has let go. This is a function of the glider's high angle of attack with the tail on the ground, combined with the spiral prop wash from the tow plane. If the wing drops into grass, a ground loop is a certainty. In crosswind conditions, especially near the limit of the glider's demonstrated crosswind component, the risks of loss of control are even higher. Pilots should not take chances by persisting with the launch and trying to pick-up the dropped wing – they should release immediately.

Date	24-Feb-2021	Region	NSWGA	SOAR Report Nbr		S-1811	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Wheels up landing	
A/C Model 1		Standard Cirrus		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	63

What Happened

The pilot landed with the undercarriage retracted following an aerotow retrieve from an outlanding paddock. The pilot released from aerotow shortly before joining circuit and forgot to configure the aircraft for landing. The pre-landing check got missed when the pilot was distracted by the tug in circuit.

Analysis

Pilots, like all humans, are susceptible to becoming preoccupied and distracted with one task to the detriment of another task. As indicated in this report, a distraction can affect a pilot operating even a simple aircraft like a sailplane and can arise unexpectedly, during periods of high or low workload, or during any phase of flight. In essence, no pilot is immune to distraction. Because some interruptions and/or distractions may be subtle, the first priority is to recognise and identify them. Then, the pilot will need to re-establish situational awareness, i.e. Identify what they were doing, and where they were in the process when they were distracted. Determine what action you need to take to get back on track – prioritisation is key. Remember: Aviate, Navigate, Communicate, and Manage.

Safety Advice

Circuit and landing are high workload environments and pilots are encouraged to reduce their workload by configuring the aircraft for landing at an early stage. GFA training is to lower the undercarriage once the decision to break-off the flight has been made and the undercarriage should be down before the circuit is joined. When the aircraft is configured early, the risk off a mishap from the omission of the pre-landing checklist, for whatever reason, will be reduced. Refer also to OSB 01/14 'Circuit and Landing Advice'.

Date	27-Feb-2021	Region	SAGA	SOAR Report Nbr		S-1812	
Level 1	Operational	Level 2	Airframe	Level 3		Doors/Canopies	
A/C Model 1		LS 7		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	

What Happened

After landing, the canopy was raised with the forward left-hand latch pin still partially engaged in the securing hole in the fuselage. The latch pin forward mount broke off canopy, and the pin was bent approximately 6cm from tip.

Analysis

The pilot lacked experience in the glider and did not pull the canopy locking lever far enough back to disengage both forward latching pins from the securing guide in the fuselage. Finding the canopy would not open, the pilot used brute force.

Safety Advice

Although gliders have become more similar in respect of cockpit layout and control movements, differences remain. Unfamiliarity with type is a common causal factor in accidents and incidents, so it is important that pilots ensure they know and fully understand the function and location of all the controls and systems. Brute force should never be required to operate any control in a properly maintained glider, so if activating a control or mechanism appears harder than normal, the pilot should think through the issue to determine the cause.

Date	28-Feb-2021	Region	NSWGA	SOAR Report Nbr	S-1821
Level 1	Operational	Level 2	Runway Events	Level 3	Runway excursion
A/C Model 1	LS10-st	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	66

What Happened

The pilot landed after a 4.5 hour cross country flight into a 7-knot 30-degree crosswind. The flare and initial ground roll were uneventful, but as the pilot commenced a gentle left taxi manoeuvre the glider commenced a sharp left turn and described an arc of 180 degrees. The 'ground loop' was slow and gentle, and upon exiting the glider the pilot noticed occasional crosswind gusts from opposite directions.

Analysis

Investigation by the local club CFI identified that the pilot was landing downhill and, due to changing wind direction at the time, landed with a tailwind. When the airflow over the rudder made control ineffective, inertia during the taxying turn initiated by the pilot, coupled with the weathercock effect of the crosswind, caused the glider to turn through 180 degrees before coming to rest.

Safety Advice

Approaching a runway with a tailwind will usually result in a faster ground speed as the wind carries the glider along. As a result, a glider will often float along the runway during the flare, and require extra braking to slow down, leading to a much longer landing distance. This is exacerbated when the runway also slopes downhill. If a pilot must land downhill with a tailwind, they must still fly an approach speed appropriate for the conditions (e.g. 1.5Vs) but should aim to touchdown as close to the runway threshold as possible, and during the ground run the stick should be held fully back to keep the tailwheel or tailskid grounded to maintain directional control.

Date	28-Feb-2021	Region	NSWGA	SOAR Report Nbr	S-1823
Level 1	Operational	Level 2	Runway Events	Level 3	Runway excursion
A/C Model 1	ASW 27-18	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	65

What Happened

The pilot landed after a cross country flight into a 7-knot 30-degree crosswind. The flare and initial ground roll were uneventful, but as the pilot commenced a left taxi manoeuvre to clear the runway the glider commenced a sharp left turn and skidded sideways with the wings level. Upon exiting the glider, the pilot noticed the two airfield windsocks were pointing in different directions and believed the glider had rolled through a thermal on landing.

Analysis

Investigation by the CFI identified that the pilot was landing downhill and lost directional control after losing rudder authority when the airspeed reduced. As the groundspeed was somewhat higher than normal when the airflow over the rudder made control ineffective, inertia during the turn initiated by the pilot, coupled with the weathercock effect of the crosswind, caused the glider to skid sideways before coming to rest.

Safety Advice

During the ground run the stick should be held fully back, as this gives better directional control in crosswinds and when landing downhill.

Date	28-Feb-2021	Region	NSWGA	SOAR Report Nbr		S-1826	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway excursion	
A/C Model 1		Mini-Nimbus HS 7		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	75

What Happened

The pilot landed after a cross country flight into a 7-knot 30-degree crosswind. The flare and initial ground roll were uneventful, but when the pilot applied the wheel brake, he found it ineffective and felt what he perceived to be the brake cable snap. As the glider seemed not to be slowing down significantly and with the end of the runway approaching, the pilot initiated a ground loop to the right and the glider skidded sideways a short distance and came to a halt. The tailwheel suffered minor damage.

Analysis

Investigation by the CFI identified that the pilot was landing downhill and, due to changing wind direction at the time, landed with a tailwind. Compounding matter, the pilot had added an extra 5 knots to his approach speed to compensate for what he thought was a headwind component. The pilot later acknowledge that he should have landed shorter so as not to rely on the wheel brake to shorten the landing distance. The CFI stressed the importance of checking the windsocks to identify the most into-wind runway.

Safety Advice

Approaching a runway with a tailwind will usually result in a faster ground speed as the wind carries the glider along. As a result, a glider will often float along the runway during the flare, and require extra braking to slow down, leading to a much longer landing distance. This is exacerbated when the runway also slopes downhill. If a pilot must land downhill with a tailwind, they must still fly an approach speed appropriate for the conditions (e.g. 1.5Vs) but should aim to touchdown as close to the runway threshold as possible, and during the ground run the stick should be held fully back to maintain directional control.

Date	28-Feb-2021	Region	VSA	SOAR Report Nbr		S-1835	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Wheels up landing	
A/C Model 1		DG-1000S		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	53

What Happened

The pilot was conducting the last flight of the day in the glider and was landing long in order to stop near the hangars. The pilot did not configure the aircraft for landing and did not complete their pre-landing checklist. As a consequence, the glider landed with the mainwheel retracted and suffered minor damage to the lower fuselage.

Analysis

The pilot reported joining the downwind leg of the circuit early to avoid a glider and tug combination that was climbing out on the crosswind leg. The towing combination continued to climb into the downwind leg of the circuit, which distracted the glider pilot who omitted to complete the pre-landing checklist. After passing clear of the towing combination, the pilot completed the circuit and joined a high final approach in order to land long and come to rest at the other end of the runway where the hangars were situated. During the flare the pilot noticed the horizon was unusually low and realised he had omitted to lower the undercarriage. The

glider touched down with the gear up on the fuselage and overran a small gravel strip, which caused minor damage to the fuselage.

Safety Advice

Checklists

Wheel-up landings are a common occurrence in gliding, and mainly occur because pilots do not properly follow procedures and check lists, either due to distraction, stress or high workload. For this reason, once the decision to break-off the flight has been made, the pilot should get some of the tasks out of the way early to reduce workload management in the circuit. At the break-off point the pilot should prepare for landing by:

- Making sure the straps are tight.
- In gliders so equipped, dump any water ballast, lower the undercarriage and set the flaps, trimming to an appropriate speed for the downwind leg.
- Make sure the radio is on the correct frequency, that volume and squelch are correctly set, and that the microphone is positioned for best performance. The pre-landing check should then be completed once the approach speed has been set and the aircraft trimmed.

The pre-landing checklist should not be conducted as an 'action list' but used to confirm the undercarriage lever is matched to the lowered position on the placard, that flaps are set as required, and that approach speed and trim has been set. For further information, please review Operational Safety Bulletin (OSB) 01/14 – 'Circuit and Landing Advice'.

Towing Patterns

Tow pilots are required to keep a sharp lookout, continually clear the aircraft's blind spots, and avoid those parts of the sky in which traffic will congregate, e.g. circuit areas. Tow pilots should, wherever possible, avoid climbing the combination in the downwind leg of the circuit and plan their departure so as to keep the glider within gliding distance of the airfield. While it is usual for an aircraft to maintain runway heading until it reaches 500' AGL, the pilot in command of a glider combination is permitted to make deviations to maximise safety for the combination during the take-off (e.g. so as to remain over landable terrain). Section 10.1.22 of the GFA Aerotowing Manual provides the relevant guidance, and requires the tow pilot to:

•Keep the combination clear of circuit joining areas;
•avoid climbing the combination in the downwind leg of the circuit; and
•keep the glider within gliding distance of the airfield.

Date	3-Mar-2021	Region	VSA	SOAR Report Nbr	S-1831		
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication		
A/C Model 1		Duo Discus		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Outlanding	PIC Age	83

What Happened

While on a cross-country flight an outlanding became inevitable. The pilot conducted a visual inspection of the paddock during the circuit but was unable to recognise that the grass covered landing area was pock-marked with cattle hoof prints. Shortly after touchdown on the rough surface, uncommanded retraction of the undercarriage occurred. The aircraft suffered superficial damage.

Analysis

The command pilot reported that the landing area was a previously cropped paddock with a grassed surface and appeared to be suitable for landing. Upon touchdown at about 35 knots the gear handle moved uncommanded from the locked position and the undercarriage retracted. The landing area was pock marked by extensive cattle hoof marks from the previous wet winter that had hardening during summer, and these were hidden in the grass. The operation of the undercarriage was subsequently checked, and the following contributing factors were identified:

- The plastic covered handle of the undercarriage lever had turned around sufficient to prevent the lever from fully engaging in the locking detent.
- There was a build-up of dirt and debris on the undercarriage itself, which may have impeded the undercarriage mechanisms from moving into the correct positions.
- The overcentre of the undercarriage required a small adjustment.

Safety Advice

No matter how complicated and advanced the glider gets, they remain pieces of machinery. If there are even any minor problems in a single area of the glider, who knows what could happen. If some debris starts to collect in the wrong part of the glider for an extended period, it can cause severe failures. Similarly, if a part of the glider is not as secure as it should be such as the handle on a control lever or the control column grip becoming loose, this can also have serious consequences. If a pilot notices something is amiss, rather than live with the problem they should have a qualified airworthiness inspector check the glider and correct any identified deficiencies.

Date	6-Mar-2021	Region	SAGA	SOAR Report Nbr	S-1824		
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Controlled flight into terrain		
A/C Model 1	Astir CS 77	A/C Model 2					
Injury	Serious	Damage	Substantial	Phase	Landing	PIC Age	52

What Happened

During final approach, the pilot realised he had not lowered the undercarriage. The pilot changed hands on the control column, and inadvertently pushed forward on the stick coincident with lowering the wheel. The aircraft flew onto the ground heavily at approach speed. The pilot suffered back injury and the glider was substantially damaged.

Analysis

The glider was launched by winch and upon release the pilot turned downwind to chase a thermal. After a minute or so the glider had lost altitude and the pilot broke off the flight and flew towards the circuit joining area. The pilot stated that he joined circuit lower than usual and only realised prior to touchdown that the undercarriage had not been lowered. He said that he swapped hands to move the undercarriage lever, located on the right side of the cockpit, into the lowered position. At that moment the glider pitched forward and struck the ground hard. A witness on the ground stated the glider “flared a little higher than normal and suddenly pitched forward and touched down with a puff of dust onto the rubble runway”. The witness claimed the glider had plenty of speed when it hit the ground, and that it skidded for 70 metres before coming to a stop. The witness initially thought the glider had landed with the undercarriage retracted, however it soon became apparent that the undercarriage was down and had collapsed on impact. The pilot exited the glider before ground crew arrived and complained of a very sore back. He was immobilized and transported to hospital by ambulance. Subsequent inspection of the glider revealed the impact had broken several bulkheads as well as the undercarriage system. Potential causal factors include breaking off the flight too late, increased workload and fixation on the landing area due to the low circuit, failure to configure the aircraft for landing before joining circuit and forgetting to complete the pre-landing checklist.

Safety Advice

Circuit and landing are high workload environments and pilots are encouraged to reduce their workload by configuring the aircraft for landing at an early stage. GFA training is to lower the undercarriage once the decision to land has been made and the undercarriage should be down before the circuit is joined. When the aircraft is configured early, the risk off a mishap from the omission of the pre-landing checklist, for whatever reason, will be reduced. Refer also to OSB 01/14 'Circuit and Landing Advice'. This accident also highlights the risk of injury to the pilot who attempts to lower the undercarriage in the late stages of the approach. Where the undercarriage control lever is situated on the starboards side of the cockpit, a pilot has to change

hands on the control stick to lower the undercarriage. If the glider is not trimmed, it can tend to drop the nose during this action. Over the years there have been many accidents, including fatal, caused by the pilot changing hands to lower the undercarriage at low height. On the other hand, most gliders only suffer minor scratches from a well-conducted 'wheel-up' landing.

Date	7-Mar-2021	Region	NSWGA	SOAR Report Nbr	S-1832
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	SZD 55-1	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	61

What Happened

During an aerotow launch the tug accelerated for take-off prior to the slack being taken-up in the tow rope. The glider was thrust forward, and the mainwheel struck a large tussock of grass that bounced the glider prematurely into the air. When the glider touched down again the undercarriage partially retracted but the glider and tug became airborne and climbed away. The glider pilot, after lowering the glider's undercarriage, maintained a routine and normal aero tow, separation, thermal flight, and subsequent uneventful landing.

Analysis

The undercarriage mechanism was subsequently examined, and it was identified that the port-side lower overlocking arm had been installed 180 degrees around. This prevented that side of the glider's undercarriage leg from locking over centre. When the glider travelled across the rough ground, the undercarriage mechanism moved resulting in the starboard leg unlocking. The port-side lower overlocking arm was reinstalled correctly, returning the mechanism back to specification.

Safety advice

Aviation safety relies heavily on maintenance. When it is not done correctly, it contributes to a significant proportion of aviation accidents and incidents. Some examples of maintenance errors are parts installed incorrectly, missing parts, and necessary checks not being performed. In comparison to many other threats to aviation safety, the mistakes of an airworthiness inspector can be more difficult to detect. Often times,

these mistakes are present but not visible and have the potential to remain latent, affecting the safe operation of aircraft for longer periods of time. Inspectors are confronted with a set of human factors unique within aviation. Often times, they are working alone, in confined spaces, and in a variety of adverse temperature/humidity conditions. The work can be physically strenuous, yet it also requires attention to detail. Being aware of the human factors involved in maintenance can lead to improved quality. For further information, refer to section 3.2 of Basic Sailplane Engineering dealing with 'Systemic and Human Factors'.

Date	8-Mar-2021	Region	VSA	SOAR Report Nbr	S-1822
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion
A/C Model 1	ASK 21		A/C Model 2		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	50

What Happened

The pilot of a glider landing on runway 26 had to conduct a low-level manoeuvre to avoid a tractor driven onto the runway.

Analysis

The command pilot of the glider reported that they were conducting a training flight, and during the final approach was demonstrating the correct approach attitude and use of the airbrakes. At that time, a glider was on the runway awaiting launch, and another glider was occupying the runway having recently landed. A tractor that was retrieving the recently landed glider was driving parallel to and outside the runway. The command pilot, who was flying, was landing clear of the other gliders when, at about 100ft AGL, they observed the tractor turn and enter the runway in front of the landing glider. The command pilot conducted a low-level manoeuvre to avoid the tractor and landed on the runway shoulder. The driver of the tractor advised they were retrieving a glider and checked the airspace before entering the runway but did not see the glider on final approach. The tractor driver reported the weather was stormy and the sky was quite dark. Investigation by the club CFI found the tractor driver did not effectively check that the approach was clear. The driver was counselled and underwent further training.

Safety Advice

This incident highlights the difficulty of seeing gliders in cloudy conditions and low light and serves as a reminder that retrieve drivers must maintain proper situational awareness and use radio for alerted see-and-avoid.

Date	8-Mar-2021	Region	VSA	SOAR Report Nbr	S-1827
Level 1	Operational	Level 2	Ground Operations	Level 3	Ground handling
A/C Model 1	DG-1000S		A/C Model 2		
Injury	Nil	Damage	Minor	Phase	Ground Ops	PIC Age	69

What Happened

The glider had just landed following a training flight and a member of the ground crew drove the Club tractor to the glider to tow it back to the flight line. The tractor was driven past the glider with the intention of towing it backwards with the towing gear, whereupon the driver decided to reverse towards the glider to *"to save pushing a heavy aircraft to the tow hitch"*. The driver reported *"The clutch unexpectantly grabbed and the tractor lurched backwards impacting the rudder of the glider."* The rudder was substantially damaged.

Analysis

The tractor driver was debriefed by the Club CFI. Investigation revealed he was not familiar with the tractor and had no formal induction on its use. He was unaware that it was club policy not to reverse the tractor up to a glider.

Remedial Action

The Club CFI raised awareness of the need to be endorsed before driving the Tractor via the club newsletter. Warning signs have been placed on the tractor reminding members not to drive it unless endorsed, and to

never reverse it up to gliders during retrieves. The glider's rudder was replaced with a spare while the original is being repaired.

Date	9-Mar-2021	Region	VSA	SOAR Report Nbr	S-1829
Level 1	Operational	Level 2	Runway Events	Level 3	Runway excursion
A/C Model 1	LS 3-a	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Outlanding	PIC Age	69

What Happened

During an aerotow from an outlanding paddock, the pilot lost directional control when the wing dropped into the stubble and he released from tow.

Analysis

The pilot was competing in the Victorian State Championships and was on the last leg of an assigned area task. On nearing the 'control' turnpoint, and at a distance of about 15kms from the home airfield, an outlanding became inevitable. The pilot conducted a safe landing in a harvested paddock containing 30cm wheat stubble. After assessing the suitability of the paddock, the pilot contacted the competition organisers and arranged an aerotow retrieve. Due to an absence of ground crew, the pilot conducted a 'wing down' take-off behind the tow plane. After taking-up the slack in the rope, the tow plane accelerated for take-off creating a cloud of dust that reduced the glider pilot's visibility. The drag of the wing on the ground caused the glider to veer 20 degrees to the right before the pilot got the wings level. While attempting to straighten the glider, the left wing contacted the ground and began to drag in the stubble. The pilot decided to release from tow and pushed the control column forward to keep the tail in the air as the glider conducted a ground loop. The glider was undamaged and subsequently retrieved by trailer.

Safety Advice

During an outlanding retrieve it is sometimes not possible to find a person to hold the wingtip for the launch. This necessitates a wing-down take-off, which is quite feasible but only if the surface is suitable. Any vegetation over about 10cm long should rule out a wing-down take-off, as the glider pilot will not be able to keep straight due to the drag of the wing in the grass. Even with a wing-tip holder, the pilot may still be in trouble. Modern gliders often drop wings some considerable time after the wingtip holder has let go, a function of their rather high angle of attack with the tail on the ground, combined with the spiral prop wash from the tow plane. If the wing drops into long stubble or grass, a ground loop is a certainty. Don't take chances with long stubble or grass and don't drop your guard just because it looks like it's only in small patches. If in doubt, get the trailer.

Date	9-Mar-2021	Region	WAGA	SOAR Report Nbr	S-1834
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing
A/C Model 1	Astir CS 77	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	56

What Happened

The pilot mishandled the flare while landing into a strong crosswind. The glider bounced on touchdown and the pilot lost directional control as the glider weathercocked into wind and ground looped to a stop off the edge of the runway.

Analysis

The pilot was inexperienced in gusty crosswind conditions and did not use sufficient rudder to swing the nose into line with the runway direction. This resulted in the glider touching down on the mainwheel with drift and bouncing into the air. The pilot was unable to maintain directional control, resulting in runway excursion with a rapid rotation of the glider around the down going wing as it slowed. The glider was not

damaged.

Remedial Action

The pilot agreed to undergo specific retraining in crosswind operations before flying in such conditions again.

Safety Advice

Gliders with their CG well behind the wheel have a much stronger tendency to weathercock into wind. If a swing does develop it will worsen, sometimes very quickly, and the rudder may be incapable of stopping it. Pilots must take special care with these machines. Unless full opposite rudder is applied immediately the glider starts to swing, it will almost certainly ground loop, perhaps with serious consequences. The decision as to who, if anyone, shall fly in crosswind conditions must be based on the individual pilot's experience and competence. Flying in extreme cross wind conditions can lead to ground looping on either take-off or landing.

Date	20-Mar-2021	Region	GQ	SOAR Report Nbr	S-1833		
Level 1	Consequential Events	Level 2	Low Circuit	Level 3	Low Circuit		
A/C Model 1	ASK 21	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	62

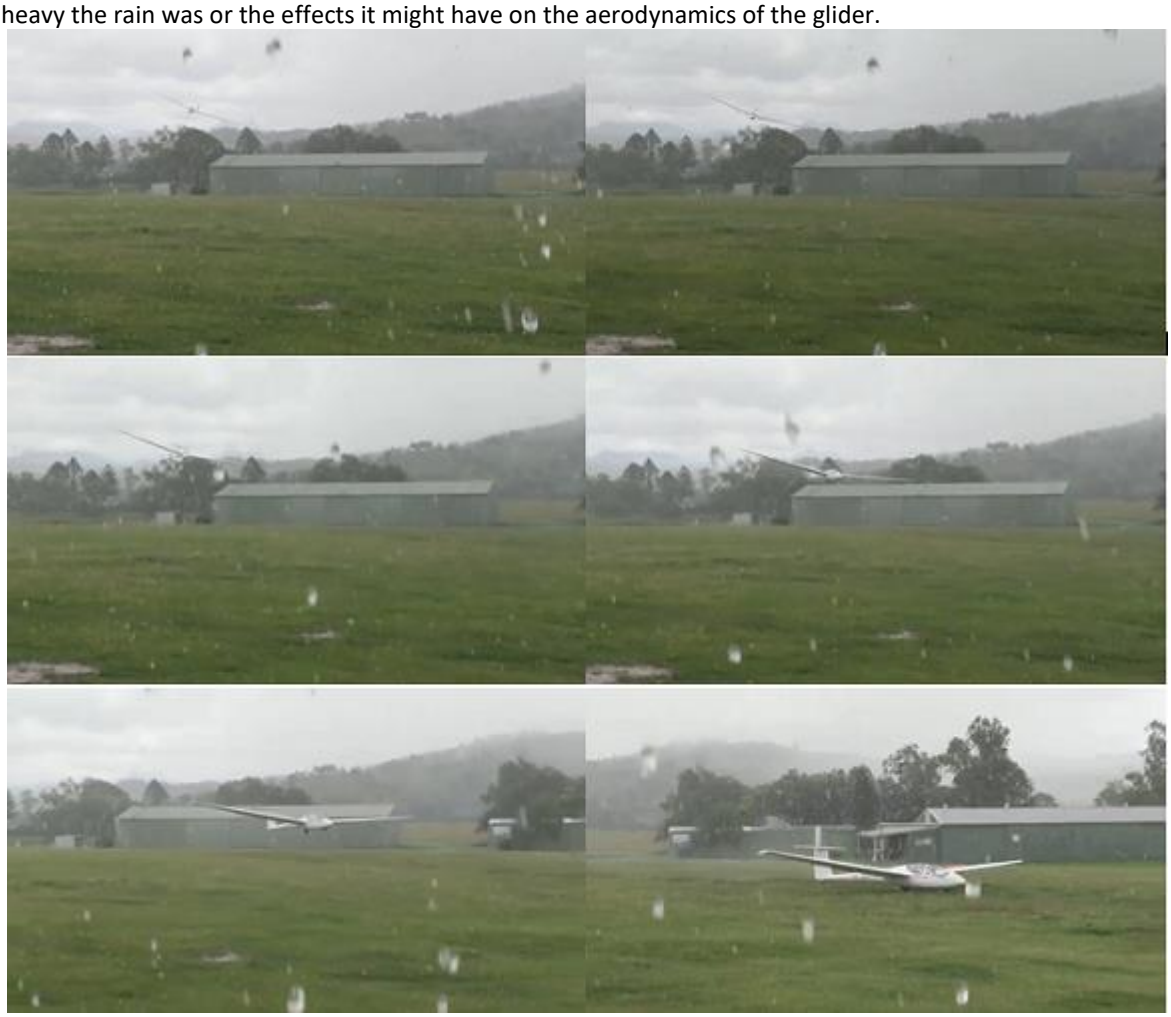
What Happened

During circuit to land the glider passed through a heavy rain shower. The pilot flew too far downwind for the conditions and conducted a very low approach to landing.

Analysis

The pilot was conducting an Air Experience Flight in overcast conditions with occasional showers increasing in frequency. After been airborne for about 30 minutes the pilot decided the break off the flight and head back to the circuit for landing. The pilot observed local rain showers approaching the airfield from the South and extended the flight by a few minutes to allow the nearer shower to pass. The pilot joined circuit for RWY 04 with the windsock indicating a weak crosswind. Shortly after joining circuit for RWY 04 the Duty Instructor on the ground made a radio call to the pilot suggesting he consider landing on RWY 22, which was more into wind. The pilot decided to continue to land on RWY 04, but the glider flew into another rain shower and the pilot noticed the glider was drifting away from the runway. The pilot stated: "This confirmed my sense of drift, and so I adjusted to around a 45-degree angle toward the strip. By this time, we started to enter the influence of the shower and light rain started to fall. Another more urgent call came over the radio to modify my circuit. We were now roughly in line with the touch down point, so I curtailed the downwind leg and

pointed us straight toward the airstrip." On turning base the rain got heavier and the glider's descent rate increased; possibly due to sink and rain contamination on the wings. The pilot flew a very low approach around the Club hangar, touched down on the runway threshold and came to rest about 300 meters down the runway. The CFI noted that the pilot committed himself to a landing on RWY 04 and did not realise how heavy the rain was or the effects it might have on the aerodynamics of the glider.



Safety Advice

Many modern glider aerofoils are severely affected by rain, resulting in reduced performance and an increase in stall speed. This is because drops of rain on the wing disturb the airflow, thus reducing lift and changing the stall characteristics. Most manufacturers suggest adding at least 5 Knots to the approach speed to take into account the increased stall speed. Flying too fast with contaminated wings will severely reduce the glide performance and will lead to increased sink rates.

Date	26-Mar-2021	Region	WAGA	SOAR Report Nbr	S-1837		
Level 1	Operational	Level 2	Ground Operations	Level 3	Taxiing collision/near collision		
A/C Model 1	ASK-21	A/C Model 2					
Injury	Nil	Damage	Substantial	Phase	Ground Ops	PIC Age	

What Happened

The glider had been towed to the launch point, and while manoeuvring in the tie-down area the vehicle driver misjudged the turn and the starboard wing impacted a signpost damaging the starboard aileron.

Analysis

The vehicle driver was a low hour's pilot who had recently returned to gliding after an hiatus of several years. He had towed the aircraft to the launch point unsupervised and was the first person to arrive, so there was no one available to assist in manoeuvring the glider.

Safety Advice

When towing gliders, drivers need to pay particular attention to obstacle clearance, remain situationally aware and take things slowly. When manoeuvring in tight spots, it is recommended that the glider be manhandled rather than moved with a vehicle. In some cases it may be prudent to await the arrival of persons to assist.

Date	31-Mar-2021	Region	NSWGA	SOAR Report Nbr	S-1838		
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion		
A/C Model 1	ASK 21	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	53

What Happened

While letting down to join downwind the ASK-21 flight crew observed the Club's K13 glider had landed to the right of the runway centre and about halfway down the runway. Shortly afterwards a retrieve vehicle arrived to collect the landed glider. The vehicle and glider were still on the runway when the ASK-21 turned onto final approach, so the pilot flying the ASK-21 adjusted the final approach to land to the left of the vehicle and K13. However, when on late final, the flight crew of the ASK-21 observed the retrieve vehicle

start to tow the K13 to the launch point directly across their approach path. The Instructor in the ASK-21 assumed control and overflew the vehicle/glider combination to land further down the runway.

Analysis

Investigation identified that the flight crew in the K13 did not immediately exit the glider after landing. When the retrieve vehicle driver arrived at the K13, the flight crew were still in the aircraft conducting a debrief, and neither party had heard the circuit position calls from the ASK-21 in circuit. Similarly, and although the retrieve vehicle was fitted with a radio, the experienced flight instructor driving the vehicle also missed the radio calls. No radio problems were identified. However, the CFI noted that the controlled aerodrome was very busy, and there was a lot of radio chatter that may have contributed to the radio calls from the ASK-21 being missed.

Safety Advice

After landing, the pilot in command of an aircraft (including a glider) must ensure the runway is vacated promptly. In the case of a glider that has landed, it is usual practice for the flight crew to manhandle the aircraft clear of the runway without undue delay. Leaving a glider on the runway while conducting a debriefing or waiting for the retrieve vehicle is very poor airmanship, and potentially hazardous to another aircraft that is compelled to land. After landing, the flight crew must move the glider clear of the runway and landing area and should always behave as if another aircraft will be landing soon. This requires maintaining a good lookout and actively listening to the radio. Lookout is especially important before commencing the retrieve of the glider across a movement area – in this incident the retrieve crew changed the dynamics of the situation for the crew of the landing glider by moving across the selected landing path that necessitated the command pilot to assume control and take avoiding action.

Date	2-Apr-2021	Region	VSA	SOAR Report Nbr	S-1851				
Level 1	Airspace		Level 2	Airspace Infringement		Level 3	Airspace Infringement		
A/C Model 1		DG-1000S		A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Thermalling	PIC Age			

What Happened

The pilot inadvertently breached Class C controlled airspace while flying locally.

Analysis

The recently solo pilot was operating from an uncertified aerodrome in Class G airspace with overlying Class C airspace at 4500 AMSL. To the West of the aerodrome is a Danger Area to allow gliders to climb to 5500ft AMSL when activated by NOTAM. The pilot stated: *"I was blissfully soaring on what was my first glider flight of over an hour, thinking myself well on my was to gaining a 'C' Certificate, and …entirely engrossed in having the opportunity to develop my thermal centring."* To maintain sufficient height to return to the aerodrome, the pilot entered the 'Danger Area' in the mistaken belief that it was active. Compounding matters, while concentrating on his thermalling skills to maintain glide back to the aerodrome, the pilot allowed the glider to drift outside the Danger Area boundaries. The pilot stated: "*I had the map poorly set-up and zoomed out so that the airspace border appeared thick…I also had my device set up on a poor angle and out of my line of sight, which combined with my polarised sunglasses, the device's screen protector and the glare made it difficult to read accurately".* The pilot was disappointed by his failure to check the status of the Danger Area before flight, his inattention to the glider's position, his overreliance on and lack of experience with the navigational device, and for allowing himself to become distracted in flight. The pilot self-reported the breaches and will in future:

- conduct a thorough flight planning ahead of all flights, which includes familiarising himself with airspace, geographical markers for the airspace, and relevant NOTAMs;
- ensure navigation devices are properly positioned and set-up for use;
- will not wear polarised sunglasses which reduce visibility of LCD type navigation displays; and
- maintain situational awareness and apply appropriate tolerances to airspace boundaries;

Safety Advice

Violations of controlled airspace can be avoided by remaining situationally aware, ensuring you have current airspace charts, and by thoroughly familiarising yourself with local airspace and other aeronautical issues. Pilots should always navigate using CASA approved data and charts. Airspace files provided by competition organisers or downloadable from the internet are unapproved and should never be relied upon.

Date	2-Apr-2021	Region	VSA	SOAR Report Nbr	S-1868		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing		
A/C Model 1	Zephyrus			A/C Model 2	HORNET STOL		
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	63

What Happened

An aerotow launch in slight tailwind conditions was aborted by the glider crew when it became apparent that the combination was not climbing satisfactorily.

Analysis

Weather conditions during the day were benign, with light and variable wind progressively moving to the East. Operations were being conducted on RWY 27 in accordance with local procedures for the conditions. The flight was a training sortie involving a solo student who was flying under supervision without reference to the ASI and Altimeter to qualify for the 'A' Certificate. Just prior to the flight the wind had moved to the East and had increased to a few knots. The gliding operation continued with a slight tailwind, as the two Pawnee tow planes were providing safe launches. However, the tow plane for the incident flight was low-powered and unable provide the same performance as the two Pawnees. The initial ground roll was well managed by the student flying but was longer than usual due to the tailwind component. The glider became airborne first and maintained a height of about 2 metres above the runway as the tow plane got airborne and began a shallow climb. Due to the long ground run and slow climb rate, it became obvious to the flight instructor that the combination would pass very low over the airfield boundary. To avoid getting into the non-manoeuvring area and while only about 5 metres above the runway, the instructor activated the tow release with the aim of landing straight ahead. The student was also concerned about the slow climb rate and had been focussing on the boundary fence that was looming ahead. When the glider was released from tow, the student pilot reacted by opening the airbrakes and simultaneously pitched forward on the control column. Due to the low height, the glider almost immediately struck the ground nose first, impacting on the front skid near the fuselage mounting point. Although the instructor was maintaining a defensive posture on the controls, the action happened too fast for the instructor to react. The glider rolled 50 meters and came to rest about 200 meters from the airfield boundary. The tow pilot continued to climb and then joined circuit and landed safely. Initial inspection of the glider identified the nose skid had cracked at a previous repair. A detailed inspection later identified the forward skid mounting tube had slightly deformed. The glider was repaired and returned to service. The instructor debriefed the student who explained that he was concerned that they were running out of runway and when the release was activated, he felt he needed to get the glider on the ground immediately to avoid running into the airfield boundary fence. The student acknowledged that his actions were inappropriate and that he should have maintained the landing attitude. The instructor advised they did not assume control before releasing from tow because they believed the student could handle the emergency and that he had allowed sufficient room for the glider to land straight ahead. The instructor had conducted most of the student's flight training and advised the student had not reacted in that way previously. The instructor considers it is likely the student was startled by the sudden release from tow at a critical stage of the launch and, in the absence of the ASI to confirm the aircraft's speed, he acted instinctively to lower the nose and get the aircraft on the ground. The instructor stated that the aircraft struck the ground almost coincident with the over pitching of the elevator control and that he had no time to react.

Safety Advice

1.Startle Response

The startle response is the physical and mental response to a sudden unexpected stimulus. More commonly known as 'fight or flight', this physiological reaction occurs in response to what you may perceive as a

harmful event, attack, threat to your survival or simply fear. The fight or flight response evolved to enable us to react with appropriate actions: to run away, to fight, or sometimes freeze to be a less visible target. In aviation, startle often occurs when in a highly dynamic, time-critical condition. Two systems in the brain—the reflexive fast system and the slow system—play different roles in our reaction to danger. The reflexive fast system acts immediately—in one twelfth of a second—by sending information directly to the sense organs through the thalamus to the amygdala. The slow system sends sensory information to the hippocampus and cortex for further evaluation. It's slower because it requires conscious processing. Pilots finding themselves in non-routine, emergency and abnormal situations will have difficulties in recognising that a problem has occurred and difficulties in getting out of the normal mode of operations. While GFA does not have a formal policy with regards to 'startle factor training' as a specific issue, training in non-technical skills is required to recognise and manage situations that can occur in a sudden event. The idea is to give pilots the skills to manage a 'startle' type event. This training is also encompassed in the GFA's Flight Review regime, where a pilot's competency in emergency procedures is demonstrated in flight following simulation of the emergency by the instructor or examiner.

2.Control inputs close to the ground

Pilots should never use coarse elevator control inputs close to the ground, as gliders are sensitive in pitch and such action is inconsistent with a safe transition from a stabilised approach into the flare and landing. Course movement of the elevator control at low levels usually results in a sudden and unrecoverable steep dive into the ground. Instructors should also note that a student pilot's sudden forward elevator control inputs, initiated at low level (under 100ft), will usually be beyond the limits of instructor intervention and safe recovery.

Date	4-Apr-2021	Region	WAGA	SOAR Report Nbr		S-1836	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Hard landing	
A/C Model 1		PW-6U		A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Landing	PIC Age	42

What Happened

The pilot was on their second solo flight and turned onto final approach somewhat higher than normal. The pilot deployed full airbrakes with the aim of landing abeam the control vans but rounded out too late and did not close the airbrakes. The glider struck the ground heavily on the main wheel and bounced back into the air. The pilot pushed the stick too far forward to recover resulting in the glider striking the ground hard a second time on the nose wheel. The front canopy ejected and the nose wheel inner tube burst.

Analysis

The pilot had struggled with the landing phase during training but had demonstrated consistency in recent weeks. On the day prior to the accident the pilot had flown on eight occasions in crosswind conditions and had demonstrated an ability to safely handle rope breaks in difficult situations. On the day of the accident the pilot also demonstrated rope breaks and unusual landings and was sent solo for the first time, and the flight was completed competently. On the second solo flight the pilot joined a high final approach that required the use of full airbrake to achieve the selected aiming point. The pilot was late to round out and forgot to ease closed the airbrakes to arrest the rate of descent. The glider struck the ground heavily and bounced back into the air. The pilot over corrected the recovery from the bounce and pitched too far forward on the elevator control causing the aircraft to strike the ground heavily on the nosewheel. The impact caused the canopy to eject and the nosewheel tube to burst, and the aircraft came to rest about 100 metres from the point of impact. A 'hard landing' inspection was conducted, and no further damage was identified. It was found the front canopy attachment was poorly adjusted and probably would not have ejected if correctly adjusted.

Safety Advice

When landing with full airbrakes the pilots should commence the roundout at a height sufficient to overcome the effect of inertia before the ground intervenes. If the pilot rounds out too late, the first action should be to reduce the airbrakes to arrest the descent rate. If the aircraft bounces, the pilot must ensure

that any elevator control inputs are small. This is because the faster and cleaner the aircraft, the greater the pitch sensitivity. Recovery from a bounce should not be thought of in terms of 'control movements', but by reference to the glider's attitude and its position in relation to the ground. In other words, the pilot needs to recover by selecting an attitude which prevents any further climb. Bounces can be avoided by the pilot establishing the glider on the approach at the correct airspeed for the conditions using half or more airbrake. Pilots must endeavour to maintain the approach speed to roundout and aim to touch-down with low energy on the main-wheel and tailwheel simultaneously. For further guidance, refer to OSB 01/14 'Circuit and Landing advice' and OSB 01/19 'Avoiding Approach & Landing Accidents During Training'.

Date	9-Apr-2021	Region	GQ		SOAR Report Nbr		S-1839		
Level 1	Airspace	Level 2	Aircraft Separation		Level 3	Aircraft Separation Issues			
A/C Model 1	Hornet		A/C Model 2	Discus b					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	19		

After making a radio call on entering the circuit from midfield crosswind for RWY 30, the pilot of a hornet heard another pilot call joining late downwind for the reciprocal RWY 12. The other pilot did not broadcast their location, but the glider's registration was known to be that of a local glider. The Hornet pilot was concerned that they would potentially be landing head-on to the other glider and commenced a scan of the RWY12 circuit to identify the position of the other glider. The Hornet pilot then observed the other glider was on final approach for RWY30, and so completed their circuit and landing without further incident. The pilot of the other glider advised that he had been thermalling near the circuit area when he heard the Hornet pilot make their downwind radio call. As he was not having any success and was getting low, he decided to also join circuit and land. Upon joining the downwind leg, he made a radio call but mistakenly nominated the reciprocal runway identifier, thus creating confusion in the mind of the Hornet pilot. The Club CFI suspects that the pilot's error may have been caused by stress due to being low in the circuit. The pilot was counselled on the correct procedures for joining the circuit.

Date	9-Apr-2021	Region	GQ		SOAR Report Nbr		S-1842		
Level 1	Consequential Events	Level 2	Low Circuit		Level 3	Low Circuit			
A/C Model 1	Discus b		A/C Model 2						
Injury	Nil	Damage	Nil	Phase	Outlanding	PIC Age			

What Happened

During a cross-country flight in weak conditions and at a height of about 2100ft AGL, the pilot decided to head back to the airfield some 31 kms away. The pilot recognised that the glider was below final glide height but pressed on in hope of making it. The pilot stated *"with the area being surrounded by paddocks and suitable landing options I continued on the track back to the strip continuing to lose altitude. I lost track of my height and continued to speed up in a desperate attempt to make it back."* The pilot did not make the decision to conduct an outlanding until the glider was very low and made a turn at 100ft AGL to land in a paddock about 10kms from the airfield. The pilot stated: *"I was still in disbelief that I had frozen up and did not land sooner. I believe that I put too much faith in the performance of myself and the glider to make it back."*

Analysis

Investigation by the Competition Director revealed that, at the time the pilot elected to return to the home airfield, he was in the vicinity of an agricultural airstrip where a safe outlanding could have been made. The pilot was also aware that he was below final glide and that conditions back to the home airfield were soft. At this point a sound option would have been for the pilot to search for lift while staying within safe glide of the agricultural airstrip, as the lift was going high enough to achieve a safe glide home. The Competition Director reviewed the flight with the pilot and identified some gaps in his knowledge and/or training. The

pilot will undergo some remedial training to ensure he has the skills, aptitude, and attitudes to fly cross country safely.

Safety Advice

A common reason for outlanding accidents is the pilot not accepting soon enough that an outlanding is likely, and not prioritising the available height to allow them to fly to a good safe area. Pressing on with the flight in the hope that that all will be well is fraught with danger. Unlike landing at the home airfield where the runway layout, ground features and hazards are usually well known, when landing in a strange paddock the pilot is faced with the unknown. Such a situation demands the pilot take additional precautions to ensure a proper survey is undertaken of the landing area so as to identify all hazards and ensure a safe landing can be accomplished. To enable this check to be done adequately, pick a general area for outlanding at 2,000ft AGL; by 1,500 AGL a specific paddock should have been selected in that area and by 1,000ft AGL you should be committed to planning a circuit and landing into that paddock. Leaving an outlanding decision too late, at too low a height above ground, eats into the available time and eventually shuts off all the pilot's escape routes. This often has fatal results. Under 700ft AGL, the number one priority is to land safely! For further advice, refer to:

- The 'Outlanding' section in Australian Gliding Knowledge; and
- A Guide to Outfield Landings – by Allan Latemore

Date	9-Apr-2021	Region	NSWGA	SOAR Report Nbr		S-1853	
Level 1	Operational	Level 2	Airframe	Level 3		Landing gear/Indication	
A/C Model 1		DG-300 Club Elan		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	61

The pilot did not lock the undercarriage down and the gear collapsed upon touchdown. The pilot stated that after entering the downwind run, and at about 950 feet AGL, they started the prelanding checks, during which the landing gear was lowered. The pilot stated that they opened the airbrake momentarily to check if the landing gear was locked, and as no alarm sounded, they made one more visual check and the undercarriage lever appeared to be in correct position. Shortly after touching down, the undercarriage retracted into the fuselage and the glider came to rest on its belly. The aircraft flight manual states that the undercarriage is locked in the extended position by an overcentre locking arrangement, and an additional safety catch at the handle. To engage the safety catch, the handle must be turned to the cockpit wall. A post incident check of the airframe did not identify any mechanical problems with the undercarriage mechanism, and the pilot believes they did not push the undercarriage lever sufficiently forward to engage the locking mechanisms. The pilot is experienced on type and this incident was likely a lapse in his technique.

Date	10-Apr-2021	Region	VSA	SOAR Report Nbr		S-1847	
Level 1	Operational	Level 2	Airframe	Level 3		Fuselage/Wings/Empennage	
A/C Model 1		ASK 21		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	54

What happened

During the airframe pre-flight checks being conducted by the instructor and student, both the left- and right-hand rear wing attachment pins were found to be flush with the wing and the safety lock was not engaged. The pins were then pushed further into to wing to engage the locking mechanism.

Analysis

The glider had been outlanded two days earlier. When it was being rigged the following day, the crew were informed that the glider needed to go into the workshop for a 250-hour inspection. Believing that the aircraft would then be derigged, a post-rigging inspection was not conducted. However, the aircraft was not

inspected and was later returned to service. The aircraft then passed a Daily Inspection and was towed to the flight line. The instructor, who was training the student in the conduct of the pre-boarding airframe inspection, noticed the wing drag pins were not in safety and immediately made the pins safe.

Safety Advice

This incident highlights the importance of securing all controls and fittings whenever an aircraft is rigged. It also highlights the dangers of not following standard procedures when conducting Daily Inspections. A thorough Daily Inspection is essential to avoid incidents and accidents by finding faults with the glider before it flies. A person holding Daily Inspector authorisation therefore plays a frontline role in incident and accident prevention, and in continuing to keep the glider airworthy. Before conducting inspections, the inspector must make themselves familiar with the rigging guidance in the Aircraft Flight Manual. Another good reference is the 'Daily Inspector's Handbook' that is available from the GFA Documents Library.

Date	10-Apr-2021	Region	NSWGA	SOAR Report Nbr		S-1848	
Level 1	Operational	Level 2	Aircraft Control	Level 3	Pilot Induced Oscillations		
A/C Model 1		DG-300 Club Elan		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	35

What Happened

While landing in gusty crosswind conditions, the glider touched down heavily at speed and bounced back into the air. The plot mishandled the recovery, and the glider conducted a series of pilot induced oscillations down the runway.

Analysis

Conditions at the time of the flight were rough, with a 12-knot crosswind on the operational runway that was gusting up to 25kts. Prior to launch the low-hours pilot had a discussion with an instructor on an appropriate speed for the landing and had settled on 65 kts for the conditions. The pilot was also advised to make a steeper approach and land further down the runway to avoid turbulence over trees on the approach. The pilot reported that they completed a steep turn onto the final approach, during which they allowed the glider's speed to increase to 75 kts. After rolling wings level the pilot felt that they were both too high and too fast on the approach and raised the nose to decrease speed while simultaneously opening the airbrakes to lose height. Due to the strong headwind component, the glider descended towards the trees and undershot the intended aiming point. The pilot closed the airbrakes to reduce the sink rate, and the glider flew through turbulence as it passed the trees. The pilot corrected for the crosswind component and regained the centreline, but the approach speed was higher than planned. The pilot raised the nose to slow the glider, but this resulted in a higher than optimal round-out. The pilot adjusted by easing the control column forward, upon which the glider touched down heavily at speed and bounced back into the air. The pilot mishandled the recovery from the bounce by pushing forward on the control column, and this resulted in the glider conducting a series of 'pilot induced oscillations' before coming to rest. A subsequent 'heavy Landing inspection' did not identify any damage. The pilot, on reflection, stated *"I forgot the correct procedure on bouncing on landing (put airbrakes away and start again). If I remembered or refreshed on that, then this could have been prevented."* The pilot's CFI identified that the pilot had low hours and limited experience in difficult conditions, which led to inappropriate airbrake use and poor speed control during the final approach.

Safety Advice

Pilot Induced Oscillations (PIO) have been part of aviation history since the beginning of manned flight. They most often occur when the pilot is engaged in a highly demanding control task. In gliding, most of the reported events have taken place during approach and landing, most often when the pilot is also concerned about adverse weather, emergencies, or other issues. Typically, smooth aircraft control is replaced by increases in the amplitude of pilot commands leading to aircraft oscillation which, in turn, leads to even

greater pilot control input which further exacerbates the oscillation. Startle Effect can also result in a PIO. By definition, PIO cannot happen unless the pilot is making inputs that are sustaining the oscillation; that is, the pilot is "in the loop" that caused and is maintaining the condition. Consequently, the first and most critical step for exiting PIO is to get out of the loop. PIO can be avoided by establishing the glider on the approach at the correct airspeed for the conditions using half or more airbrake (the faster and cleaner the aircraft, the greater the pitch sensitivity). The approach speed should then be maintained to round out, with the aim to touch-down with low energy on the mainwheel and tailwheel simultaneously. If a landing is bounced or ballooned, the pilot should reduce the airbrakes, establish a safe approach attitude, and then repeat the flare for landing.

Date	11-Apr-2021	Region	GQ	SOAR Report Nbr	S-1841
Level 1	Operational	Level 2	Runway Events	Level 3	Runway excursion
A/C Model 1	ASK 21 B	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	66

What Happened

The sortie was an outlanding check to qualify for the 'C' Certificate. The pilot under check conducted a safe into-wind landing at a remote airfield, landing long toward the far boundary. An aerotow retrieve was arranged and the combination commenced launch on a reciprocal heading to the landing with a slight downwind component. During the initial take-off, the pilot under check had trouble maintaining directional control, which was exacerbated when the glider's mainwheel struck the mound of an ants' nest. The pilot under check could not prevent the left wing dropping into the long grass and the glider veered off line. The instructor released from tow as the glider conducted a ground loop and rotated through 180 degrees.

Analysis

The flight crew had the landowner's permission to conduct the off-field landing at the private airstrip and had inspected the runway from the air. However, the grass on the runway was higher than expected following recent rains. The subsequent take-off was undertaken with one wing down as there was no ground crew to assist. The instructor noted that *"the aircraft was under control until the wheel bumped an ants' nest and then unsettled."* It is likely the tailwind resulted in a longer than usual ground run and that the airspeed may not have been sufficient to enable the pilot flying to maintain wings level. Once the wing contacted the long grass, the glider began to rotate around the down going wing and the instructor had no option by to release from tow. It is noted that at this single runway airstrip, landings may only be made from one direction to avoid overflying the adjacent feedlot, and all takeoffs are on the reciprocal heading for the same reason.

Safety Advice

Because there may be many unknown or uncertain factors, any outlanding is inevitably more hazardous than a landing back at home base. Similarly, an outlanding retrieve is also risky, especially when taking off without ground crew. Conducting outlanding retrieves without crew assistance requires careful assessment and planning, and it is best if the number of risks are kept to a minimum. Taking off into wind whenever possible is one way of mitigating risk. A thorough inspection of the take-off surface is also appropriate. It should be noted that the tow pilot is the pilot in command of the towing combination and thus bears the responsibility for its safe conduct. Civil Aviation Advisory Publication (CAAP) 92-1 explains the requirements for use of an airfield which is not a public or military aerodrome.

Date	12-Apr-2021	Region	GQ	SOAR Report Nbr	S-1840
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	DG-1000S	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	69

What Happened

At the end of the landing roll the glider's right wingtip dropped to the ground and struck a runway light. The glider suffered a small chip in the leading edge of the wingtip extension and the runway light casing broke.

Analysis

The sortie was a training flight for an early student who was flying the circuit, approach, and landing. The student turned onto final approach slightly to the right of the runway centreline and, despite the instructor's prompting, the glider touched down to the right of centre and angled slightly to the right. As the glider rolled to a stop the right wingtip contacted the ground and the pilots were unable to raise the wing to prevent it striking the runway light. The instructor reported he did not recognise early enough the likely contact and thus did not take control in time to prevent collision with the light.

Safety Advice

During training flights, the instructor must always be ready to take over if the student becomes unresponsive to directions or responds inappropriately. In many late take-over accidents, the instructor allowed the student to continue to fly the glider beyond the trigger for take-over. This is never the right course of action and the instructor must take over and demonstrate the correct actions. Refer also to Operational Safety Bulletin (OSB) 01/19 - Avoiding Approach & Landing Accidents During Training.

Date	12-Apr-2021	Region	WAGA	SOAR Report Nbr	S-1843		
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication		
A/C Model 1	PA-25	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	

The tow plane was observed to land normally and during the landing roll the tail wheel assembly separated. Investigation identified the tail wheel spring bolt had sheared, causing the tail wheel unit to fall free from the leaf spring. The bolt was an approved part that suffered a fatigue failure.

Sheared bolt tail | Leaf Spring | Tail Wheel Unit

Date	12-Apr-2021	Region	NSWGA	SOAR Report Nbr	S-1846		
Level 1	Operational	Level 2	Miscellaneous	Level 3	Other Miscellaneous		
A/C Model 1	DG-1000S	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	19

The glider was prepared for launch with the tow rope attached and the wingtip signaller was awaiting the command to take up the slack in the tow rope. In the meantime, the command pilot's pen fell out of his sleeve pocket and into the cockpit below the seat pan. The command pilot immediately activated the cable release and then opened the canopy to exit the glider to retrieve the pen. Upon the canopy opening two members of the ground crew advised that command pilot that the tow rope was still connected to the glider, so the command pilot activated the cable release again and the rope and rings fell free. It was

identified that the rope was slack and not under load when the first release was initiated, and the command pilot could not visually identify that had released.

Date	13-Apr-2021	Region	VSA	SOAR Report Nbr	S-1852		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	Piper PA-25-235	A/C Model 2	LS 4-a				
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	34

What Happened

When approaching the top of an aerotow launch the command pilot of the glider under tow made a radio call to the tow pilot asking if he could see a thermalling glider ahead. The tow pilot did not hear the radio call, although the pilot of the thermalling glider heard it. The command pilot of the glider under tow made a further radio call directing the tow pilot to immediately turn to the right. The tow pilot complied and turned right, and the pilot of the thermalling glider who also heard the call tightened his turn in order to provide separation.

Analysis

The tow pilot had recently obtained his tow pilot certificate but had over 800 hours aeronautical experience, of which about 37 hours was as a tow pilot. The pilot of the thermalling glider had only recently gone solo but had over 5600 hours aeronautical experience, of which about 3 hours was on type. The command pilot in the glider under tow was an experienced Level 2 Gliding instructor and tow pilot. The glider and tug combination launched from glider runway 35 and, when at about 400 ft AGL, the command pilot in the glider under tow observed another glider thermalling about 1,000 ft higher in the area where the tow pilot had been briefed to tow the glider. The towing combination then changed course and climbed directly towards the thermalling glider that was at a similar height. The command pilot in the glider under tow made a radio call to the tow pilot to alert him to the thermalling glider but, for reasons not identified, the tow pilot did not hear the call. The command pilot in the glider under tow made a further radio call to the tow pilot directing him to turn immediately to the right. This call was heard by both the tow pilot and the pilot of the thermalling glider, who both took avoiding action – the tow pilot changed heading the right and the glider pilot tightened his turn. The command pilot in the glider under tow advised that he chose not to immediately release because the tug *"would have turned left and increased the chance of mid-air collision"* (although he was ready to release if necessary). The Duty Instructor conduced a debrief of the incident and counselled both the tow pilot and pilot of the thermalling glider on situational awareness, lookout and listening to their radio. The Club CFI later spoke with both pilots and reinforced the need to maintain effective lookout and to listen to the radio and use it to maintain situational awareness, and for the glider pilot to be aware of the towing pattern in use on the day and avoid it. The CFI proposed to raise member awareness through the Club newsletter.

Safety Advice

Collision avoidance, both in the air and on the ground, is one of the most basic responsibilities of a pilot flying in visual conditions. During primary training, pilots are taught to keep their eyes outside the cockpit to look for traffic and to listen and use their radio (and Flarm, if fitted) to enhance see-and-avoid. However, simply looking out of the cockpit is not enough to avoid a mid-air collision – pilots need to know how to look, and what to look for, which requires an understanding of the limitations of human vision and tactics to compensate for its deficiencies. The following publications provide information that may assist pilots avoid airprox events:

- Staying clear of other aircraft in uncontrolled airspace.
- Collision avoidance strategies and tactics.
- Flight Safety Australia article, Sharing the skies – gliders (printed in Issue 87 July-August 2012).
- CAAP 166-1 provides advice in relation to making radio broadcasts to reduce the risk of coming in close proximity with other aircraft.
- Operational Safety Bulletin (OSB) 02/12 'Lookout for Glider Pilots'.

- Operational Safety Bulletin (OSB) 02/14 'See and Avoid for Glider Pilots'

Date	14-Apr-2021	Region	SAGA	SOAR Report Nbr	S-1854
Level 1	Operational	Level 2	Aircraft Control	Level 3	Control issues
A/C Model 1	LS 8-18	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	80

What Happened

The pilot was undertaking his first flight on type. Upon attaining release height, the pilot was unable to locate the tow release knob and allowed the glider to get out of station behind the tow aircraft. The pilot asked the tow pilot to disconnect the rope from the tug end, and shortly after being released from the tug the pilot identified the yellow tow release handle. The pilot then returned to the circuit, released the tow rope over the airfield and made a normal landing.

Analysis

The pilot regularly flew the clubs 'Discus' aircraft. In this aircraft the tow release handle is at the bottom of the control panel next to the base of the stick. The pilot was briefed on the LS8 and had read the aircraft manual. When boarding the aircraft for the first flight, the pilot spent some time adjusting the sheep skin covered seat cushion. Once the pilot was ready for the flight, he successfully hooked on to the tow rope and conducted a test release. When it came time to release, the pilot forgot where the release was on the LS8 and looked where the release would be in the 'Discus'. He could not find the release but did note there was a sheep skin cushion near the base of the stick. His initial thoughts centred around the possibility that the sheep skin cushion may be covering the release handle. He remembered adjusting the position of this cushion before the flight. While his mind was occupied troubleshooting the problem, he failed to maintain station behind the tug and was surprised by how quickly the situation changed. He regained station and again attempted to locate the release but fell into the same trap again. Eventually he decided to give up on trying to locate the release and asked the tow pilot to release the tow rope. Shortly after the tug pilot released the rope, the pilot relaxed and quickly found the tow release handle in the glider. The glider was successfully flown back to the airfield, where the tow rope was then released, and the glider landed normally. Subsequent investigation revealed that the pilot had been flying for a great number of years but had never undertaken any human factors training. The pilot subsequently undertook human factors training with his instructors and now understands the relationship between workload and performance, and the danger of distractions while flying.

Safety Advice

The most common pilot factors in accidents and incidents relate to poor judgement and decision making. Pilots may divert their attention from the operation of the aircraft for a variety of reasons. Diverted attention is particularly likely when the pilot is under stress. In this incident, the pilot was undertaking his first flight on a new type and was clearly unfamiliar with the layout of all controls. In some cases, the cockpit layout of the new type will be different to what the pilot is accustomed to, so it is prudent to take some time sitting in the cockpit with the parachute on to familiarise oneself with the controls (such as locating them with eyes closed). This is also the time to get comfortable and go through the motions of a take-off and landing to make sure everything is done correctly. If the conversion is rushed, workload and stress levels increase and any minor abnormality, such as locating the release handle, can distract a pilot from other aspects of the flight, such as maintaining station behind the tug. As this incident shows, it is easy for even an experienced pilot to focus on a minor problem to the detriment of situational awareness.

Date	15-Apr-2021	Region	GQ	SOAR Report Nbr	S-1849
Level 1	Technical	Level 2	Powerplant/Propulsion	Level 3	Other Powerplant/Propulsion Issues
A/C Model 1	Pik 20 E II	A/C Model 2			

Injury	Nil	Damage	Substantial	Phase	Launch	PIC Age	45

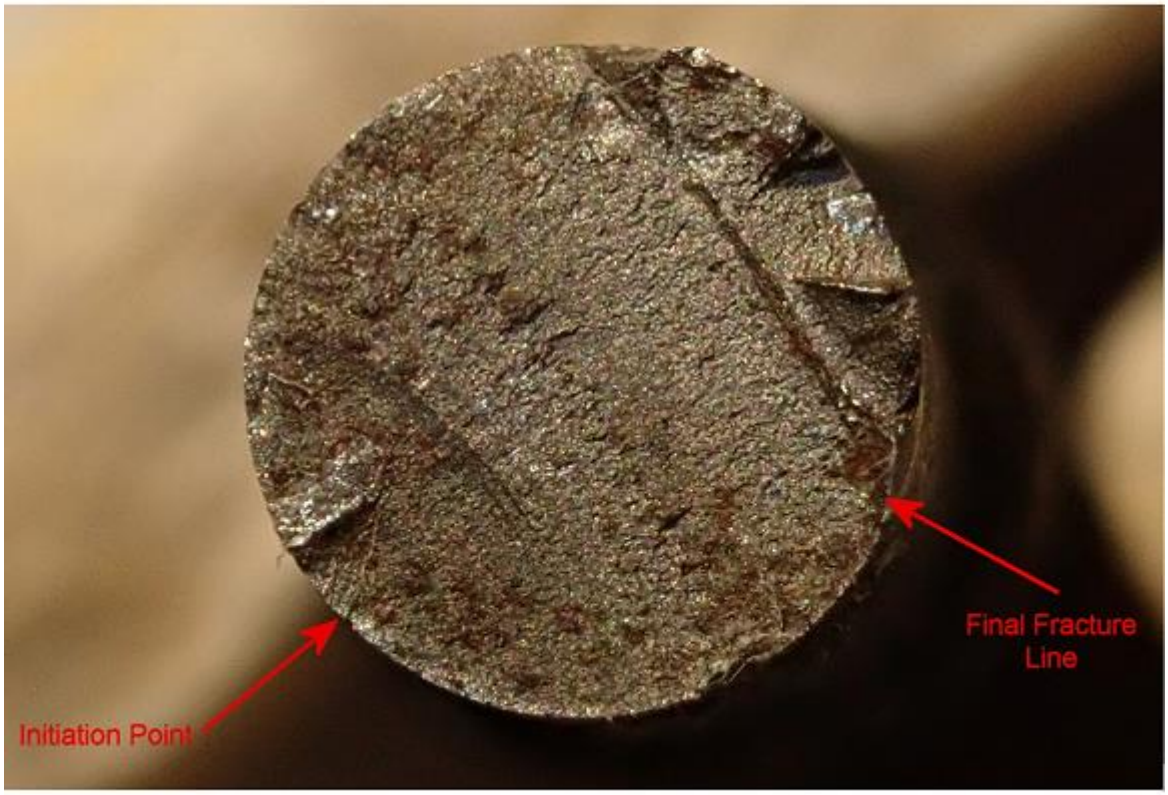
What Happened

During the Take-off roll the engine moved forward and the spinning propellor struck the upper fuselage. The pilot abandoned the launch and shut down the engine.

Analysis

Just prior to the self-launching sailplane becoming airborne, the turnbuckle used for the stay wire on the engine sheared. As the stay wire was no longer capable of holding the engine against the thrust of the propellor, the engine moved forward resulting in the rack and pinion dislodging and the propellor striking the upper fuselage. The propeller tips suffered substantial damage as they cut a hole on the top of the fuselage. A close examination of the two fracture surfaces did not reveal any defect that might have initiated the cracking that led to this failure. A crack initiated at the surface of the turnbuckle end fitting in the non-threaded section had progressed over time to the point where the fitting was unable to carry the imposed loads. The failure mechanism is fatigue, but the initiating cause could not be identified. An examination of the aircraft records could not identify if the turnbuckle had ever been changed, although the stay wire had been replaced twice (Reasons for replacement were not specified). While the stay wire and turnbuckle are not subject to sustained loads (the stay wire is only loaded when the engine is producing significant power), it is subject to significant vibration, particularly at low power (stay wire resonant frequency may be close to a driving vibration produced by the engine/propeller). Such vibration has the potential to induce significant cyclical loads in the stay wire and turnbuckle and may well have been the mechanism behind the fatigue failure suffered in this case. The Registered Operator has since installed a secondary load path, comprising of a cable which duplicates the turnbuckle, and which will carry any loads if the turnbuckle fails.

Clevis | Clevis End | Thread End



Turnbuckle thread end

Safety Advice

The airworthiness inspector recommended the stay wire and turnbuckle be replaced at each life extension inspection, and that the turnbuckle be replaced at any time the stay cable is replaced. A modification to install a secondary load path, such as a cable in parallel with the turnbuckle is also an option.

Date	15-Apr-2021	Region	NSWGA	SOAR Report Nbr	S-1859		
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion		
A/C Model 1	DG-1000S			A/C Model 2	Piper PA-28-161		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	
Two powered aircraft were holding short on runway 26 at the holding point, waiting for the glider tug to land so that they could enter and back-track the runway and depart the airfield. The pilot of the leading							

powered aircraft was aware that they would not have time to fully back-track the runway and depart until after the tug had landed and was clear. The tug landed safely and taxied off the runway to the glider staging pad, and the tow pilot made a radio call stating that they were clear of the runway. The pilot of the following powered aircraft opted to enter RWY 26 and taxi at a safe distance behind the leading powered aircraft to help expedite their departure time for the gliding operations. When both aircraft were approximately ½- ¾ of the way down the runway, they heard a glider pilot announce on the CTAF that they were downwind for landing RWY 26. Neither powered aircraft had back-tracked far enough to safely take off at that point, so they both increased taxi speed to further taxi down the runway. The leading powered aircraft then turned and set up for a take-off, while the following powered aircraft continued to taxi behind the aircraft. The leading powered aircraft then took off without a full back-track, but the following powered aircraft did not have sufficient time to do the same, as the glider was well established on final approach. The pilot of the following powered aircraft attempted to vacate the runway by using the glider staging pad adjacent to RWY 26, but this was occupied by three gliders and two tow planes. The pilot then taxied to the right-hand side of the runway to provide separation from the landing glider but was unable vacate the runway. The glider pilot called the glider base to notify there was a conflict on the runway and was instructed to land long on the left-hand side of RWY 26. The glider landed safely and once clear of the runway, the powered aircraft conducted its departure. In this incident, both powered aircraft are locally based and familiar with local operations when gliding is in progress. Both pilots' felt that they were safe to enter and back track the runway, this was based on the radio call information that they had received at the holding point from the pilot of the glider tug who advised was clear of the runway. The radio call from the glider pilot upon entering downwind was unexpected. The lack of a taxi way on runway 26 requires all aircraft to back track on the runway. As there are no distance markers on this runway, it is difficult for pilot to determine the length of runway available – especially if they wanted to conduct a quick turn and roll procedure as one pilot did. In addition, the area outside the runway markers is rocky ground with drains that prevents an aircraft from moving off the runway in an emergency. The local operators and gliding club propose to work with the aerodrome operator on possible remediation action. For further guidance, refer to:

- CAR 162 (8) *"An aircraft that is about to take-off shall not attempt to do so until there is no apparent risk of collision with other aircraft".*
- CAR 162 (9) *"The pilot in command of an aircraft must give way to another aircraft that is compelled to land."*
- AIP ENR 1.1 - 57, 9.3 – Separation Minima for Take-off.
- CAAP 166-1 Paragraph 3.2.4 *"Gliders landing on the active runway may not be able to give way to other aircraft".*
- CAAP 166-1 Paragraph 4.3 - Take-off and landing separation

Date	16-Apr-2021	Region	NSWGA	SOAR Report Nbr		S-1855	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway excursion	
A/C Model 1		DG-1000S		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	17

What Happened

The early solo student pilot was approaching to land after a 30-minute soaring flight. The pilot conducted a stabilised approach using full airbrakes and following a normal flare and hold off, the glider touched down in a two-point attitude and bounced slightly. During the bounce the aircraft yawed to the left, and as the glider touched down again it was observed to pitch forward onto the nose wheel. The glider continued to yaw to the left with wings level and come to rest facing the opposite direction to landing. The aircraft suffered some superficial damage, but the pilot was uninjured.

Analysis

The duty instructor, who was also the student's flying instructor, stated that they had authorised the student to conduct the solo flight after two consecutive training flights that day. The student had previously gone

solo over 12 months earlier. The instructor had conducted the previous six flights with the student and was satisfied that they were flying well enough to conduct a solo flight. The duty instructor observed the student conduct the approach and landing onto RWY 17 and noted that the wind was about 5 knots from South-east. The instructor commented that the approach appeared stable with full airbrake applied, and the landing speed was slightly fast. Upon touching down in a two-point attitude, the glider was observed to bounce slightly. The glider was observed to pitch forward before the glider veered to the left and completed a 180 degree turn within the runway strip as it came to rest. During this manoeuvre the glider`s wings remained parallel to the ground. The student later stated that they had applied full airbrake on final approach, and upon touching down they recall pressing the left rudder and easing rear pressure on the stick. During this action the glider veered to the left. The student attempted to keep the wings as the aircraft veered to the left. The cadet also applied the wheel brake to bring the glider to a stop. It was determined that the pilot's application of full wheel brake, easing of the stick back-pressure and depressing of the left rudder pedal in combination contributed to the glider veering to the left. The CFI later conducted a briefing on the incident, focusing on the importance of maintaining back pressure on the stick upon landing, maintaining directional control with the rudder, and emphasising that care is required when landing with full airbrake because the wheel brake is operated at the end of the airbrake handle travel. The post-flight inspection of the glider revealed light scrubbing marks within the nose wheel fairing, and minor scrub marks on the side wall of the front tyre which were consistent with a sideways force on the nose wheel.

Safety Advice

Gliders are particularly susceptible to ground looping, which occurs when directional control is lost by the pilot and the tail passes outside the centre of gravity, spinning the aircraft. To avoid a ground loop, the pilot must respond to any directional change immediately while sufficient control authority exists to counteract the unwanted movement. Pilots must also anticipate the need for corrective control input in order to respond quickly. If the wheel-brake is activated at the end of the airbrake lever's travel, pilots should avoid touching down with the lever back against the stop, i.e. with the wheel brake applied. If there's any drift due to a crosswind, this can lead to a ground-loop. Throughout the ground run the wings must be kept level with the ailerons, and the glider kept straight using the rudder. As the speed decays, larger and larger control movements will be required to keep the wings level and/or steer the glider. Like the take-off run, this is another occasion where independent use of the ailerons and rudder may be necessary.

Date	17-Apr-2021	Region	WAGA	SOAR Report Nbr	S-1856		
Level 1	Operational	Level 2	Ground Operations	Level 3	Taxiing collision/near collision		
A/C Model 1	Ventus-2cM	A/C Model 2					
Injury	Nil	Damage	Substantial	Phase	Ground Ops	PIC Age	75

What Happened

While towing a glider on the taxiway to the launch point with a vehicle, the vehicle driver did not provide sufficient obstacle clearance and the glider's right wingtip struck a small shed near the runway intersection. The impact caused the towing bar to break away from the tail dolly and the wing swung around and hit the rear taillight of the vehicle.

Analysis

The driver advised they were usually in the habit of towing the glider in an obstacle free area between the runway and the taxiway. However, on this occasion glider launching was in progress so the glider was being towed along the taxiway and close to a small equipment shed used by the crew of locally based fire-fighting aircraft. The driver did not allow sufficient clearance from the shed and the right wingtip struck the edge of the shed. On hearing the impact, the driver applied the vehicle brakes resulting in the towing bar breaking away from the tail dolly and the left wing swinging around and contacting the rear of the towing vehicle. The port flaperon suffered crush damage.

Advice

Many avoidable accidents have happened towing gliders with tow-out equipment into fixed obstacles around the airfield. When taxying a glider, it should be moved along a planned route to its destination so as to avoid potential obstructions such as bad ground, tight spaces, and moving hazards like taxiing aircraft. Drivers need remain situationally aware, take things slowly and keep a good lookout for obstacles.

Date	17-Apr-2021	Region	GQ	SOAR Report Nbr	S-1858
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	DG-1000S	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	69

Following a training sortie the student performed a normal circuit, approach and landing. The flight crew reported the landing ground roll was a little noisy and the glider slewed slightly to the left as it came to rest. Upon exiting the aircraft, the crew observed the mainwheel tire was flat. Investigation revealed the inner tube had suffered a puncture, most likely during the later stages of the aerotow launch or just after touchdown.

Date	24-Apr-2021	Region	VSA	SOAR Report Nbr	S-1857
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion
A/C Model 1	Janus B	A/C Model 2	K13		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	63

The crew using a vehicle to retrieve a glider that had landed on the right-hand grass verge of RWY 27 towed the glider onto the main runway and into the path of a glider on late final approach. The student pilot handling the landing glider conducted a low-level manoeuvre to touch down on the vacated grass verge and avoid collision with the glider under tow. At this aerodrome, the grass verges are used for landing gliders and tow planes, and the prescribed order of landing is 'Grass Left', 'Grass Right' and then the 'main runway', subject to which one is clear. At the time of the incident another glider had just landed on the left-hand grass verge of RWY 27, leaving the runway centre available for the following glider. The driver of the towing vehicle advised they were aware of a glider on base leg and believed they had sufficient time to clear the grass verge to make it available for the landing glider. The driver stated: *"I was surprised to see the (landing glider) make an alteration of direction at about 200ft to land on grass right. I had not seen that the (landing glider) had apparently initially lined-up on the asphalt runway centre. I was watching the (other glider that had landed) at the time, having ensured that grass right was clear for the other landing glider."* The flight crew in the landing glider were monitoring the glider being retrieved during the approach and had a plan to cope with a potential runway incursion. Given the established landing order, and in the knowledge that another glider was about to land, the retrieve crew ought to have anticipated the landing glider would be committed to land on the main runway, and thus been predictable by remaining where they were. Once the retrieve crew commenced moving the glider, they changed the dynamics of the situation for the crew of the landing glider. In cloudy conditions and low light it is important that retrieve crew and vehicle drivers maintain a good look out for aircraft before entering or crossing a runway.

Date	8-May-2021	Region	VSA	SOAR Report Nbr	S-1860
Level 1	Operational	Level 2	Aircraft Control	Level 3	Control issues
A/C Model 1	Piper PA-25-235/A1	A/C Model 2	Twin Astir-LP		
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	21

What Happened

During an aerotow launch from a grass runway the tow pilot applied full power and moved the control stick progressively forward. As the combination began to roll, the tow pilot applied further forward control stick to raise the tail in order to reduce the take-off distance. The nose attitude lowered at a faster rate than the tow pilot anticipated, and the propellor tips struck the runway surface. The tow pilot applied some backpressure on the control stick to attain the normal attitude and the tow plane rotated at around 50kts. The launch proceeded normally, and the tow pilot made a safe landing. Upon landing the tow plane was inspected and minor damage was identified to the composite propeller leading edge tips. The tow plane was deemed unserviceable and is awaiting inspection and repair by an authorised person.

Analysis

The Glider Instructor advised there was significant crosswind component at the time of the flight and, while the take-off acceleration appeared normal, the ground roll was a little longer than would have been the case had it been into a head wind. The tow pilot advised this was the first launch of the day and that *"…as full power was applied the stick was moved progressively forward and was moved slightly further than normal to raise the tail earlier and reduce TODR. The nose attitude lowered at a faster rate to a lower than usual attitude and backpressure was applied to prevent this however a buzz sound was heard, and the glider pilot noted a small amount of dust come from the tug."* The 'dust' was caused by the propellor tips coming into contact with the runway surface. The tow pilot stated *"The tow plane rotated at around 50kts, and no further issues occurred with the launch. No vibrations or abnormalities of any kind were noted in flight and the aircraft performed as expected."* Subsequent inspection identified damage to the tips of the composite propeller blades, so the aircraft was retired to the hangar pending inspection and repair. The tow pilot had recently qualified for his towing endorsement and had conducted 75 flights on type. During the post-flight debriefing, the tow pilot claimed that when towing at another club he was told to lower the nose of a Pawnee as soon as possible on the take-off run. However, enquiries of the Tugmaster of the other club suggests he misunderstood the advice.

Safety Advice

Keeping straight during the initial stages of the ground run, even in a tailwheel aircraft, is easier than it is without a glider on the back. This is because of the pull of the rope. However, the pull of the rope also has a tendency to lift the tail of the aircraft. If the tow pilot has cultivated a habit in non-towing operations of using a lot of forward stick to lift the tail of the aircraft, they may find they experience over-rotation at this point and will need to move the stick back a bit. The correct technique when towing with a tailwheel aircraft is to start the take-off run with the stick fully back. Once the ground roll has been established the stick should be progressively eased forward to raise the tail into the normal balanced take-off attitude. For further information on Take-off technique, refer to the GFA Aerotowing Manual, Section 10.1.10.

Date	8-May-2021	Region	GQ	SOAR Report Nbr	S-1861		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues		
A/C Model 1	IS-28B2	A/C Model 2	Piper PA-24-260				
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	77

Shortly after a powered aircraft entered circuit for RWY 30, a glider made a radio call and entered the downwind leg with the glider positioned inside the powered aircraft's circuit. Both aircraft made position calls on turning onto base leg, and they later turned onto final approach simultaneously. The pilot of the powered aircraft advised that they had the glider in sight and complained about being cut-off in the circuit. The glider subsequently landed first, and the pilot of the powered aircraft executed a late go-around from below 50ft AGL and passed low over the glider. The Right of Way Rules (CASR 91.325) provides that all aircraft must give way to the aircraft compelled to land (e.g. an unpowerd glider), and when two heavier-than-air aircraft are on approach to land at an aerodrome, a power-driven heavier-than-air aircraft must give way to an unpowered glider. The matter was referred to the ATSB.

Date	9-May-2021	Region	SAGA	SOAR Report Nbr	S-1862
Level 1	Operational	Level 2	Aircraft Control	Level 3	Loss of control
A/C Model 1	Grob G 109	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	70

What Happened

The student pilot, who was flying under instruction, had conducted an engine-off landing in a touring motor glider and was applying full wheel braking to slow the glider. While taxying off the runway the glider travelled across a soft patch of ground, which caused the glider to pitch forward and come to rest on its nose. The aircraft was not damaged.

Analysis

This model glider is pitch sensitive on the ground due to the main wheels being positioned just in front of the CG datum. When flying with two pilots and fuel, the aircraft is operating near the forward limit of the CG. The wheel brakes are connected to the airbrake lever and are very effective, and full back elevator is usually applied when braking. On the day prior to this incident, over 30mm of rain had fallen on the airfield, and the edge of the runway was very soft. It was a combination of the pilot's heavy braking, insufficient back elevator control, and the glider rolling through the soft ground while taxying off the runway that caused the glider to nose over. The instructor had relaxed his defensive stance and was unable to react in time to prevent the glider from nosing over.

Safety Advice

As a general rule for tail-dragger type aircraft, the stick must be held in its full aft position at all times when taxying. The only possible exception to this rule is if there is a tail wind strong enough to cause the tail to rise, in which case the elevator should be held in a neutral position at the same angle as the stabiliser so that the wind helps to hold down the tail. The stick should never be held forward of the neutral position when taxying – it should be all the way back or neutral. This incident also highlights the importance of instructors maintaining a defensive stance with hands and feet near relevant controls in order to react quickly until the flight is over, and the aircraft has come to a full stop.

Date	15-May-2021	Region	GQ	SOAR Report Nbr	S-1866
Level 1	Operational	Level 2	Fuel Related	Level 3	Contamination
A/C Model 1	Grob G 109	A/C Model 2	N/A		

Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	74

What Happened

When the pilot opened the throttle of the touring motor glider while in the cruise, the engine began to surge. Contaminated fuel filters and non-standard fuel lines were identified as contributing factors.

Analysis

The pilot had been on a coastal sightseeing flight in his touring motor glider for about an hour at a low power setting. While approaching Tyagarah airport, the pilot applied more throttle, but the engine began to surge and the rpm continuously fluctuated. Since the glider was within glide range of Tyagarah airport, a precautionary landing was conducted. The following day the pilot drained the fuel tank, removed and checked the fuel filter, and added fresh fuel. Subsequent ground running indicated the engine was operating normally and the pilot departed for the home airfield at Caboolture. The engine ran fine until the glider was overflying Murwillumbah airport, where an increase in throttle resulted in the engine surging again. The pilot decided to land at Murwillumbah airport and terminate the flight. The pilot contacted a GFA maintenance inspector who attended the aircraft and found the inline filters of both fuel pumps blocked. The filters were cleaned, and the two fuel pumps were swapped. The inspector identified the main fuel line was unsuitable for fuel use and all hoses from the fuel tank to the pumps were replaced with the correct type of fuel hose. The fuel tank was removed to check for contaminants and was found to be leaking. The fuel tank was repaired and found to be free of contaminants.

Safety advice

A surge can occur when the engine is not getting enough fuel due to fuel pressure problems. A contaminated fuel filter will often cause a loss of engine power and lead to the engine surging under power. There are several forms of contamination in aviation fuel. The principal contaminants that reduce the quality of gasoline fuels are other petroleum products, water, rust or scale, and dirt. Particulate contamination can be introduced in many different ways. From dirt and sand getting in open ports to degradation of fuel system lines, particulates are constantly being introduced to fuel systems. Engine fuel filters and screens help trap particulates before they can damage the engine. Regular inspection ensures that any excessive particulate presence is investigated to the source of the contamination. Cleaning the filters ensures that the filter elements do not become clogged. Flexible hoses that are not designed for aviation fuel will usually degrade quickly due to chemical incompatibility and fail. The consequences of a hose failure can have a significant impact on safety. This can include engine failure and fire in the air. All flexible hoses have a finite life and several hose manufacturers mention FAA AC 20-7N General Aviation Inspection Aids Summary, which contained basic hose inspection procedures and recommended replacement of all engine compartment hoses at 5 years or at engine overhaul, whichever came first. The effects of fuel contamination on tanks, fuel lines, seals and carburettors must also be carefully checked, and any manufacturer's service bulletins on this subject adhered to. For further information, refer to CASA Airworthiness Bulletin AWB 02-006 Flexible Hose Assemblies - Maintenance Practices.

Date	16-May-2021	Region	VSA	SOAR Report Nbr	S-1870
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	Mosquito	A/C Model 2			

Injury	Nil	Damage	Substantial	Phase	Outlanding	PIC Age	56

What Happened

The pilot was on his first flight on type and flew beyond gliding range of the home airfield. A late decision was made to outland, but the selected paddock was uncultivated and covered in large tufts of grass and scattered surface rocks. The pilot landed along a ridgeline and had to conduct a ground loop to prevent collision with a post and wire fence. The glider was substantially damaged.

Analysis

On the day of this incident the pilot was flying the tug and had conducted five launches. During these flights conditions were turbulent, with some local drizzle and virga and winds gusting to 20 knots from the North-West. Cloud base was about 3500ft in the vicinity of the airfield and higher bases were observed elsewhere. Areas of moderate to strong lift and corresponding sink was encountered during the aerotows. Following his towing duties, the pilot prepared to fly a fellow club member's single-seat sailplane. Although this was to be his first flight on type, he had previously flown gliders with the same design features; namely retractable undercarriage and flaps. The pilots stated that he *"intended to conduct a local flight with the aim of getting comfortable with the aircraft*". The aerotow launch was uneventful and the pilot stated he *"felt comfortable in the aircraft quickly*". The pilot released from tow at about 3300 ft to the west of the runway and found lift downwind and East of the airfield. The pilot said that they found "*a street of neutral air to strong lift under a large cloud",* which he followed to the North-East for about 12 kilometres to the outskirts of a regional town while climbing to about 5000 ft. The pilot then headed South, following the highway back to the airfield but did not encounter any workable lift. Due to the strong crosswind, the glider's track placed it downwind and to the East of the airfield. Approaching into a stiff headwind, and with about 4 kilometres to the airfield, the pilot realised the glider would not make the runway and made a decision to outland. In an area with few landing options, the pilot selected an uncultivated grassed paddock straight ahead that was aligned North-South that contained large tufts of grass typical of the area. Unknown to the pilot, the paddock also contained scattered surface rocks that were not visible from the air. The pilot approached the paddock from the North-East and conducted a modified right-hand circuit and approach with a crosswind from the left. The glider bounced on touchdown and rolled deep into the 500-metre paddock. The pilot found the wheel brake to be ineffective in slowing the glider rapidly and with the boundary fence approaching quickly, the pilot chose to conduct a ground loop to avoid collision with the fence. During this manoeuvre, which

involved lowering the right wing to the ground, the fuselage suffered stress cracks aft of the cockpit, and the starboard wing was damaged when it struck rocks. The pilot was unhurt.

The pilot subsequently identified that he was unprepared for a cross-country flight but initially felt comfortable with the height/distance relationship to the airfield based on prior experience flying his Libelle and the Club's Twin Astir. The pilot also had an expectation of finding reasonable lift on the way home, but this did not occur. The pilot stated that he became fixated on getting back to the airfield, which appeared to be within reach, and then did not properly plan for an outlanding. The Club's training panel subsequently conducted an outlanding training session at another local ALA and have since identified several suitable outlanding paddocks in the region. A training session was also conducted on outlanding decision making and hazards, that will be followed up with some cross-country coaching.

Safety Advice

Press-on-itis

In this incident the pilot became fixated on getting back to the airfield, and despite several cues that this was unlikely, the pilot decides to 'press on' with the plan. Press-on-itis describes the decision to continue to the planned destination or toward the planned goal even when significantly less risky alternatives exist. Press-on-itis is also known as "get-home-itis," "hurry syndrome," "plan continuation" and "goal fixation." No matter what it is called, press-on-itis can present a serious problem to flight safety. It is important for a pilot to understand the causes of press-on-itis and to recognise when they are suffering from the condition. Knowing the causes and recognising the symptoms will allow a pilot to recover before anything goes terribly wrong. Press-on-itis is really the result of a decision-making error that involves continuing toward the destination (objective) despite a lack of readiness of the airplane or pilot and the availability of reasonable lower-risk alternatives. Good training that stresses awareness of the dangers of press-on-itis, setting boundaries, sound knowledge of rules and procedures, disciplined adherence to minima and performance requirements, and planning to deal with potential situations will act as defences against unsafe conditions.

Flying Downwind

The pilot's decision to follow the lift under a cloud street downwind of the aerodrome meant the return trip would have a significant headwind component. Also, the cloud street was also moving downwind and away from the airfield. Flying downwind in strong wind conditions can be a costly mistake since it is difficult to penetrate back into the strong headwind. When the lift is strong, it is easy to drift downwind while climbing into stronger winds aloft, so it pays to be attentive to the glider's position relative to its intended track.

Date	22-May-2021	Region	NSWGA	SOAR Report Nbr	S-1871
Level 1	Operational	Level 2	Airframe	Level 3	Doors/Canopies
A/C Model 1	Ventus cM	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	66

Shortly after becoming airborne during an aerotow launch the pilot heard a significant air leak and noticed that the canopy was not fully locked. A quick check revealed that while the rear locking pin was partially engaged, the forward pin was not. After releasing from tow, the pilot slowed the glider and was then able to fully engage both locking pins. The pilot decided to break off the flight and conducted a safe landing. Subsequent inspection found no defect with the operating mechanism. The glider's canopy locking system employs two sliding pins, each driven by a rod connected to the actuating handle. The first three quarters of the handle movement locks the rear pin, and the remaining ¼ slides the rod to the front pin. The pilot suspects his pre-take-off checklist was interrupted when he became distracted by the wingtip runner connecting the tow rope to the glider's release. The pilot stated that they should have diligently completed the checklist before having the rope attached.

Date	22-May-2021	Region	GQ	SOAR Report Nbr	S-1872
Level 1	Environment	Level 2	Wildlife	Level 3	Birdstrike
A/C Model 1	ASW 20	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Thermalling	PIC Age	46

As the pilot entered a thermal at about 3600ft, they sighted a juvenile wedge-tailed eagle about 1000ft below. During the climb and at about 4,600ft the glider was struck by the eagle. The pilot, who was scanning for another glider about to enter the thermal, did not see the eagle hit the glider but heard the thud and noticed feathers flying on the port side of the fuselage. The pilot conducted a control check and ascertained the glider was flying normally with no abnormality. The pilot continued to climb to gain enough heigh to glide back to the home airfield to check for damage. After a safe landing the pilot inspected the airframe and found the eagle had hit the port wing causing a localised minor indentation and some scratches in the paint on the upper surface of the wing. The glider was subsequently repaired and returned to service.,

Date	23-May-2021	Region	GQ	SOAR Report Nbr	S-1865
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	Discus CS	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	72

What Happened

While conducting the annual post-maintenance flight the pilot pulled the undercarriage up, but it jammed halfway and could not be raised further nor lowered. The pilot landed with the undercarriage partially down, and the mainwheel retracted upon landing.

Analysis

Subsequent inspection identified the castellated nut on the wheel axle had been overtightened, which had a clamping effect on the articulated joint at the axle sufficient to prevent the undercarriage from being locked up or down. The tension was adjusted by backing-off the nut by one Castellation and the undercarriage was able to be operated normally.

Safety Advice

A castellated nut, sometimes referred to as a castle nut, is a nut with slots (notches) cut into one end. They are used with drilled shank bolts, clevis bolts and eye bolts. The slots in the nut accommodate a cotter pin for safetying purposes. Castellated nuts are used in low-torque applications, such as holding a wheel axle in place. They're unsuited to applications that require a specific preload. The castellated nut on the main wheel axle should be tightened to the specified torque. When the specific torque is not supplied by the aircraft manufacturer, reference can be made to table 7-1 in FAA Advisory Circular (AC) No: 43.13-1B. It is usually possible for an experienced inspector to tension a normal steel bolt by applying a firm torque with the correct sized spanner until the bolt is snug. When installing a castellated nut, it should be torqued until the slot in the nut aligns with the hole in the bolt. If it is not possible to align the hole and the slot using the proper torque, then different thicknesses of washers should be used so the correct alignment can be obtained.

Date	30-May-2021	Region	NSWGA	SOAR Report Nbr	S-1867
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	DG-1000S	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	32

While taxying off the runway at the end of the landing roll, the pilot was unable to prevent the starboard wing from contacting a runway marker and causing minor damage to the wing. The pilot noted that he should have come to a complete stop on the runway, and then physically pushed the glider off to the side of the runway. Section 8.1.8 of MOSP 2 states: *"Sailplanes should make a straight approach and landing run parallel to the runway and must not taxi clear of the runway unless operationally required and only if no other aircraft can land alongside in the direction of taxi. Powered sailplanes may taxi under power providing it is safe to do so."* It has been noted over many years that a significant percentage of reported accidents and incidents indicate that Clubs and/or pilots have modified their normal operating procedures, or abandoned accepted best practice, for no reason other than convenience. Good operating procedures and flying standards are developed over time and built on the experience of many pilots and many mistakes. There is no doubt that convenience can be a seductive force, but pilots (and clubs) must resist the temptation and recognise that even slight departures from standard accepted good practice can have severe consequences.

Date	7-Jun-2021	Region	WAGA	SOAR Report Nbr	S-1869
Level 1	Operational	Level 2	Aircraft Control	Level 3	Control issues
A/C Model 1	SZD-50-3 "Puchacz"	A/C Model 2	Piper PA-25-235/A6		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	62

What Happened

During and aerotow and at approximately 4000' (2920' AGL), the glider pilot climbed out of station and started to lift the tail of the tow plane. The tow pilot was about to activate the tow release when the glider pilot released from tow. Both aircraft landed safely, and a debriefing was held with the Duty Instructor.

Analysis

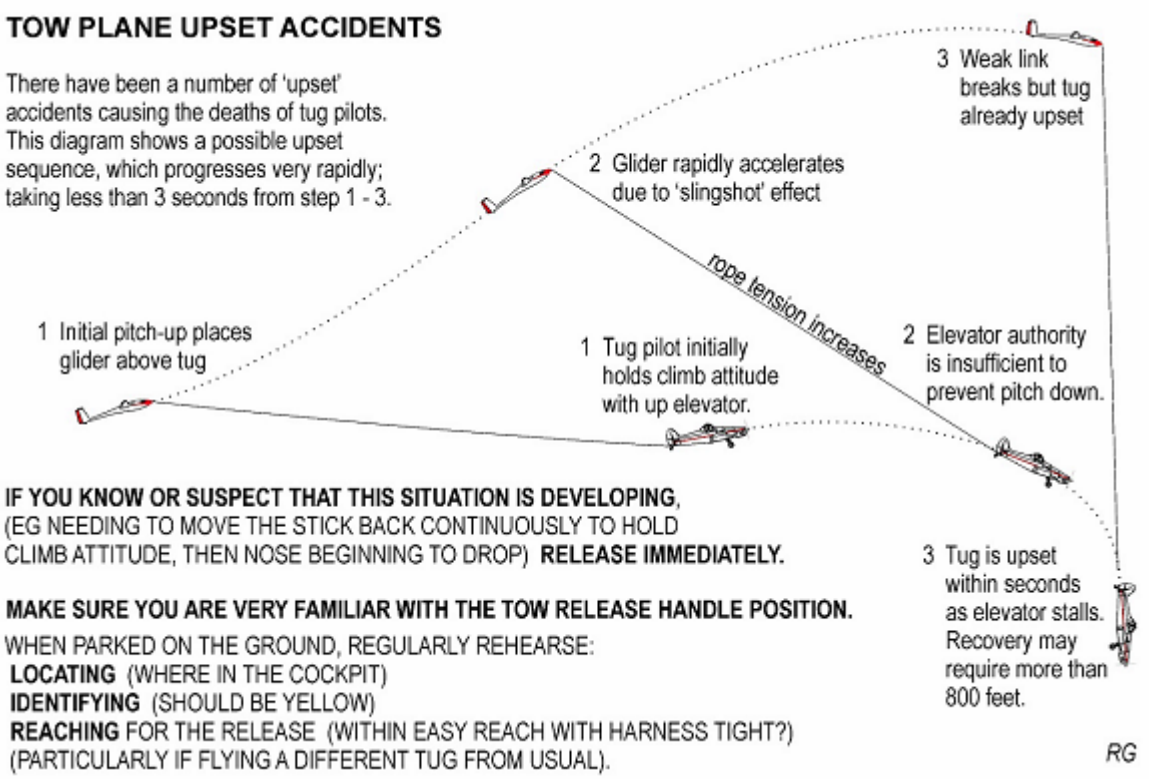
The flight was the pilot's third solo after 17 dual training flights, having recently returned to gliding after a break of several years. The glider pilot reported that the tow plane climbed unexpectedly, then descended, at which point the glider unexpectedly climbed, resulting in the glider being significantly out of station above the tow plane. The glider pilot also reported that he had misidentified the tow release handle, and when he attempted to release from tow, he may have inadvertently pulled the wheel brake control, which is a similar shape to the release handle but a different colour. After realising that the tow cable had not released, the glider pilot then identified and operated the cable release control. The tow pilot, who is the club's Tugmaster and an experienced sailplane pilot, advised he was about to release the glider when the tow rope was released by the glider pilot. The tow pilot reported that the air was particularly smooth, and that the combination had climbed well above the temperature inversion when the incident occurred. The tow pilot stated there was no environmental turbulence at any time during the launch. Investigation by the CFI concluded that the glider pilot probably operated what he thought was the release handle and most likely performed a climbing clearance turn to the right. By the time he realised that the cable had not released, he then identified and operated the actual release control, by which time the glider was most likely well above the tow plane and pulling the tail of the tow plane upwards and to the right. The CFI has asked his instructors to reinforce with their pilots the correct release procedure, including to "locate, identify and operate" the release handle and to verify that the rope has gone before commencing a clearing turn.

Safety Advice

Tug upsets are serious and have caused the deaths of a several tug pilots around the world. If the glider is allowed to climb rapidly behind the tug, it can very quickly become impossible to prevent it accelerating upwards in a slingshot action (rather like a winch launch) and tipping the tug over into a vertical dive. Once that has happened, the tow pilot will only be able to recover provided there is sufficient height. Downward displacement of the glider below the slipstream is quite acceptable, but upward displacements are much

more critical. The glider pilot must release immediately if the glider is going high and the tendency cannot be controlled, or the pilot loses sight of the tug. The circumstances which make tug upsets more likely are:

- a light pilot flying close to the minimum cockpit weight;
- an inexperienced pilot - particularly wire launch pilots with little recent aerotow experience;
- glider with a belly or CG hook;
- an all-flying tailplane, or a glider with very light elevator forces;
- short rope; or
- turbulent conditions.



A vertical upset can also arise when the glider releases if the glider turns before the pilot has confirmed that the rope has separated. A tug upset is less likely to occur if the glider pilot avoids transitioning above or below the slipstream prior to release. If towing in low-tow, then the glider pilot should release from low-tow and vice versa. It is essential to check that, prior to release, the airspace is clear (a) to the right where the glider is just about to turn, and (b) to the left and below where the tug is just about to descend. The glider pilot must then 'Locate, Identify, Operate' the tow release. The release should not be operated until it has been positively located and identified as the one required. This eliminates any possibility of error in selection of the wrong control. This principle applies to all ancillary controls. When ready, the glider pilot will pull the release, and must observe the rope fall away before beginning their clearance turn to the right while simultaneously applying normal targeted scan. The release should be operated while the towrope is still under some tension, and the tug pilot, after feeling "release" should check that the glider has in fact released and begin a descending turn to the left. Post release actions should then be carried out and transition from launching pilot to soaring or landing pilot. For further information on tug upsets, please refer to Section 10.3 of the GFA Aerotowing Manual.

Date	12-Jun-2021	Region	GQ	SOAR Report Nbr	S-1873
Level 1	Operational	Level 2	Aircraft Control	Level 3	Incorrect configuration

A/C Model 1		ASW 20 C		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	76

What Happened

The glider took off with the airbrakes unlocked, and during the aerotow they deployed. The tow pilot signalled the glider pilot by waggling the rudder, and the glider pilot immediately closed the airbrakes. The flight continued uneventfully.

Analysis

The pilot advised that their take-off procedure in this flapped type glider was to start the initial aerotow ground roll in negative flap to achieve aileron control at low speed, and to then move the flaps to neutral once aileron control has been obtained and the airspeed has increased. In addition, and to prevent the glider over-running the tow rope, the pilot applies the wheel brake that is actuated by the application of full airbrakes. Once the slack in the rope has been taken up and the tow pilot has opened the throttle for launch, the glider pilot will then close and lock the airbrakes. On this occasion, the pilot closed but did not lock the airbrakes and they deployed early in the climb. The pilot stated *"During the first phase of the launch, I changed to neutral flap (as per my normal procedure) and was trying to work out why the glider felt different when I saw the tug rudder waggle and immediately closed the airbrakes. Prior to this incident, I have had 555 flights in this glider, with 1560 hours without incident. I was too complacent on this occasion."* After the flight, the glider pilot discussed this incident with his CFI and expressed their embarrassment for the oversight. The tow pilot advised that they did not notice any difference with the glider on tow, having previously towed a heavy tow-seater. However, the tow pilot stated that, in line with their training, they looked in the mirror shorty after the combination became airborne and observed the red airbrakes were showing above the wings and immediately gave the rudder waggle signal.

Safety Advice

This very experienced pilot attributed this procedural lapse to complacency, which is one of the biggest enemies a pilot can face. Over time, flight related tasks can become rote actions performed without the necessary forethought to ensure we're not acting out of habit. All pilots can be vulnerable to making errors if they become complacent by allowing habits and expectations to influence their actions. Taking actual steps to direct attention and methodically verify the status of an action can reduce your chances of making errors.

Date	14-Jun-2021	Region	NSWGA	SOAR Report Nbr	S-1883
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues
A/C Model 1	ASK 21		A/C Model 2	Hercules C130	

Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	75

A RAAF Hercules C130 flew through the circuit joining area of this gliding site at about 500ft AGL. The C130 passed about 300 ft below a glider in circuit and close to the tow plane on final approach. The C130 pilots did not respond to calls on both the local CTAF or the glider frequency. The tow pilot subsequently contacted Melbourne Centre ATC and was advised of another flight from Williamtown that would be undertaken on a 'NO COM' basis, but this aircraft was not observed and may have avoided the area. The Club raised the conflict with the RAAF base and was informed the club site was not on their charts. The RAAF was advised that there is a glider symbol marked on some aeronautical charts, and reference to the gliding site is in the ERSA entry for the certified aerodrome situated 7 NMs to the East. The matter was reported to the ATSB, who provided a copy to the Defence Flying Safety Bureau. The club is investigating having the aerodrome more prominently noted in the aeronautical charts and ERSA.

Date	19-Jun-2021	Region	SAGA	SOAR Report Nbr	S-1874
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	LS 8-18		A/C Model 2	Jabiru	

Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	50

What Happened

After a short local flight to the north and west of the field the glider pilot flew towards the circuit joining area to join a right-hand downwind for runway 23. The glider pilot observed two Jabirus ahead and joined behind them, although at a slightly lower altitude. As the glider pilot conducted a wide left-hand turn to join the downwind leg, and while making a joining downwind radio call, he was surprised to see a third Jabiru appear above the nose of the glider about 300m in front conducting a right-hand turn onto the downwind leg while climbing. The glider pilot reported separation between the two aircraft was 100 metres laterally with the Jabiru about 100ft higher. After landing the glider pilot spoke with the pilots of the Jabiru, who stated that he had seen the glider and did not believe there was a risk of collision. The glider pilot admitted that he was aware that the circuit was busy from radio transmissions but did not maintain adequate situational awareness of the aircraft in the vicinity.

Safety Advice

The most hazardous area for collisions is within a space bounded by a cylinder of airspace 5 NM in diameter and up to 3,000 ft above aerodrome elevation. It is important for all pilots to maintain good situational awareness within this high-risk area. Pilots should be familiar with the aerodrome layout and have radio frequencies set, so their attention can be directed outside the aircraft. Pilots should be alert, looking for other traffic, maintaining a listening watch and responding appropriately to applicable transmissions. Pilots should broadcast their intentions by making the standard positional broadcasts and other broadcasts as necessary in the interests of safety. Most collisions occur on downwind or on final approach. There are many distractions during this time, including configuring the aircraft, completing checklists, setting equipment and communicating. Early completion of checklists and configuration changes will help to minimise distractions at this critical time.

Date	19-Jun-2021	Region	SAGA	SOAR Report Nbr	S-1876
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1	LS 8-18	A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	50

What Happened

The pilot landed long on the main runway and did not vacate it in a timely manner. An aircraft following in the circuit had to initiate a go-around due to the glider occupying the runway.

Analysis

The glider pilot reported that after a short local flight he landed long on the active runway with the intention of rolling to a stop near the hangars to put the glider away. Other aircraft were in the circuit at the time, and the pilot of one of them had to conduct a go-around because the glider was occupying the runway. At this busy regional aerodrome local procedures require gliders to land on the grass verges outside the marked runway to keep the main runway clear for powered aircraft to land. The pilot advised that when he joined circuit, he came into close proximity with a powered aircraft conducting a midfield departure and this may have impaired his judgement.

Safety Advice

As gliders cannot normally taxi clear of runways, they will often occupy a runway for some time before the pilot or crew can push it clear. For this reason, many busy gliding sites with mixed traffic have developed protocols for glider landings that minimise or eliminate inconvenience to other aerodrome users. While it is not a breach of the Regulations for a glider to land on a runway, it is good airmanship to clear the runway quickly and adhere to established protocols that promote equitable access to runways for all aircraft.

Date	27-Jun-2021	Region	GQ	SOAR Report Nbr	S-1875

Level 1	Operational	Level 2	Airframe	Level 3	Doors/Canopies
A/C Model 1	Grob G103A Twin II Acro	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Launch	PIC Age	72
During a winch launch and at about 500ft AGL, the pilot gave a too fast signal and the front canopy departed the aircraft. The command pilot released the cable and conducted a safe circuit and landing. The canopy was substantially damaged. The experienced command pilot advised *"I closed the window and checked the canopy was locked before take-off. I recall moving my left arm back from the trim - not sure why now – and can only think loose clothing may have moved the canopy handle but I don't remember any resistance"*. The pilot's CFI noted that the glider has a lever actioned canopy release, and it is possible the pilot may have caught his sleeve on the canopy release lever causing it to either become fully or partially unlocked. However, conditions on the day were gusty and this, coupled with the pilot giving the too fast signal and the canopy seals being worn, may have generated sufficient force to dislodge the canopy locking mechanism that resulted in the canopy departing the airframe.							

Date	3-Jul-2021	Region	SAGA	SOAR Report Nbr	S-1882
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3	Aircraft preparation
A/C Model 1	Marianne	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	92
During a winch launch the rear canopy came open. The command pilot occupying the rear seat had just rotated into the climb when he noticed the rear canopy coming open. He transferred control of the glider to the second pilot and was able to successfully close and lock the canopy. The flight proceeded without further incident. A post flight inspection revealed the canopy locking mechanism was working correctly, so it is presumed the command pilot failed to lock it during the pre-take-off check list.					

Date	4-Jul-2021	Region	NSWGA	SOAR Report Nbr	S-1879
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	DG-300 Elan Acro	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	32
Following an 83-minute flight, the pilot joined the downwind leg of the circuit and lowered the undercarriage. The pilot then checked that the undercarriage handle was against the cockpit wall and couldn't be moved backwards. The approach was normal, but just after touching down, the undercarriage retracted as the weight of the aircraft came to bear. A witness to the event conformed the undercarriage was down during the landing. Investigation did not find any fault and it is believed the undercarriage was not fully locked down.					

Date	5-Jul-2021	Region	SAGA	SOAR Report Nbr	S-1878
Level 1	Operational	Level 2	Ground Operations	Level 3	Ground handling
A/C Model 1	DG-1000S	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Ground Ops	PIC Age	60
The glider had been towed to the launch area by vehicle. When disconnected from the vehicle and tail dolly, the tow bar partially folded and slipped from the operators hand. The centre hinge section of the tow bar impacted and penetrated the left-hand side of the aircraft rudder.					

Date	6-Jul-2021	Region	SAGA	SOAR Report Nbr	S-1877
Level 1	Operational	Level 2	Airframe	Level 3	Other Airframe Issues
A/C Model 1	Grob G 103 Twin II	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	59
Shortly after becoming airborne the airbrakes deployed. Both flight crew members believed the airbrakes were properly locked before take-off but no mechanical fault was found.					

Date	6-Jul-2021	Region	GQ	SOAR Report Nbr	S-1880
Level 1	Technical	Level 2	Systems	Level 3	Hydraulic
A/C Model 1	DG-1000S	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	59
On landing from an instructional flight, the command plot found wheel braking to be ineffective. The aircraft was inspected on the flight line for brake pad wear and brake fluid level but found to be in order. The aircraft was grounded and a subsequent inspection identified a fluid leak from the seals in the brake caliper. The seals had become brittle over time and were replaced.					

Date	10-Jul-2021	Region	GQ	SOAR Report Nbr	S-1881
Level 1	Environment	Level 2	Wildlife	Level 3	Birdstrike
A/C Model 1	DG-1000S	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	69
During the landing flare at the end of an instructional flight the glider suffered a bird strike. Subsequent investigation revealed a dead pink and grey Galah at the edge of the runway in the touchdown area. An inspection of the aircraft revealed the bird had likely contacted the starboard wing leading edge but did not cause any damage.					

Date	11-Jul-2021	Region	GQ	SOAR Report Nbr	S-1891
Level 1	Operational	Level 2	Aircraft Control	Level 3	Loss of control
A/C Model 1	ASW 19B	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	57
What Happened					

While launching by aerotow in a crosswind, the pilot was unable to prevent the into-wind wing (left) from rising and the starboard wingtip struck the ground. The glider began to weathercock to the right, so the pilot released from tow.

Analysis

The pilot's report is consistent with observations of the duty instructor on the day. A post flight debriefing was conducted by the CFI. The pilot was relatively inexperienced and had only 18 flights in the aircraft since he acquired it. The aircraft was only fitted with a CG hook, which meant that it was more prone to weathercocking in a crosswind, The CFI identified that the pilot had not received a brief on type when he purchased this glider and was not familiar with handling characteristics in crosswind conditions. The pilot subsequently received a through briefing on type from the previous owner of the glider and thoroughly read the Flight Manual to establish important flight parameters. The pilot also participated in remedial training with an instructor covering crosswind take-off and landing technique and management, emergency procedure workload management, Situational Awareness, Human Factors and assessing weather conditions and applying findings to the pre-flight planning.

Safety Advice

In crosswind conditions, with glider and tug both on the ground and accelerating to the glider's take off speed, the glider will try to weathercock into the wind. This tendency will be more pronounced if the glider's wheel is ahead of the centre of gravity and if the glider is being aerotowed on its belly-hook. The glider pilot needs to use the ailerons to stop the wing from lifting under the influence of the crosswind, and to apply sufficient rudder in the downwind sense to prevent weathercocking. If the into-wind wing goes down and strikes the ground, it is quite likely to accentuate the weathercocking tendency and may cause a ground-loop. In this situation, the best course of action is to release from tow.

Date	31-Jul-2021	Region	NSWGA	SOAR Report Nbr		S-1884	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway incursion	
A/C Model 1		Club Libelle 205		A/C Model 2		Tecnam P2002	
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	33

What Happened

A glider was being pushed onto the runway threshold for a launch when the crew sighted an aircraft established on final approach. The glider was immediately pushed back clear of the runway and the aircraft completed a normal landing and vacated the runway.

Analysis

The ground crew had been monitoring the radio for several minutes and was aware of other traffic in the vicinity. After visually clearing the airspace, the ground crew gave a broadcast on the CTAF advising they were entering the runway for a glider launch. In the absence of any further radio calls, the ground crew pushed the glider onto the runway while the tow plane held at the taxiway. While moving the glider onto the runway, the ground crew continued to monitor the airspace and observed a powered aircraft on final approach about one mile away. The glider was immediately pushed clear of the runway and the tow pilot was advised not to enter the runway. The powered aircraft landed and exited the runway, and no radio calls were heard. A member from the gliding club went to talk to the pilot of the powered aircraft but did not catch up with them. The aircraft was from the local aero club and a check of the radio identified it had been incorrectly set and was not on the aerodrome CTAF. The ground crew reported that the aircraft did not display landing lights on approach, which made it more difficult to sight.

Safety Advice

The concept of 'see-and-avoid' in conjunction with an active listening watch is the best defence against the risk of collision. However, alerted see-and-avoid is not always effective as it relies on pilots being on the correct frequency and understanding the transmitted information. In this case, the pilot of the powered aircraft did not recognise they had set the wrong frequency on the radio, and while the ground crew followed best practice, they still failed to observe the powered aircraft on approach – most likely because it was on a long shallow approach and its landing lights were not illuminated. CASA guidance in CAAP 166-1,

under the heading 'Related safety actions at non-controlled aerodromes' at paragraph 2.2 states: *"Pilots are encouraged to turn on external aircraft lights, where fitted, when in the vicinity of a non-controlled aerodrome. These lights should be kept on until the aircraft has landed and is clear of all runways."*

Date	31-Jul-2021	Region	SAGA	SOAR Report Nbr	S-1885
Level 1	Operational	Level 2	Ground Operations	Level 3	Other Ground Ops Issues
A/C Model 1	Grob G 109	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	71

What Happened

The flight crew were conducting a scheduled engine service on a Touring Motor Glider and had pushed it partially into the hangar to get out of the wind while they changed the engine oil. After turning the engine over with the ignition off to move the oil through the filter, it was decided to run the engine for a brief period. The pilot started the engine while outside the aircraft with the fuselage still inside the hangar. This was observed by the Club CFI who immediately intervened to have the engine stopped.

Analysis

This model Touring Motor Glider requires the changing of the oil every 25 hours. The glider sits on a dolly that allows it to be pushed into and out of the hangar sideways. To avoid the oil being blown by the wind, the crew pushed the aircraft partially into the hangar so that the fuselage and engine was sheltered from the wind, but one wing was outside. After changing the oil and turning the engine over with the ignition off to facilitate circulation of the oil, the flight crew decided to run the engine for a brief time while the aircraft was still substantially inside the hangar. The Club CFI and several members were in the hangar at the time talking with the GFA auditor who was conducting the scheduled Operational Safety Audit. The CFI spoke with the flight crew members and had them stop the engine and advised them that their actions were in breach of the Regulations. He also noted that there was potential for a person entering the hangar to walk into the spinning propellor. The flight crew, who stated they were unaware of the regulations, were counselled by the CFI.

Safety Advice

Civil Aviation Regulation (CAR) 230 provides that a person must not start or permit an aircraft engine to be run unless the engine is started or run when the control seat is occupied by an approved person or by a person who may fly the aircraft. This may include a pilot qualified to fly, or maintenance personnel qualified to work on, that type of aircraft. In any case, the person starting the aircraft must have sufficient knowledge of the aircraft's controls and systems to ensure the starting or running does not endanger any person or damage the aircraft. Civil Aviation Order (CAO) 20.9(5) states: *"An aircraft engine shall not be started or operated: within 5 m (17 ft) of any sealed building; or within 8 m (25 ft) of other aircraft; or within 15 m (50 ft) of any exposed public area; or within 8 m (25 ft) of any unsealed building in the case of an aircraft with a maximum take-off weight not exceeding 5700 kg (12,566 lb)."*

Date	31-Jul-2021	Region	GQ	SOAR Report Nbr	S-1886
Level 1	Operational	Level 2	Fuel Related	Level 3	Starvation
A/C Model 1	Piper PA-25-235	A/C Model 2	ASK 21 B		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	78

What Happened

Shortly after becoming airborne while conducting a glider tow, the tug engine lost power. The tug pilot released the glider and both the glider and tug stopped safely within the confines of the airfield.

Analysis

As the tow plane became airborne on a glider launch, the pilot noted the power was dropping. While still over the runway and with half the runway length available, the tow pilot released the glider from tow, touched down and rolled off the runway to the left to provide room for the following glider. The tow plane

was inspected by the Club Tugmaster, who conducted a few fast taxi runs that the aircraft passed. A sustained static power test was performed to ensure the engine was making the expected power, and after approximately 20 seconds of full power the aircraft engine suddenly stalled. This test was repeated three times and the aircraft exhibited the same power loss each time. The tow plane was removed from service and was later examined by a Licenced Maintenance Engineer. Examination revealed the emergency fuel cut-off lever was partially closed, and after being fully opened the aircraft performed faultlessly. It was concluded that the partial closure of the emergency fuel cut-off was the likely cause of the partial power loss by restricting the fuel flow when the throttle was opened. How the emergency fuel cut-off valve became partially closed was not determined.

Safety Advice

In the case of partial engine failure during take-off, the pilot should never assume the engine will "come good". As in this incident, the tow pilot must release the glider and use whatever power is available to increase the distance between the tow plane and the glider or to manoeuvre out of the way. If the engine failure is total, the tow pilot must use the tow plane's inertia to get out of the way of the glider as best they can, turning in the direction most appropriate for the prevailing conditions. For further information, refer to Section 10.2 of the Aerotowing Manual.

Date	31-Jul-2021	Region	GQ	SOAR Report Nbr	S-1887		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing		
A/C Model 1	DG-1000S	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	64

What Happened

On final approach to runway 27 at about 50ft above the main runway, with the student in control, the indicated air speed started to drop below the predetermined `safe speed near the ground` of 60 knots. As the student rounded-out, the glider landed heavily tail-first on the runway. The plastic tailwheel hub was broken.

Analysis
The student pilot rolled out of the turn onto final approach higher than optimal for the conditions. To maintain the aiming point, the student applied full airbrake while simultaneously lowering the nose of the glider to maintain airspeed. The instructor was unconcerned, as the student was maintaining the glide towards the nominated aiming point with full airbrakes. When the student initiated the flare, they abruptly pulled back on the stick resulting in the glider adopting a nose high attitude. Due to a combination of rapidly decreasing airspeed and inertia, the glider touched down hard on the tailwheel first before settling on the bitumen runway. The instructor did not have time to react.
Safety Advice
With a steep approach using full airbrakes, the round-out must begin higher up, especially in a heavy glider. Rounding out too late is usually due to not looking far enough ahead, or 'target fixating' on the aiming point. Since the time from commencing the round-out height to impact with the ground will be short, immediate action is required. As the glider reaches the round-out point, the pilot needs to divert their attention to looking ahead towards the far end of the airfield, and to move the stick gently but progressively back until the glider is flying just above the ground. Landings are easier when made with 2/3 airbrake, as during the round-out and float the airspeed's rate of decay is comparable with a comfortable rate of elevator movement. For further information, refer to Operational Safety Bulletin (OSB) 01/14 – 'Circuit and Landing Advice.

Date	31-Jul-2021	Region	GQ	SOAR Report Nbr	S-1888		
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication		
A/C Model 1	DG-1000S	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	59

The student pilot conducted normal circuit, good flare and normal landing. During the ground roll the flight crew noticed the main wheel tyre was flat. The glider was removed form runway and the mainwheel assembly was removed. The mainwheel inner tube was found to have a hole in the centre wall directly opposite the valve stem but there was no obvious cause of this damage. The tube was replaced, and the glider was returned to service.

Date	1-Aug-2021	Region	GQ	SOAR Report Nbr	S-1890		
Level 1	Operational	Level 2	Ground Operations	Level 3	Ground handling		
A/C Model 1	DG-1000S	A/C Model 2					
Injury	Minor	Damage	Nil	Phase	Ground Ops	PIC Age	

What Happened
A visiting university student was injured in a ground handling incident when their arm got caught between the towed glider wing and the retrieve vehicle.
Analysis
The visiting student was assisting with the retrieve of a glider that had just landed. The retrieve vehicle had been positioned at the tail of the glider when the crew noticed it did not have the correct towing gear on board. While rotating the glider in preparation for pushing it clear of the runway, the student sitting in the vehicle saw that the wing was about to strike the towing vehicle and put their arm out of the window to deflect the wing upwards. However, the inertia of the moving wing struck the student's hand quite hard and caused bruising to the hand and upper arm. The crew member was treated with first aid and visited their GP the following day. The GP identified a hairline wrist fracture. Investigation by the CFI identified a lack of situational awareness by the crew manoeuvring the glider, and found that the student had not received any training in the retrieve of gliders.

Safety Advice

Ground handling is a generally simple task, but it still requires ground crew personnel to have the appropriate skills and situational awareness if the task is to be performed safely. As this incident shows, a lack of both training and awareness can lead to accidents. The CFI has raised awareness of these factors with Club members, wit particular focus on ensuring new members are appropriately trained. For further reading, refer to the chapter titled 'Safety on the strip' in Australian Gliding Knowledge.

Date	2-Aug-2021	Region	WAGA	SOAR Report Nbr	S-1894		
Level 1	Operational	Level 2	Miscellaneous	Level 3	Rope/Rings Airframe Strike		
A/C Model 1	SZD-50-3 "Puchacz"	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	67

What Happened

The pilot in command reported that shortly after the glider started rolling for launch, he heard a noise like stones hitting the underside of the fuselage, followed by a couple of smaller knocks, and then all was quiet. He momentarily took control from the student to confirm that nothing was amiss, and then handed back to the student. At approximately 800ft AGL the flight crew received a radio call from the ground crew advising the glider had picked up a second tow rope that was hanging below the glider. The tow pilot flew back over the airfield, and at about 2000ft AGL the glider released from tow. A second radio call from the ground crew informed the glider pilots that the rope was still attached and stuck in the nose wheel cavity. The command pilot took control and, after a normal circuit, conducted a minimum energy landing on the verge of the runway. As the glider touched down, the rope came loose, and the landing proceeded without further incident.

Analysis

The incident occurred at the beginning of a training flight with an experienced Level 2 instructor and a pre-solo student. The launch crew comprised a wing runner and another person who attached the tow cable, both of whom were current glider pilots. There were several other glider pilots, including at least one other instructor, observing the operations from the pie-cart, approximately 30 metres to the north of the launch point. The pie cart contained a functional VHF radio transceiver, tuned to the CTAF frequency. Operations were being conducted on RWY 28, which has a sealed surface approximately 25 metres wide, with a 13-metre-wide gravel verge on either side. A redundant tow rope was laying across the path of the launching glider (see diagram).

This rope was clearly visible to anyone in the vicinity, however no one considered that it presented any threat to the launching glider. As the launch commenced, and at about the moment when the wing runner released the wing tip, the wing runner saw that the redundant rope had become entangled in the nose wheel of the glider and she called out "STOP, STOP, STOP". At least one witness at the pie cart reported that they clearly heard the stop command. The glider pilots advised they had not heard the stop call, but they did hear some impact noises from under the glider that they attributed to gravel (from the runway margins) being flicked up against the fuselage by the tow rope . Various people at the pie cart, including at least one instructor, reported that they had seen the events unfolding but chose not to take any action to abort the launch as they didn't want to add to the pilot's workload at a critical time in the launch. After the combination had attained an altitude of approximately 800 ft AGL, and with the redundant tow rope dangling from the glider, the ground crew contacted the glider crew using the CTAF frequency and informed them of the situation. The tow combination flew back over the airfield, where the glider crew released from the tow plane at a height of approximately 2,000 ft AGL, hoping that the release action might have caused the redundant rope to become dislodged. The glider crew elected to perform a normal circuit to land on the gravel margins of RWY 28, so as to minimise the chances of damaging the glider should the rope run under the main wheel. As the glider landed, the ground crew observed the redundant tow rope become dislodged and remain on the runway until removed later. A subsequent inspection of the glider by an authorised inspector found no damage.

Summary of key factors

- A redundant rope was present across the launch path of the glider.
- The glider and launch crews did not recognise the rope as presenting a threat.
- As the glider commenced its ground run, the redundant rope became entangled in the glider's nose wheel.
- The call by the wing runner to abort the launch was not heard by the glider crew.
- Bystander pilots (i.e., not part of the launch crew) decided not to use the radio to abort the launch.
- When the tow combination had reached an altitude of approximately 800 ft AGL, the glider crew were contacted by radio to inform them of the dangling rope.
- The glider landed without further incident.
- No one was injured, nor was the glider damaged in the incident.

Safety Action

1. The CFI published a brief article on the incident in the club's monthly newsletter, pointing out the risks of attempting to launch over ropes or any other potentially hazardous items.
2. The circumstances of the incident, and the need to maintain clear launch paths will be included in the briefing notes for Duty Instructors to refer to in future morning briefings.
3. The Instructor's Panel will be consulted to:
    1. Review the whole incident including the decision to not take further action to abort the launch.
    2. Consider advising the club's committee to purchase an additional hand-held, VHF radio transceiver, for wing runners, to improve communications between the launch crew, glider and/or tow plane during launching operations.
    3. Consider the use of a "forward signaller" in lieu of a portable VHF radio transceiver.

Safety Advice

The 'Stop' signal is the most important of all launch signals and must be clearly understood by everyone in the vicinity of a glider being launched. Its purpose is obvious - to stop the launch from taking place. There may be several reasons for doing this; for example, someone may notice that the pilot has forgotten to lock the airbrakes or cockpit canopy, or a small child might escape from the mother's clutches and run across the front of the glider being launched. When these sorts of things happen, the launch must be stopped immediately. The problem is that the pilot might not realise that there is something wrong. For this reason, the general rule is that anyone at the launch point may give a stop signal if that person sees something dangerous happening or about to happen. It is then vital that appropriate action is taken to stop the launch.

In aerotow operations relaying signals to the tug pilot can be assisted by the forward signaller method, which is reliable, but care must be taken by the signaller not to be run-down, particularly if the glider drops a wing. Modern radio is another reliable method. Even if the tug is equipped with a rear-view mirror, the tug pilot will find it easier and quicker to see and respond to signals from a forward signaller, or on radio. Using the rear-view mirror alone, the tug pilot probably won't see a stop signal once he has been given the all-out and opened the throttle.

Date	7-Aug-2021	Region	WAGA	SOAR Report Nbr	S-1889
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues
A/C Model 1	DG-1000S	A/C Model 2	Piper PA-25-235		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	68

What Happened

A glider tug on final approach flew under a glider that was conducting a sideslip approach, and after landing the tug pilot taxied across the path of the landing glider.

Analysis

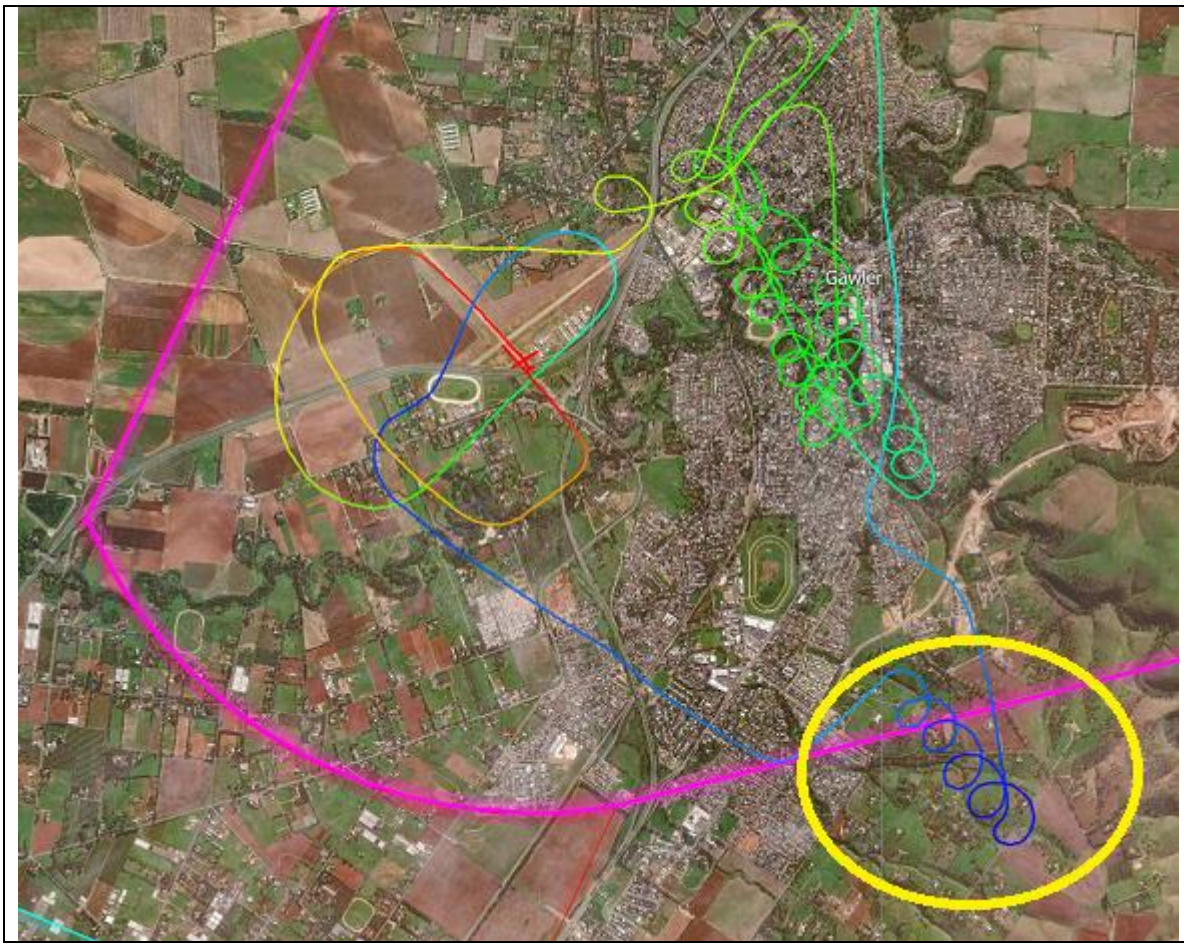
As part of the glider pilot's flight review, a sideslip approach was to be demonstrated. The glider pilot under check therefore set up the circuit so that the turn onto final approach would be higher than normal. As planned, the final approach was steep and the pilot under check conducted a right-wing down sideslip. During the manoeuvre the flight crew observed the tow plane pass underneath. The pilot under check ceased the sideslip and flew the remaining approach using airbrake to manage the descent. The tow plane landed about 150 metres ahead of the landing glider and then proceeded to turn off the runway in front of the glider. The tow pilot subsequently advised they made several attempts to call the glider pilots to ascertain their position and intentions, and was later puzzled by the glider's height on final approach. The glider was later found to have a radio fault due to an open microphone caused by a faulty push-to-talk switch.

Safety Action

The pilots' CFI counselled the tug pilot on the rules for prevention of collision and the requirement for powered aircraft to give way to the sailplanes. In this case the better option would have been for the tug pilot to conduct a go around. In addition, the tug pilot, aware the glider was landing behind, could have landed further into the runway to provide more separation before taxying off. The CFI noted that, when used correctly, the radio can be very effective in resolving issues in the circuit and landing, but if no response is received it should never be assumed that the message has been received. As this incident shows, radios are not always reliable and effective lookout in combination with good airmanship is required to maintain flight safety.

Date	9-Aug-2021	Region	SAGA	SOAR Report Nbr	S-1923
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement
A/C Model 1	LS 8-18	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Thermalling	PIC Age	67

While local soaring, the pilot entered restricted airspace by 1.0 km. The airspace around the aerodrome is complex, with a mix of civilian controlled airspace and military restricted airspace directly overhead. Shortly after take-off the pilot caught a thermal near the airspace boundary. While thermalling the pilot allowed the glider to drift 1km into restricted airspace. The pilot was familiar with the local airspace but became distracted on getting a successful climb after release. The pilot was counselled and undertook refresher training with the Club's Airspace officer.



Date	21-Aug-2021	Region	WAGA	SOAR Report Nbr	S-1899		
Level 1	Operational	Level 2	Crew and Cabin Safety	Level 3	Inter-crew communications		
A/C Model 1	ASK 21	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	71

What Happened

Returning to the dead side of the circuit at 400ft and 130kts following an aerobatic sequence, the pilot in command, who was flying from the front seat, handed control to the second pilot who would be conducting the landing. The second pilot did not hear that control had been handed to him and did not assume control. With no pilot on the controls, the aircraft conducted two phugoid manoeuvres. After the second phugoid the glider pitched forward onto a path that the command pilot assessed would result with impact with the ground. At about 180 ft AGL and at 90kts the command pilot took control and recovered to normal flight.

Analysis

The command pilot was the club's aerobatic and low-level instructor and had completed a practice aerobatic sequence approximately one hour before, where the handing over of controls had taken place for the return to the aerodrome. The second pilot was also very experienced instructor. The incident was recorded using a forward-facing wide-angle video camera that recorded the forward horizon, the command pilot in the front seat in the front seat, all the front instruments and audio. At speed the noise from the rear cockpit was loud and the two pilots had difficulty hearing one another. Returning to the dead side of the circuit at 400ft and 130kts following an aerobatic sequence, the pilot in command attempted to handover control using a non-

standard phraseology of "*You can have it*" and then raised his left hand. The command pilot heard the rear pilot say *"Yep"*, which he interpreted as an acknowledgement from the rear pilot, and then held up two hands to the top of the front canopy to signify he was no longer on the controls. However, the rear pilot advised that the noise in the cockpit was so loud that he didn't hear what was said, and as he was focused on taking the video of the flight, he did not see the handling pilot's hands go up when control was relinquished and so did not take-over control.

The moment the command pilot took control.

With no one on the controls, the glider began a climb while banking to the right. This was anticipated by the command pilot, as the pilots had briefed that the rear pilot would be landing after taking over from the low-level segment upon exiting the aerobatic box. The glider entered the first of two phugoid manoeuvres from 400ft and 130kts in a climbing right turn to the trimmed state of 75kts. The top of the first phugoid was about 800ft at an airspeed of 55kts, following which the glider descended to 200ft and 120kts before again climbing in the second phugoid. The second climb peaked at about 480ft and 70kts, whereupon the glider again descended, and the speed increased. The command pilot thought the second pilot was positioning for an alternative runway and was experimenting with energy exchanges that, while unconventional, kept the glider within gliding range of the airfield's two appropriate runways. As the glider continued to descend, the command pilot became concerned that it would hit the ground and moved his hands to 'guard' the stick. At 180ft, with the glider rapidly approaching the ground in excess of 100 knots (or 170 feet per second), the command pilot took control and recovered to normal flight. The low point during the recovery was 100ft.

The CFI noted the following:

- The command pilot used a non-standard handover technique and did not adequately confirm the other pilot had control. This may have been influenced by the successful handover on the previous flight.
- The pilot in the front seat thought the rear pilot was practicing a low-level high-energy finish and the rear pilot thought the same of the front seat pilot.
- The command pilot took over while it was still within his ability to complete a safe landing at the aerodrome.

As a result of this incident, the club's instructor panel suggested that as well as hearing the 'Handover/Taking over' calls, a lateral 'shake' on the stick would confirm that the pilot flying has control. The command pilot stated that this incident *"…highlights the extra caution needed when two experienced instructors are assuming the other is flying to his comfort level, although one of us should have spoken out earlier."*

Safety Advice

When two pilots are flying together and sharing control of the aircraft, it is important that they effectively manage and prioritise the tasks and act as a team. The ability to communicate clearly and accurately is also vital, as miscommunication as in the case of this incident has the potential to cause an accident. Another vitally important tool for instructors is to develop and maintain skills in applying various 'Thresholds of Intervention', along with disciplined and clear 'Handover-Takeover', to manage risk exposure during a flight. In this incident the command pilot did not properly manage the handover of control, but when the limit of his threshold was approaching, he intervened while there was still time to complete the flight safely. For further information, please refer to the Training Principles & Techniques Manual.

Date	21-Aug-2021	Region	GQ	SOAR Report Nbr	S-1895		
Level 1	Consequential Events	Level 2	Low Circuit	Level 3	Low Circuit		
A/C Model 1	Hornet			A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	20

What Happened

The pilot joined circuit slightly lower than normal and, despite losing further height due to sinking air, did not modify their aiming point and turned onto final approach at a very low height.

Analysis

Returning to the airfield following a 150km cross-country flight, the pilot flew across the upwind extended centreline of the operational runway at about 1500ft AGL, and at a distance of about 2NMS, towards the dead side of the circuit. The pilot then turned onto the crosswind leg for RWY30, about 500 metres upwind at about 1400ft AGL. The glider flew through areas of strong sink and the pilot eventually turned onto the downwind leg at about 700ft AGL. The glider continued to fly through sinking air losing height, but the pilot maintained a standard circuit pattern. The base leg turn was made at a height of about 300ft AGL and the glider attained a wings level attitude at about 100ft AGL. The pilot's CFI witnessed the landing and spoke with the pilot, who advised they wanted to land close to their car and tow gear, and to have some privacy for a 'convenience' stop. The CFI counselled the pilot and reiterated the advice in Operations Safety Bulletin (OSB) 01/14 'Circuit and Landing Advice'. To quote from this document, *"The final turn must be conducted at a safe height, preferably not lower than 300ft AGL, and at the calculated approach speed, having regard to the local conditions. Good energy management is critical to safety, and to setting up a good stable approach from which a safe landing can be conducted. There is strong evidence to suggest that poor landings, or landings causing damage or injury, are much more likely to result if the final turn is executed too late, too close to the ground or with poor energy management, all of which make a stabilised approach and controlled landing much more difficult."*

Safety Advice

It has been noted over many years that a significant percentage of reported accidents and incidents have resulted from pilots modifying their normal operating procedures, or abandoning accepted best practice, for no reason other than convenience. Good operating procedures and flying standards are developed over time and built on the experience of many pilots and many mistakes. There is no doubt that convenience can be a seductive force, but pilots must resist the temptation and recognise that even slight departures from standard accepted good practice can have severe consequences.

Date	22-Aug-2021	Region	GQ	SOAR Report Nbr	S-1893		
Level 1	Consequential Events	Level 2	Low Circuit	Level 3	Low Circuit		
A/C Model 1	Duo Discus			A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	18

What Happened

The pilot joined circuit slightly lower than normal and, despite losing further height due to sinking air, did not modify their aiming point. The pilot turned onto base leg so low that they were unable to turn tight enough to align with the runway and landed in a padock aongside.

Analysis

The command pilot had flown a 150km cross-country flight with another pilot as crew and commenced final glide at 6000ft about 55kms from the aerodrome. The command pilot flew the final glide at 100 knots and encountered severe sink in the last few kilometres. The pilot did not want to conduct an outlanding, having outlanded the previous day, so decided to join circuit much lower than normal from the opposite side of the runway instead of turning earlier onto a left-hand circuit. The pilot flew across the upwind extended centreline of the operational runway towards the opposite side of the circuit at about 1500ft AGL and at a distance of about 2NMS. The pilot then turned onto the crosswind leg for RWY30 about 500 metres upwind and at about 1400ft AGL. The glider flew through areas of strong sink and the pilot eventually turned onto the downwind leg of the standard circuit at about 700ft AGL. The glider continued to fly through sinking air losing height, but the pilot maintained the standard circuit pattern. The base leg turn was made abeam the glider control van at a height of about 300ft AGL and the glider attained a wings level attitude at about 100ft AGL. The glider flew over the glider control van at a height of about 10 metres and the pilto then undertook a shallow a 90-degree turn to line up with the runway. Due to the low height, the pilto could not bank very steeply, and the glider overshot the runway and landed in a paddock on the edge of the runway. The pilot's CFI witnessed the landing and spoke with the pilot, who advised they wanted to land close to their car and tow gear, and to have some privacy for a 'convenience' stop. The CFI counselled the pilot and reiterated the advice in Operations Safety Bulletin (OSB) 01/14 'Circuit and Landing Advice'. To quote from this document, *"The final turn must be conducted at a safe height, preferably not lower than 300ft AGL, and at the calculated approach speed, having regard to the local conditions. Good energy management is critical to safety, and to setting up a good stable approach from which a safe landing can be conducted. There is strong*

evidence to suggest that poor landings, or landings causing damage or injury, are much more likely to result if the final turn is executed too late, too close to the ground or with poor energy management, all of which make a stabilised approach and controlled landing much more difficult."

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Date	27-Aug-2021	Region	WAGA	SOAR Report Nbr	S-1896		
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain		
A/C Model 1	Discus CS			A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	52

What Happened

While taxying clear of the runway after landing, the glider's left wing struck a runway light.

Analysis

After a local flight in one of the club single gliders, the pilot landed long down the field towards the hangars as the glider was no longer required for the day. As the glider rolled past the hanger location, the pilot turned off the runway onto the grass and came to a stop. Upon exiting the glider, the pilot noticed a runway light behind the left wing had been knocked over. Inspection of the wing found a deep scratch on the bottom on the underside of the left wing where it had contacted the top of the runway light (see photos).

Safety Action

The club CFI noted that this was a recurring issue with the runway lighting being relatively high, and in recent times the long grass makes the lights difficult to see. With the approval of the aerodrome operator, the club has installed a lower-level lights (approximately 1 inch high) on the first 300 metres of both ends of the runway, which solved the issue of damage to gliders. In consultation with the local RFDS operator, the Club proposes to replace the old lighting with this smaller type down the western side of the runway, which will finally remove this hazard. Until then, the club has banned club aircraft taxying off the strip.

Date	27-Aug-2021	Region	WAGA	SOAR Report Nbr	S-1897		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	Piper PA-25-235	A/C Model 2	LS 8-18				
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	71

What Happened

While on the base leg of the circuit the tug pilot heard two radio transmissions that were carrier wave only (no voice). Shortly after turning onto final approach, the tug pilot heard a radio transmission advising *"I am immediately underneath you"*. The tug pilot then noticed a glider on his left-hand side, and slightly behind and below. The tug pilot immediately selected full throttle, turned away from the glider and conducted a go-around procedure.

Analysis

Returning to the airfield following a local flight, the glider pilot made a broadcast on the CTAF that he was joining final 3NMs from the runway. At that time the tug was joining downwind, and its pilot heard the call. However, due to other radio traffic from airfields in the area broadcast area, the tug pilot did not hear the identity of the aerodrome called by the glider pilot and so did not associate it with his circuit. The tug pilot made a further radio call upon turning onto the base leg that was heard by the glider pilot, but the glider pilot did not hear what leg of the circuit was called and, because he could not see the tug, thought the tug was joining downwind. The glider then made a call on the CTAF to advise he was on final approach and number 1, but he did not receive an acknowledgement. Very shortly afterwards the glider pilot saw the tug on his left turning onto the base leg towards the glider and a little higher. The glider pilot reported being surprised by the tug's position, as he had assumed it would be mid-downwind at that time. The glider pilot then lost sight of the tug as it went behind the glider, and called *"Tug, I am just below you"* three times – each call being a few seconds apart – but he did not hear a response. Shortly afterwards, he observed the tug turning away to the right about a wingspan to the right, and slightly above, the glider. The Tug pilot reported that he heard two carrier wave transmissions when on Base leg and then a voice call when the glider was very close to him on final approach, at which stage he took evasive action and conducted a go-around. A subsequent check of the radios in both aircraft's proved they were serviceable, but while the FLARM in the glider was also serviceable and had the current firmware update, the unit in the tug had an unserviceable aerial. It was also identified that the tug FLARM did not have any audio warning. The Tug FLARM was fixed, and a modification was made to provide an audio signal to the pilot's headset.

Causal Factors:

- Several aerodromes in the area share the same frequency, and there was a lot of radio chatter heard from traffic at the other sites.
- As it was not a day conducive to cross-country flight, a glider joining final at 3NMs (5kms) was unusual.
- While the tug pilot heard an aircraft call final at 3NMs, he could not see an aircraft in that position and assumed it was an aircraft flying into another site.
- The glider pilot was unsure of the tug's position when he heard the first call and did not consider calling the tow pilot to confirm.
- Although both aircraft had working radios, the tug pilot did not receive a clear voice transmission from the glider pilot until the tug was near the glider.
- Both aircraft were fitted with FLARMs, but neither pilot received a collision alert as the unit in the tug was faulty.

Safety Advice

Subregulation 166C (1) of CAR requires that a broadcast be made to avoid the risk of collision if the aircraft is carrying a serviceable VHF radio and the pilot-in-command holds a radiotelephone qualification. When operating at busy uncontrolled airport, pilots are required to utilise alerted see-and-avoid procedures wherever possible in order to decrease the risk of collisions with other aircraft. Pilots, therefore, need to

conduct an effective radio serviceability test and be able to recognise a possible radio failure. Pilots must be alert to the fact that they cannot assume that radio communication equipment is serviceable until two-way communications have been established. Pilots should take extra care to avoid any conflict by repeating broadcasts, or asking for confirmation from the other aircraft when unsure of its intentions or a message has not been understood. For further information, refer to CAAP 166-1 'Operations In the Vicinity of Non-Controlled Aerodromes'.

Date	28-Aug-2021	Region	SAGA	SOAR Report Nbr		S-1898	
Level 1	Technical	Level 2	Systems	Level 3		Avionics/Flight instruments	
A/C Model 1		DG1000S		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	60

The glider was returned to service following the annual maintenance inspection with the pitot tube disconnected from the instruments. The maintenance was being performed by two experienced inspectors who were under time pressures to deliver the aircraft for the operator earlier than originally intended. After the ASIs had been tested by one of the inspectors, the other inspector decided to service the nose release and in so doing disconnected the ASI plumbing from the nose mounted pitot tube. The inspector did not recall reconnecting the ASI plumbing to the pitot when reinstalling the nose release and closing the access panel. The glider was subsequently rigged for the test flight, but a functionality check of the instruments was overlooked. The pilot conducting the test flight did not observe any anomalies with the airspeed readings, and following a successful flight the maintenance release was issued. The section of the nose where the release is fitted is sealed from the cockpit, and is believed that that the release compartment became sufficiently pressurised in flight to cause the ASIs to read correctly.

Date	30-Aug-2021	Region	SAGA	SOAR Report Nbr		S-1900	
Level 1	Operational	Level 2	Airframe	Level 3		Landing gear/Indication	
A/C Model 1		Piper PA-25-235		A/C Model 2	DG1000		
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	69

Shortly after the glider released at about 3,000ft, the tow pilot received a radio call from the ground crew advising that the tailwheel had departed the tug during take-off. The tug pilot landed on the grass verge of RWY 23 without incident. It was discovered that the bolt securing the tail-wheel assembly had failed.

Date	4-Sep-2021	Region	GQ	SOAR Report Nbr		S-1901	
Level 1	Operational	Level 2	Miscellaneous	Level 3		Other Miscellaneous	
A/C Model 1		Piper PA-25-235		A/C Model 2	N/A		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	62

What Happened

The tow pilot identified that the TOST weak link fitted to the tow rope had been incorrectly assembled and was double the rated strength.

Analysis

The tow pilot was inspecting the weak link and tow rope for serviceability as part of the Daily Inspection before the day's operation when he noticed there were two equal link inserts fitted to the weak link. Both inserts had round holes rather than one having an elongated hole, which effectively doubled the breaking load (see photograph). There were no records of when the weak link had been changed, but it is believed many aerotows had been performed in this configuration. The tow pilot replaced the weak link and ensured the correct inserts were fitted.

Safety Advice

The TOST weak link system is an engineered and approved system which prevents aircraft overloading in winch, autotow and aerotow operations. By using this system, the operator is assured of maintaining the manufacturer's airworthiness requirements for protection of both tow plane and sailplane. The GFA recommends clubs and operators use the TOST reserve insert and sleeved weak link system. This uses two weak links in parallel protected by a steel sleeve. Both weak links have attachment holes at each end and are 8 mm in length. The reserve has oval attachment holes and carries no load in normal operations. If the load exceeds the rating, the weak link will fail and the reserve link will take up the load. If the load is more than a momentary jolt both weak links will fail. For further information, refer to Operations Advice Notice (OAN) 01/13 'Weak Links – Selection, Application, Safety and Testing of Glider Weak Links'.

Date	4-Sep-2021	Region	GQ	SOAR Report Nbr		S-1958	
Level 1	Environment	Level 2	Weather	Level 3		Other Weather Events	
A/C Model 1		Blanik L13 A1		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	74

While landing in marginal weather conditions, the aircraft encountered a heavy crosswind gust associated and rain significantly reduced the pilot's forward visibility as the aircraft approached landing. The sortie was an evaluation flight crewed by two very experienced pilots, with the instructor correctly occupying the front seat for the launch and evaluation flight manoeuvres. The pilot in the rear seat was the operating pilot for the circuit, approach, and subsequent landing. Prior to launch the pilots were aware of rain showers in the area, but the sky to the South was clear and suitable for the evaluation flight. The instructor stated: "If I had any doubts on the target area being weather affected, I would not have launched." About 19 minutes after launch the glider joined circuit with the pilot under check on the controls. The instructor said there was "…considerable rain on downwind but still with very good visibility. The pilot under check turned final at about 300' aligned exactly on the runway centre. At about 150' the canopy went white with heavy rain, and I felt a severe wind gust blow us to the right. Through the rain I could see we were lined up on a culvert on the undershoot area. I shouted loudly to [the pilot flying to move left], whereupon the aircraft veered left and the landed safely on the runway." The CFI debriefed the two pilots and counselled the instructor on the need to take control early when the situation is deteriorating and not to rely on prompts when at very low

level in marginal conditions. This was especially important, as the view from the front seat was far superior that that from the rear seat.

Date	6-Sep-2021	Region	SAGA	SOAR Report Nbr	S-1921
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement
A/C Model 1	DG-1000S	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	71

The command pilot was conducting an Air Experience flight and inadvertently flew into controlled airspace. The pilot advised the breach occurred when they were busy conducting inflight instruction. Violations of controlled airspace can be avoided by remaining situationally aware, ensuring you have current airspace charts, and by thoroughly familiarising yourself with local airspace and other aeronautical issues.

Date	8-Sep-2021	Region	GQ	SOAR Report Nbr	S-1902
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion
A/C Model 1	LAK12	A/C Model 2	Piper PA-28-140		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	61

What Happened

A powered aircraft entered and backtracked the runway while a glider was approaching to land.

Analysis

The glider pilot made several radio calls; including when inbound, joining crosswind, joining downwind and turning onto the base leg. Each radio call stated that the intention was to land on the grass verge to the left of RWY 14. During the circuit the glider pilot observed a powered aircraft holding short of the runway awaiting the landing of the gliding club's tug that was landing ahead of the glider. After landing the tug pilot advised the glider pilot that he was taxying back to the glider launch point on the right-hand grass verge. The tug pilot then heard the pilot of the powered aircraft call entering and backtracking the operational runway and made a radio call to alert the power pilot to the glider on final approach. The pilot of the powered aircraft exited the main runway onto the left-hand grass verge directly into the path of the landing glider. The glider pilot stopped short of the powered aircraft, with both facing head on. The tug pilot had a short radio exchange with the powered pilot, who advised there was plenty of room and appeared unconcerned that he had taxied in front of the landing glider. The tug pilot confirmed hearing the radio calls from the glider pilot and believed the power pilot had not been monitoring the radio.

Safety Advice

Regulation 91.400 contains rules related to the carriage of an operational radio in the vicinity of, or on the manoeuvring area of, certified, military and certain designated non-controlled aerodromes. In summary, if an aircraft is carrying an operative radio in these circumstances, then the radio must operate and be used/monitored during taxying and flight.

Date	8-Sep-2021	Region	GQ	SOAR Report Nbr	S-1903
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3	Aircraft preparation
A/C Model 1	IS30	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	N/A	PIC Age	61

The sortie was a remedial training flight for the low gliding hours pilot (who had 20,000+ hours experience as an airline pilot) following a PIO event the flight immediately before (refer SOAR report S-1904). The assessing instructor had observed, from a distance, the pilot under check conducting a pre-flight inspection. Upon arrival at the aircraft, the assessing instructor debriefed the earlier mishandled landing and decided a circuit was all that was needed. The pilot under check confirmed he had completed the pre-

boarding checks and found no issues. The assessing instructor reported *"I made the mistake of not checking myself, especially after observing the non-normal landing and only observed the main tyre was inflated and the tail wheel was in good condition as I approached from the rear of the glider"*. The subsequent flight was normal, and the landing was to a high standard. While the glider is fitted with a nose wheel, it tended to sit in a tail-down attitude and the nose wheel did not contact the ground during the whole flight. When the glider was returned to the hangar, it was noticed that that the nose wheel was badly damaged; although it looked inflated and spun easily. Incidents involving sailplanes that have been flown with undetected damage following a hard or abnormal landing are not uncommon. If design limits are exceeded the structural integrity of the sailplane structure may be jeopardised and safety could be impaired. Any report or evidence on the sailplane that suggests the design limits have been exceeded or the aircraft damaged should, therefore, be followed by a careful inspection appropriate to the nature of the occurrence and in accordance with the sailplane manufacturer's approved data. For further information, refer to Operational Safety Bulletin (OSB) 01/20 - Inspection of a Sailplane After Abnormal Flight Loads or Hard Landing.

Date	8-Sep-2021	Region	GQ	SOAR Report Nbr	S-1904		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Pilot Induced Oscillations		
A/C Model 1	IS-30	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	
During landing the glider bounced and the pilot mishandled the recovery. The glider experienced three pilot induced oscillations, nose to tail, before coming to rest. The nose wheel rim was damaged with buckling, and the tyre was damaged and deflated. Causal factors include low experience, incorrect landing technique and over controlling glider in pitch during flare and hold off prior to ground impact. To avoid the PIO, pilots should always aim to touch down with minimum energy, in a two-point attitude whereby the tail wheel and main wheel touch simultaneously. To reduce ballooning during the flare, stabilise the glider at an altitude of 3 or 4 feet, and then begin the flare anew. Do not try to force the nose of the glider down onto the runway.							

Date	8-Sep-2021	Region	GQ	SOAR Report Nbr	S-1906		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Incorrect configuration		
A/C Model 1	DG-400	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	64
The pilot reported activating the canopy release instead of the air vent knob, both of which were positioned close together on the cockpit wall and obscured by the canopy mounted flight computer (See photographs). The pilot was able to hold the canopy in place with one hand, and immediately return to the circuit. A safe landing was made. This incident highlights the dangers posed by pilots' use of electronic devices in the cockpit. Pilots need to remain mindful that these devices need to be fitted such as to ensure they do not interfere with, or impede access to, the controls, while positioning them in such a manner as to facilitate optimum lookout.							

Date	10-Sep-2021	Region	SAGA	SOAR Report Nbr	S-1909
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Ground strike
A/C Model 1	ASK 21	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Landing	PIC Age	63

What Happened

While landing with a crosswind on training flight at a remote site. During the final approach, the glider drifted off the runway centreline. The instructor prompted the student to regain the centreline by turning slightly into wind, but the aircraft touched down near the side of the runway with the port wing over the ungraded verge. The port wing contacted the ground and tall grass caused the glider to rotate to the left through 130 degrees and skid to a stop about 3 metres off the runway. The glider suffered substantial damage to the port wing.

Analysis

The student had 214 flights and 57 hours under instruction, and the CFI noted that the student was known to be indecisive and slow to learn. The final approach was initially flown well, but as the glider got closer to touch down the student flying allowed the aircraft to drift offline. Although the student was prompted by the instructor to point further into wind to regain the runway centreline, the glider touched down such that the outer half of the port wing was over ungraded and rocky ground with a small patch of grass from recent rain. As the aircraft slowed, the port wing caught on a clump of grass and a ground loop ensued. The CFI noted that, given the low height and limited manoeuvring time, the instructor should have taken over rather than prompt.

Safety Advice

The most common instructing accident is 'instructor failed to take-over in time'. These accidents usually involve the trainee responding in an unforeseen way or failing to respond at all (e.g. not rounding out). While the overall idea is to let the trainee do as much as possible within their level of skill, the instructor should never wait until the last moment - which can rapidly become 'too late' - before responding to a situation that is going awry. This is particularly true of any manoeuvres close to the ground. Instructors must always maintain a defensive stance with hands near relevant controls in order to react quickly.

Date	12-Sep-2021	Region	GQ	SOAR Report Nbr	S-1907

Level 1	Operational	Level 2	Terrain Collisions		Level 3	Collision with terrain	
A/C Model 1		LS 4-a TOP		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	28

What Happened

After a normal landing, the pilot decided to taxy clear the runway for gliders landing behind but in so doing had too much speed and collided with a ditch on the side of the runway.

Analysis

The pilot returned to the airfield after a short cross-country flight with sufficient height to complete a normal circuit. The pilot identified the wind speed to be 15 knots and increased the landing speed in case of encountering turbulence and wind shear on final approach. The right-hand side of the runway was occupied by another glider that had just landed, so the pilot elected to land on the left-hand side. After a normal touch down and ground run, the pilot turned left to clear the runway for following gliders. The glider had more energy and speed than the pilot anticipated, and the pilot was unable to prevent it from rolling into a ditch alongside the runway. The glider turned through about 100 degrees and the wing came to rest just short of a parked car. The pilot stated: *"I learned the risks of taxiing with too much speed and to not feel pressured to clear the runway, especially not when there is plenty of space for other gliders to land ahead. I was also reminded that I should not land short for convenience if the circumstances do not permit. Today, given I had plenty of height, it would have been safer for me to land ahead of the other glider in the middle of the runway, and to either push the glider to the side or wait until the very end of the roll to steer it to the right."* The pilot's CFI conducted a debrief and provided guidance on clearing the runway safely and discussed the importance of taking the safest route rather than the most convenient route. The CFI believed this incident was the result of an error in judgement and discounted fatigue as a contributing factor.

Safety Advice

It has been noted over many years that a significant percentage of reported accidents and incidents occur when pilots modify their normal operating procedures, or abandon accepted best practice, for no reason other than convenience. Good operating procedures and flying standards are developed over time and built on the experience of many pilots and many mistakes. There is no doubt that convenience can be a seductive force but pilots must resist the temptation and recognise that even slight departures from standard accepted good practice can have severe consequences.

Date	16-Sep-2021	Region	GQ		SOAR Report Nbr	S-1908	
Level 1	Operational	Level 2	Terrain Collisions		Level 3	Collision with terrain	
A/C Model 1		Ventus-2cM		A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Landing	PIC Age	66

What Happened

The pilot conducted a low-level finish manoeuvre upon returning to the circuit from a 3-hour cross-country flight but did not change his planned approach when it became obvious a modified circuit may be appropriate. This resulted in the pilot conducting a very low turn onto final approach, following which a severe ground loop occurred. The glider was substantially damaged.

Analysis

The experienced pilot had undertaken a cross country flight of about 290kms in reasonable conditions working a height band of between 2,500ft and 6,000ft AMSL. On the final glide the pilot made a radio call advising he would be conducting a low-level finish. The pilot gradually increased airspeed as the glider neared the aerodrome, and when at 115 knots about 200ft above the runway intersection, the pilot pulled up and slowed to circuit speed while conducting a right-hand turn onto the downwind leg for RWY 16. The glider joined downwind at below 500ft AGL abeam the upwind end of the 1600 metre runway. The pilot reported: "*After crossing the intersection at 200ft and 115kts I proceeded to gain altitude to 444ft with a right turn to join a right downwind for glider strip 16. After starting my downwind leg, I could see that the circuit would be a marginal. At this point I thought about doing a modified circuit for glider strip 34 but*

continued downwind for glider strip 16. I checked the AWIS on the final glide and noted that the wind was from the southwest which, I think may have influenced my decision to dismiss doing a modified circuit on 34. I should have modified my circuit earlier onto glider strip 16 but was influenced to continue by buoyant air and the perceived shortness of useable runway as I was passing by runway 05". The turn onto final approach was conducted at around 60ft AGL, with the right wingtip close to the ground. It is believed the right wingtip contacted the ground just prior to touchdown, resulting in the glider conducting a severe ground loop to the right. The glider was substantially damaged; both wingtip ailerons were damaged, there was additional tail plane free play, evidence of stress and a tear in the structure on the fuselage, and the undercarriage was bent and difficult to retract. The pilot stated: *"I remember that I was thirsty after landing so hydration and perceived tunnel vision may have been a factor in my poor planning, circuit entry and decision making."* The pilot's CFI conducted a debriefing and identified potential contributing factors as follows:

- ***Complacency*** - over time the pilot had become comfortable with being lower in the circuit than otherwise would be considered safe.
- **Task *fixation*** - despite the pilot recognising the low circuit entry height and the ability to modify the circuit and land safely were identified, the pilot convinced himself that he could safely complete the task.
- ***Stress*** – The pilot mentioned that on the downwind leg he felt a sense of tunnel vision, which is usually workload related and leads to diminished situational awareness.
- ***Fatigue*** – The pilot explained he had a very busy week leading up to the flight and felt this may have been a contributing factor leading to his poor decision making. The pilot also mentioned that his age may have affected his recovery time from his busy week.

Safety Advice

Human factors including decision biases, goal fixation and cognitive tunnelling have been identified as casual factors in several glider accidents in past years. Being aware of the dangers of continuing into marginal circumstances, setting boundaries, having a sound knowledge of rules and procedures, disciplined adherence to minima and performance requirements, prioritisation of options, and planning to deal with potential situations will act as defences against unsafe conditions.

Date	18-Sep-2021	Region	GQ	SOAR Report Nbr		S-1910	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Control issues	
A/C Model 1		ASW 20 B		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	63
During the post Form 2 test flight, aileron controls were restricted due to contact with other control mixer surface. The lateral restriction only became evident in flap position 4. Investigation determined that the wheel brake actuating mechanism had been disconnected by one inspector and reassembled by another inspector. Unbeknown to the latter inspector, the bolt was not fitted in the standard manner (i.e. Right to Left, Front to back, top to bottom), and so caused interference with the flap mechanism when flap 4 position was selected. When the aircraft was subsequently rigged, only basic control checks were undertaken and flap position 4 (landing) was not checked. The bolt direction was reversed, and a subsequent check revealed all control combinations and full deflections were free and easy. The aircraft was returned to service.							

Date	19-Sep-2021	Region	GQ	SOAR Report Nbr		S-1911	
Level 1	Operational	Level 2	Crew and Cabin Safety	Level 3		Flight crew incapacitation	
A/C Model 1		Astir CS 77		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	
What Happened							

During a solo local flight, the low hours pilot experienced nausea and then vomiting. Circuit was entered but the pilot omitted to prepare the aircraft for landing or complete the pre-landing checklist due to partial incapacitation and landed with the undercarriage retracted.

Analysis

The pilot reported the first 40 minutes of the flight were quite normal, after which he began to feel nauseous and developed a headache. The pilot decided to return to the aerodrome and land, and deployed airbrakes to expedite the descent. Symptoms quickly progressed to significant airsickness and vomiting, and the pilot was retching during the circuit. The pilot stated: *"While being severely distracted by airsickness symptoms and trying to concentrate on airspeed, glide angle to runway, wind, traffic etc, I failed to complete a proper pre-landing check and regrettably landed with the undercarriage retracted."* The pilot had consumed approximately 1.5L of water in the morning before the flight and had the same amount in the cockpit during the flight, of which approximately 60% of was consumed before landing. The pilot explained: *"It was a relatively hot day, with no cloud cover and with most of the flight occurring under 5000 ft, the temperature in the cockpit was quite hot and I would consider dehydration to be a significant contributor to the airsickness developing."* The pilot's CFI reported that the pilot had experienced air sickness during training and had investigated various over-the-counter remedies. One medication had proven effective, and the pilot had taken this prior to the flight. The CFI found that, despite the pilot drinking a reasonable amount of water prior to going out onto the runway, there was a significant wait in the heat before launch with little fluid consumed. The pilot will seek advice from a medical practitioner and will only fly with a safety plot until his air sickness can be controlled.

Safety Advice

Exposure to flying often desensitises the pilot and eliminates airsickness. There are also some strategies that help prevent motion sickness:

- Avoid heavy meals before flight
- Remain hydrated; drink water
- No aggressive head motion during flight; use slow, purposeful movements
- When becoming queasy and the flight environment permits, try focusing on the horizon outside the airplane
- Place cool air vents on the face
- Breathe slowly, and relax

If symptoms persist, it is best to seek professional medical advice.

Date	19-Sep-2021	Region	NSWGA	SOAR Report Nbr		S-1912	
Level 1	Technical	Level 2	Systems	Level 3		Other Systems Issues	
A/C Model 1		Janus B		A/C Model 2	N/A		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	55

What Happened

On three occasions while thermalling, the seat harness came undone during flight – once in the front seat and twice in the rear seat.

Analysis

The harnesses are of the Gadringer FB19 type, where the two lap strap buckle halves are secured by a tongue and spring-loaded clip (see photo).

On the first occurrence, as the control column was held back and moved across to the right, it struck and pushed the locking clasp out of safety and the harness became undone. The second and third occurrences occurred when the pilot knocked the locking clasp open with his hand. Three factors were identified as contributing to the first occurrence:

- The glider trims nose heavy, making it necessary to hold the control column near full back stop when flying slowly.
- This style of harness can be released by applying pressure laterally to the end of the aluminium tongue.
- The front seat pilot was rotund, which placed the buckle in a position where the backward movement of the control column during thermalling allowed it to contact the buckle. When the control column was moved from left to right it pushed the harness tongue out of safety.

The second and third occurrences were not caused by the control column engaging the buckle and were solely due to the movement of the pilot's hands.

Safety Advice

While not a common event, there have been previous reports of harnesses coming undone in flight while thermalling or during stall/spin training. Such occurrences have also occurred with rotary buckles being knocked undone. When conducting the pre-flight control checks, pilots need to be aware of the possibility that the harness could come undone in flight if the control column can strike the harness buckle.

Date	22-Sep-2021	Region	SAGA	SOAR Report Nbr		S-1951	
Level 1	Airspace	Level 2	Airspace Infringement	Level 3		Airspace Infringement	
A/C Model 1		Discus b		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	80
After releasing from aerotow the pilot flew near the Western boundary of restricted airspace, and while thermalling the glider drifted 500 metres into the Military CTR. A temporary loss of situational awareness was the main factor in this airspace infringement. The pilot was counselled and undertook a check flight with an instructor that focused on identifying ground features on the CTR boundary. Violations of controlled or restricted airspace can be avoided by remaining situationally aware, and by thoroughly familiarising yourself with local airspace and other aeronautical issues.							

Date	26-Sep-2021	Region	SAGA	SOAR Report Nbr		S-1914	
Level 1	Technical	Level 2	Systems	Level 3		Other Systems Issues	
A/C Model 1		ASK 21		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	44
What Happened							

While hooking on the winch cable for a second launch, the TOST rings pulled out of the release when the ground crew applied tension (to check connection) to the rope. The rings were reconnected but again pulled free during the initial stages of the winch launch.

Analysis

The annual inspection had been completed the day prior, and two flights were undertaken on that day. During the daily inspection on the following day the inspector noted there was very little free play at the release knobs in both the front and rear cockpits. However, a functional test of the release system found it to be serviceable. The glider was successfully launched by winch later that day and the release functioned properly. During the hooking on procedure for the second launch, the TOST rings released uncommanded when the ground crew applied tension to the trace. The command pilot was concerned that this might be related to the lack of free play in the release system identified earlier, but decided to continue with the launch having considered that it was not unknown for the TOST rings to release when the ground crew applies tension and that the aircraft had flown on three previous occasions without issue. Shortly after the aircraft began the ground roll for the second winch launch, the rope broke. Believing the rings had pulled free from the release uncommanded, the aircraft was then taken offline and inspected by two appropriately qualified personnel. The inspection determined that the belly release was not able to return to its fully closed position due to cable tension in the release control circuit. The lockwire on the turnbuckle in the release control circuit was subsequently removed to adjust the turnbuckle to allow the control arm of the belly release to return its fully closed position. It was judged that, measured at the top (furthest away from the release) of the control arm, that the control arm was being held forward of its fully closed position in the order of 10 to 15 millimetres. The aircraft was returned to service.

Safety Advice

Inspectors must ensure they familiarise themselves with the latest maintenance information provided in the Manual of Standard Procedures and the Basic Sailplane Engineering manual.

Date	26-Sep-2021	Region	VSA	SOAR Report Nbr		S-1922	
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	Piper PA 25-235		A/C Model 2	PIK-20-B			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	68

What Happened

Shortly after the glider released from tow, the tug pilot reported that another glider appeared suddenly in his view, coming in the opposite direction but at an oblique angle, and flashed under the tug's left wing. It was visible for only a fraction of a second. An analysis of the FLARM traces showed that the glider was 9 metres to the left and 25 feet below the tug at its closest point.

Analysis

At around 15:40 the tow pilot commenced to launch the Club's two-seat sailplane for a training flight. At that time a privately owned single-seat sailplane was airborne. When the tug/glider combination reached 3900ft AMSL south-west of the aerodrome, the glider pilot released, and the tug pilot maintained his north-westerly heading while descending to return to the aerodrome. At the time of release the ingle-seat sailplane was about 2NMs north-west of the tow plane at the same altitude and was also returning to the aerodrome. About 30 seconds later the tow pilot made a right-hand turn to position to join the circuit. At this time the glider was about 1300 metres away and heading directly towards to tow plane at almost the same altitude. Subsequent analysis of the flight trace suggested that, from the tow pilot's perspective, the glider would have been heading straight towards the tow plane near the horizon. The tow pilot advised that he did not see the glider, as it would have been difficult to see against the afternoon haze. As the tow pilot continued the right-hand turn and while he was scanning right and below to clear the airspace, he received a FLARM alert of another aircraft approaching head-on. At this point the glider was approaching the tow plane head-on, but slightly to the left and closing at a (combined) speed of 150 knots. Before the tow pilot had

time to react, the glider suddenly appeared and flashed under the left wing of the tow plane. An analysis of the FLARM traces showed that the glider was 9 metres to the left and 25 feet below the tug at its closest point. Afterwards, the tow pilot continued the turn before completing the rest of the descent without incident. The glider pilot advised that he didn't see the tow plane at all during the flight and believes he may have been looking in the opposite direction to the tow plane. The glider pilot had not heard an alert from the FLARM due to high noise levels in the cockpit consequent of flying without undercarriage doors that had been removed for repair. A possible causal factor was the lack of relative movement of the two aircraft that were heading directly towards each other at the same height.

Safety Advice

If two aircraft are on a collision course and these aircraft are flying on constant headings at constant horizontal and vertical speeds, then each aircraft has a constant relative bearing to the other right up until the moment of impact. Even though one aircraft may be going twice as fast as the other, if their relative bearings are constant, the aircraft will collide. From the pilot's point of view, if the approaching aircraft has no apparent motion with respect to his or her aircraft and stays at exactly the same point on the windscreen, a collision is inevitable. This absence of any relative motion is important from the point of view of detecting the other aircraft because the retina is especially sensitive to the detection of small movements. Also, most of us would use motion of another aircraft as a good cue to detection. While aircraft on converging tracks will, of course, appear larger as they get closer, it is roughly true to say that the apparent size of an on-coming aircraft doubles with each halving of that aircraft's range. Imagine the case in which a general aviation aircraft and a military jet are approaching each other head-on at speeds of 150 knots and 450 knots respectively, a closing speed of 600 knots. At about 20 seconds before impact, the two aircraft might be about 6,000 metres apart and reach will present a target to the other of only around one-sixteenth of a degree. Ten seconds from impact, the distance will have halved, and the target size will have increased to all of one-eighth of a degree; at 5 seconds, the size will have again doubled but will still be only about one-quarter of a degree. In other words, the oncoming aircraft remains extremely small until very, very late, and then it suddenly expands into something that fills the windscreen. The calculations in the previous paragraph match up, with the accounts of many pilots who have had mid-air's or near-collisions. Typically, they maintained a good lookout and then diverted their attention inside the cockpit for 2 or 3 seconds to complete some checks, only to look up in horror to find the windscreen full of aircraft. An added complication is that reaction time is usually 2 seconds or more. The retina of the eye is not equally sensitive over its whole surface. In fact, it is only in a small, central area of the retina (the fovea) that visual acuity is good. Even at very small angular departures from this central area, acuity drops off alarmingly to a small fraction of the central acuity. This does not cause any problems in everyday life because we can always use the central part of the retina to investigate anything that we are interested in and use the rest of the retina to fill in the rest of the world. But it does mean that if we are conducting a visual search for a small target and the object of our search does not happen ever to fall on the foveal area, then we are extremely unlikely to see it. This is particularly true if the target has no relative movement. Many pilots will have spotted another aircraft, looked away for a few moments, and then been unable to see it again because this time the aircraft's image bust does not happen to land on the right bit of the retina. What is the best way to scan an empty sky in order to maximize the chances of detecting an aircraft? Some pilots believe they should move the eyes in a smooth, continuous action. But unless there is something out in the world also moving smoothly which the eye can track, the eye will move only in fast jerks ("saccades") with interposed rests. There is some good evidence to suggest that if you are conducting a search, it wastes time to prolong the rests because, if the aircraft is going to be spotted, it will become visible immediately. Another point to make about visual searches regards the problem of where to look. It is possible that you could collide with an aircraft that was descending (in which case you should have seen it silhouetted against the sky) or climbing (in which case it should have been seen against the ground). In the first case it probably would not matter much what colour the aircraft was painted, but in the latter case it might be an important issue. The most likely threat, however, is another aircraft that is at the same level. In this case, the other aircraft will (at low to moderate altitudes) be between yourself and the horizon and will present its least conspicuous

aspect. Pilots should understand what they are actually doing when they search the sky. Here are some tips that may be worth remembering:

- Remember that the aircraft you are going to collide with is the one that appears to be stuck in the same pace on the windscreen. If you are both in cruise and it moves, you will miss it, but take positive avoidance action to miss it by a safe distance.
- Remember that you are looking for a small target that gets bigger only when it is too late to be avoided. It can easily take 2 seconds or more to appreciate the situation, make a response and get your aircraft to change course, so minimize the time with your head in the cockpit.
- Concentrate your search in the area of most likely conflict, which in many situations will mean along the horizon, looking for those aircraft at the same levels.
- Do not imagine that you can make a smooth, continuous search. Keep your eyes scanning the world in quick movements.

Date	26-Sep-2021	Region	SAGA	SOAR Report Nbr	S-1913		
Level 1	Operational	Level 2	Fire Fumes and Smoke	Level 3	Fumes		
A/C Model 1	DG-1000S	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	59
At the end of landing roll, the flight crew smelled a minor electrical fumes odour. They vacated the glider, and it was placed unserviceable. Inspection of the glider identified a fault with the ditto log and FLARM wiring. The DittoLog electrical power cable had evidence of arcing around the terminal. The terminal fitting was replaced and tested serviceable, and the aircraft was returned to service.							

Date	26-Sep-2021	Region	GQ	SOAR Report Nbr	S-1918		
Level 1	Technical	Level 2	Systems	Level 3	Flight controls		
A/C Model 1	DG-1000S	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	
What Happened One of the port airbrake panel mounting bolts was found to be not in safety during the daily inspection.							

Analysis

During the Daily inspection, the inspector noticed that the locknut on the port inboard airbrake pivot arm was not in safety. Paragraph 5.5.1.a of the document Basic Sailplane Engineering requires that at least one full thread must be showing through the elastic insert for the bolt to be in safety. Investigation revealed the bolt was not seated against the rear of the airbrake and had not been pulled tight by tightening the locking nut (refer photo). The lock nut was finger tight. The lock nut correctly tightened, assessed as functional and the aircraft was returned to service. It is believed the nut was not tightened and made safe during the previous annual inspection. The aircraft had been subject of 29 Daily inspections since the last annual inspection.

Safety Advice

Human error is a fact of life and needs to be minimised. Checks and double-checks are supposed to ensure that human error is detected before disastrous consequences eventuate. However, we are all fallible, which is why it is important that checks are done diligently. A good Daily Inspection helps in avoiding incidents and accidents, by finding faults in or issues with the sailplane before it flies. A person holding Daily Inspector authorisation therefore plays a front-line role in incident and accident prevention, and in continuing to keep the sailplane airworthy. In this case, the Daily inspector's vigilance identified a potentially dangerous situation and arranged for it to be remedied.

Date	1-Oct-2021	Region	GQ	SOAR Report Nbr	S-1926		
Level 1	Technical	Level 2	Powerplant/Propulsion	Level 3	Engine failure or malfunction		
A/C Model 1	HK 36 TC	A/C Model 2	N/A				
Injury	Nil	Damage	Substantial	Phase	In-Flight	PIC Age	

What Happened

While conducting a local flight and at 600ft AGL approximately 4NM from the aerodrome, the Touring Motor Glider experienced a sudden loss of power and extreme rough running. The pilot reduced the throttle and was able to fly back to the aerodrome and conduct a safe landing.

Analysis

The pilot was at Burketown to soar the morning glory cloud in his touring motorglider. On the day of the incident there was no cloud visible from the airport, so the pilot decided to conduct a local flight towards the Northeast following the course of the Albert River. Approximately 4nm from the airport at 600' AMSL and at approximately 80 knots indicated airspeed, the Rotax engine suddenly lost power and began running extremely roughly. The pilot reduced the throttle setting and reduced speed to best glide and requested the second pilot for a vector directly to the airport. A call was made on the CTAF to advise other traffic. Fortunately, the pilot was able to turn speed into height and, with some thrust still being delivered by the engine, managed to fly back to the airport and land safely. Post-flight inspection revealed the exhaust valve spring of the No. 4 cylinder had broken in two places. Examination of the maintenance records identified that the leak down test performed the previous week measured cylinder No 4 at 78/80 relative to cylinders 1,2 & 3, which measured 79/80. It is therefore believed likely that one of the breaks in the valve spring was present at that time, but still allowed the valve to close effectively and thus masked the problem. Two replacement used springs were obtained and a field repair was successfully conducted a few days later and the aircraft performed normally during the remainder of the trip. Upon arrival back home, the spring was examined by a University of Queensland Materials Performance Laboratory expert using a stereo microscope. This examination revealed that there were inclusions, and stress markers near those inclusions, which led to the failures. The fractures almost certainly occurred sequentially and not simultaneously. Rotax has been advised via Australian agent, Bert Flood Industries, with the submittal of a Rotax Customer Service Information Report. The failed spring was returned to Rotax as requested.

Date	9-Oct-2021	Region	GQ	SOAR Report Nbr	S-1915		
Level 1	Operational	Level 2	Miscellaneous	Level 3	Other Miscellaneous		
A/C Model 1	Cessna 150 G	A/C Model 2	Monnett Sonerai II-L				
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	61
It was reported that a RAA listed light aircraft landing at this regional airfield did not make any radio calls while in circuit, nor did the pilot respond to radio calls from the glider tow pilot operating on the runway or other circuit traffic. The Aerodrome operator requires the use of radio when using the aerodrome, which is							

outlined in the ERSA, and it is a requirement for the pilot of an aircraft with a serviceable radio to use it to enhance safety in a CTAF. The report was referred to Recreational Aviation Australia.

Date	9-Oct-2021	Region	GQ	SOAR Report Nbr	S-1916
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	Standard Cirrus	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	51

What Happened

The pilot left the decision to break off the flight late to search for thermals in the vicinity of the aerodrome before entering circuit and did not configure the aircraft for landing. Once in circuit, the pilot became distracted by radio calls and adjusting for lift and forgot to conduct the pre-landing checklist.

Analysis

The pilot advised that while planning to land he decided to see if there was any lift at a known location near the circuit joining area. He considered lowing the undercarriage at that point but decided to wait until joining the circuit to minimise drag. When arriving at the location he could not find any lift and joined circuit at the normal height. During the downwind leg the glider flew into lift while the pilot was responding to a radio call from another glider pilot about likely thermal sources. The pilot considered taking a climb in this lift but chose not to because of possible conflict with other circuit traffic and instead modified his circuit to account for the increase I height. The radio call and modification to the circuit led to the pilot omitting to conduct the pre-landing checklist, and the glider subsequently landed safely, albeit with the undercarriage retracted.

Safety Advice

Landing mishaps commonly occur to pilots who lack the discipline to break off the flight at an early stage, and who become overloaded in the circuit. Workload management can be eased by proper flight management, which includes attending to pre-landing tasks, like lowering the undercarriage, early rather than later in the circuit (OSB 01/14 'Circuit and Landing Advice' refers). Many similar accidents have had their genesis in pilots choosing not to lower the undercarriage until late in the flight in the mistaken belief that to do so would significantly reduce the glider's performance by increasing the drag. While a lowered undercarriage adds to profile (or parasitic) drag, such drag increases with the square of the airspeed – so in most sailplanes the drag penalty of the lowered undercarriage is negligible up to normal cruising speeds.

Date	10-Oct-2021	Region	SAGA	SOAR Report Nbr	S-1917
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1	Piper PA 25-235	A/C Model 2	Allegro		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	

What Happened

An aerotow launch commenced while a powered aircraft was established on late final.

Analysis

The tug with a glider on tow commenced the ground roll just as an ultralight aircraft was landing. The tug and glider combination ran parallel with the landing aircraft for a short distance. The landing aircraft did not pass the tug at any stage and the tug pilot never saw the aircraft. The glider pilot could see the aircraft landing parallel with the launching combination and elected to continue with the launch. The wing runner had seen the situation developing and raised one arm in the air but did not put the wing down on the ground, raise both arms in the air and shout STOP, STOP, STOP. The tug pilot did not hear any circuit calls from the ultralight pilot, although it was later identified that another glider pilot flying in the area at the time heard a faint and indistinct call from an aircraft on a long final. The Duty Instructor spoke to the ultralight pilot after the incident, who advised they had not heard the tow pilot's radio call on commencing the launch. The ultralight pilot advised that he had been using a replacement radio as the other one had failed. The Duty

instructor spoke to the wing runner and counselled them on the correct procedure for abandoning a launch. It is noted that the club does not us a forward signaller.

Safety Advice

It is essential for pilots preparing to launch to be aware of any airspace activities in their vicinity and the threat, if any, posed by the presence of other aircraft. Lookout is the principal method for implementing see-and-avoid. Effective lookout means seeing what is 'out there' and assessing the information that is received before making an appropriate decision. Gliding operations must always be conducted in a manner that conforms to Gliding Australia requirements and any site-specific requirements. They must also be conducted in a manner that is predictable and minimises the possibility of potential conflicts. Gliding Australia recommends having both a 'wingtip' signaller and 'forward' signaller for aerotow operations, as this ensures the maximum monitoring of airspace during the launch sequence. For further information, refer to Operational Safety Bulletin (OSB) 02/06 - Airspace Clear for Launch.

Date	10-Oct-2021	Region	GQ	SOAR Report Nbr	S-1920		
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain		
A/C Model 1	DG-1000S	A/C Model 2	N/A				
Injury	Nil	Damage	Nil	Phase	Outlanding	PIC Age	49

What Happened

The student was conducting a simulated outlanding across the operational runway under supervision for the award of the 'C' Certificate. During the circuit the instructor applied the airbrakes to adjust the approach angle and shortly afterwards, as the glider flew over a nearby creek, the glider entered an area of sink and into an undershoot position. The instructor attempted to close the airbrakes, but the lever would not move. The glider struck an electric fence on the boundary of the aerodrome in a nose high attitude and came to rest undamaged on the runway.

Analysis

The incident occurred during an organised event for students at a local university. The instructor was approached by one of the students to conduct an outlanding check for the grant of the student's C certificate. The instructor conducted a briefing beforehand to confirm the student's knowledge and understanding of the objective of the flight and found the student to be appropriately informed. The briefing

also included a discussion on conditions around the task area and potential outlanding hazards. The practice outlanding was to be conducted across the operational runway and into a paddock abutting the north side of the runway (see graphic below). The instructor briefed the organisers and instructors on the exercise.

After releasing from tow, the student joined circuit and made appropriate radio calls. The student cramped the circuit, which made for a very short final that was too high. In order to avoid landing halfway into the paddock, the instructor took control and completed the landing. After a briefing and review, it was decided to launch for a second attempt. On the second flight, the student better positioned in the circuit and commenced a longer and stabilised final approach to allow for more adjustments. As the glider got close to the landing area, and with the student flying and managing the airbrakes, the instructor identified they were still a little high and opened the airbrakes fully to lose a bit of height (maybe 80-100ft). In hindsight, I obviously adjusted too much. The student continued the full-airbrake approach, and the glider began to rapidly sink and undershoot the aiming point. The instructor attempted to close the airbrakes, but they seemed jammed. The instructor stated, "I am not 100% sure if I pushed the handle against the fuselage when I was attempting to close the airbrakes, or they were already there, or if I was fighting the student, but the nose was lifted at the last minute…". The rear fuselage of the came to rsst on the aerodrome undamaged. During a debrief, the instructor advised that he hadn't adequately considered the implications of undershooting, and during the approach became too fixated on avoiding touching down at flying speed well into the paddock.

Safety Advice

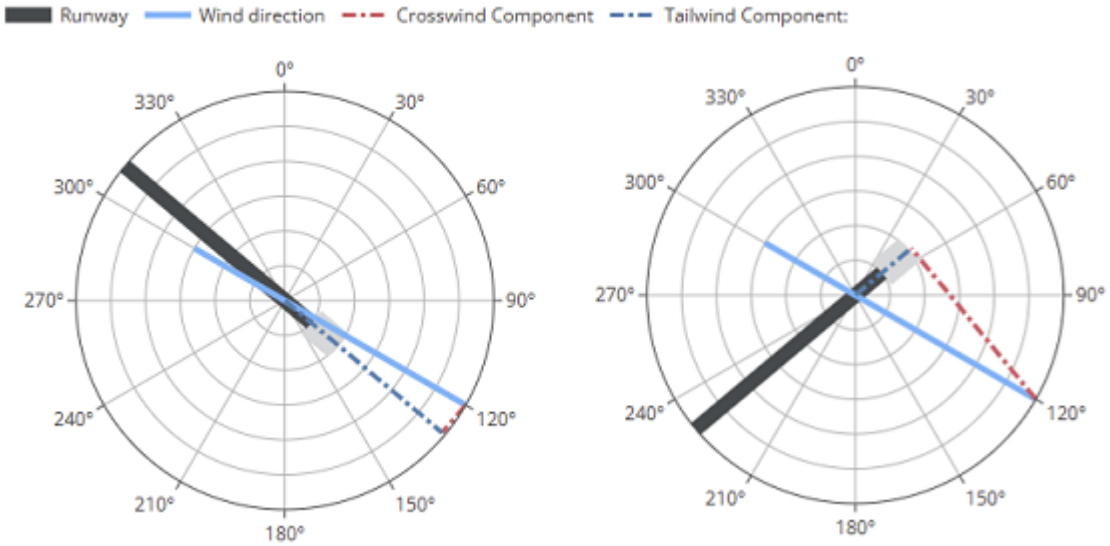
It is much more difficult to detect a shift in the aiming point in the undershoot case than it is in the overshoot case. A glider overshooting only has to go a little way above the approach path in order to detect that it will in fact overshoot. However, a glider undershooting has to go a long way below the approach path before it becomes obvious that the aiming point has shifted, and that the glider is in an undershoot situation. The undershoot situation is potentially dangerous, because, once it has been detected it may not

be possible for the glider to regain the previous approach path. A new, flatter approach is therefore inevitable, and if obstacle clearance was previously limited it may now become impossible to achieve. Instructors should remain alert to this fact and must always ensure a safe height sufficient to clear obstacles is maintained on the approach. Most modern gliders have effective airbrakes that make it very easy to lose height and shorten the landing run even when well into the landing area.

Date	11-Oct-2021	Region	SAGA	SOAR Report Nbr	S-1919
Level 1	Operational	Level 2	Runway Events	Level 3	Depart/App/Land wrong runway
A/C Model 1	Piper PA-25-235/A1	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	

What Happened

It was reported that the gliding operation was launching on RWY 31 and landing on RWY 23 with a 10 knot East South-easterly wind. This calculates as a 9-knot tailwind for take-off and a 5-knot tailwind component for the landing gliders.



Analysis

Investigation identified that the winds were light and variable when gliding operations commenced. In keeping with local protocol, operations were being conducted using Runways 31 (take-off) and 23 (landing) because emergency landing options are limited on runways 05 and 13 due to the proximity of the local township. As the day developed, the wind strength increased to 10kts and settled to ESE, and operations were eventually moved to runway 13. The CFI noted that the change of duty runway was probably later than ideal but was being continually assessed by the duty instructor.

Safety Advice

While gliders and tow planes can cope with slight tailwind operations, take-off or landing downwind is not recommended as a standard procedure unless operationally required. Pilots should use the runway most closely aligned into wind wherever possible. Pilots must also operate within the limitations prescribed in the Aircraft Flight Manual (AFM). Civil Aviation Regulations state that the pilot must *"take off or land into the wind if, at the time of the take-off or landing it is practicable to take off or land into the wind"* (CAR 166A(2)(h)).

Date	20-Oct-2021	Region	GQ	SOAR Report Nbr	S-1925		
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain		
A/C Model 1	Standard Cirrus	A/C Model 2					
Injury	Minor	Damage	Substantial	Phase	Outlanding	PIC Age	51

What Happened

While outlanding, the pilot crowded their circuit and overshot the intended landing area. The glider touched down heavily in the following paddock that was upward sloping, and passed through a barbed wire fence before striking the hills hoist and coming to rest near the farmhouse.

Analysis

The pilot qualified for his 'C' Certificate on 29 September 2021 after 92 hours and 247 flights, of which 40 hours was as pilot in command. On that same date the pilot had been assessed as competent to conduct an outlanding following two landings in an area behind the airfield hangars. On the day of the accident the wind was NNE at 10 knots, and the forecast was cloudy, with showers of rain and thunderstorms predicted. The pilot did not seek approval from the Duty Instructor of the day to go beyond glide range of the airfield. The pilot reported that thermal conditions were good, with climbs up to 6000 ft under cloud. After release the pilot climbed to 3500ft and decided to fly southwest (downwind). The pilot flew towards Lake Borumba, which was 27 kms SSW of the airfield, and arrived there with little loss of height at around 5500ft. At this point the sky was clear of cloud and, in the absence of any significant lift, the pilot flew East towards the closest clouds. The glider flew through strong sink and arrived under the cloud in weak lift at 3000ft over mountainous terrain. Unable to work the lift, the pilot then flew towards Imbil (about 20kms from of the airfield) where there were suitable outlanding fields. The pilot reported: *"I thermalled here for probably half an hour between 1600ft and 2300 ft, picking out an ideal outlanding field, a freshly ploughed paddock that was (later confirmed) 340m long. No power lines, irrigation troughs or stock. I looked further north for potential fields if needed but saw only grassed paddocks of unknown suitability. I decided to stick near the*

paddock that I knew would be ideal. Heavy dark clouds started rolling in with a few big droplets of rain and the cloud base seemed limited to 2300 ft so I decided to land out." The pilot joined downwind for the paddock but turned base too early and crowded the circuit. The pilot conducted a 360 degree turn on base leg to reduce height and then continued. On turning final the pilot realised he was high and used full airbrake to reduce height. The pilot stated: *"When I had got halfway down the paddock, I knew I would not get down before the fence and desperately searched ahead to the left centre and right for the best of a bad choice, but not spotting anything clearly better just continued straight ahead."* The glider overflew the post and wire fence on the end boundary of the selected paddock and collided with an embankment on the rising ground in the following paddock. The glider then collided with a barbed wire fence and came to rest near the farmhouse. The glider was substantially damaged, and the pilot suffered back injury and was taken to hospital by ambulance. In a subsequent debrief, the pilot stated that he was somewhat overconfident in deciding to go cross-country, and that he became so focussed on the landing that he crowded his circuit.

Safety Advice

Outlanding requires concentration and planning and adherence to standard procedures, and pilots must set personal minima for decision to land and for flying the circuit and stick to these. Instructors who authorise a pilot to fly cross country without having completed an actual outlanding need to be very confident about their skills and performance under pressure. Early cross-country flights should, wherever possible, be conducted in benign conditions and over good terrain. In this flight, the pilot did not adequately plan for the inclement weather that was forecast, and was overconfident in their ability to complete the flight safely.

Date	23-Oct-2021	Region	NSWGA	SOAR Report Nbr		S-1924	
Level 1	Operational	Level 2	Miscellaneous	Level 3		Rope/Rings Airframe Strike	
A/C Model 1		DG-1000S		A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Launch	PIC Age	52

What Happened

While demonstrating a double hook-up manoeuvre at approximately 1700' AGL, a bow developed in the rope and the weak link broke while manoeuvring to take-up the slack. The rope recoiled over the canopy and left wing, and the weak link struck and penetrated the left wing (see photograph below). The pilot under review flew a normal circuit and landed safely with the tow rope still tangled over the canopy and left wing.

Analysis

The sortie was the second flight of an instructor Flight Review, and the pilot under review had not flown since July 2021 due to the Covid-19 pandemic lockdown. On this flight the pilot under review was demonstrating a pre-planned double hook-up manoeuvre at approximately 1700' AGL. During the procedure the pilot positioned the glider approximately 45° to the left of and below the tug, whereupon he paused in this position awaiting acknowledgement from the tug pilot. No acknowledgement was forthcoming, so the pilot positioned the glider slightly further out. On this occasion the tug pilot gave the appropriate acknowledgement, and the glider was then manoeuvred back to the normal towing position. During this manoeuvre a bow developed in the rope that curled back level with the glider's starboard wing leading edge. While the pilot was attempting to take out the slack, the rope suddenly became taught and the weak link at the tug end broke. The tow rope recoiled towards the glider and draped over the canopy and port wing, and a section of the weak link assembly struck and penetrated the port wing. The instructor under review released the rope but it did not fall away, so a gentle descent was made to circuit height. Following a normal circuit, a safe landing was made with the rope still draped over the glider.

Safety Advice

It is not uncommon for slack to develop in the rope during out-of-station manoeuvres and for the weak link to break when the rope comes back under tension. In situations involving a large bow in the rope it is recommended that pilots release the rope just before the slack is fully taken up to prevent breaking the weak link, and also to avoid potential control difficulties should the rope wrap itself around a control surface.

Date	24-Oct-2021	Region	VSA	SOAR Report Nbr		S-1927	
Level 1	Operational	Level 2	Airframe	Level 3		Fuselage/Wings/Empennage	
A/C Model 1		IS-28B2		A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Launch	PIC Age	74

What Happened

The aircraft had recently undergone an annual inspection for the issue of a maintenance release and was being flown on the post maintenance evaluation flight with two pilots onboard. The glider was launched by

aerotow, and as it separated from the ground the flight crew heard a loud cracking noise emanating from behind the rear cockpit. The command pilot released form tow and made a landing straight ahead. After landing, the flight crew observed that the glider's wings exhibited an exaggerated dihedral. On inspection, the connection between the lower wing spar attachment fittings had failed.

Photo 1 – VH-CQD Post Incident Showing Exaggerated Dihedral

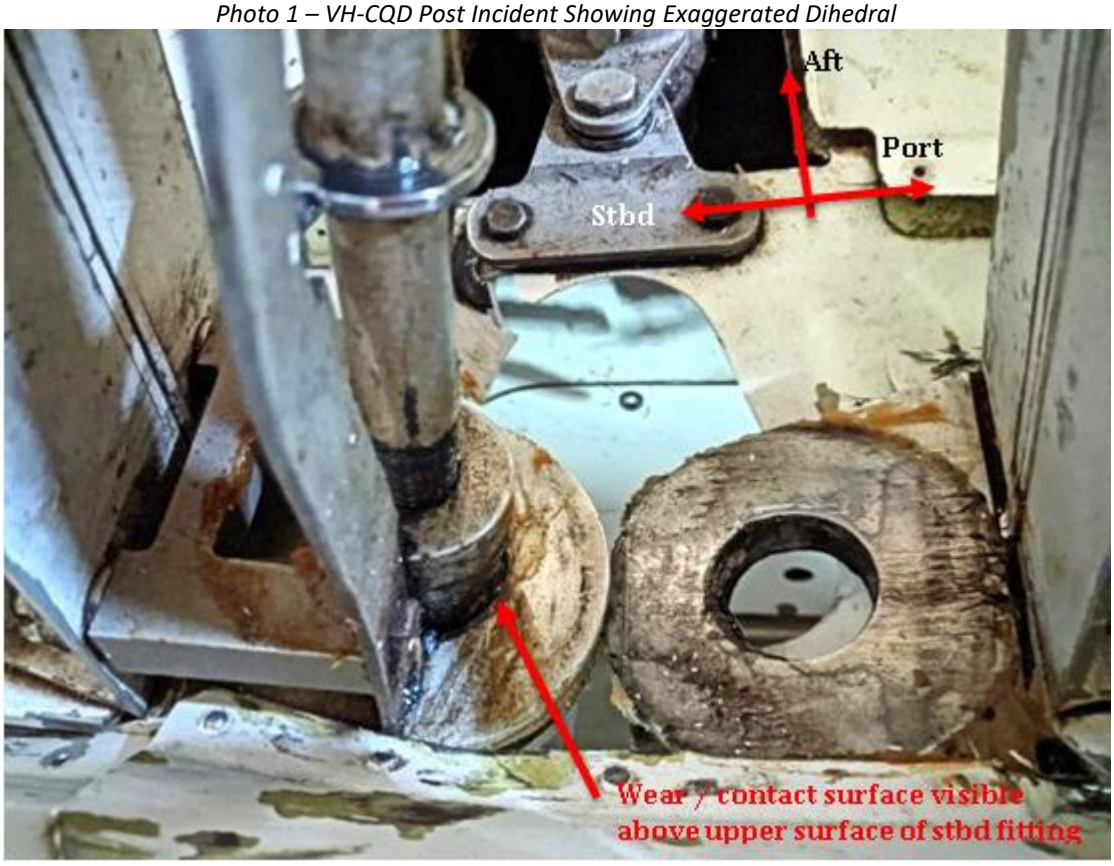


Photo 2 – Lower Spar Connection Post Incident Showing Disconnection of Fittings

Analysis

The sailplane was inspected by an experienced airworthiness inspector. Visual inspection of the spar fittings showed the upper tapered bolt had engaged in the spar fittings, but lower tapered bolt had not. It was noted that the guide plates that retains the collar of the threaded spindle were deformed, and the retaining slots worn. The centre locating collar on the spindle had broken loose from the retaining slots and was well above its normal position. Witnesses during the fitting of the wings state an extension tool was used during the rigging process, which is contrary to the manufacturers' explicit advice recorded in the flight Manual. Using an extension tool when rigging would provide greater torque on the spindle than necessary that could lead to either of the tapered bolts becoming jammed. The initial inspection revealed the upper tapered bolt had engaged correctly during rigging, but the lower tapered bolt had not engaged correctly. When the tapered bolts are correctly engaged in the spar fittings, approximately 25mm of threads will be exposed on both the upper and lower positions on the spindle when the tapered bolts were fully engaged. On the accident aircraft, the inspector found there was less than 14mm of thread exposed on the lower part of the spindle and 25mm on the upper part of the spindle.

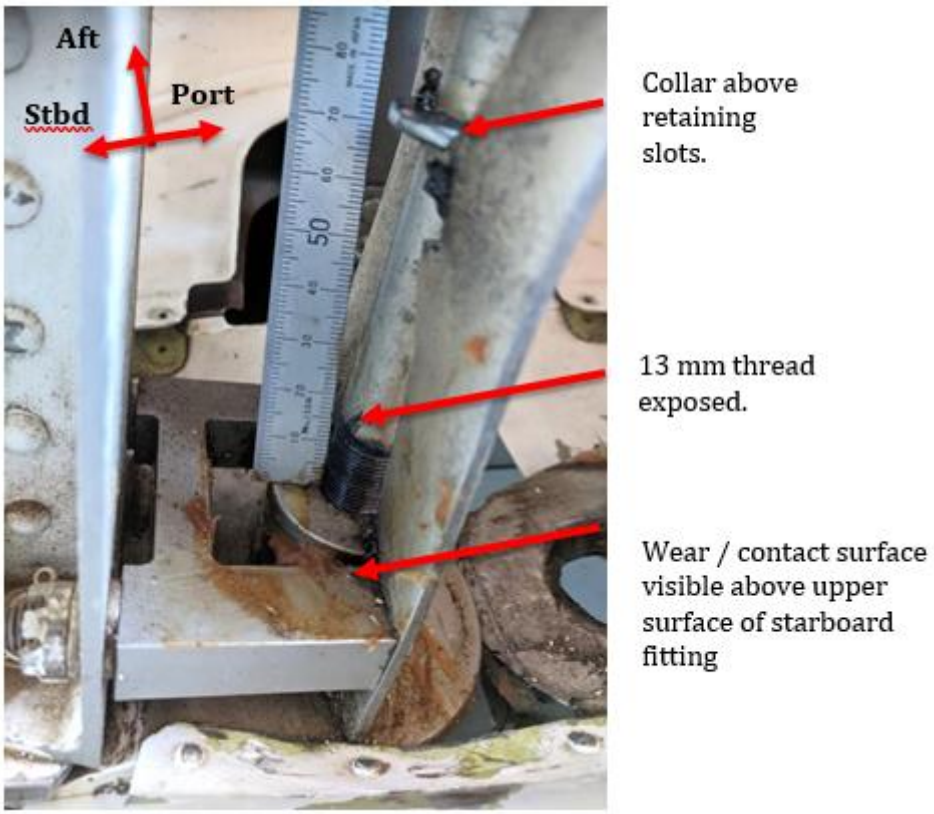


Photo 3 - Incorrect rigging - 13 mm thread exposed and wear / contact surfaces visible above upper surface of starboard fitting on lower tapered bolt. Centre collar is above retaining slot in guide plates.

Photo 4 - Correctly engaged lower tapered bolt - 25 mm thread exposed, no wear / contact surfaces of tapered bolt exposed above upper surface of fitting, centre collar housed in retainer.

After the initial inspection, the glider was derigged and it was able to recreate the likely sequence of events:

- During the assembly of the wings to the fuselage, the lower spar fittings were mis-aligned whilst the upper fittings were aligned. As the spindle was turned, the upper and lower tapered bolts extended. The lower tapered bolt jammed when it encountered the misalignment (Photo 4).
- An extension handle was being used on the T handle rigging tool used to rotate the threaded spindle. With the lower tapered bolt jammed and the additional torque provided by the extension to the Tee handle, caused the spindle collar to force itself free of the retaining slots (Photo 5).
- The upper tapered bolt was then free to extend above the distorted retaining slot. The lower tapered bolt was still jammed and winding the T handle simply moved the spindle collar and upper pin upwards. The rigging procedure was concluded when the upper tapered bolt was identified as being fully engaged. The lower retaining bolt had not engaged the port wing fitting at all.

Photo 5 - Recreation of event. The port lower spar tongue (removed from wing) is jamming the lower tapered bolt with wear / contact surfaces exposed, the collar is 10- 15mm above the retaining slots. The collar retaining slots are worn and rounded. The upper tapered bolt is fully engaged.

Human Factors

The rigging task had been carried out many times over the years, so the task was being conducted from memory and not by following the rigging instructions in the flight manual. Sometime in the past the use of a lever was introduced to assist the process without realising the dangers. It was also likely that too many persons were offering advice, with no one person in charge of the process. Two independent inspections were performed, and the maintenance release was endorsed, however both inspectors failed to identify the defect.

Causal Factors

- The GFA Maintenance release and Aircraft Flight Manual were not referenced during the rigging process.
- Use of non-standard tooling and non-compliance with AFM warnings and instructions-
- Responsibility for correct rigging was diluted among several persons offering instructions.
- A lack of familiarity with the rigging process due to the aircraft being hangared and only derigged a reassembled once a year during the annual inspection.
- A lack of discipline and complacency.

Conclusion

It was found that the wing spar connection mechanism was serviceable prior to rigging, as the aircraft had just undergone an annual inspection for the issue of a maintenance release. There is no record of the mechanism being deemed unserviceable or requiring any maintenance in the worksheets or in the aircraft's logbook entry. The mechanism most likely failed during the rigging process due to excessive force being applied when an extension was used on the rigging tool against the warnings stated in the Flight Manual. The lower tapered bolt was not engaged in the lower spar cap connection, and the both the daily inspection and independent inspection failed to identify the mechanism failure.

Recommendations

The Airworthiness Department issued the following advice to Registration Holders and Registered Operators of IS-28B2 aircraft:

- Prior to rigging, the slot in the guide plates for the collar should be inspected for undue wear.
- Prior to rigging, the tapered bolt assembly must be inspected and confirmed to be in good condition, fully functional and serviceable. Worn bolt assemblies must be replaced.
- The tapered bolts and collar should be visually inspected after rigging (including using a torch and mirror) to ensure upper and lower tapered bolts are fully engaged and collar is retained correctly in slot. Check the exposed threads are roughly equal on the upper and lower surface and approximately 25 mm of thread is exposed. Wear / contact surfaces on both tapered bolts should not be visible.

Safety Advice

The assembly of an aircraft including the associated control connections designed to be carried out by a pilot is known as “rigging”. Rigging should be carried out with reference to the Aircraft Flight Manual. Incomplete or incorrect rigging of sailplanes is a significant risk; the outcome is usually a serious injury or a fatality. Human factors are a significant consideration. Rigging can take time and can involve several people. Distraction and assumption are common causes of error when rigging sailplanes. Sources of distraction include people and mobile phones. To help avoid rigging errors caused by distraction or assumption:

- it is important that those persons involved are familiar with the process;
- one person experienced on the type should be in charge of the rigging and ensure it is conducted in accordance with the flight manual;
- the rigging must be conducted without interruption or distraction;
- a suitably knowledgeable inspector must check the rigging of the aircraft and sign for having done so in the maintenance release; and
- the pilot must carry out the proper pre-boarding and pre-takeoff checks, again without interruption or distraction.

Inspectors should also periodically familiarise themselves with the instructions in the Flight Manual, especially if there are long gaps between rigging/de-rigging.

Date	27-Oct-2021	Region	GQ	SOAR Report Nbr	S-1931		
Level 1	Operational	Level 2	Miscellaneous	Level 3	Other Miscellaneous		
A/C Model 1	ASK 21	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	70
Under investigation. The pilot reported uncommanded release of the aerotow rope at low level during launch.							

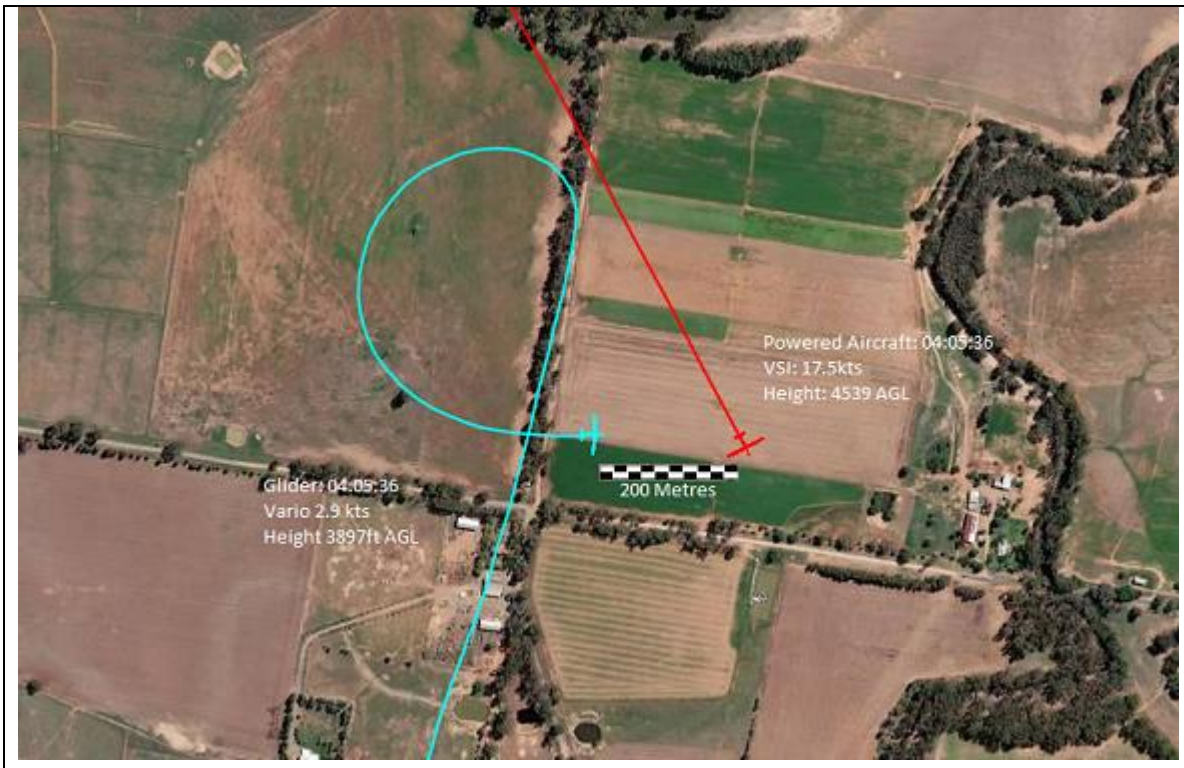
Date	27-Oct-2021	Region	VSA	SOAR Report Nbr	S-1929		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	Discus a	A/C Model 2	CASA C-212 Aviocar				
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	74

What Happened

While conducting Military Parachuting operations at a regional certified aerodrome under conditions notified by NOTAM, the flight crew of the parachute aircraft climbing through 4500ft observed a glider pass close to their aircraft by about 600ft vertically and 200 metres laterally. Attempts to contact the glider pilot were unsuccessful. The Glider was observed in the vicinity of the aerodrome for up to an hour after the parachute plane had landed, and parachuting operations were cancelled for the day due to the inability to communicate with the glider.

Analysis

The glider pilot was conducting a closed-circuit cross-country flight from Tocumwal NSW aerodrome via Glenrowan Vic and Lockhart NSW. The pilot advised he was using a hand-held radio, and that a check with the tug pilot prior to flight confirmed the radio was operating correctly. After turning the first turn point, and just before entering the vicinity of Corowa aerodrome, the pilot changed to the Corowa CTAF. The pilot stated that he was aware of the parachuting activity at the Corowa aerodrome and made a radio call advising he was in the vicinity. The radio call was not heard by the pilot of the parachute aircraft. The glider pilot advised that he "saw an airliner with two engines approaching at my level with a high rate of climb while I was sinking during a straight glide. By the time the airliner was abeam of my position the height separation was about 1,000 feet and neither of us found it necessary to take avoiding action. The horizontal separation was also about 1,000 feet." Analysis of the glider's flight trace overlayed on the transponder trace from the powered aircraft supports the glider pilot's recall. The parachute aircraft had just departed the aerodrome on RWY 22 for a parachute drop and had turned to the left on climb to the drop zone. Shortly after the turn and while climbing at about 1750 feet per minute, the parachute aircraft passed the glider that had just commenced a thermalling turn by about 200 metres laterally at the closest point and about 600 feet higher (see graphic). This position was about 4.5 NMs south of the aerodrome reference point. The glider pilot stated that he heard the pilot of the parachute aircraft call him and he answered but did not receive a reply. He thought a possible explanation was that the radio battery may not have been at peak capacity.



Advice

This type of incident reflects poorly on glider pilots and reinforces why it is important that glider pilots conduct a proper flight plan by checking NOTAMS relevant to the route to be flown, by maintaining proper radio discipline enroute, and ensuring equipment is fit for purpose.

Date	31-Oct-2021	Region	VSA	SOAR Report Nbr	S-1932		
Level 1	Operational	Level 2	Miscellaneous	Level 3	Other Miscellaneous		
A/C Model 1	Piper PA-25-235/A1	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	65

What Happened

While undertaking a tow pilot revalidation flight, the pilot under check was alleged to have taken exception to remarks about his circuits being too close to the runway and made an aggressive turn to the right without looking out to ensure the airspace was clear. While undertaking a tow pilot revalidation flight, the pilot under check was alleged to have taken exception to remarks about his circuits being too close to the runway and made an aggressive turn to the right without looking out to ensure the airspace was clear.

Analysis

The incident was investigated by the CFI, who obtained written statements from both parties who each had a different view of what transpired. However, the tone of the differing accounts highlighted that some form of interpersonal conflict did arise and was not resolved. The Examiner's in-flight criticism of the pilot under check was for doing something that was quite safe in a dynamic environment, with other traffic and priorities to manage, but it wasn't the way the Examiner would choose to do it. This is sometimes quite a difficult course to steer, but an Instructor/Examiner must keep it constantly in mind. In cases like this it would have been better for the Examiner not to have criticised the pilot during the flight, but to have waited until they were on the ground and then cover the issues in a debrief. Feedback could have included advice on what the pilot had done well, and then in the context, what he should have done differently, what

improvements and adjustments should be made in future flights. Track data could have been used to resolve track adjustment issues.

Advice

Any conflict in flight can have serious consequences, particularly if there is a pattern of escalation. While feedback and criticism is an essential part of any kind of training, Instructors/Examiners must be mindful that excessive criticism may be destructive and demotivating. Apparent failures of handover-takeover discipline have the potential to be interpreted as a loss of confidence or respect in the other pilot, an unreasonable intervention if not explained, or an antagonistic reaction. To some kinds of personalities, it is enough to cause them to overreact. This is not to say that an Instructor/Examiner must not criticise - far from it - but it is vital that such criticism is relevant, justified, and positive – and provided in the right time and place. While the natural tendency is to criticise "errors", much better outcomes will be achieved by using reflection and visualisation to discuss ways mistakes can be avoided or the consequences limited. Pilots under training or assessment will respond better if they receive dispassionate, clear, and constructive feedback. Ambiguities should be addressed in an emotionally neutral fashion with best available data. Command ambiguity must be avoided; clear handover-takeover must always be maintained.

Date	1-Nov-2021	Region	SAGA	SOAR Report Nbr		S-1928	
Level 1	Airspace	Level 2	Airspace Infringement	Level 3		Airspace Infringement	
A/C Model 1		LS3		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	69
The pilot reported inadvertently breaching the lower limit of Class C controlled airspace during a cross-country flight. While climbing in a thermal, the pilot became distracted with untangling the oxygen lines and readjusting the canula. Once the oxygen system was organised, the pilot observed the flight computer and noticed that the glider had entered Class C airspace by a few hundred feet. The pilot immediately flew below the airspace limit and self-reported the incident upon return home. The pilot has a sound knowledge of the airspace around the area, but a moment of inattention led to the airspace infringement.							

Date	3-Nov-2021	Region	NSWGA	SOAR Report Nbr		S-1930	
Level 1	Operational	Level 2	Terrain Collisions	Level 3		Collision with terrain	
A/C Model 1		JS1 B		A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Outlanding	PIC Age	67
The sortie was the second flight after the annual inspection 2 inspection. For the first flight on the previous day the glider was unballasted. The pilot conducting a 350km cross country flight, and commenced final glide at 5050 ft QFE approximately 46 kms from the home airfield. The pilot reported encountering extensive sink, and opened the water ballast dump valves with about 25kms to run. At about 10kms inbound the pilot was on a crosswind leg at 600 ft AGL for the chosen outlanding paddock. The pilot deployed and attempted to start the sustainer jet engine, but it failed to start. The pilot then commenced a right-hand turn onto late downwind, intending to continue the turn onto final approach. The pilot lowered the undercarriage and selected landing flap but noticed the rate of descent was higher than normal. When approximately 100 metres from the boundary of the selected paddock, the pilot identified the glider was undershooting and, determined not to risk rolling through the wire fence, he steered the glider to the left. During this manoeuvre the left winglet caught the ground, causing the glider to rotate through 180 degrees and travel backward to rest and retarded by the natural scrub vegetation which was about 2ft high. The pilot contacted the airfield to organise a retrieve crew, and then prepared for the de-rig. It was at this time the pilot noticed that the left wing was still full of water, and upon checking under the wing he found the drainage port was covered by a transparent adhesive patch, presumably applied during the annual inspection. The pilot stated that he had not noticed the patch during his daily inspection. The pilot believes that he may have been flying slightly cross-controlled due to the asymmetrical ballast configuration and that this resulted in a higher-than-normal rate of descent.							

Date	6-Nov-2021	Region	GQ		SOAR Report Nbr		S-1941		
Level 1	Operational		Level 2	Terrain Collisions		Level 3	Wirestrike		
A/C Model 1					A/C Model 2		N/A		
Injury	Nil	Damage	Minor	Phase	Landing		PIC Age		
Under investigation. While landing the tow rope struck a power line.									

Date	6-Nov-2021	Region	GQ		SOAR Report Nbr		S-1939		
Level 1	Operational		Level 2	Flight Preparation/Navigation		Level 3	Other Flight Prep/Nav Issues		
A/C Model 1		DG-1000S			A/C Model 2				
Injury	Nil	Damage	Nil	Phase	In-Flight		PIC Age		
The pilot was found to have been flying for several months without having completed a valid flight review. The pilot's flying privileges were suspended pending the conduct of a Flight review. While the pilot felt his instructors should have been more diligent in checking his flight review currency, ultimately it is the pilot's responsibility to ensure they comply with currency and flight review requirements. The GFA's membership system provides reminders when revalidation of expiring authorities fall due, so it is important that members take advantage of this system by ensuring they keep their profile up to date.									

Date	6-Nov-2021	Region	SAGA		SOAR Report Nbr		S-1933		
Level 1	Technical		Level 2	Systems		Level 3	Avionics/Flight instruments		
A/C Model 1		DG-1000S			A/C Model 2				

Injury	Nil	Damage	Nil	Phase	N/A	PIC Age	53
During a winch launch, the instructor observed that student flying was about to exceed the maximum launch speed. The instructor gave the “too fast” signal believing the student was too slow to react. During discussion between the instructor and student after releasing It was established that there was a 10-knot discrepancy between the indications of the front and rear ASI's, with the front ASI reading 10 knots lower than the rear ASI. The front ASI appeared to be the more accurate of the two, and the flight was successfully completed by the student with reference to the front instrument. The rear altimeter was subsequently tested and was found to have a 10-knot error throughout the range. The instrument was sent to a repair facility, where it was found the capsule was hitting on the support post. Why this occurred was not determined.							

Date	13-Nov-2021	Region	SAGA	SOAR Report Nbr	S-1934
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	DG-1000S	A/C Model 2			

Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	53
Under investigation. The Instructor was distracted when dealing with an airsick passenger, and forgot to lower the undercarriage and conduct the pre-landing checklist. The glider landed with the undercarriage retracted but suffered only minor damage							

Date	13-Nov-2021	Region	WAGA	SOAR Report Nbr	S-1935
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing
A/C Model 1	LS 4-a	A/C Model 2			

Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	74
During a cross-country flight it became necessary to conduct an outlanding. The pilot elected to conduct a landing on a country airstrip, as suitable paddocks were in crop. While turning onto finals, the pilot noticed the runway had a significant downward slope. The pilot overshot the aiming point and applied full airbrakes at around 20/30 feet to get the glider on the ground and prevent the glider over-running the runway. The glider landed heavily and the undercarriage structure was damaged. Subsequent inspection revealed that the two undercvarriage support struts were bent. The components were changed and the aircraftreturned to service.							

Date	13-Nov-2021	Region	WAGA	SOAR Report Nbr	S-1936
Level 1	Operational	Level 2	Runway Events	Level 3	Other Runway Events
A/C Model 1	ASK 21	A/C Model 2	Stemme S10-VT		

Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	
What Happened A two-seat glider and tug occupied the runway while a powered sailplane conducted a circuit and landing. **Analysis** The two-seat glider was conducting a series of “touch and goes”, whereby after landing on the runway the tow plane would pull in front and immediately relaunch the glider. There were a number of gliders on the launch grid on the side of the runway. On the second landing the tug pulled in front but there was a delay awaiting the arrival of the ground crew to attach the tow rope. During this delay the pilot of a powered sailplane made a radio call advising entering downwind. Knowing that the tug ang glider were occupying the runway and would not commence the launch for some time, the pilot of the two-seat glider made a radio call to the pilot of the powered sailplane asking for them to conduct an orbit to allow time to launch. The pilot of the powered sailplane acknowledged the call and advised he would overfly and land long. The powered sailplane touched down well into the runway, and when clear the tug and glider combination							

proceeded with the launch. The CFI noted that the pilots of the tug and two-seat glider, who were aware they would not be launching anytime soon, should have immediately cleared the runway for the landing glider.

Advice

Regulation 91.340 requires any aircraft (whether in flight or operating on the ground) to give way to an aircraft that is landing, especially one that is compelled to land (such as a glider). Gliders and tugs shall not occupy an operational runway for longer than is reasonably necessary to conduct a launch. In the case of this incident, the tug and glider combination were not going to be ready for launch for some time and should have vacated the runway for the landing aircraft.

Date	20-Nov-2021	Region	GQ	SOAR Report Nbr	S-1937		
Level 1	Operational	Level 2	Communications	Level 3	Other Communications Issues		
A/C Model 1	SZD-48-1 "Jantar Standard 2"			A/C Model 2	Piper PA-25-235		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	58
Under investigation. The pilot made circuit broadcasts on the wrong frequency.							

Date	21-Nov-2021	Region	SAGA	SOAR Report Nbr	S-1956		
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement		
A/C Model 1	LS 3			A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	55
The pilot reported inadvertently breaching the lower limit of Class C controlled airspace by about 500ft during a cross-country flight. The pilot advised that he had checked the NOTAMS and was aware of the airspace, but he misread the altimeter, which is poorly positioned at the bottom of the instrument panel directly behind the control column.							

Date	21-Nov-2021	Region	GQ	SOAR Report Nbr	S-1938		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues		
A/C Model 1	Piper PA-25-235			A/C Model 2	Tecnam		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	69
Under investigation. A tug and glider combination departed te operational runway while another aircraft was established on final. The aircraft on final executed a go-around and passed close and to the left of the airborne glider/tug combination.							

Date	21-Nov-2021	Region	WAGA	SOAR Report Nbr	S-1942		
Level 1	Operational	Level 2	Runway Events	Level 3	Depart/App/Land wrong runway		
A/C Model 1	ASK 21			A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	70

What Happened.

During an Air Experience flight in strong wind conditions, the instructor identified that the glider would not be able to land on the operational runway (RWY 08) due to encountering heavy sink and elected to land downwind on the reciprocal runway (RWY 26). A safe landing ensued.

Analysis

The pilot was current in both flying and on type and had no medical conditions. The pilot reported that he attended the initial briefing where he was informed the weather conditions were marginal due to high winds, but he considered the conditions were within his capabilities. Operations were being conducted on RWY 08, which was about 800 metres long, as it was the most into wind runway. The flight proceeded normally with the student enjoying the flight. The instructor stayed upwind but during a 360 degree turn just prior to breaking off the flight the glider flew through heavy sink. While coming out of the turn, the pilot became concerned at the loss of height experienced and did not believe he could make a safe approach to RWY 08. The pilot advised that he decided to make an approach to RWY 26 and land downwind. The pilot said that he did not consider conducting a cross wind landing onto RWY 34 or any other options. At the time of the incident the wind was reported to be gusting 20/25Kts and the glider landed well down the runway and stopped 40 metres from the tow plane. The CFI noted that, while there was no damage or injuries involved in this incident, there may have been another outcome had the pilot not flown an accurate approach in the prevailing conditions due to the short runway length and the glider having an effective wheel brake. The pilot agreed to undertake remedial training.

Safety Advice

Landing with a tailwind demands a high level of skill, as the landing distance is increased, and controllability becomes an issue due to the high groundspeed and lack of airflow over the control surfaces as the airspeed decreases. Landing distance is increased by about 10% for every 2 knots of tailwind, which means in a 10-knot tailwind the pilot is facing a 50% increase in landing distance. A high-speed ground loop is also possible if the wings cannot be maintained in a level attitude. While a crosswind landing may have been a better option, this also comes with risk on very windy days and also requires a high level of skill. Wind shadow, wind shear and weathercock effect can make a crosswind landing even more exiting. A good rule for flying on very windy days is to join circuit higher than usual, and to not fly too far beyond the approach boundary fence. Conducting a high approach into a strong headwind is a much safer option.

Date	21-Nov-2021	Region	SAGA			SOAR Report Nbr		S-1943			
Level 1	Airspace		Level 2	Airspace Infringement			Level 3	Airspace Infringement			
A/C Model 1			Glasflugel 304			A/C Model 2					
Injury	Nil	Damage	Nil	Phase	In-Flight			PIC Age			

What Happened

The pilot reported that while local soaring, they inadvertently entered Class C airspace boundary and infringed the CTA by approximately 200ft feet vertically for several seconds.

Analysis

The pilot self-reported the infringement and submitted a trace to the club Airspace Officer. A review of the flight trace revealed the incursion was minor and less than 40ft. The club airspace officer confirmed the pilot had a good understanding of the airspace and had made a simple mistake.

Safety Advice

Violations of controlled airspace can be avoided by remaining situationally aware, ensuring you have current airspace charts, and by thoroughly familiarising yourself with local airspace and other aeronautical issues. In flight a pilot should always know their position relevant to the controlled or restricted airspace steps. Using an electronic flight bag with a moving map will help you keep a track on where you are in relation to controlled airspace.

Date	22-Nov-2021	Region	SAGA			SOAR Report Nbr		S-1940			
Level 1	Airspace		Level 2	Airspace Infringement			Level 3	Airspace Infringement			
A/C Model 1						A/C Model 2		N/A			
Injury	Nil	Damage	Nil	Phase	Landing			PIC Age			
Under investigation. Pilot infringed airspace.											

Date	27-Nov-2021	Region	VSA	SOAR Report Nbr	S-1946		
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion		
A/C Model 1	Piper PA-25-235	A/C Model 2	Piper Warrior				
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	45
Under investigation. The tow pilot landed on the runway while another aircraft was backtracking after landing.							

Date	27-Nov-2021	Region	VSA	SOAR Report Nbr	S-1950		
Level 1	Operational	Level 2	Miscellaneous	Level 3	Other Miscellaneous		
A/C Model 1	HORNET STOL	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	
It was reported that a tow pilot conducted a right-hand circuit in contravention of Regulatory Requirements. The gliding club was conducting outlanding checks in a paddock 14Kms south of the aerodrome. The tow pilot had departed RWY09 to the South and upon returning to the aerodrome conducted a right-hand circuit. Although left-hand circuits are normal at this site, tug pilots are permitted to conduct right-hand circuits providing they ensure safe separation from other aircraft and persons on the ground in accordance with Regulatory Exemptions granted via Instrument number CASA EX86/20 - Aerotowing Operations (Gliding Federation of Australia) Instrument 2020.							

Date	27-Nov-2021	Region	VSA	SOAR Report Nbr	S-1952		
Level 1	Environment	Level 2	Weather	Level 3	Other Weather Events		
A/C Model 1	LS 6	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Ground Ops	PIC Age	63
The pilot reported that upon returning to the parked glider after retrieving his vehicle, he noted his Flarm display had been burnt by the sun's rays focussed through the canopy. The display is irreparable.							

Date	28-Nov-2021	Region	SAGA	SOAR Report Nbr		S-1955	
Level 1	Airspace	Level 2	Airspace Infringement	Level 3		Airspace Infringement	
A/C Model 1		Discus b		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Thermalling	PIC Age	40
Under investigation. While flying cross country the pilot inadvertently breached controlled airspace.							

Date	28-Nov-2021	Region	VSA	SOAR Report Nbr		S-1947	
Level 1	Operational	Level 2	Airframe	Level 3		Doors/Canopies	
A/C Model 1		PW-6u		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	60
Under investigation. Upon attaining release height, the student inadvertently activated the canopy release instead of the tow release. The front canopy jettisoned.							

Date	29-Nov-2021	Region	SAGA	SOAR Report Nbr	S-1954
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement

A/C Model 1		ASW 15 B		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	59
While flying cross country the pilot inadvertently breached controlled airspace bua out 1000ft vertically. The pilot reported they were unfamiliar with the area and had miscalculated when converting the metric altimeter to feet. The pilot was counselled by their CFI. **Note:** 'Metric' altimeters are easily misread and can lead to height miscalculation, GFA recommends owners of gliders fitted with a 'metric' altimeter consider replacing them with standard altimeters.							

Date	30-Nov-2021	Region	VSA	SOAR Report Nbr	S-1948
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	Standard Libelle 201 B		A/C Model 2		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	65

What Happened

During the downwind leg of the circuit the pilot mistakenly raised the undercarriage when conducting the pre-landing checklist.

Analysis

The pilot advised that they had lowered the undercarriage during the test flight and then became distracted while troubleshooting a minor problem. This resulted in the pilot *"rushing the circuit and checks*". During the downwind leg, the pilot retracted the undercarriage and failed to confirm its position to the placards. The pilot stated that he was under some personal stress at the time, and this coupled with overconfidence and low currency may have led to him conducting his checks in a perfunctory manner.

Safety Advice

This type of occurrence is common in gliding because too many pilots use the pre-landing check list as an "action list". However, merely moving the lever does not confirm the undercarriage is down and locked. The pre-landing check of the undercarriage should be a visual inspection that the lever is matched to the lowered position on the placard and locked in place. For further guidance, refer Operational Safety Bulletin (OSB) 01/14 – Circuit and Landing Advice.

Date	2-Dec-2021	Region	NSWGA	SOAR Report Nbr	S-1953
Level 1	Operational	Level 2	Runway Events	Level 3	Runway excursion
A/C Model 1	ASW 27-18 E		A/C Model 2		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	65
Under investigation. During the aerotow launch, and as the pilot was moving the flap lever from negative to positive, the right wing dropped into high grass and yawed rapidly to the right. The pilot actuated the tow release and the aircraft continued to turn through a further 90 degrees to the right before stopping. During the ground loop the tail wheel remained off the ground and the main wheel tracked through the turn and did not skid sideways. A subsequent inspection of the aircraft by the pilot and the experienced inspector confirmed was undamaged.							

Date	4-Dec-2021	Region	VSA	SOAR Report Nbr	S-1957
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	IS-28B2		A/C Model 2	Cessna 182J	
Injury	Nil	Damage	Nil	Phase	Thermalling	PIC Age	69

Under Investigation. While thermalling at about 1800ft QNH, the glider pilot observed a Cessna approaching from the East slightly below. The glider pilot maintained position and watched as the Cessna passed about 300ft below the glider.

Date	4-Dec-2021	Region	VSA	SOAR Report Nbr	S-1967		
Level 1	Consequential Events	Level 2	Low Circuit	Level 3	Low Circuit		
A/C Model 1	LS4-b	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	61
Under investigation. The pilot was flying the practice day task at the State Championships. After leaving several weak thermals at increasingly low heights in the vicinity of the aerodrome, the pilot elected to abandon the task. The decision to break off the flight was made late and at a height where the glide back to the aerodrome into the strong wind was marginal. The area over which the glider was flying had limited safe landing options, so the pilot committed to landing on the aerodrome. Upon arrival, the pilot conducted a low energy turn onto the runway and landed without damage or injury.							

Date	4-Dec-2021	Region	VSA	SOAR Report Nbr	S-1962		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing		
A/C Model 1	DG-1000S	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	58
Under investigation. The pilot inadvertently retracted the undercarriage during the pre-landing checks on downwind and landed with the wheel up.							

Date	5-Dec-2021	Region	SAGA	SOAR Report Nbr	S-1960		
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement		
A/C Model 1	LS 8-18	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	40
Under investigation. The pilot flew into Class E Airspace while flying locally.							

Date	5-Dec-2021	Region	VSA	SOAR Report Nbr	S-1959		
Level 1	Technical	Level 2	Powerplant/Propulsion	Level 3	Engine failure or malfunction		
A/C Model 1	ASK 21 Mi	A/C Model 2					
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	59
Under investigation. The self-launching sailplane suffered catastrophic engine failure on take-off at about 600ft AGL. The engine was stowed an a safe landing conducted.							

Date	8-Dec-2021	Region	VSA	SOAR Report Nbr	S-1966		
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing		
A/C Model 1	LS 3-a	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	
Under investigation. The pilot outlanded on a vehicle race track with the undercarriage retracted.							

Date	10-Dec-2021	Region	VSA	SOAR Report Nbr	S-1961
Level 1	Consequential Events	Level 2	Low Circuit	Level 3	Low Circuit

A/C Model 1		ASK 21 Mi		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	63

What Happened

During final glide of a competition flight and after crossing the 3km finish line below 400ft, the command pilot flew a straight-in approach at tree-top height across a regional town and landed in a grass area alongside the main runway.

Analysis

The flight crew were competing in the State Gliding Championships that had started several days earlier. The pilot in command was the aircraft owner and former Level 2 Instructor and was a member of the local gliding club. The second pilot was a current Level 2 Instructor, who was familiar with the site. The incident flight was the second last competition day, and the task was a 254 km closed triangle. Conditions on the day were reasonable with average climbs of 3 knots to between 5,000 to 6,500 ft. After flying for about 4 hours, the glider was about 17kms from the finish line (~20 kms from the aerodrome) at a height of about 3,000ft (2400ft above aerodrome elevation). At this point the command pilot took a last thermal, and slowly climbed to about 3,500ft before commencing the final glide into a 13-knot headwind. As the glider got close to the finish line the second pilot observed that the glider was getting very low. The second pilot recommended the command pilot consider starting the engine or landing in a paddock once the finish line was crossed, however the command pilot believed they could make the runway and continued the approach. The glider crossed the 3km finish line below 400ft AGL, and the command pilot flew at extremely low level across the township. A Level 2 Instructor from the gliding club who was at home at the time stated that he observed the glider *"fast but at tree top height and very low over the roof of the (local) school"*. The second pilot reported that just before the aerodrome boundary the glider was below tree-top height and the command pilot had to lift the glider's wing over power lines on the approach. The glider crossed the aerodrome boundary with reduced energy and the command pilot manoeuvred at low level to land in grass area alongside the main runway. The landing was witnessed by the Competition Director, who stated: *"…as I looked up and saw a glider very low to the ground flash past the hay bales by the tie down area from the NW at what must have been very close to less than half wingspan height, aiming essentially diagonally at the midway point of 17R, with a late shallow bank to align the glider with the runway direction and touching down approximately three-quarters of the way down the runway."* The following day the Competition Safety Officer reviewed the flight trace and noted: "*The trace dramatically demonstrated the series of poor*

decisions made by the pilot in the final few minutes of the flight." The Competition Safety Officer found that the command pilot left it too late to start their engine, pushed on past acceptable outlanding options when they knew further options closer in were worse, flew very low with nowhere to go if conditions such as sink or wind became more adverse, and by aiming for the middle of the runway at an angle, the final turn to align with the runway was very close to the ground. The competition Safety Officer also commented that the second pilot, who was a current Level 2 instructor, should not have let the situation develop. However, there is no one right answer in aeronautical decision-making. It is the pilot in command who has to analyse each situation in light of their experience level, personal minimums, and current physical and mental readiness level, and make his or her own decision. In normal Crew Resource Management practice, it is expected that pilots will speak up clearly and immediately with safety concerns, but it is the pilot in command who is responsible for listening carefully and seriously considering these apprehensions. In this case, the command pilot was much more experienced both in hours and on type, and while the second pilot had expressed his concerns the command pilot chose to disregard them as he believed he could safely complete the flight. The command pilot was counselled and accepted the findings of the investigation.

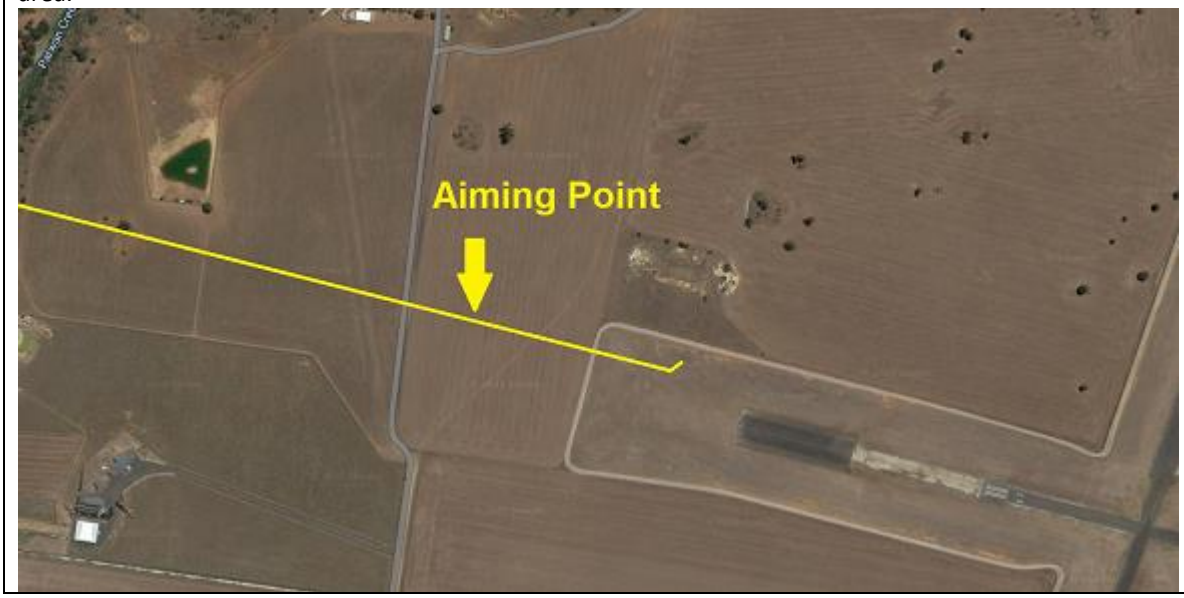
Safety Advice

For competition pilots, the race to the finish is a high workload and dynamic situation. Continuing a marginal final glide at low-level in the hope that that all will be well is fraught with danger and is particularly unwise when it is known that there are minimal options along the way for a safe landing. Flight at low-level requires good flight management and discipline due to the higher workload, and because there are more hazards to negotiate in the environment and less time to conduct a safe landing. Human factors, including decision biases, goal fixation and cognitive tunnelling in competition may lead to pilots eroding safety margins more than in normal non-competition flying. Being aware of the dangers of continuing into marginal circumstances, setting boundaries, having a sound knowledge of rules and procedures, disciplined adherence to minima and performance requirements, prioritisation of options, and planning to deal with potential situations will act as defences against unsafe conditions.

Date	10-Dec-2021	Region	NSWGA	SOAR Report Nbr		S-1964	
Level 1	Airspace	Level 2	Aircraft Separation	Level 3		Near collision	
A/C Model 1		Duo Discus		A/C Model 2		Quicksilver	
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	23
Under investigation. A glider on approach to land had to take avoiding action to prevent a collision with an aircraft conducting a low-level pass along the runway towards the landing glider.							

Date	12-Dec-2021	Region	VSA	SOAR Report Nbr		S-2071	
Level 1	Operational	Level 2	Terrain Collisions	Level 3		Collision with terrain	
A/C Model 1		DG-300 Elan		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	65
Under investigation. During a local flight and at about 2500ft approximately 2.5 miles from the aerodrome the low hours pilot decided to open the cockpit air vent, but inadvertently operated the canopy jettison lever that was situated just above the air vent lever. The front of the canopy popped open but did not separate from the glider. The pilot held the canopy in place by using his elbows, but still had good control over the glider. The pilot determined he had adequate height to return to safely return to the aerodrome and prepared the aircraft for landing by lowering the undercarriage. Being uncertain that he could hold the canopy closed against the airflow, the pilot elected to conduct a straight-in approach. The glider was high, so the pilot increased the speed to 60 knots and used the airbrakes to lose height. Due to the distance from the airfield, the pilot mistook the fence of a paddock before the aerodrome as the runway boundary fence and flew into an undershoot position. The pilot conducted a normal approach into the paddock, believing it was the runway, and after overlying the paddock fence, he then noticed the aerodrome boundary fence ahead of the glider. The pilot believed he had sufficient airspeed to reach the runway, so he closed the airbrakes and							

flew at very low level over the paddock. As the glider approached aerodrome boundary fence while flying only a metre above the ground, the pilot pulled-up but the main wheel struck the top strand of the wire fence, which tore off the undercarriage doors. The glider came to rest just inside the runway undershoot area.



Date	12-Dec-2021	Region	SAGA	SOAR Report Nbr		S-1970	
Level 1	Airspace	Level 2	Airspace Infringement	Level 3		Airspace Infringement	
A/C Model 1		Discus b		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	59

What Happened

During a cross-country flight, the pilot inadvertently flew through restricted airspace – outbound the pilot flew through R265F, and inbound he flew through R265B, R265E and R234.

Analysis

On the outbound leg the glider had a 20kt tailwind and covered ground quickly. However, on the return leg the pilot struggled make headway into this wind and he began to press on with little or no margin. Fatigue was affecting the pilot's decision-making and his navigation. While climbing in a thermal the pilot realised that he was inside restricted airspace and turned to track out of the airspace. However, the pilot did not clear the restricted airspace before turning towards the home aerodrome. In a post flight debrief with the CFI, it was identified that in a high workload environment the pilot tended to become fixated on problem solving to the detriment of situational awareness. The pilot agreed to conduct a flight review of his review his airmanship and decision-making processes prior to flying in command and undertook retraining in airspace procedures.

Safety Advice

Situational awareness is having an accurate understanding of what is happening around you and what is likely to happen in the near future. By being aware of what is happening around you and understanding how information, events and your own behaviour will affect your own goals, you have situational awareness. Having situational awareness doesn't happen by accident, it is a cognitive skill. You need to build and maintain situational awareness to ensure that you are able to stay ahead of a situation and avoid being caught off guard or unprepared. To build a mental model of the environment, it is necessary to gather sufficient and useful data by using our senses of vision, hearing and touch to scan the environment. We must direct our attention to the most important aspects of our surroundings and then compare what we sense with the experiences and knowledge in our memory. It is an active process and requires significant

discipline, as well as knowing what to look for, when to look for it and why. For further information, refer to https://skybrary.aero/articles/situational-awareness.

Date	13-Dec-2021	Region	GQ	SOAR Report Nbr	S-1963
Level 1	Operational	Level 2	Aircraft Control	Level 3	Pilot Induced Oscillations
A/C Model 1	PW-6U	A/C Model 2			
Injury	Minor	Damage	Substantial	Phase	Landing	PIC Age	48

What Happened

The student on a solo flight landed heavily and conducted several oscillations down the runway before coming to rest. The glider was substantially damaged, including a broken canopy that had detached, and cracking around the front wheel.

Analysis

The student, who was a low hour's solo pilot, flew with an instructor on the day prior to, and then on the morning of the accident. The instructor reported the student was having difficulty in the roundout and flare, and more work was required. Another instructor conducted a check flight with the student, and reported the pilot's the circuit and landing was good. The pilot conducted a solo flight, during which his circuit was poorly planned, and was joined at too low a height and quite wide of the runway. The final turn onto final approach was below 200ft and the glider was seen to be slow on approach. The instructor conduct a thorough debrief and the pilot was allowed to take another solo flight. On the second solo flight, the pilot again joined circuit low and wide, and eyewitnesses reported the glider approached the runway low and slow with the pilot attempting to stretch the glide. There was no visible flare and the glider touched down heavily on the nose wheel. The glider then bounced and hit on the nose wheel a second time and the front canopy came off. The aircraft bounced a few more times before coming to rest. The canopy suffered cracking to the Perspex, and the forward fuselage was damaged around the nose wheel. The supervising instructor again debriefed the student and concluded the student failed to cope with flying a different aircraft and was controlling airspeed by reference to the airspeed indicator and not using nose attitude on the horizon. This led to the student to feeling he was not in control of the situation, and to losing situational awareness and an inability to make critical decisions. Further training is to be undertaken.

Advice

Although it would be convenient if the rate of learning could be consistent and predictable, it is not always so. Students may progress rapidly for a period, and then suddenly progress more slowly or even retrogress for a time. Retrogression sometimes occur, during which a student's performance becomes worse with continued practice. Generally, such reversals are due to a faulty habit pattern involving one of the basic elements of the syllabus involved. This faulty habit causes the student to practice an erroneous performance repeatedly, until correction becomes very difficult. It is therefore incumbent on instructors to identify and rectify any errors and misunderstandings that develop before progress can resume. In this case the student demonstrated poor circuit planning and speed control, which led to low circuits and poor approach control. While he did demonstrate sound performance during a check ride, upon being sent solo the pilot immediately regressed to previous bad habits.

Date	13-Dec-2021	Region	VSA	SOAR Report Nbr	S-1981
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain
A/C Model 1	Standard Libelle 201 B	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	

What Happened

While conducting a local flight, the pilot became lost and flew into rough terrain about 70 kms from the home airfield. During the outlanding the glider struck a small rock that damaged the main wheel hub.

Analysis

While thermalling to 11500 ft about 15kms from the aerodrome, the pilot did not recognise the wind had swung around to the North-West, and while drifting away from the aerodrome the pilot lost sight of his reference point. The pilot reported a bluish 'fog' on the horizon in all directions caused him the lose situational awareness and he was unable to recognise any familiar landmarks. As the pilot had not intended to fly out of sight of the aerodrome, he did not have a GPS device nor was he carrying aeronautical charts by which to navigate. The pilot found himself low over unidentifiable terrain with few landable paddocks, and so chose to land in a suitable paddock near a bitumen road and farmhouse. The landing was uneventful but during the landing roll the glider ran over a small rock that caused minor damage to the hub of the main wheel.

Safety Advice

Being fully prepared for your flight is an important aspect in reducing the chance of becoming lost, and in dealing with the situation when you do. Prior to a flight, a pilot must study all available information appropriate to the intended operation, including the current weather forecasts, and ensure relevant maps and charts are carried. Many pilots today use navigation software and apps on their smartphones or tablets which are excellent at instantly pinpointing your current location. You can also use these tools to plot the route you need to take to a particular destination, but ensure you heed warnings about straying into danger areas or controlled airspace. However, electronic devices can fail so paper charts should always be carried as a backup. For further information, refer to GPC Unit 36 - Airspace and Navigation.

Date	14-Dec-2021	Region	GQ	SOAR Report Nbr	S-1965		
Level 1	Operational	Level 2	Terrain Collisions	Level 3	Collision with terrain		
A/C Model 1	DG-1000S	A/C Model 2					
Injury	Nil	Damage	Substantial	Phase	Landing	PIC Age	61

What Happened

On 14 December 2021, at about 1013 AEST an AAFC DG-1000S was conducting a training flight, with a student and instructor on board. During the landing onto runway 27 grass-left, the aircraft experienced a ground loop. The student and instructor were uninjured, and the aircraft was seriously damaged.

After the aircraft came to rest, ground crew approached the aircraft and made an initial assessment that the instructor and student were uninjured. Shortly after, the Duty Instructor suspended all launches, and later it was recommended that the Emergency Response Plan (ERP) be reviewed. Prior to the aircraft being removed from the field, the accident site was photographed. The aircraft was then towed from the flight strip, de-rigged, and placed in its transport trailer.

Factual Overview

On 14 December 2021, at about 1003 AEST a DG-1000S launched for an instructional training flight, with an instructor and student on board, from Warwick Airport, Queensland (Figure 1). This was their first flight for the day, and the 16th launch that morning. The purpose of the flight was to review decision making in the circuit, and further development of speed control and attitude along the flightpath from downwind through to the final approach. Weather at the time was considered to be CAVOK, warm and calm. The Flight Commander (FLTCDR) who was the acting Activity OIC and the majority of the instructors were at the flightline, adjacent to runway 27, grass-right. The Chief Flying Instructor (CFI) was in the Australian Air Force Cadets (AAFC) office and briefing rooms complex doing paperwork after returning from the flightline, and the Aviation Safety Officer (ASO) had relocated to the opposite end of the field, at the runway 09 grass-right glider launching area. The ASO had repositioned there at the request of the instructor of another glider about to launch to allow for glider retrieval should they need to modify their circuit to assist with their training outcomes.

Figure 1 Warwick Airport, Queensland

Final approach

At about 1013 AEST, the student turned the glider from base leg, onto final runway 27 (Figure 2), lining up with grass-left. Runway 27 grass-left had about a 30 ft (10m) wide firm strip adjacent to the bitumen, that the tow aircraft had been using. To the left of the firm strip was a wide, soft, ploughed area that the local council is preparing for glider use in the future.

Figure 2 Runway 27 layout

Instructor account

The instructor reported that the student was a little hesitant with most manoeuvres and was reluctant to make command decisions. They took an aerotow to 2,000 ft AGL to practice some upper air work. They then joined downwind at 7-800 ft AGL and turned onto base at about 500 ft AGL. The student flew these sequences well. The student turned onto final early, lining up with grass left. The instructor elected to let the student continue to grass-left, even though it wasn't the ideal landing spot. The instructor felt that getting the student to 'drift' across to 27 bitumen or 27 grass-right was not a good practice. On late final, the glider was drifting towards the soft surface of 27 grass left, and the instructor requested a course correction. Just before touchdown, the instructor identified that they were drifting towards a runway edge light for 27 bitumen (abeam the 1,000 ft marker) and attempted to do a course correction. The left wing subsequently contacted the ground, resulting in a ground loop.

Student account

The student stated: *"I joined downwind at 2500 AMSL, right after a powered aircraft had said they were joining downwind landing RWY 27. When I was ¾ of the way downwind I said I'm going to land grass right as I'm assuming that the powered aircraft is going to land bitumen. I waited for the powered aircraft to turn final before I turned base as I was a bit anxious and wanted to keep well clear of it. Once I eventually turned final, I lined up to land grass right but [the instructor] said to land grass left after I turned final. I began to line up with the patch of dirt grass left because that's what I assumed. Then as I was about to round out, he said, "the grass not the dirt" so I tried adjusting where I was going to land to the small patch of grass. I tried rounding out too late and I remember dust covering the canopy and [the instructor] yelling."*

Circuit traffic

Other powered aircraft were reported to be in the area around the time of the occurrence. One witness, the ASO, located at the runway 09 grass-right glider launching area, recalled a powered aircraft do at least one 'touch and go' prior to the glider arriving in the circuit. A review of Flightradar24 identifies this aircraft as a Cessna 172, which conducted a single circuit and then departed the airfield at 1015 AEST. The ASO, who was holding a portable VHF radio, also recalled that another powered aircraft had made a radio call stating that they were inbound, about 5 NM, conducting an RNAV. A review of Flightradar24 identifies this aircraft as a Beech 58 Baron, which touched down at 1017 AEST. This call was at about the time the glider was on final. Actual powered circuit traffic was difficult to ascertain during discussions with witnesses. There was a large variability in recollections. No other traffic was displayed on Flightradar24.

The landing

Witness observations were generally consistent for the approach and touch-down of the glider. Several witnesses recalled thinking that it was odd for them to be landing on 27 grass left. Witnesses saw the left wing contact the ground, the aircraft pivot to the left, and rapidly come to a halt, about 120° nose-left to the direction of travel. All witness observations were consistent with the aircraft experiencing a ground loop. The student and instructor were uninjured, and the aircraft was significantly damaged. During the morning brief, pilots were informed that grass left was unusable by gliders (although it was available for use by tug landings if grass right was obstructed).

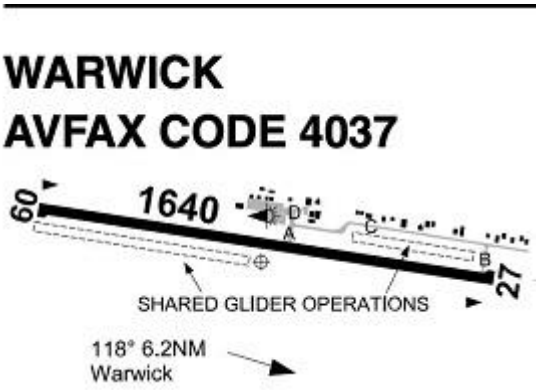
Emergency response

After the aircraft came to rest, ground crew were dispatched to the aircraft and confirmed the instructor and student reported that they were uninjured. The other gliders were told to hold their station at the glider launch area. Shortly after, the Duty Instructor suspended all launch operations. As the conditions were favourable, and because the DG1000S was still on runway 27 grass-left (within the gable markers), the Duty Instructor elected to allow the pilot of an airborne glider to continue their flight. Two of the flying instructors, began documenting the aircraft damage, ground scars, and organising the cadets. At the time of the accident, a few cadets were making their way to the AAFC office complex. They observed the ground loop, and proceeded to the office where they advised the CFI. The CFI made their way to the flightline where he saw the instructors and ASO managing the site. The FLTCDR also confirmed that they were the Incident Site Commander (ISC), and that the ASO was also an ISC. The AAO advised that they got witnesses to document their observations before further discussions, and the instructor and student were later requested to do the same. After a period of time, one of the instructors suggested to the FLTCDR that they

should head to the office and review the Emergency Response Plan (ERP) contents to see they had missed any steps up to that stage. The FLTCDR advised that they did not nominate roles as per the ERP, did not follow the Incident Site Controller checklist or populate a Log-Keeper Checklist, nor did they complete and send the Notification Form. The FLTCDR took a top-down approach for contacting people regarding the accident. The FLTCDR consider this to be an incident and not an accident, so did not see the need to call the Aviation Response Team (ART) or use the checklists or forms from the ERP, however the FLTCDR did confirm that they did activate the ERP immediately when the accident happened. Emergency services were not considered to be required and were therefore not contacted. The CFI did take the instructor and student to the local hospital for a check-up at about 1200 AEST. No issues were identified during their medical examinations. A couple of the instructors agreed that it would be advisable to debrief the cadets on the occurrence, so organised a briefing with them. The instructors felt that this went well and was well received. After the accident site was photographed, the aircraft was towed from the flight strip to the AAFC hangar facility, where it was de-rigged and stored in its transportation trailer.

Analysis

Warwick (YWCK) airfield is a non-security-controlled airfield that hosts general aviation and glider traffic where an AAFC Glider Training School and the Warwick Gliding Club are located. In addition to runway 09/27, the ERSA identifies two shared glider operations areas known as 09 grass left and 27 grass right as shown below.



At the time of the accident the area to the left of RWY 27 was in the process of being developed into an area for glider operations by the aerodrome owner. The condition of the area was ploughed and unlevelled. Approximately an area of 30ft (10m) wide grass to the left of RWY 27 was present before meeting the soft ploughed surface. During the Daily Briefing, it was identified that RWY 27 Grass Left was not suitable for landing gliders, although tug aircraft were using the narrow strip of grass for landing. The sortie was the 16th launch of the day, and the first for the PIC and student. The objective for the sortie was to review decision making in the circuit and further development of speed control/attitude from downwind to final approach. The Duty Instructor at the time was aware that the glider was landing on the grass area to the left of RWY 27 but did not take any action to alert the aircraft that this area was not to be used for landing. During the landing neither the instructor nor the student could recall if the instructor announced that they were taking control of the aircraft. On 17 December 2021 all instructors were briefed on the incident and undertook a check flight, which included taking control of approach and landing, and recovering from poor landings.

Findings

- The instructor was suitably qualified to conduct the flight.
- The instructor allowed the aircraft to land on RWY 27 grass left in contravention of the daily briefing.
- The instructor did not intervene early enough to regain the runway alignment and prevent the loss of control.
- The Duty Instructor did not effectively monitor the flight to ensure the overall safety of the operation.

- The Emergency Response Plan was not activated nor was the Aviation Response Team advised.

Safety Advice

Above all else, the instructor as Pilot in Command will strive to maintain SAFETY at all times. However, the most common instructing accident is 'instructor failed to take-over in time'. These accidents usually involve the trainee responding in an unforeseen way or failing to respond at all. Given that the overall idea is to let the trainee do as much as possible within their level of skill the instructor should never wait until the last moment - which can rapidly become 'too late' - before responding to a situation that is going awry. This is particularly true of any manoeuvres close to the ground. It is also extremely important to make clear who is controlling of the aircraft at all times. when you hand over control say clearly “You have control” and only take your hands and feet off the controls when you have heard the other pilot respond with “I have control”. Similarly, when you take back control, say clearly “I have control” and start flying only when you have heard the other pilot say “You have control”. The actual phrase is not too important as long as its intention is clear, and it is used consistently and religiously. When pilots fly in a tandem-seat aircraft, this vitally important procedure can be appended with a slight aileron shake for confirmation, since pilots cannot see each other’s actions.

Date	15-Dec-2021	Region	NSWGA	SOAR Report Nbr		S-1993	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Control issues	
A/C Model 1		SZD-50-3 Puchacz		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	65
Under investigation. During late final and at about 30feet above the ground the student pilot allowed the speed to decay. The instructor prompted the student to increase speed, whereupon the student suddenly applied a large forward elevator input. The glider adopted a steep nose-down position, and the instructor immediately took control, closed the airbrakes, and recovered to wings level before the glider touched down.							

Date	17-Dec-2021	Region	GQ	SOAR Report Nbr		S-1968	
Level 1	Operational	Level 2	Ground Operations	Level 3		Ground handling	
A/C Model 1		DG-1000S		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Ground Ops	PIC Age	
Under investigation. During ground handling at the flight line, the wing tip of another glider came into glancing contact with the front canopy, resulting in several scratches and scuff marks.							

Date	17-Dec-2021	Region	NSWGA	SOAR Report Nbr		S-1987	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway excursion	
A/C Model 1		LS10-st		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	

Date	18-Dec-2021	Region	NSWGA	SOAR Report Nbr		S-1969	
Level 1	Operational	Level 2	Ground Operations	Level 3		Other Ground Ops Issues	
A/C Model 1				A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	

Date	29-Dec-2021	Region	VSA	SOAR Report Nbr	S-1972		
Level 1	Operational	Level 2	Airframe	Level 3	Fuselage/Wings/Empennage		
A/C Model 1	Phoenix Air U15	A/C Model 2					
Injury	Nil	Damage	Substantial	Phase	In-Flight	PIC Age	60

GFA Investigation (Findings reported to the ATSB)

INTRODUCTION

On 29 December 2021 at approximately 14:45 AEDT, the U15 Phoenix touring motor glider registered under CASR Part 47 departed the Benalla, Vic CTAF on cruise-climb, passing through 3500 ft and around 90 knots when the autopilot was engaged. The aircraft pitched forward and accelerated up to, and briefly exceeding, Vne (120 knots TAS) before the acceleration was arrested by a pull-up performed by the pilot overriding the autopilot. A rapid succession of bangs was heard, with a louder final bang at some point during this overspeed sequence approximately 4 minutes into the flight. The pilot continued the flight to Merimbula NSW. After landing and disembarking, the pilot noticed that the fuselage tail boom near the vertical stabiliser junction had experienced a major structural failure. No injuries resulted from the incident. The cruise-climb, at high speed and engine RPM, made the aircraft more vulnerable to pitch-related overspeed than it would at the recommended climb-cruise speed. The high airspeeds encountered beyond the maximum manoeuvring speed, maximum structural cruise speed and marginally beyond Vne, coupled with elevator inputs and clear air turbulence, are the probable contributing factors in the structural failure. The U15 Phoenix is closely related in empennage design to other types that have a history of similar in-flight structural failures. A preliminary report was provided to the Civil Aviation Safety Authority.

FACTUAL INFORMATION

History of the flight

The pilot was ferrying the Phoenix aircraft from Benalla, Vic to Merimbula, NSW. The aircraft had been flown by the same pilot on 18 December 2021 in similar weather conditions. The aircraft is fitted with an autopilot but the pilot had not previously used the autopilot prior to the incident flight. Due to an extended period of no flying caused by the COVID-19 lockdowns, the pilot underwent a currency check flight with an instructor on 30 October 2021 (although not in the same aircraft), and then had a few flights in the Phoenix with an instructor before flying it solo again. At about 1641 AEDT on 29 December 2021, the touring motor glider took-off from Benalla, Vic and departed the CTAF area to the east, with the command pilot intending to climb to a cruising altitude between 7000 and 10000 ft AMSL for traversing the Great Dividing Range en-route to Merimbula. Some turbulence was encountered and observed by the pilot during this phase of the flight. While climbing through 3500ft at 700 fpm and around 90 knots IAS, the autopilot was engaged. The aircraft immediately pitched forward and accelerated up to and briefly exceeding Vne (120 knots TAS) before the acceleration was arrested by a pull-up performed by the pilot overriding the autopilot. A rapid succession of bangs was heard with a louder final bang at some point during this overspeed sequence. This occurred approximately 4 minutes into the flight. Engine power was subsequently reduced, the autopilot disengaged and, following a basic assessment of the aircraft's stability by the pilot, the aircraft was flown onwards to land at Merimbula, NSW with the autopilot engaged for most of the flight. The aircraft landed at Marimbula around 1837, after a flight of nearly 2 hours. After landing and disembarking, the pilot noticed that the fuselage tail boom near the vertical stabiliser junction had experienced a major structural failure.

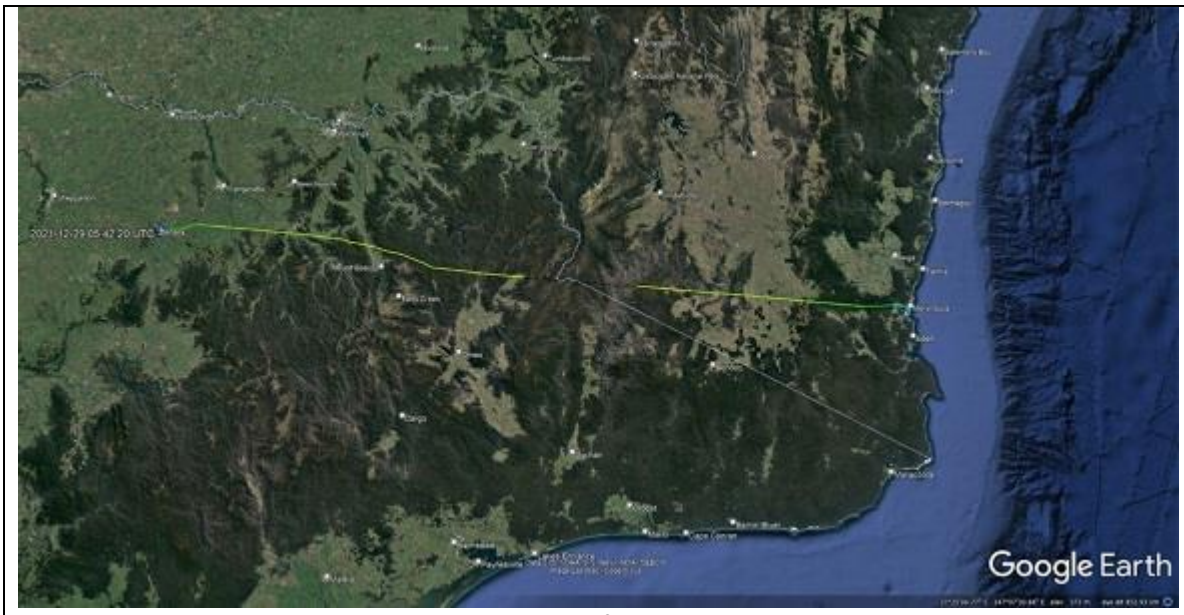


Figure 1: Flight track from transponder data

Injuries to persons

The pilot was uninjured.

Damage to aircraft

The aircraft was substantially damaged, suffering a full skin thickness fracture of the tail boom just forward of the position where the leading edge of the vertical stabilizer intersected the fuselage. The fracture extended about 70% around the circumference the tail boom (refer Figure 2).

Figure 2: Damage to tail boom

Personnel information

Flight Experience

The pilot commenced gliding as a teenager in 1975 and ceased flying around 1985, having accumulated about 82 hours. The pilot resumed flying in 2011 and has accumulated about 273 hours aeronautical experience over about 300 flights.

Medical Information

The pilot held a valid medical Certificate of Fitness issued by a Registered Medical Practitioner as required by GFA. The standards for issuing a Certificate of Fitness are the 'Austroads' medical standards for the issue of a private motor vehicle driver's license.

Aircraft information

- Manufacturer:Phoenix Air s.r.o.
- Type:U15 Phoenix
- Country of manufacture:Czech Republic
- Year of manufacture: 2013
- Engines:One - Bombardier Rotax Ltd, 912 ULS
- PropellorWoodcomp 2 Blade Feathering
- Total airframe hours:325 hours
- Total Engine Hours:301 Hours
- Certificate of Airworthiness:Yes, perpetual
- Maintenance ReleaseYes, until 18/08/2022

The U15 Phoenix is a special light sport aircraft (S-LSA) touring motor glider that is a derivative of the Urban Air UFM-13 Lambada. The U15 Phoenix was developed and initially manufactured by Phoenix Air s.r.o. in the Czech Republic. The current manufacturer and licence holder is Pure Flight in the Czech Republic (https://www.pure-flight.eu). The Phoenix is a single engine, carbon airplane with two side-by-side seats. The airplane is equipped with a fixed main wheel undercarriage with a steerable tail wheel. The fuselage is a carbon shell with carbon/kevlar seats integrated. Safety belts are attached to the seats and to a shelf intended for lightweight objects (headphones, maps, etc.). The wing spar is carbon and the wing is a monospar construction with a sandwich skin composed of two layers of fiberglass with a foam core. Control surfaces are of the same construction. The airplane is controlled by a dual push-pull control system, only the rudder drive is controlled by cable. The ailerons and elevator are controlled by the control stick located between the pilot's legs (co-pilot's) which drives control rods. The rudder is controlled by the rudder pedals (Note: The rudder pedals do not have a cable tensioning system, so the Aircraft Operating Instructions has this warning: "Never remove your feet from rudder pedals during flight! Your feet are making tension in rudder control line!" While the command pilot stated their feet were on the rudder pedals throughout the first overspeed incident, the inflight video taken by the pilot shows only their right foot was on the rudder pedal). Flaps, trim, and spoilers are operated by control levers located between the pilots. The U15 Phoenix is intended for recreational, sport, cross-country and training. It is not approved for aerobatic operation.

Aircraft History

The aircraft was manufactured on 23 May 2013 by Phoenix Air s.r.o in the Czech Republic. It was imported to Australia in July 2013 by the first owner, with initial survey and inspection performed by a GFA Approved Maintenance Organisation. The aircraft has had three owners (registered operators). The aircraft underwent an annual inspection according to GFA MOSP on 18 August 2021. All relevant Airworthiness Directives and service bulletins were complied with. At the time of inspection, the airframe had 324.8 total hours flown, 300.8 engine hours, 300.8 propeller hours and 367 launches. No records of structural repairs are recorded in the logbook. The only known damage history is a main undercarriage strike of a runway marker causing damage primarily to a wheel spat during its second ownership.

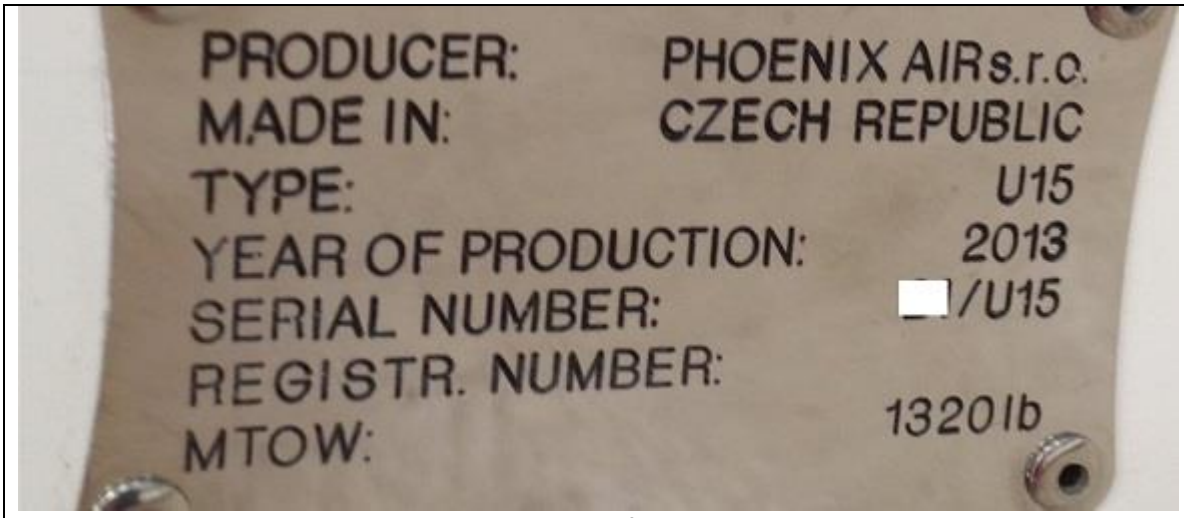


Figure 3: Aircraft data plate

Aircraft Autopilot

The aircraft is equipped with Dynon SkyView with autopilot, S/N 3029. The firmware of the SkyView system was updated in the previous annual inspection. The autopilot is of two-axis configuration (aileron and elevator). When the autopilot is enabled, the servomotors sense actuation torque and when the torque exceeds a threshold value, the corresponding servomotor `slips', allowing for the pilot to override the autopilot inputs. The U15 Phoenix Aircraft Operating Instructions bears the following warning:

"Some Phoenix aircraft are equipped with autopilots. The autopilot is to be used only in very smooth conditions during cruise flight. Turbulence and vertical air currents can result in speed beyond Vne to develop quickly when the autopilot attempts to maintain altitude when lift is encountered by lowering the angle of attack."

Defects

The tail wheel tyre was observed to be deflated after landing following the incident.

Aircraft load

The aircraft was being flown solo and was within the maximum take-off weight of 600 kgs, The take-off weight was estimated to be 520 kg – comprising the aircraft's empty weight of 351 kg, plus 100 litres fuel, the 80 kg pilot and approximately 20kg of luggage in rear.

Operating limitations

The U15 Phoenix Aircraft Operating Instructions (dated 5 August 2014) is used herein for stated operating limitations. Relevant operating limitations are as follows:

- Stall speed (all-up mass): 38 to 42 knots (Vs0 to Vs1)
- Maximum Manoeuvring Speed: 97 knots TAS (Va)
- Maximum structural cruising speed: 97 knots TAS (Vb)
- Never exceed speed: 120 knots (Vne) TAS
- The recommended speed for cruise climb and engine cooling is 70 knots, with throttle reduced to 5000rpm above 500'.

The U15 Phoenix Aircraft Operating Instructions presents a calibration chart for IAS to CAS conversion (refer Figure 4).

V IAS [kts]	δV [kts]	V CAS [kts]
38	-2.7	35
43	-1.6	42
49	-1.1	47
54	-0.5	53
59	0.0	59
65	0.5	65
70	1.1	71
76	1.2	77
81	2.2	83
86	2.4	88
92	2.5	95
97	2.6	100
103	2.9	106
108	3.0	111
116	3.2	119
120	4.0	124
124	4.5	125
130	5	135

Figure 4: Airspeed indicator system calibration

Meteorological information

Soaring forecast information from SkySight.io predicted average thermal strength of around 4 m/s (8 knots) with convection ceiling around 7500 ft at the time and date of the incident. The aerodrome METAR report for nearby airport Wangaratta (YWGT) was obtained from https://www.ogimet.com/metars.phtml.en and is presented below:

METAR YWGT 290600Z AUTO 19005KT 140V250 9999 // NCD 30/03 Q1013

Flight logs from sailplanes operating in the area of the incident were reviewed and showed achieved climb rates of 5-10 knots. In their report the pilot stated they experienced mild turbulence characteristic of late afternoon convective conditions in the flight phase leading up to the incident.

Flight Recorders

Flight data was obtained from the Dynon Skyview. Variable definitions and coordinate systems are described in the Dynon SkyView System Installation Guide dated January 2016. A small acceleration event during taxiing was detected at 16:38:06. The location of the aircraft at that time was near the sealed run-up area at Benalla aerodrome. During the flight, and after the structural failure incident, the pilot used a 360-degree camera on a 'selfie stick' to record some flight video, which shows on the airframe a predominantly lateral oscillation of the fin of around 15 cm magnitude at the top.

Additional information

Following the inflight structural failure of a UFM-13 Lambada s/n 108/13 in Czech Republic on 21 March 2009, a flutter analysis of the type was conducted by the Air Accidents Investigation Institute of the Czech Republic using ground based modal analysis(Report CZ-09-046, https://uzpln.cz/pdf/incident_9pyF5ket.pdf). This analysis resulted in a mandatory service bulletin (UFM-13-1/2009) being issued by Urban Air on 24 September 2009, in which the maximum speed for all operations was limited to 81 knots IAS. This restriction has not subsequently been lifted. Related types have subsequently been involved in other inflight structural failures of the tail-boom relating to flutter or clear air turbulence:

- NTSB accident CEN09LA37910 - UFM-13 Lambada on June 23 2009; and
- NTSB accident ERA13CA19511 - U15 Phoenix on 6 April 2013.

In the latter incident, the aircraft was flying between 90 and 95 knots IAS at 6500 ft at the time of structural failure, and the damage is similar to that found in the present incident. Pure Flight confirmed to the GFA's field investigator via email that the elevator and tail design of the incident aircraft is essentially identical to the UFM-13 Lambada, with the exception of the vertical elevator pushrod. A survey of photographs of U15 Phoenixes (and the 3-view layout diagram in the U15 Phoenix Aircraft Operating Instructions manual) show the majority of U15's incorporate this design similarity to the UFM-13 Lambada. Pure Flight has revised the elevator and tail design for production to incorporate elevator mass balance horns at the tips and have stated that the revised design was used for flutter testing. Following the business failure of Urban Air in 2010, the UFM-13 production was assumed by another company, Distar Air, which currently produces the derived design D-13-15 Sundancer. According to their website, new flutter testing was performed resulting in adjustment of the elevator pushrod and balancing control surfaces. This aircraft has a Vne of 118 knots in 15-metre configuration, and 100 knots in 13-metre configuration. Phoenix Air was founded in 2008 by the UFM-13 Lambada's chief designer. In 2017, Pure Flight Solution was formed from a consortium of companies Sport Prop, Phoenix Air, MGM Compro, and PEG in the Czech Republic, to develop an electric propulsion version of the U15 Phoenix. Pure Flight purchased the production rights of the U15 Phoenix from Phoenix Air in 2021 and it appears Phoenix Air itself is defunct.

ANALYSIS

General

The command pilot held appropriate flight and medical certificates, and was trained and qualified for the flight. The aircraft was properly certificated, and there was no evidence that aircraft maintenance was a factor in the accident. It had a Daily Inspection on the day of the incident.

Flight operations

The touring motor glider took off from sealed runway 08 at Benalla Vic aerodrome under its own power at 1641 hours. The following sequence has been reconstructed from the data file that was retrieved from the flight computer and pilot's report:

Time	Action
16:44:45	During climb-out through 3500 feet, 100 knots and 5400 rpm, the autopilot was engaged.
16:44:50	The autopilot commanded pitch-down (to hold altitude), causing the aircraft to accelerate (airspeed at this time is 105 kts).
16:45:08	The airspeed at this time reached a peak of 121 kts.
16:45:10	The pilot pulled back on the control column overriding the autopilot (resulting in pitch servo slip and high opposing pitch servo force), to prevent further over-speeding.
16:45:10	The aircraft yawed left; the autopilot applied right aileron which is partially overridden by the pilot (resulting in roll servo slip and high opposing roll servo force).
	The pilot heard a bang (or quick succession of bangs) — precise timing unknown.
16:45:13	The pilot reduced engine power.
16:45:20	The pilot disengaged the autopilot.
16:47:05	The autopilot was engaged, and the aircraft continued on the planned flight.
	The pilot noted having to apply right rudder continuously to maintain straight flight from this time onwards.
16:54:30	The aircraft exceeded Vne (second overspeed event) for nearly a minute whilst autopilot is enabled.
17:15:00	The aircraft exceeded Vne (third overspeed event) for nearly two minutes with autopilot disengaged, whilst on descent.
18:02:45	The aircraft exceeded Vne (fourth overspeed event) with autopilot disengaged, whilst on descent.
18:36:00	The aircraft landed at Merimbula, NSW.

Aircraft

Post-incident analysis

A post-incident inspection was performed by the Regional Technical Officer Airworthiness Victoria (PhD and BEng Aerospace Engineering) and a CASA-licensed and GFA qualified aircraft maintenance organisation engineer. The structural failures on the tail-boom to fin junction are characteristic of tension failure on the right side, compression failure on the left side. These cracks propagate through the whole laminate section. The diagonal pattern of composite failure is consistent with shear failure. The residual longitudinal stiffness is good whereas the residual lateral stiffness is poor. Although the tailwheel was found to be deflated after landing, no noticeable damage to the tailwheel assembly was found, nor were the tyres scuffed which might indicate side-loading. The tail wheel was reinflated and maintained pressure over several hours, indicating the tube was undamaged. It is therefore likely that the aircraft took off with the tail tyre deflated. Gelcoat/paint condition was found to be fair, with light longitudinal crazing in the aft fuselage area. This condition is consistent with typical degradation expected given the age of the airframe. There was no evidence of previous damage or repairs on gelcoat/paint surfaces. A small opening was cut into the left side lower tail boom section of the vertical stabiliser opposite to the damaged section of shell to allow inspection of the interior structure. No evidence of pre-existing damage or repairs were found. Free play in the elevator and rudder control circuits were found to be negligible (in a rigged state). The rudder and elevator were removed, and mass and hinge moments were measured. These control surfaces are not mass balanced. No damage to any of the rudder and elevator hinge attachments was detected. The run-up area and taxiways at Benalla aerodrome were surveyed to check for witness marks on runway lights, which might indicate a severe strike with the tailwheel, but no marks were found.

Figure 5: Full thickness fracture on the starboard side of the tail boom.

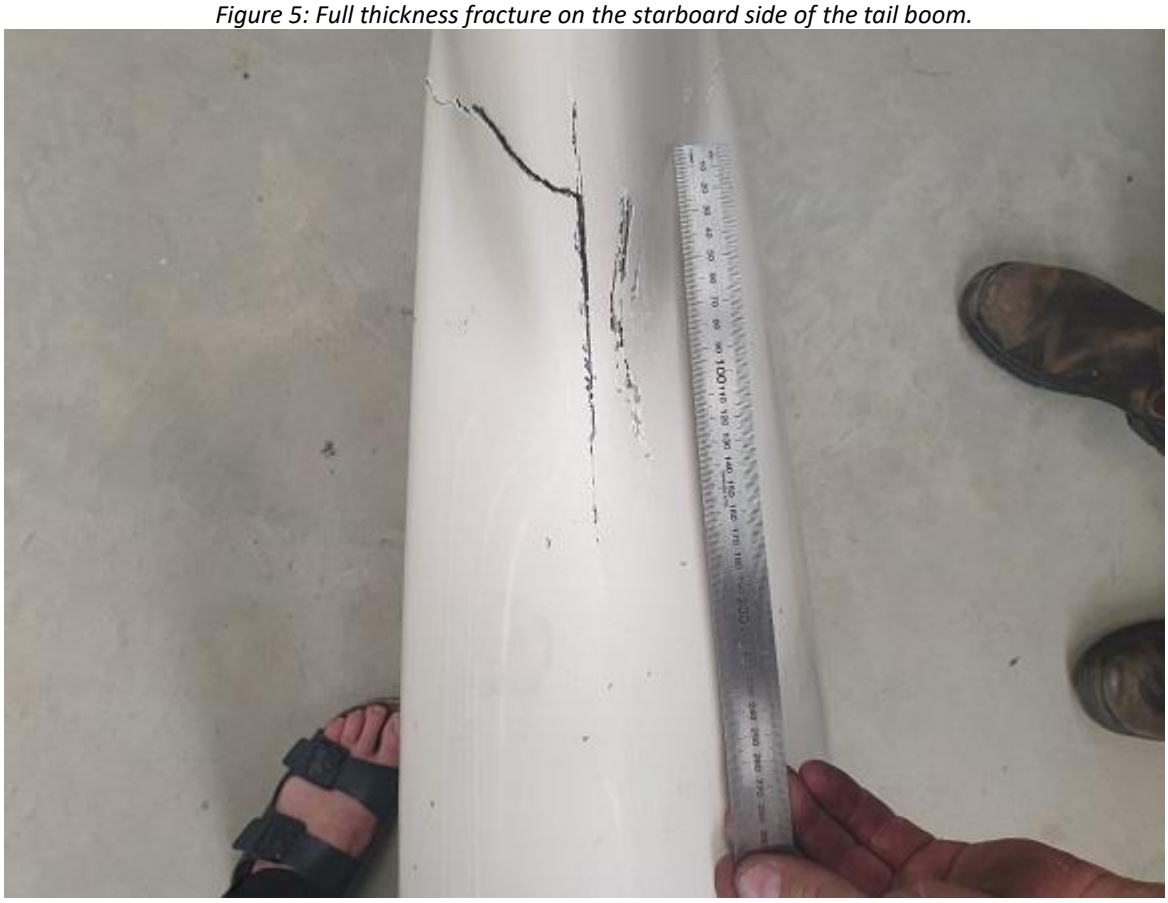


Figure 6: Full thickness fracture on the lower vertical stabiliser.

Figure 7: Full thickness fracture on the underside of the tail boom through to the port side.

Figure 8: Full thickness fracture on the port side of the tail boom.

Mass and balance

The aircraft all up weight and c.g. position were within limits and are unlikely to have any bearing on the incident.

Control surface mass and balance

The mass and hinge moments for the UFM-15 empennage control surfaces were requested from the manufacturer. The rudder mass and hinge moments were measured and compared to manufacturer's specified reference data:

	Measured	Reference	Difference (%)
Mass (kg)	2.36	2.46	-4
Hinge Movement (kg/m)	0.339	0.373	-10
CG aft of hinge (mm)	144	151	-5

The values are within expected manufacturing tolerance of 7.5%, with the centre of gravity closer to the hinge line than the reference values (that is, a safer flutter condition). The elevator mass and hinge moments were not compared to manufacturer's specifications, as the manufacturer could only supply information related to an updated elevator and tail design that incorporates mass balance horns at the tips — giving an effective centre of gravity 2mm behind the hinge line without incorporating additional mass balance from the elevator pushrod mechanism. The flutter analysis of the UFM-13 Lambada reports the elevator pushrod hinge moment required to counterbalance the tested elevator as 0.194 kg/m. The measured hinge moment of 0.161 kg/m is lower (that is, safer flutter condition) than this value. Pure Flight also reported the range of masses of produced elevators as 2.06 to 2.50 kg. The mass of the elevator fitted to the incident aircraft of 2.09 kg was within this range. It can therefore be concluded that the empennage control surfaces were within stated design tolerances for the older tail design. However, it is not clear whether the U15 Phoenix with the older tail design has received adequate flutter testing. Furthermore, a lack of data makes it unclear whether the reduction of operating speeds to 81 knots applied to the UFM-13 Lambada should also apply to these early production U15 Phoenixes. These factors support the conclusion that flutter may have been a factor in this incident.

Instrumentation

The pitot-static system was not tested, as inspection of the flight recorder traces shows the pressure altitude to be in good agreement to GPS altitude, and True Airspeed (TAS) to be within good agreement with GPS ground speed (given the prevailing light winds). Certain autopilots, including the Dynon Skyview, offer a user-defined maximum speed beyond which the autopilot cannot be engaged. This parameter had not been set. Had the maximum speeds been setup correctly, the autopilot-initiated pitch down and subsequent overspeed may have been avoided.

Aerodynamic forces

It is unclear whether the Dynon SkyView system incorporates calibration of airspeed sensors; consequently, it is unclear as to whether the Indicated Airspeed (IAS) and TAS data presented to the pilot and recorded in the flight log adjusts for static pressure errors. Noting that the IAS under-reads compared to Calibrated Airspeed (CAS), this suggests that actual TAS values encountered may have been higher than those presented in the flight records. Due to the low wind speeds and operating height of the aircraft above mountainous terrain, orographic gust conditions such as rotor is unlikely to be a factor in the incident. However, based on the conditions experienced by gliders operating in the area at the time, there is a strong potential for encountering up to 7 m/s thermal updrafts. These conditions cannot be regarded as `very smooth conditions' required for safe engagement of the autopilot. Likewise, the aircraft airspeed was in excess of the maximum structural cruising speed (Vb) at the time of the incident, so it is plausible that encountering clear air turbulence resulted in structural failure. However, the flight records do not indicate a severe loading (the maximum acceleration was 2.5 g). During the incident, the aircraft was flown well in excess of the maximum manoeuvring speed (Va) and the combination of pitch inputs by the autopilot and command pilot (during the override pitch-up) may have resulted in elevator inputs that were high magnitude or sufficiently abrupt to overload the airframe. Again, though, because the flight records do not indicate a severe loading (maximum acceleration or pitch rate), this is an unlikely cause of failure.

It is unusual that in the U15 Phoenix Aircraft Operating Instructions, the Va and Vb speeds are expressed in TAS rather than IAS — this is most likely because flutter limits are based on TAS at all attitudes. During the

incident, the aircraft exceeded Vne and may have experienced symmetric or asymmetric flutter that overloaded the structure at the tail-boom to vertical stabiliser junction. The excess of airspeed beyond Vne was within the type's design tolerance for demonstrated flutter speed. There is insufficient data to determine whether the structural damage occurred entirely during the first overspeed event, or if the cracks extended during the flight after this event.

HUMAN FACTORS

About four minutes into the flight the pilot experienced the flutter event that was accompanied by loud banging. The pilot *"wondered if the rudder felt normal so slowed and did a few turns and decided the rudder behaved normally"*. The pilot then reasoned that the subsequent *"…need for right-rudder in the cruise (was due to their) first experience cruising with the Autopilot.*" The pilot rationalised that the flight could be continued, despite a flight time to the destination of nearly 2 hours over known rough high country, and with the departure airport close by. This sequence of events fits a well-known pattern in human factors, called plan continuation, when the decision to continue to the planned destination or toward the planned goal is made despite significantly less risky alternatives existing, such as landing at the nearest airport. Plan continuation is also known as goal fixation, get-home-itis, press-on-it is and hurry syndrome. Decision-making in complex, dynamic settings 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 on whether to continue with a plan into a constantly (re-)negotiable issue – even if the decision 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 situation have come in. 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. Weaker and later cues that suggest that another course of action could be safer have a hard time dislodging the original plan. In summary, plan continuation means sticking to an original plan in rapidly evolving situations, while the changing situation calls for a different plan:

- Early cues that suggest the initial plan is correct are usually very strong and unambiguous. This helps lock people into a continuation of their plan. The persuasive early cue here would have been the aircraft behaving relatively normal post incident after the pilot conducted a basic assessment of the aircraft's stability.
- Later cues that suggest the plan should be abandoned are typically more ambiguous and not as strong. These cues, even while pilots see them and acknowledge them, often do not succeed in pulling pilots away from the plan. In this case, a later cue would have been the need to use continuous right rudder in the cruise.

CONCLUSION

While there is insufficient data to determine whether the failure was caused from static overloading or from flutter, it is more likely than not the incident was the result of flutter caused by high magnitude elevator inputs by the pilot during one or more overspeed events during flight in turbulent conditions.

Findings

The following findings are made:

1. The command pilot was certified and qualified for the flight in accordance with existing regulations.
2. The maintenance records indicated that the aircraft was equipped and maintained in accordance with existing regulations, approved procedures, and by approved persons.
3. The centre of gravity of the aircraft was within the prescribed limits.
4. The aircraft mass was within MAUW limits.
5. The autopilot was engaged in conditions beyond the stated operating limits of the airframe, resulting in pitching down and acceleration beyond Vne. The cruise-climb at high speed and engine RPM made the aircraft more vulnerable to pitch-related overspeed than it would at the recommended climb-cruise speed.

6. The high airspeeds encountered beyond the maximum manoeuvring speed, maximum structural cruise speed and marginally beyond Vne, coupled with elevator inputs and clear air turbulence resulted in structural failure.
7. Subsequent periods of flight at high speed with already damaged structure may have extended the damage, though there is insufficient data to establish whether this is the case.

SAFETY RECOMMENDATIONS

The following recommendations are made:

1. The status regarding the airworthiness of the U15 Phoenix with respect to flutter with the older tail design inherited from the UFM-13 Lambada should be investigated. Likewise, the status of other UFM-13 derived designs such as the Distar D-13-15 Sundancer should be investigated.
2. Pilots to be advised when an inflight event results in observable changes to the aircraft handling characteristics, the flight should be aborted immediately.
3. Safety features in autopilots, such as maximum airspeed settings, should be employed to offer additional protection from autopilot-induced overspeed.
4. The GFA raise pilot awareness of the flight envelope to enhance their understanding of flutter and the circumstances that can lead to this phenomenon.

Date	30-Dec-2021	Region	VSA	SOAR Report Nbr		S-2016	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Wheels up landing	
A/C Model 1		LS 8-t		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	72

Date	30-Dec-2021	Region	SAGA	SOAR Report Nbr		S-1977	
Level 1	Airspace	Level 2	Airspace Infringement	Level 3		Airspace Infringement	
A/C Model 1		LS 4-a		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	61

What Happened

While local soaring, the pilot flew across the Class C airspace boundary and infringed the CTA by two thousand feet vertically and 1.5 kms laterally. After a couple of minutes the pilot realised his error and promptly exited the airspace.

Analysis

The pilot self-reported the infringement and submitted a trace to the club Airspace Officer. A temporary loss of situational awareness was the main factor in this airspace infringement. The pilot was counselled and lost command flying privileges pending retraining.

Safety Advice

Violations of controlled airspace can be avoided by remaining situationally aware, ensuring you have current airspace charts, and by thoroughly familiarising yourself with local airspace and other aeronautical issues. In flight a pilot should always know their position relevant to the controlled or restricted airspace steps. Using an electronic flight bag with a moving map will help you keep a track on where you are in relation to controlled airspace. Pilots should create a buffer of, say, 2 nm from the edge of controlled airspace and 200 feet above (or below).

Date	30-Dec-2021	Region	SAGA	SOAR Report Nbr	S-1978

Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Aircraft Separation Issues
A/C Model 1	ASW 15 B	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	59

What Happened

The pilot departed on a cross-country flight and crossed the boundary into Class C airspace with a lower limit of 4500 ft at an altitude of about 6300 ft. The pilot flew 8 kms into Class C to an altitude of 10000ft and was involved in an air proximity event with a Gulfstream G150 jet aircraft bound for Adelaide Airport. The incident was logged by AirServices.

Analysis

The Club's Assistant Airspace officer (AAO) had been monitoring activity on the Open glider Network (OGN) at the time and noticed the airspace breach in real time. The AAO contacted the CTA Air Traffic Controllers alert them to the situation. The AAO then notified the Club CFI, who contacted the Duty Instructor and tow pilot to establish communications with the pilot. After some time, the tow pilot was able to establish communications with the pilot and inform him that he was within controlled airspace and must vacate the area. However, the tow pilot was unable to get clear acknowledgment from the pilot that he understood the message or the request. The CFI rang the pilot's mobile phone, and about 10 minutes later the pilot returned the call. The pilot was informed that he was in controlled airspace and that he must vacate the area. The pilot advised that he wasn't in controlled airspace as the CTA steps in the area were 8500 feet and he was clear of that, but the CFI informed him that the CTA steps were 4500 feet in the area and the OGN showed he was currently at 9600 ft. The pilot was advised to immediately fly out of the CTA and to stay well clear of controlled and restricted airspace. This was the third airspace breach by this pilot in the preceding two months and investigation identified that the pilot does not adequately plan for each flight. On each flight the pilot was aware of what airspace was available and had read the NOTAMS, but when under pressure the pilot lost situational awareness. The pilot was not carrying serviceable flight computers and, to compound matters, the glider is fitted with a metric altimeter displaying height in metres that may have led to the pilot to misidentifying his altitude. The CFI noted that the pilot had participated in detailed post flight review to identify the circumstances leading to all three airspace breaches but had not taken sufficient action to prevent recurrence. While the pilot was supported by his instructors and the AAO, he appears not to have learnt from previous mistakes and the quality of his airmanship has failed to improve. The pilot has been relegated to flying dual with an instructor until he can demonstrate compliance.

Note: Analysis of multiple airspace incursions and one fatality reported through the SOAR system showed that the metric and metric style (three thousand feet per rotation) altimeters fitted to some sailplanes directly contributed to altimetry errors. In February 2022 the GFA issued Airworthiness Advice Notice (AN) 185 requiring metric and metric style altimeters to be withdrawn from service prior to the next annual inspection or by 31 December 2022, whichever comes first.

Date	30-Dec-2021	Region	GQ	SOAR Report Nbr	S-1979
Level 1	Operational	Level 2	Miscellaneous	Level 3	Other Miscellaneous
A/C Model 1	Astir CS Jeans	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	

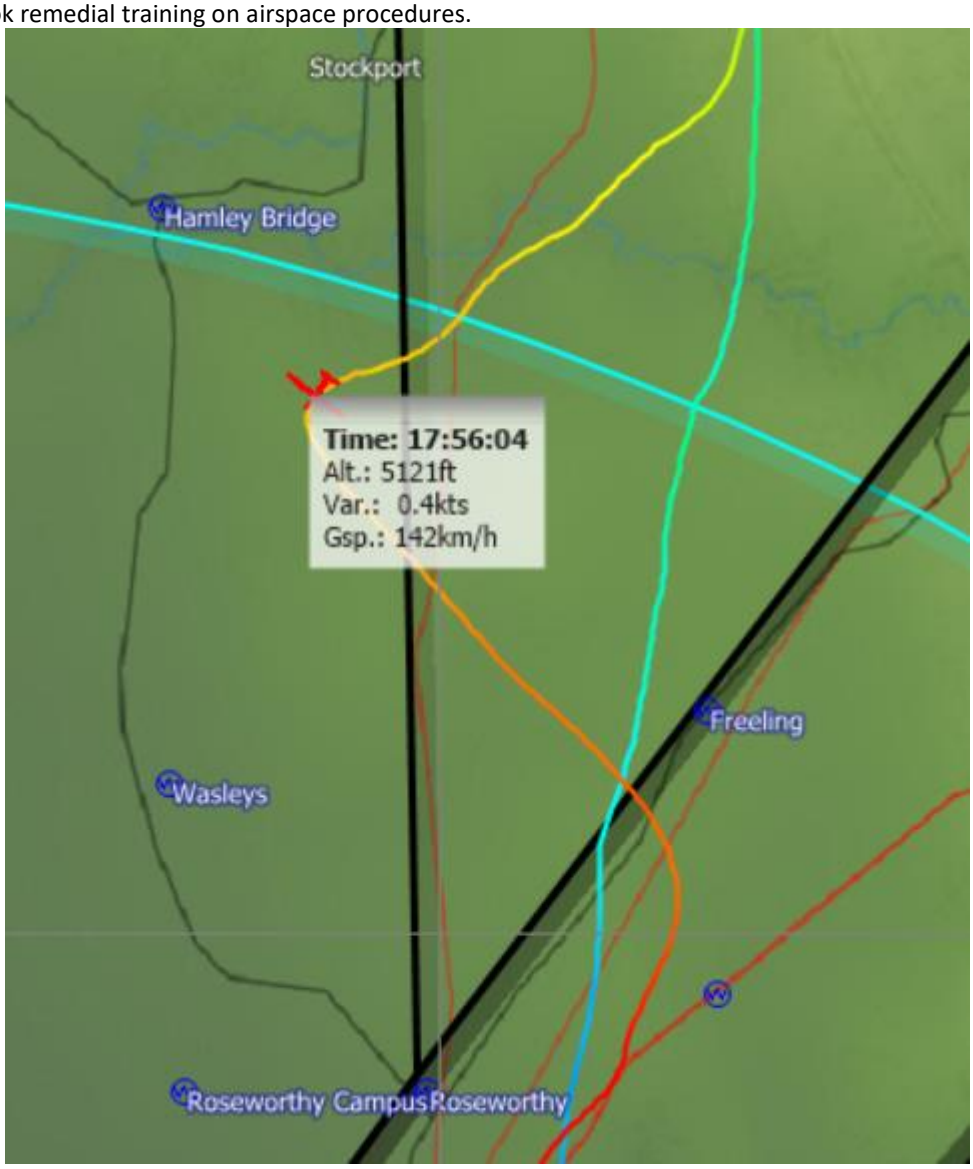
Date	30-Dec-2021	Region	SAGA	SOAR Report Nbr	S-1976
Level 1	Airspace	Level 2	Airspace Infringement	Level 3	Airspace Infringement
A/C Model 1	Arcus M	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	77

What Happened

The pilot was returning home from a 500km out and return flight after five hours. The pilot reported soaring conditions were good and the glider encountered a lot of lift during the final glide. The pilot made a detour to the West and inadvertently flew across an airspace boundary into controlled terminal airspace. The pilot noted his error and immediately tracked out of the area.

Analysis

The club Airspace officer reviewed the pilot's logger trace and determined that the pilot had flown across the airspace boundary by 2.1 kilometres and about 600ft above the Class 'C' airspace lower limit. The CFI noted that the pilot failed to maintain sufficient situational awareness. The pilot was counselled and undertook remedial training on airspace procedures.



Advice

A violation of controlled airspace occurs when a pilot enters controlled airspace without a clearance. Unauthorised aircraft in controlled airspace present a potential collision threat to other aircraft. There are several ways to avoid controlled or restricted airspace:

- **On the ground** - A thorough pre-flight planning is the best defence against airspace infringements. Before you head out flying, make sure you have the current charts and have familiarised yourself with the area you will be flying in. You should do this even if you know the area well, because things

may have changed. Check for any temporary restrictions to airspace. You can do this by logging into NAIPS and checking NOTAMS.

- **In the air** - Always know your position relevant to the controlled or restricted airspace steps. Using an electronic flight bag with a moving map will help you keep a track on where you are in relation to controlled airspace. Pilots should create a buffer of, say, 2 nm from the edge of controlled airspace and 200 feet above (or below). If you are unsure of your position, it is better to ask ATC for help rather than infringe controlled airspace.

Date	31-Dec-2021	Region	VSA		SOAR Report Nbr		S-1973		
Level 1	Operational		Level 2	Airframe		Level 3	Landing gear/Indication		
A/C Model 1		Discus 2b			A/C Model 2				
Injury	Nil	Damage	Minor	Phase	Landing		PIC Age	78	

What Happened

After returning to the aerodrome from a cross-country flight, the pilot configured the aircraft for landing and then confirmed the undercarriage was down and locked during the pre-landing checks. The glider bounced on touchdown and as it settled back on the runway the undercarriage collapsed.

Analysis

Subsequent inspection at an approved maintenance organisation identified that a critical part of the undercarriage mechanism broke on touchdown, causing the undercarriage to retract. It was determined that either a heavy landing or a series of heavy landings over time had weakened a part of the mechanism, which eventually failed.

Advice

Fatigue is a common occurrence among all metal components of an airframe. Due to the repeated flight cycles and frequent use, the metal elements of undercarriages can become weakened over time, and they will eventually require attention and repair. This weakness manifests in cracks, which are microscopic at first. With continued aircraft use over time, the cracks grow larger and eventually become visible. The detection of premature failure of components depends on sound inspection techniques and inspector awareness. Non-destructive testing methods are well proven ways of finding fatigue cracks. For further information, refer to GFA Basic Sailplane Engineering.

Level 1	Level 2	Level 3	Definition
Airspace	Aircraft Separation	Collision	An aircraft collides with another aircraft either airborne or on the runway strip, or a vehicle or person on the runway strip.
Airspace	Aircraft Separation	Issues	Airspace - Aircraft separation occurrences not specifically covered elsewhere.
Airspace	Aircraft Separation	Near collision	An aircraft comes into such close proximity with another aircraft either airborne or on the runway strip, or a vehicle or person on the runway strip, where immediate evasive action was required or should have been taken. (a) En-route (b) Thermalling (c) Circuit
Airspace	Airspace Infringement	Airspace Infringement	Where there is an unauthorised entry of an aircraft into airspace for which a clearance is required.
Airspace	Other	Other Airspace Events	Airspace occurrences not specifically covered elsewhere.
Consequential Events	Ditching	Ditching	When an aircraft is forced to land on water.
Consequential Events	Diversion / Return	Diversion / Return	When an aircraft does not continue to its intended destination, but either returns to the departure aerodrome or lands at an alternative aerodrome.
Consequential Events	Emergency / Precautionary descent	Emergency / Precautionary descent	**Emergency descent** - Circumstances that require the flight crew to initiate an immediate high rate descent to ensure the continued safety of the aircraft and its occupants.
Consequential Events	Emergency evacuation	Emergency evacuation	When crew and/or passengers vacate an aircraft in situations other than normal and usually under the direction of the operational crew.
Consequential Events	Forced / Precautionary landing	Forced / Precautionary landing	**Forced landing** – Circumstances under which an aircraft can no longer sustain normal flight and must land regardless of the terrain. **Precautionary landing** - A landing made as a precaution when, in the judgement of flight crew, a hazard exists with continued flight.
Consequential Events	Low Circuit	Low Circuit	Any occasion where a pilot flies a Low Circuit that was potentially hazardous.
Consequential Events	Other	Other Consequential Events	Consequential events not specifically covered elsewhere.
Environment	Weather	Icing	Any icing issue that affects the performance of an aircraft.
Environment	Weather	Lightning strike	The aircraft is struck by lightning.
Environment	Weather	Other Weather Events	Weather occurrences not specifically covered elsewhere.
Environment	Weather	Turbulence/Windshear/Microburst	Aircraft performance and/or characteristics are affected by turbulence, windshear or a microburst.
Environment	Weather	Unforecast weather	Operations affected by weather conditions that were not forecast or not considered by the flight crew.
Environment	Wildlife	Animal strike	A collision between an aircraft and an animal.
Environment	Wildlife	Birdstrike	A collision between an aircraft and a bird.
Environment	Wildlife	Other Wildlife Events	Wildlife related occurrences not specifically covered elsewhere.
Operational	Aircraft Control	Airframe overspeed	The airspeed limit has been exceeded for the current aircraft configuration as published in the aircraft manual.
Operational	Aircraft Control	Control issues	The flight crew encounter minor aircraft control difficulties while airborne or on the ground.
Operational	Aircraft Control	Hard landing	Damage occurs during the landing.
Operational	Aircraft Control	Incorrect configuration	An aircraft system is incorrectly set for the current and/or intended phase of flight.
Operational	Aircraft Control	In-flight break-up	The aircraft sustained an airborne structural failure or damage to the airframe, to the extent that continued flight is no longer possible.
Operational	Aircraft Control	Loss of control	When control of the aircraft is lost or there are significant difficulties controlling the aircraft either airborne or on the ground.
Operational	Aircraft Control	Other Control Issues	Aircraft control occurrences not specifically covered elsewhere.
Operational	Aircraft Control	Pilot Induced Oscillations	Any PIO occurrence occassioning damage.
Operational	Aircraft Control	Stall warnings	Any cockpit warning or alert that indicates the aircraft is approaching an aerodynamic stall.
Operational	Aircraft Control	Wheels up landing	An aircraft contacts the intended landing area with the landing gear retracted.

Operational	Aircraft Loading	Loading related	The incorrect loading of an aircraft that has the potential to adversely affect any of the following: a) the aircraft's weight; b) the aircraft's balance; c) the aircraft's structural integrity; d) the aircraft's performance; e) the aircraft's flight characteristics.
Operational	Aircraft Loading	Other Loading Issues	Aircraft loading occurrences not specifically covered elsewhere.
Operational	Airframe	Doors/Canopies	When a door or canopy, or its component parts, has failed or exhibited damage.
Operational	Airframe	Furnishings & fittings	An internal aircraft furnishing or fitting, including its component parts, has failed or exhibited damage.
Operational	Airframe	Fuselage/Wings/Empennage	Damage to the fuselage, wings, or empennage not caused through collision or ground contact.
Operational	Airframe	Landing gear/Indication	When the landing gear or its component parts (including indications), has failed or exhibited damage.
Operational	Airframe	Objects falling from aircraft	Objects inadvertently falling from or detaching from an aircraft.
Operational	Airframe	Other Airframe Issues	Technical - Airframe occurrences not specifically covered elsewhere.
Operational	Airframe	Windows	A window or a component part has failed or exhibited damage.
Operational	Communications	Other Communications Issues	Communications occurrences not specifically covered elsewhere.
Operational	Communications	Transponder related	The incorrect setting of a code and/or usage of transponder equipment.
Operational	Crew and Cabin Safety	Cabin injuries	A cabin crew member or passenger has suffered an illness or injury.
Operational	Crew and Cabin Safety	Flight crew incapacitation	A Flight Crew member is restricted to nil or limited duties as a result of illness or injury.
Operational	Crew and Cabin Safety	Inter-crew communications	Relates specifically to a loss, or breakdown, of communication between flight crew or associated ground staff.
Operational	Crew and Cabin Safety	Other Crew and Cabin Safety Issues	Cabin safety occurrences not specifically covered elsewhere.
Operational	Crew and Cabin Safety	Passenger related	Where the actions of a passenger adversely or potentially affects the safety of the aircraft.
Operational	Crew and Cabin Safety	Unrestrained objects	When objects are not appropriately restrained for the aircraft operation or phase of flight.
Operational	Fire Fumes and Smoke	Fire	Any fire that has been detected and confirmed in relation to an aircraft operation.
Operational	Fire Fumes and Smoke	Fumes	When abnormal fumes or smells are reported on board the aircraft.
Operational	Fire Fumes and Smoke	Smoke	When smoke is reported to be emanating from: a) inside the aircraft; or b) an external component of the aircraft.
Operational	Flight Preparation/Navigation	Aircraft preparation	Errors or omissions during the planning and/or pre-flight phase that affect or may affect aircraft safety in relation to: a) the aircraft's weight; b) the aircraft's balance; c) the aircraft's structural integrity; d) the aircraft's performance; e) the aircraft's flight characteristics.
Operational	Flight Preparation/Navigation	Lost / Unsure of position	When flight crew are uncertain of the aircraft's position and/or request assistance from an external source.
Operational	Flight Preparation/Navigation	Other Flight Preparation/Navigation Issues	Navigation - Flight planning occurrences not specifically covered elsewhere.
Operational	Flight Preparation/Navigation	VFR into IMC	An aircraft operating under the Visual Flight Rules enters Instrument Meteorological Conditions.
Operational	Fuel Related	Contamination	When the presence of a foreign substance is found in fuel.
Operational	Fuel Related	Exhaustion	When the aircraft has become completely devoid of useable fuel.
Operational	Fuel Related	Leaking or Venting	Relates specifically to the unplanned loss of fuel from a fuel tank or fuel system.
Operational	Fuel Related	Low fuel	The aircraft's supply of fuel becoming so low (whether or not the result of a technical issue) that the safety of the aircraft is compromised.
Operational	Fuel Related	Other Fuel Related Issues	Fuel related occurrences not specifically covered elsewhere.

Operational	Fuel Related	Starvation	When the fuel supply to the engine(s) is interrupted, but there is still usable fuel on board the aircraft.
Operational	Ground Operations	Foreign Object Damage/Debris	Any loose objects on an aerodrome have caused, or have the potential to cause, damage to an aircraft.
Operational	Ground Operations	Ground handling	Any ground handling and aircraft servicing that caused, or has the potential to cause injury or damage to a stationary aircraft.
Operational	Ground Operations	Jet blast/Prop/Rotor wash	Any air disturbance from a ground-running aircraft propeller, rotor or jet engine that has caused, or has the potential to cause, injury or damage to property.
Operational	Ground Operations	Other Ground Ops Issues	Ground operation occurrences not specifically covered elsewhere.
Operational	Ground Operations	Taxiing collision/near collision	An aircraft collides, or has a near collision, with another aircraft, terrain, person or object on the ground or on water during taxi.
Operational	Miscellaneous	Missing aircraft	The aircraft is reported as missing.
Operational	Miscellaneous	Other Miscellaneous	Miscellaneous occurrences not specifically covered elsewhere in this manual.
Operational	Miscellaneous	Rope break/Weak link failure	Towplane separation incident necessitating a modified circuit.
Operational	Miscellaneous	Rope/Rings airframe strike	Airframe struck by launch cable or rings. Includes entanglemt with rope.
Operational	Miscellaneous	Warning devices	Situations in which an aural or visual aircraft warning device activates to alert the flight crew to a situation requiring immediate or prompt corrective action.
Operational	Miscellaneous	Winch Performance Issue	Any incident caused by poor winch performance, such as power failure, or mechanical reasosn.
Operational	Runway Events	Depart/App/Land wrong runway	An aircraft that: a) takes off b) lands, c) attempts to land from final approach d) operates in the circuit at, to or from an area other than that authorised or intended for landing or departure
Operational	Runway Events	Other Runway Events	Runway event occurrences not specifically covered elsewhere.
Operational	Runway Events	Runway excursion	An aircraft that veers off the side of the runway or overruns the runway threshold.
Operational	Runway Events	Runway incursion	The incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.
Operational	Runway Events	Runway undershoot	Any aircraft attempting a landing and touches down prior to the threshold.
Operational	Terrain Collisions	Collision with terrain	Any collision between an airborne aircraft and the ground, water or an object, where the flight crew were aware of the terrain prior to the collision.
Operational	Terrain Collisions	Controlled flight into terrain (CFIT)	When a serviceable aircraft, under flight crew control, is inadvertently flown into terrain, obstacles or water without either sufficient or timely awareness by the flight crew to prevent the collision.
Operational	Terrain Collisions	Ground strike	When part of the aircraft drags on, or strikes, the ground or water.
Operational	Terrain Collisions	Wirestrike	When an aircraft strikes a wire, such as a powerline, telephone wire, or guy wire, during normal operations.
Technical	Powerplant/Propulsion	Abnormal Engine Indications	A visual or cockpit warning that indicates an engine is malfunctioning or operating outside normal parameters.
Technical	Powerplant/Propulsion	Engine failure or malfunction	An engine malfunction that results in a total engine failure, a loss of engine power or is rough running.
Technical	Powerplant/Propulsion	Other Powerplant/Propulsion Issues	Powerplant / Propulsion occurrences not specifically covered elsewhere.
Technical	Powerplant/Propulsion	Propeller malfunction	The failure or malfunction of an aircraft propeller or its associated components.
Technical	Powerplant/Propulsion	Transmission & Gearboxes	The failure or malfunction of an aircraft transmission/gearbox and/or its associated components.

Technical	Systems	Avionics/Flight instruments	The partial or complete loss of normal functioning of the avionics system or its components.
Technical	Systems	Electrical	The partial or complete loss of normal functioning of the aircraft electrical system.
Technical	Systems	Flight controls	The partial or complete loss of normal functioning of a primary or secondary flight control system.
Technical	Systems	Fuel	The partial or complete loss of normal functioning of the fuel system.
Technical	Systems	Hydraulic	The partial or complete loss of the hydraulic system.
Technical	Systems	Other Systems Issues	Technical - Systems occurrences not specifically covered elsewhere.