The Gliding Federation of Australia Inc

Occurrence Summaries

01/01/2013 to 31/12/2013

Region(s): All

Club:

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

31-Dec-2013

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

Date From: 01/01/2013
Date to: 31/12/2013

Damage	**VSA**	**NSWGA**	**SAGA**	**GQ**	**WAGA**	**Total**
Nil	13	12	11	21	3	60
Minor	3	6	1	7	6	23
Substantial	5	2	1	2	1	11
Write-off		1				1
Total	**21**	**21**	**13**	**30**	**10**	**95**

Injury	**VSA**	**NSWGA**	**SAGA**	**GQ**	**WAGA**	**Total**
Nil	20	19	13	30	10	92
Fatal		1				1
Minor		1				1
Serious	1					1
Total	**21**	**21**	**13**	**30**	**10**	**95**

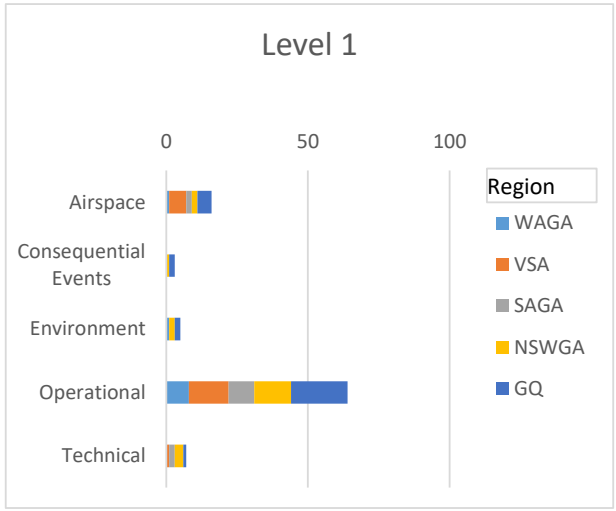
Phases	**VSA**	**NSWGA**	**SAGA**	**GQ**	**WAGA**	**Total**
In-Flight	5	3	4	4	1	17
Launch	6	6	3	7	2	24
Ground Ops	1	1	3	1		6
Landing	8	8	3	14	6	39
Thermalling		1		2		3
Outlanding	1	2		2	1	6

Type of Flight	**VSA**	**NSWGA**	**SAGA**	**GQ**	**WAGA**	**Total**
Cross-Country	4	3	1	5	2	15
Local	10	10	6	14	5	45
Ground Ops	1	1	2	1		5
Training/Coaching	4	4		4		12
AEF	1	1	2		1	5
Competition	1	2	2	6	2	13
Total	**21**	**21**	**13**	**30**	**10**	**95**

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

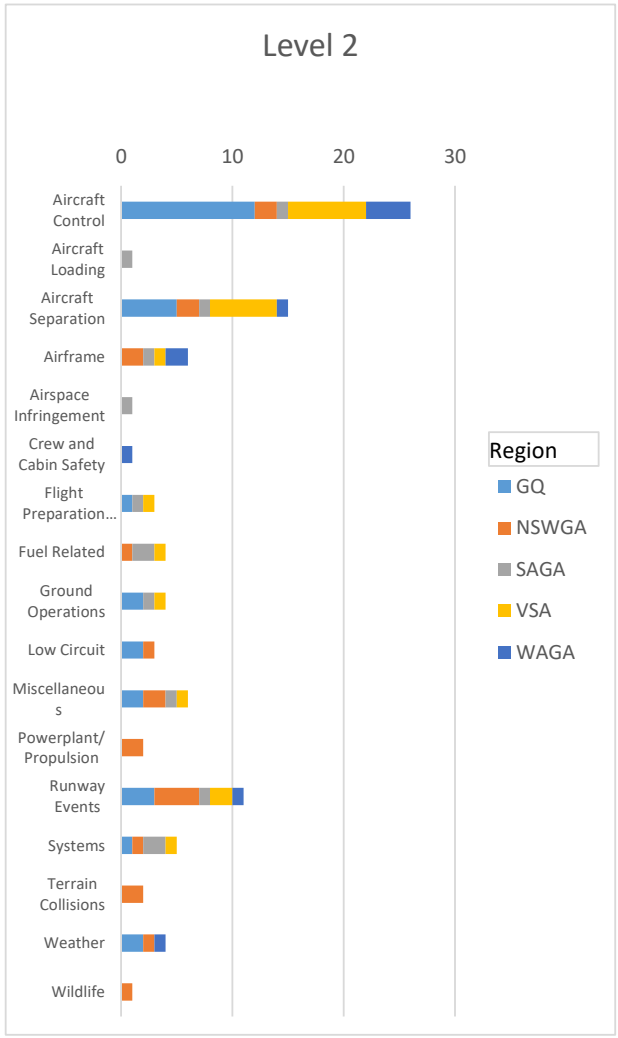
Date From: 01/01/2013
Date to: 31/12/2013

Level 1	VAG	VSA	SAGA	ISWG	GQ	Total
Airspace	1	6	2	2	5	16
Consequential Events				1	2	3
Environment	1			2	2	5
Operational	8	14	9	13	20	64
Technical		1	2	3	1	7
Total	**10**	**21**	**13**	**21**	**30**	**95**



The Gliding Federation of Australia Inc
SOAR Accident and Incident Occurrences
Classification Level 2
Date From: 01/01/2013
Date to: 31/12/2013

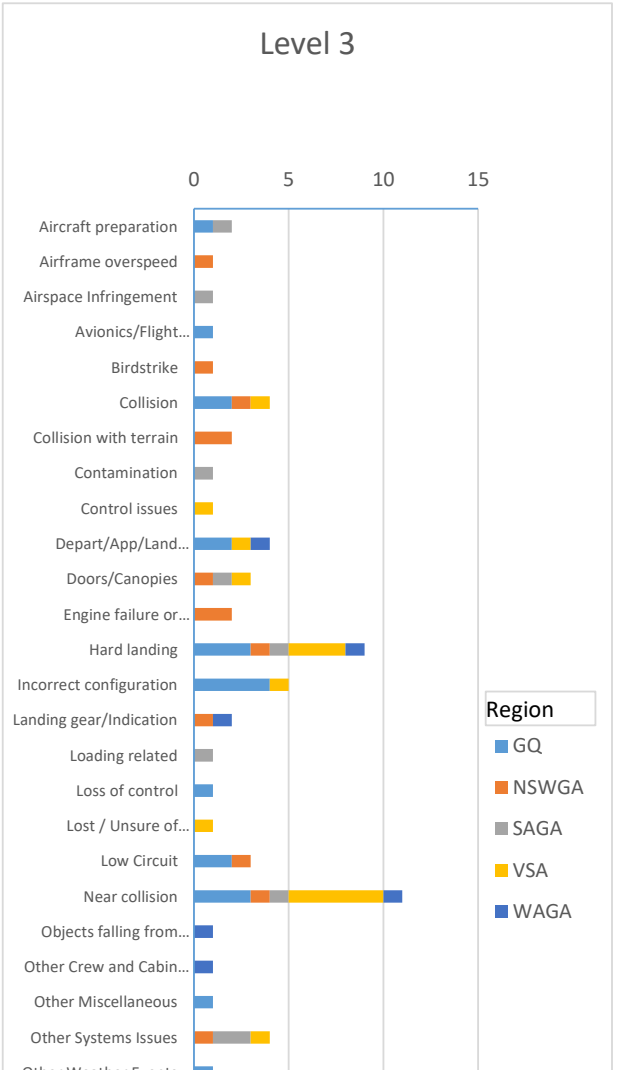
Level 2	GQ	NSWGA	SAGA	VSA	WAGA	Total
Aircraft Control	12	2	1	7	4	26
Aircraft Loading			1			1
Aircraft Separation	5	2	1	6	1	15
Airframe		2	1	1	2	6
Airspace Infringement			1			1
Crew and Cabin Safety					1	1
Flight Preparation/Navigation	1		1	1		3
Fuel Related		1	2	1		4
Ground Operations	2		1	1		4
Low Circuit	2	1				3
Miscellaneous	2	2	1	1		6
Powerplant/Propulsion		2				2
Runway Events	3	4	1	2	1	11
Systems	1	1	2	1		5
Terrain Collisions		2				2
Weather	2	1			1	4
Wildlife		1				1
Total	**30**	**21**	**13**	**21**	**10**	**95**



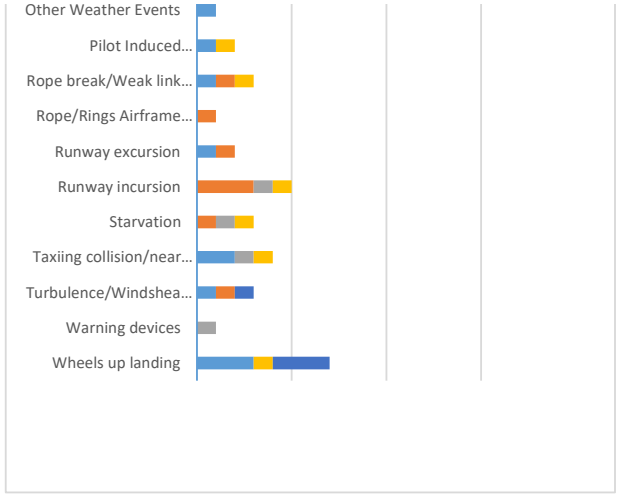
The Gliding Federation of Australia Inc
SOAR Accident and Incident Occurrences
Classification Level 3

Date From: 01/01/2013
Date to: 31/12/2013

Level 3	GQ	NSWGA	SAGA	VSA	WAGA	Total
Aircraft preparation	1		1			2
Airframe overspeed		1				1
Airspace Infringement			1			1
Avionics/Flight instruments	1					1
Birdstrike		1				1
Collision	2	1		1		4
Collision with terrain		2				2
Contamination			1			1
Control issues				1		1
Depart/App/Land wrong runway	2			1	1	4
Doors/Canopies		1	1	1		3
Engine failure or malfunction		2				2
Hard landing	3	1	1	3	1	9
Incorrect configuration	4			1		5
Landing gear/Indication		1			1	2
Loading related			1			1
Loss of control	1					1
Lost / Unsure of position				1		1
Low Circuit	2	1				3
Near collision	3	1	1	5	1	11
Objects falling from aircraft					1	1
Other Crew and Cabin Safety Issues					1	1
Other Miscellaneous	1					1
Other Systems Issues		1	2	1		4



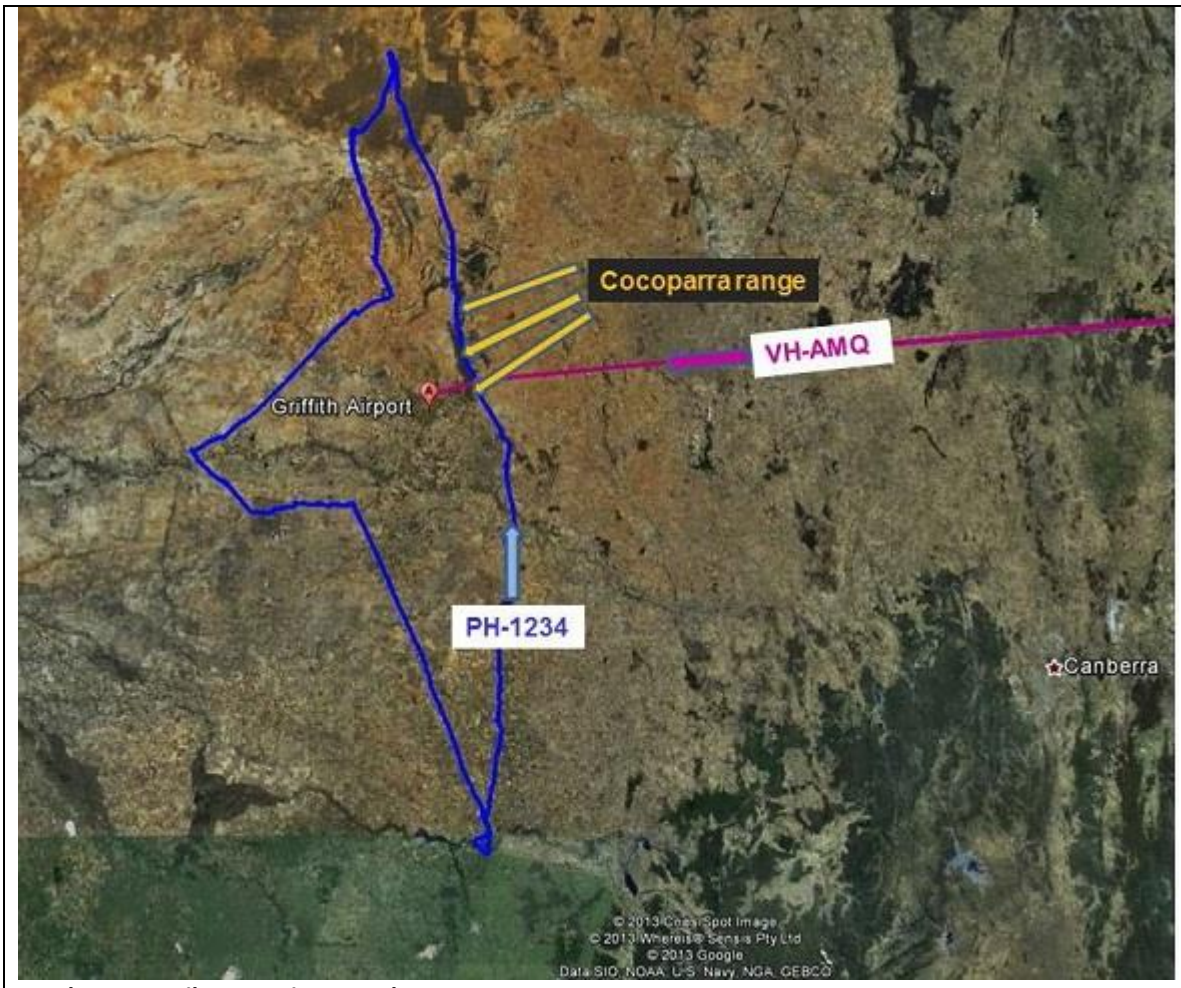
Other Weather Events	1					1
Pilot Induced Oscillations	1			1		2
Rope break/Weak link failure	1	1		1		3
Rope/Rings Airframe Strike		1				1
Runway excursion	1	1				2
Runway incursion		3	1	1		5
Starvation		1	1	1		3
Taxiing collision/near collision	2		1	1		4
Turbulence/Windshear/Microburst	1	1			1	3
Warning devices			1			1
Wheels up landing	3			1	3	7
Total	**30**	**21**	**13**	**21**	**10**	**95**



Date	6-Jan-2013	Region	VSA	SOAR Report Nbr	S-0410		
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision		
A/C Model 1	Ventus 2CT	A/C Model 2	Beech B200C				
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	59

ATSB INVESTIGATION - What happened

On 6 January 2013, at about 1402 Eastern Daylight-saving Time, a Hawker B200 aircraft was inbound to Griffith from Sydney, New South Wales, on an aero-medical retrieval flight. Onboard the aircraft were the pilot and a flight nurse. When 25 NM to the east of Griffith, the pilot of the Hawker B200 broadcast his position and intentions on the Griffith common traffic advisory frequency (CTAF). At that time, the aircraft was descending through 8,500 ft and tracking for a straight-in approach using the runway 24 area navigation global navigation satellite system (RNAV (GNSS)) approach. The pilot advised he would call again when closer to the airport. The pilot of a Schempp-Hirth Ventus glider, with the Netherlands registration, replied to the Hawker pilot's broadcast, advising that he was 12 NM east of the airport, at 3,300 ft, and tracking to the north. At that time, the glider was pursuing a thermal along the Cocoparra Range, east of Griffith, which lies almost at right angles to the RNAV approach for runway 24. Several fire-bombing aircraft landing and taking off from both runway 06 and 24 were also broadcasting on the CTAF. These aircraft were being coordinated by a ground-controller also on frequency. After clarifying the number of fire-bombing aircraft, the pilot of the Hawker B200 broadcast on the CTAF when 13 NM to the east, descending through 4,500 ft, and requested 1234's current position. Another glider from a group of over 30 involved in a friendly competition transiting the area, responded that he was at about 5,000 ft. Shortly after, the pilot of the Hawker B200 reported that the aircraft's traffic alert and collision avoidance system (TCAS) indicated 'traffic 800 ft below'. The pilot made visual contact with a climbing glider. He broadcast on the CTAF that the Hawker B200 was in the two o'clock high position relative to the glider. Initiating avoiding action, the pilot of the Hawker B200 discontinued the RNAV approach, and commenced a right turn and shallow climb. Shortly after, at about 1405, the Hawker B200 passed about 275 m laterally and 62 ft vertically over the glider. Both pilots commented on the CTAF the closeness of the event.



Hawker B200 pilot experience and comments

The pilot of the Hawker B200 held an Air Transport Pilot (Aeroplane) Licence with over 11,000 hours total flight time. The pilot commented that the CTAF was very busy, and although the weather was good, a single-pilot, high performance aircraft on descent, dictates a high workload for the pilot. The added requirement to safely self-separate visually from such a diverse mix of traffic adds yet another dimension to the workload. The pilot noted the following:

- As he had broadcast the aircraft's position and intentions, he made the assumption that the glider pilot would appreciate the potential conflict.
- As he had only heard 1234 as a potential conflict, he made the assumption that this was the traffic displayed on the TCAS.
- To enhance situation awareness, when broadcasting to visual flight rules (VFR) traffic, the pilot uses generic terms such as north-east, rather than approach specific instrument flight rules (IFR) terminology.
- There was no Notice to Airmen (NOTAM)2 issued regarding gliding activity in the area.
- He did not realise there was a large group of gliders in the area.
- He suggested an educational approach may assist all users sharing uncontrolled airspace. In particular, a poster showing how instrument approaches, utilising up to three different entry points can operate to within 15 NM of an aerodrome, may better facilitate understanding between VFR and IFR pilots.

Glider pilot experience and comments

The glider pilot had previously held a fixed-wing Commercial Pilot's licence, IFR rating, and had been a Flight Engineer on the Boeing 747-300. He had about 3,500 gliding hours, including over 1,000 hours of those gained in Australia. The pilot noted the following:

- He was part of a group of gliders conducting an on-line competition3. A triangular course was flown from Corowa, New South Wales via the Griffith area among other places, back to Corowa.
- He had broadcast on the Griffith CTAF when 20 NM south-east of the airport, and again in response to AMQ's first inbound call.
- He assumed the pilot of AMQ would know his position from his broadcast, so did not make direct contact with him.
- The glider was also fitted with a Mode S transponder and automatic dependent surveillance-broadcast (ADS-B) capability4. When the transponder is switched on, it goes automatically to the standby (non-active) mode. The pilot activates the altitude mode by pressing the mode button, this is part of his pre-takeoff checklist. The pilot believed the transponder was transmitting Mode S; however, it was not transmitting ADS-B. The transponder antenna on 1234 was fitted to the lower right side of the fuselage under the wing. The pilot suggested that the position of the antenna may have influenced the ability of AMQ's transponder to interrogate the signal.
- He had commenced flying a thermal over the Cocoparra range, but as it was not suitable, he resumed gliding in a northerly direction.
- When he first saw AMQ, the aircraft was very close, and had commenced a shallow climbing right turn.

Gliding Federation of Australia (GFA) comments

The Gliding Federation of Australia (GFA) advised that gliders operating within Australian airspace are only required to have one radio. Most gliders do not carry power generating equipment, relying on batteries for power, hence carry only the minimum of powered avionics equipment. To enhance safety, and mitigate an elevated risk of a collision between gliders when flying in large numbers, it was common practice to use a discrete glider frequency, along with a vigilant lookout, to maintain separation. A list of frequencies was available in the Airservices Australia Aeronautical Information Publication (AIP). The GFA noted that the on-line competition was not organised or formally sanctioned by the GFA. The GFA also suggested that guidance material alerting general aviation (GA) pilots about the danger of flying in proximity to common IFR approach routes would assist in keeping all parties safe.

ATSB comment

In 2012, the Civil Aviation Safety Authority (CASA) commenced a safety review into the level of risk from gliders in aircraft proximity (airprox) events in uncontrolled airspace. More recently, in response to discussions at a Regional Aviation Safety Forum and following advice from the ATSB of an increase in the number of airprox events across all categories of operations, CASA has established an Industry Airprox Working group to examine ways to reduce airprox events and enhance safety. Many regional airlines, industry groups including the Gliding Federation of Australia are members of this group.

Safety action

The ATSB has been advised of the following proactive safety action in response to this occurrence.

Operator of Hawker B200 and the Gliding Federation of Australia (GFA)

As a result of this occurrence, the operator of the Hawker B200 and the GFA have taken the following action:

- The GFA will email the operator of the Hawker B200 before gliding events, where there is expected to be increased levels of glider activity. Although some of these events may be promulgated in NOTAMs, the GFA will provide additional detail regarding the number of gliders and the proposed tracks and altitudes.
- In addition, the operator of the Hawker B200 will be incorporating an article about this incident in their next company safety newsletter.

Local gliding club

As a result of this occurrence, the local gliding club has taken the following action:

- Discussed this near miss in the briefing to the pilots and undertook to continue reminding pilots about position reports and transponder use.

Safety message

In areas outside controlled airspace, it is the pilot's responsibility to maintain separation with other aircraft. For this, it is important that pilots utilise both alerted and unalerted see-and-avoid principles. Pilots should never assume that an absence of traffic broadcasts means an absence of traffic. The use of transponders greatly enhances safety in non-controlled airspace. The AIP states that pilots of aircraft fitted with a transponder must activate it at all times during flight. Transponders can be detected by aircraft equipped with TCAS, allowing them to detect other aircraft and initiate avoidance action. The use of ADS-B provides additional information to equipped aircraft. The following publications provide information that may assist pilots avoid airprox events:

- Staying clear of other aircraft in uncontrolled airspace www.atsb.gov.au/publications/2011/staying-clear-of-other-aircraft-in-uncontrolled-airspace.aspx
- Collision avoidance strategies and tactics www.aopa.org/asf/publications/sa15.pdf
- A Flight Safety Australia article, Sharing the skies – gliders printed in Issue 87 July-August 2012, is available at www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD::pc=PC_93249
- CAAP 166-1(1) provides advice in relation to making radio broadcasts to reduce the risk of coming in close proximity with other aircraft: www.casa.gov.au/wcmswr/_assets/main/download/caaps/ops/166-1.pdf

Date	16-Jan-2013	Region	NSWGA	SOAR Report Nbr	S-0221		
Level 1	Operational	Level 2	Airframe	Level 3	Doors/Canopies		
A/C Model 1	Discus b	A/C Model 2					
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	64
During an aerotow launch and at a height of about 600ft AGL, the glider's canopy opened and departed the aircraft. Investigation revealed that the canopy was not properly locked prior to take-off.							

Date	2-Feb-2013	Region	SAGA	SOAR Report Nbr	S-0222

Level 1	Operational	Level 2	Airframe	Level 3	Doors/Canopies
A/C Model 1	Twin Astir	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	59
Following a check flight, the student pilot was sent on a solo flight. During the winch launch, the rear canopy opened. The pilot released the cable and completed a safe landing. It was determined that the Instructor who vacated the rear seat secured the harnesses for the solo flight and closed the canopy but did not lock it. The student did not identify the canopy was unlocked during his pre-boarding inspection,					

Date	2-Feb-2013	Region	VSA	SOAR Report Nbr	S-0225
Level 1	Operational	Level 2	Ground Operations	Level 3	Taxiing collision/near collision
A/C Model 1	Janus C	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Ground Ops	PIC Age	54
While the glider was being towed to the tie down area by vehicle, the wind lifted the starboard wing upward causing the port wing aileron to strike a cable marker.					

Date	4-Feb-2013	Region	NSWGA	SOAR Report Nbr	S-0224
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion
A/C Model 1	ASW 28	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	61
A vehicle was driven across the runway while a glider was on short finals. Notwithstanding the vehicle driver had the glider in sight at all times, vehicles must remain clear of runways when aircraft in the process of taking off or landing.					

Date	7-Feb-2013	Region	NSWGA	SOAR Report Nbr	S-0223
Level 1	Operational	Level 2	Fuel Related	Level 3	Starvation
A/C Model 1	H-36 Dimona	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	59
After a local flight and ten minute glide back to the airfield the engine was restarted. After idling for a few minutes to allow the cylinder head temperature to reach operating levels, slight throttle was applied but there was no response. Early on the final approach the engine was shut down and attempts to restart the engine after landing were unsuccessful. Investigation could not identify any irregularities with the level of fuel or systems but it is thought that an air lock may have occurred in the fuel line between the electric pump and fuel filter.					

Date	9-Feb-2013	Region	SAGA	SOAR Report Nbr	S-0227
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing
A/C Model 1	ASK-21	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Landing	PIC Age	56
During the landing flare, the pilot mishandled the airbrakes resulting in the aircraft striking the ground firmly and rebounding about two feet into the air. The pilot moved the stick to far forward to correct the bounce resulting in the nosewheel contacting the runway causing significant damage. The correct action in the case of a bounced landing is to select and hold a steady level attitude and retract the airbrakes or spoilers. A second attempt at the landing can then be made without further problems.					

Date	14-Feb-2013	Region	NSWGA	SOAR Report Nbr		S-0236	
Level 1	Operational	Level 2	Runway Events	Level 3		Runway incursion	
A/C Model 1		Piper PA-25-235		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	71
A local gliding club member drove a car across the operational runway as the tow plane was on final approach.							

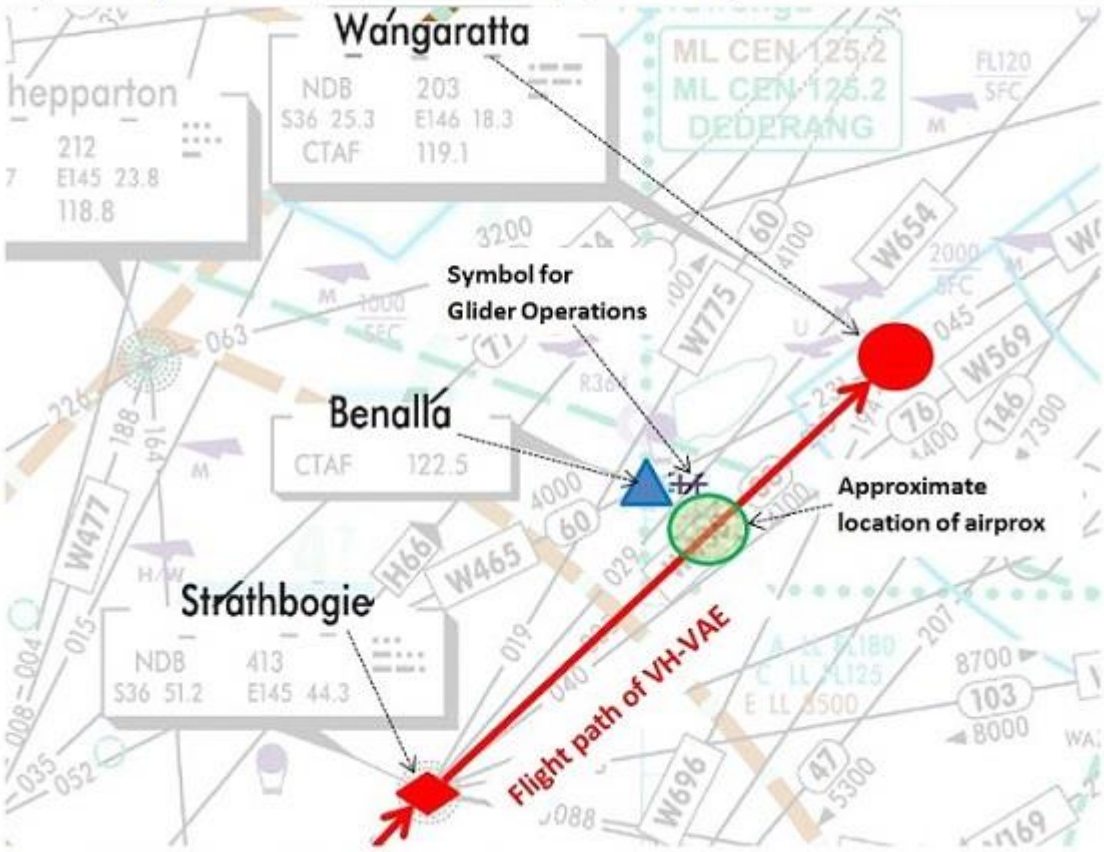
Date	16-Feb-2013	Region	NSWGA	SOAR Report Nbr		S-0228	
Level 1	Technical	Level 2	Systems	Level 3		Other Systems Issues	
A/C Model 1		SZD-48-1 Jantar Standard 2		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	38
During the pre-flight inspection the pilot noticed the bolt retaining the tailplane was not in safety. Investigation could not determine when this condition developed and it may have been flown in this condition for some time. This incident highlights the importance of proper pre-flight checks.							

Date	16-Feb-2013	Region	VSA	SOAR Report Nbr		S-0230	
Level 1	Airspace	Level 2	Aircraft Separation	Level 3		Near collision	
A/C Model 1		Unknown		A/C Model 2	Hawker Beechcraft		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	

ATSB INVESTIGATION - What happened

On 16 February 2013, a Beech B200C aircraft was being operated on an aero-medical flight under instrument flight rules (IFR). On board the aircraft were the pilot and a paramedic. The aircraft was cleared by air traffic control at Flight Level (FL) 150 from Essendon to Wangaratta, Victoria, via the Strathbogie IFR reporting point. The flight path of the aircraft passed within about 5 NM of Benalla Airport. At 1453 Eastern Daylight-saving Time, the Beech B200C was about 15 NM from Wangaratta on descent through 6,000 ft above mean sea level, with an indicated air speed of 240 kt, when the pilot observed a white glider with red markings approaching at the same level. The pilot reported that the windscreen's central pillar may have obscured the approaching glider, as he first saw it about 150 m in front of his aircraft tracking from the 1230 to 1 o'clock position. The glider passed the left side of the aircraft with separation reducing to about 70 m at the same altitude. Due to the relative speeds of both the Beech B200C and the glider, the pilot of the Beech B200C did not have an opportunity to take evasive action, nor did he observe the glider take evasive action. The glider did not appear on the Beech B200C's traffic alert and collision avoidance system (TCAS), nor were any broadcasts heard from the glider pilot on the area very high frequency (VHF). Attempts to identify the glider were unsuccessful.

Map showing VAE's track (red) and the Gliding Operations symbol at Benalla



Source: Underlying image from Airservices Australia

Gliding operations

The Airservices Australia Aeronautical Information Publication (AIP) notes that glider pilots are encouraged, but not required, to monitor the area VHF when operating above 5,000 ft in Class G airspace. The AIP further states: *"Except for operations in controlled airspace, gliding operations may be conducted no-radio, or may be on frequencies 122.5MHZ, 122.7MHZ or 122.9MHZ, which have been allocated for use by gliders. … Except when operationally required to maintain communications on a discrete frequency listed above, glider pilots are expected to listen out on the area VHF and announce if in potential conflict."*

The Gliding Federation of Australia's (GFA's) Airways and Radio Procedures for Glider Pilots states: *"The presence of a glider in an area into which a medium-sized aircraft may be descending at more than 200 knots is a clear case when "un-alerted" see and avoid is not sufficient and needs to be supplemented by use of radio."*

Industry liaison

In early 2012, and following a submission from the operator of the Beech B200C, the Civil Aviation Safety Authority (CASA) commenced a safety review into the level of risk from gliders in aircraft proximity (airprox) events in uncontrolled airspace. More recently, in response to discussions at a Regional Aviation Safety Forum and following advice from the ATSB of an increase in the number of airprox events across all categories of operations, CASA has established an Industry Airprox Working group to examine ways to reduce airprox events and enhance safety.

Safety message

When operating outside controlled airspace, it is the pilot's responsibility to maintain separation with other aircraft. For this, it is important that pilots utilise both alerted and unalerted see-and- avoid principles. Pilots should never assume that an absence of traffic broadcasts means an absence of traffic. The use of

transponders greatly enhances safety in non-controlled airspace. The AIP states that pilots of aircraft fitted with a transponder must activate it at all times during flight. Transponders can be detected by aircraft equipped with TCAS, allowing them to detect other aircraft and initiate avoidance action. Issues associated with unalerted see-and-avoid have been documented in an ATSB research report Limitation of the See-and-Avoid Principle. Unalerted see-and-avoid relies entirely on the ability of the pilot to sight other aircraft. A traffic search in the absence of traffic information is less likely to be successful than a search where traffic information has been provided because knowing where to look greatly increases the chance of sighting the traffic. The Limitations of the See-and-Avoid Principle is available at www.atsb.gov.au/publications/2009/see-and-avoid.aspx

The following publications provide information that may assist pilots avoid airprox events:

- Staying clear of other aircraft in uncontrolled airspace www.atsb.gov.au/publications/2011/staying-clear-of-other-aircraft-in-uncontrolled-airspace.aspx
- Collision avoidance strategies and tactics www.aopa.org/asf/publications/sa15.pdf
- A Flight Safety Australia article, Sharing the skies – gliders printed in Issue 87 July-August 2012, is available at www.casa.gov.au/scripts/nc.dll?WCMS:STANDARD::pc=PC_93249

Date	5-Mar-2013	Region	VSA		SOAR Report Nbr		S-0231		
Level 1	Operational	Level 2	Miscellaneous		Level 3		Rope break/Weak link failure		
A/C Model 1	Duo Discus				A/C Model 2	Cessna 180C			
Injury	Nil	Damage	Nil	Phase	Launch		PIC Age	61	
During aerotow launch the towline prematurely released form the tug. Investigation revealed the TOST rings being used were incompatible with the Schweitzer release fitted on the tug.									

Date	9-Mar-2013	Region	VSA		SOAR Report Nbr		S-0229		
Level 1	Airspace	Level 2	Aircraft Separation		Level 3		Collision		
A/C Model 1	Twin Astir				A/C Model 2	Cessna 150F			
Injury	Nil	Damage	Substantial	Phase	Landing		PIC Age	63	

ATSB INVESTIGATION - What happened

On 9 March 2013, two glider clubs conducting gliding operations at the same time as an aerobatic aircraft event was being conducted at Tocumwal aerodrome, New South Wales. The gliders and glider tug aircraft were operating left circuits from the grass runway 36 left (36L) and the aircraft involved in the aerobatic event were operating right circuits from runway 36 right (36R), the sealed runway. Once airborne, the gliders were being towed to the west of the aerodrome prior to release, to remain clear of the aerobatic aircraft. The aerobatic activity was being conducted in a 'box' directly overhead the aerodrome down to 1,200 ft above mean sea level. A 'Tocumwal Advisory' radio service was being provided to the aerobatic aircraft by a ground station transmitting on the Tocumwal Common Traffic Advisory Frequency (CTAF). The constant radio traffic generated on the CTAF by the Tocumwal Advisory service, the aerobatic aircraft, gliders and glider tug aircraft meant that the radio frequency was more congested than normal at Tocumwal. At 1313 Eastern Daylight-saving Time, a Grob G103 Twin Astir glider was towed airborne for a solo flight to the west of the aerodrome and released at 2,000 ft. The glider pilot heard the CTAF broadcasts made by the tug pilot, as the tug rejoined the circuit and landed. After a number of orbits looking for rising air, the glider pilot tracked to return to the circuit and land. At 1316, a Cessna 150F (C150) became airborne towing a glider and tracked to the west prior to releasing the glider at 1,700 ft for a cross-country flight. The tug and this glider were from one gliding club, the Twin Astir from the other. Following the release, the pilot of tug turned left and tracked for a left downwind for runway 36L, making all necessary CTAF broadcasts. The pilot of the Twin Astir heard the downwind CTAF broadcast made by the pilot of tug but did not recall

hearing any other broadcasts from that aircraft. The tug pilot made the required CTAF broadcast, just prior to turning the aircraft onto the base leg of the circuit, at about 1,000 ft, and while doing about 65 to 70 knots. As he completed the turn, he reported hearing a poor quality broadcast from an aircraft on downwind. As all the broadcasts he had heard from Tocumwal Advisory and the aerobatic aircraft had been loud and clear, he determined that the call he had just heard was from a glider on left downwind, which was well behind him. The pilot of the Twin Astir had joined downwind for runway 36L, abeam the upwind threshold at about 1,300 ft, doing between 55 and 60 knots, when he made the required CTAF broadcast. As he was 100 ft lower than the standard height on downwind, the glider pilot was very conscious of the need to expedite the landing. The subsequent sequence of events could not be determined, as neither aircraft heard the CTAF broadcasts from the other. However, witnesses on the ground reported hearing both pilots making all necessary CTAF broadcasts. The tug pilot reported seeing no other aircraft or any gliders while in the circuit. The pilot of the Twin Astir reported seeing only one aircraft while in the circuit, well to the south of the aerodrome when the glider was on left base. The pilot of the Twin Astir was not able to determine the direction of travel of that aircraft due to the need to focus on landing the glider. At 1326, just as the tug touched down on runway 36L, the pilot felt a heavy jolt on the top of the cockpit and simultaneously heard a loud noise. Immediately, he saw the windscreen fill with the underside of a glider. He observed the glider continue down the runway at about 5 to 10 ft above ground level. As soon as the aircraft came to a stop, the tug pilot turned off the runway and did not see the glider land. The pilot was uninjured and, on exiting the aircraft, observed a wheel contact print on the top of the aircraft. The pilot of the Twin Astir was uninjured and landed the glider well down the runway. Although the glider was fitted with a FLARM collision warning system, no alarm was triggered, as the tug aircraft was not fitted with a similar FLARM system. On exiting the glider, the pilot observed damage on the left wing and fuselage. However, he was not aware that he had landed on the tug aircraft until club personnel arrived in an airfield vehicle. Both gliding clubs operated with a radio-equipped observer on the ground, known as the 'duty pilot', to record glider departure and arrival times and to observe operations. Though both duty pilots observed the latter stages of the accident sequence, they were engaged in other activities remote from the radios.

Gliding Federation of Australia

Both gliding clubs operated under the rules and procedures proscribed by the Gliding Federation of Australia (GFA). The investigation conducted by the GFA determined that glider and tug landed together with the glider on top. Propeller strikes caused damage to the underside of the glider's left wing and along the fuselage near the main landing wheel. There was no damage to the C150. The GFA investigation determined

that the glider tug and glider would have been operating at similar speeds, on simultaneous final approach aiming to land on the same runway, using a similar aiming point. The restricted visibility from both cockpits would have resulted in neither pilot being aware of the other. The GFA investigation also noted: *"While the pilot of both aircraft made appropriate broadcasts on the CTAF, it is possible the radio transmissions tug to glider were not heard due to proximity interference. Frequency congestion from the aerobatic operations may also have impeded situational awareness."*

ATSB comment

The poor quality of the Twin Astir's downwind CTAF broadcast as heard by the pilot of the tow plane, and the fact the neither pilot heard any other broadcasts from the other during the unfolding incident, may have been a result of radio receiver dynamic range performance. The sensitivity of a radio receiver can easily be overloaded when strong signals are present, for example when the transmitting radio is very close to the receiving radio.

SAFETY ACTIONS

The ATSB has been advised of the following proactive safety actions in response to this occurrence.

Gliding Federation of Australia

As a result of this occurrence, the GFA has advised the ATSB that they will raise awareness of collision risk at non-towered aerodromes with its members through the Gliding Magazine and through its biennial Safety Seminars.

Glider tug operator

As a result of this occurrence, the operator of the glider tug has advised the ATSB that they are sourcing quotes for the fitment of FLARM to their gliders and glider tug aircraft.

Safety message

When operating outside controlled airspace, it is the pilot's responsibility to maintain separation with other aircraft. For this, it is important that pilots utilise both alerted and unalerted see-and- avoid principles. Pilots should never assume that an absence of traffic broadcasts means an absence of traffic. Issues associated with unalerted see-and-avoid have been documented in an ATSB research report Limitation of the See-and-Avoid Principle. Unalerted see-and-avoid relies entirely on the ability of the pilot to sight other aircraft. A traffic search in the absence of traffic information is less likely to be successful than a search where traffic information has been provided because knowing where to look greatly increases the chance of sighting the traffic. The Civil Aviation Safety Authority (CASA) has published a number of Civil Aviation Advisory Publications (CAAPs) dealing with operations at non-towered aerodromes and the importance of not relying solely on radio broadcasts for traffic advice. The following publications provide useful information on radio use and the limitations of see-and- avoid.

- Civil Aviation Advisory Publication 166-1(0) – Operations in the vicinity of non-towered (noncontrolled) aerodromes is available at http://casa.gov.au/wcmswr/_assets/main/download/caaps/ops/166-1.pdf
- Civil Aviation Advisory Publication 166-2(0) – Pilots' responsibility for collision avoidance in the vicinity of non-towered (non-controlled) aerodromes using 'see-and-avoid' is available at http://casa.gov.au/wcmswr/_assets/main/download/caaps/ops/166-2.pdf
- Civil Aviation Advisory Publication 5-59(1) – Teaching and Assessing Single-Pilot Human Factors and Threat and Error Management is available at http://casa.gov.au/wcmswr/_assets/main/download/caaps/ops/5_59_1.pdf
- Limitations of the see-and-avoid principle (1991) is available at www.atsb.gov.au/publications/2009/see-and-avoid.aspx
- A pilot's guide to staying safe in the vicinity of non-towered aerodromes (AR-2008-004(1)) is available at www.atsb.gov.au/publications/2008/ar-2008-044(1).aspx
- Pilots' role in collision avoidance (Federal Aviation Administration Advisory Circular AC 90- 48C) is available at http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/list/AC%2090- 48C/$FILE/AC90-48c.pdf

- Collision avoidance strategies and tactics is available at www.aopa.org/asf/publications/sa15.pdf
- A Flight Safety Australia article, Sharing the skies – gliders printed in Issue 87 July-August 2012, is available at: www.flightsafetyaustralia.aero/#folio=1
- More information on radio receiver dynamic range performance is available at www.radio-electronics.com/info/receivers/dynamic_range/dynamic_range.php

Date	16-Mar-2013	Region	GQ	SOAR Report Nbr	S-0232
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Collision
A/C Model 1	LS 3	A/C Model 2	Glasflugel 304C		
Injury	Nil	Damage	Substantial	Phase	Thermalling	PIC Age	70

At 1545 EST on 16 March 2013, two very experienced pilots flying a 304C Wasp and LS3 collided wing to wing while thermalling at 2,000ft AGL in separate but converging thermals south-east of Boonah Qld Airstrip. The 304C Wasp was established in the thermal for some time before the LS3 started thermalling close by. The Wasp pilot did not sight the other glider until immediately prior to the impact and had no time to react. The LS3 pilot saw the other glider 500 metres away and 150ft higher and did not perceive it to be a threat. The LS3 pilot lost sight of the other glider on the blind side of his turns and did not see the other glider until immediately before the collision. Both gliders landed safely without injury to either pilot but both suffered serious damage. The LS3 pilot landed with the undercarriage retracted due to stress. When thermalling with others, it is both pilots' responsibility to maintain separation. Flying converging circles at the same height must be avoided. Pilots must adhere to the principle of "see and be seen."

Date	24-Mar-2013	Region	SAGA	SOAR Report Nbr	S-0235
Level 1	Operational	Level 2	Fuel Related	Level 3	Contamination
A/C Model 1	Grob G 109	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	49

At approximately 600ft AMSL during the launch, the motor glider's engine began to surge. The pilot turned on the electric fuel pump and assessed throttle response, and the surging reduced at the lower power setting which was insufficient to maintain the climb. The pilot then commenced a left turn back towards the airfield and advised other traffic of the aircraft's partial engine failure. With the engine idling and in a 10 knot tailwind, the pilot successfully landed without further incident. Investigation revealed foreign object contamination and slight traces of water in both the mechanical and electrical fuel pumps, and an obstruction was noted between the fuel tank and electric fuel pump, reducing fuel flow to the carburettor when the electrical fuel pump was turned on. The club uses 98 Octane UL fuel purchased from a local service station. Proper fuelling arrangements have been implemented to prevent future contamination.

Date	29-Mar-2013	Region	NSWGA	SOAR Report Nbr	S-0233
Level 1	Environment	Level 2	Wildlife	Level 3	Birdstrike
A/C Model 1	SZD-50-3 Puchacz	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Thermalling	PIC Age	25

While thermalling at around 2,000ft AGL, a small eagle or kite flew over the canopy and impacted the rear of the glider. The pilot flew back to the airfield at moderate speed and landed without incident. Inspection revealed a puncture in the top surface of the horizontal stabiliser and a number of scratches. A large incision was also noted on the top surface of the elevator.

Date	30-Mar-2013	Region	VSA	SOAR Report Nbr	S-0234
Level 1	Operational	Level 2	Fuel Related	Level 3	Starvation

A/C Model 1		Piper PA-18A-150		A/C Model 2		SZD-48-1 Jantar Standard 2	
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	22
During aerotow launch and at about 1500ft AGL the tow plane's engine started to cough and splutter and lost power. The tow pilot immediately lowered the nose and pulled the emergency guillotine on the tugs retractable tow rope system (releasing the glider). In the interim, the glider pilot observed the tow rope go slack immediately followed by the tug descending and released from tow. The tow pilot completed his emergency checks, which included swapping fuel tanks. As soon as the tank selector valve was swapped to the left tank, the engine returned to smooth running and operating at a usual power. The tow plane was landed without further incident. The tow pilot did not notice the selected fuel tank was almost out of fuel during his pre-take-off checks.							

Date	4-Apr-2013	Region	GQ	SOAR Report Nbr	S-0246
Level 1	Operational	Level 2	Aircraft Control	Level 3	Incorrect configuration
A/C Model 1	Nimbus 2	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	51
Tail chute deployed during winch launch. Ground crew noticed the chute deploy and radioed pilot who jettisoned the chute and continued the launch. Pilot believes he may have inadvertently actuated the release lever while getting into the aircraft.							

Date	7-Apr-2013	Region	VSA	SOAR Report Nbr	S-0238
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3	Lost / Unsure of position
A/C Model 1	Astir CS 77	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	47
The pilot became disorientated on a short cross-country flight and inadvertently flew into Class C airspace. Upon realising the error, the pilot retraced the track but was unable to identify the location of the home airfield due to deteriorating visibility and ground shadows. A precautionary landing was made at an alternate aerodrome. Causal factors include the pilot misidentifying ground features that were similar but 90 degrees off track, poor visual conditions, and complacency.							

Date	13-Apr-2013	Region	SAGA	SOAR Report Nbr	S-0239
Level 1	Operational	Level 2	Fuel Related	Level 3	Starvation
A/C Model 1	SF 25C Falke	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	71
The aircraft had been successfully test flown after returning to service following replacement of Fuel Selector Switch. During climb-out on the subsequent flight and at 600 ft AGL the engine suddenly lost power. The pilot returned to the airfield and landed engine-off. Investigation subsequently revealed that maintenance engineer replaced the fuel selector switch with a faulty unit from another aircraft. Contributing factors include poor maintenance records and inadequate use of the maintenance release for recording problems.							

Date	14-Apr-2013	Region	GQ	SOAR Report Nbr	S-0241
Level 1	Operational	Level 2	Ground Operations	Level 3	Taxiing collision/near collision
A/C Model 1	T61A	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	77

After landing and while turning around on the runway under power, the undercarriage sank into damp soil resulting in the propeller striking the ground. Causal factors include heavy rain the night before.

Date	15-Apr-2013	Region		SAGA		SOAR Report Nbr		S-0240	
Level 1	Operational		Level 2	Flight Preparation/Navigation		Level 3		Aircraft preparation	
A/C Model 1		SF 25C Falke				A/C Model 2			
Injury	Nil	Damage	Nil		Phase	Ground Ops		PIC Age	71

The pilot noticed oil forming on the canopy during flight and returned to the airfield. Upon inspection, it was found the dipstick was not secured. The oil cap was tightened and the aircraft continued in service. Investigation by the club determined that the pilot was distracted during the daily inspection and forgot to secure the oil dipstick.

Date	27-Apr-2013	Region		NSWGA		SOAR Report Nbr		S-0242	
Level 1	Airspace		Level 2	Aircraft Separation		Level 3		Collision	
A/C Model 1		Mini-Nimbus C				A/C Model 2		Blanik L13 A1	
Injury	Fatal	Damage	Write-off		Phase	Launch		PIC Age	73

GFA FIELD INVESTIGATION - FACTUAL INFORMATION

On 27 April 2013, at 1542 Eastern Standard Time, an LET National Corporation Blanik L-13A1 two-seat glider was being used by the Southern Tablelands Gliding Club for flight training at Towrang airfield, "Lockyersleigh", New South Wales. A Level 2 Instructor occupied the rear seat of this tandem-seat glider. A solo-qualified GFA pilot occupied the front seat of this glider, and was undertaking a currency check-flight under the Instructor's supervision. At the same time, a Schempp-Hirth Flugzeugbau GMBH Mini-Nimbus C single-seat glider was being flown by a GFA Level 3 Instructor, on a recreational local soaring flight. The Mini-Nimbus pilot had successfully completed a Currency Check-Flight in THE Blanik and then a solo flight in Mini-Nimbus earlier that day. At about 1540-1542 EST on 27 April 2013, the Mini-Nimbus C single-seat glider was flown on a standard right-hand circuit to land on Runway 23 at Towrang airfield. The base leg and early part of the final approach path was behind a line of tall pine trees close to the threshold of Runway 23. The Mini-Nimbus flew directly over the trees and launch point on late final approach, just as a winch launch was initiated and the two-seat Blanik L-13 glider was launched. The Blanik accelerated under winch power, rose from the ground, and the crew rotated the glider into a climbing attitude as is normal for a winch launch. shortly after take-off at a height of about 50-100ft above ground level the landing Mini-Nimbus glider and climbing Blanik L-13 glider were observed to collide; with the lower fuselage and left wing of the Mini-Nimbus impacting with the tail of the Blanik. Post-collision, the Blanik glider was seen to pitch steeply nose upwards, stall, and then impact the ground in a near vertical attitude about 145-150m from the launch point, close to the left-hand edge of Runway 23. The Mini-Nimbus glider was seen to pass under the Blanik glider post-collision, resume its approach path and land normally about 300m further down Runway 23. The pilot was uninjured but shaken. Post ground impact, the Blanik toppled from the nose-down attitude back onto its undercarriage in a near-normal position, off to the left-hand side of Runway 23, pointing right (West). Pilots and visitors at the launch point, plus the winch crew and pilot of the Mini-Nimbus, rushed to the Blanik crash site and attempted to render assistance to the crew. Emergency Services were called; Police, Ambulance and Fire Services soon attended the accident scene. The front-seat occupant of the Blanik suffered fatal injuries. The rear-seat occupant suffered serious injuries requiring air ambulance evacuation and hospitalisation. The Blanik glider suffered serious damage and was assessed as a total write-off. The Australian Transport Safety Bureau was notified soon after the accident and declined to investigate.

ANALYSIS

Timeline and Description of Accident Flights

Mini-Nimbus

The Mini-Nimbus launched on its second flight on 27 April 2013 at about 1517, as recorded on the daily log sheets maintained by the Duty Pilot at the launch point and the Command Pilot's statement; or 1515, as recorded on the Cambridge Data Logger fitted in the glider. The data logger trace from the Mini-Nimbus shows a normal winch launch to about 3,600ft altitude Above Sea Level (QNH), or about 1,600ft Above Field Elevation (QFE). The Command Pilot reported that he launched to about 3,700ft QNH, or 1,700ft QFE. The pilot then attempted to soar in several areas of rising air (thermals), rising to 4,000ft QNH or 2,000ft QFE, drifting east while climbing, and searching for lift upwind west of the airfield. After about 25 minutes of attempted soaring, the Command Pilot then elected to join a right hand circuit onto Runway 23, from a position south-west of the airfield. At 1540:18 seconds data logger time, the Mini-Nimbus appeared to have commenced the downwind leg of the circuit at a height of about 620ft QFE. About 30 seconds later, at 1540:48 seconds data logger time, the Mini-Nimbus appeared to slow down in rising air, and when abeam the aiming point on downwind leg was at about 460ft QFE. At 1541:14 seconds data logger time, the Mini Nimbus was in a turn onto the base leg of the circuit, at about 410ft QFE. At this point, the glider was about 600m from the launch point, therefore an apparent elevation of about 12 degrees above the horizontal. Sixteen seconds later, at 1541:30 seconds data logger time, the Mini Nimbus commenced its final turn from base leg onto final approach at about 364ft QFE. It was established on approach at 1541:34 seconds at about 322ft QFE, descending in a straight line. At this point it was behind the line of pine trees, about 345m behind the launch point, therefore an apparent elevation of about 16 degrees above the horizontal. This data appears reasonably consistent with the Command Pilot's description of the circuit. He described his decision to fly a right hand circuit onto Runway 23, as the left hand circuit was described as *"not safe as there are high tension power lines on the eastern side of the runway"*. He described his downwind radio call on 122.7 MHz on downwind leg, at about 700ft QFE. He described completing his pre-landing check and how he *"observed the Blanik was still in the launch position until I was late on the downwind leg, until I lost sight of the launch area of the runway due to the obstructing pine trees. At no stage in the circuit did I hear any*

departure call from the Blanik." He then stated, *"As I turned onto finals, I lined up with the runway at about 300 ft above ground level. I didn't see the Blanik at any stage as I crossed over the pine trees at about 100ft, giving me a 50ft clearance from the top of the trees."* During final approach, the data logger was recording position and altitude at 4 second intervals, until the glider executed a major positive vertical acceleration at 1541:46 seconds, about 12 seconds after being established on approach. The data shows the glider descending quite rapidly, then at about 89ft QFE suddenly rapidly accelerating upwards. Impact probably occurred at about this point. Two seconds later, at 1541:48 seconds, the glider appeared to be at 200 ft QFE, a rise of over 110ft from the previous data point. The data then shows the glider descending and landing ahead on Runway 23. The sudden vertical acceleration and temporary altitude gain appears to correspond to the combination of an instinctive reaction to try to avoid a collision, along with the nose of the Mini-Nimbus being pitched up by the Blanik tailplane. On the evening of the accident, the Command Pilot's verbal account to the GFA Accident Investigator emphasised that *"I saw the winch rope rising in front of me, the same time the fuselage of the Blanik appeared, climbing right beside me to the left of the cockpit, and an instant later there was a bang as we collided. There was no time to avoid; everything happened in a fraction of a second."* The Command Pilot's written account included these statements: *"I could not see the Blanik because of my own fuselage. In my mind the runway was clear to land. Then almost simultaneously I observed the winch rope lifting off the ground and the Blanik's fuselage appeared about 1 metre to the left of my fuselage and I heard a loud report "bang" as the two aircraft collided. At the time of the collision I was about 10 degrees nose down and the Blanik was about 30 degrees nose up. I was descending rapidly with full dive brakes and he was climbing rapidly. The Blanik then disappeared."* With the combined vertical rates of the descending Mini-Nimbus and ascending Blanik, plus aerodynamics limitations and inertial effects coupled with blind arc limitations in the cockpits of both gliders, the time available from a late visual detection of the threat to avoidance of a collision would have been miniscule. It appears that the collision would have been almost impossible to avoid once the winch launch had commenced below the landing glider.

Blanik

The flight of Blanik was tragically short. Once the launch was authorised to commence and the slack was taken out of the winch rope, the glider accelerated quickly as power was applied. The first few seconds were a normal winch launch; a short ground roll with rapid acceleration to flying speed, then a gradual rotation from initial climb into full climb. Various witnesses described how the glider was at about 50-100ft QFE when the collision occurred, during a transition from initial climb (shallow nose up angle) to full climb (up to 45 degrees nose up angle). This transition is quite rapid, and the rate of climb very high. The average rate of climb in a winch launch may be in the range of 2,000-3,500 feet per minute, or 20-35 knots. An instructor at the launch point described how *"The Blanik had commenced its launch when I heard the sound of the Mini-Nimbus approaching over the trees and I then called "stop, stop, stop" several times on the CB radio. The Blanik was about 50 ft or less above the ground and transitioning from separation to full climb when it was impacted from behind by the Mini-Nimbus. At impact the Blanik pitched sharply nose up to a near vertical attitude, the Mini-Nimbus continued straight ahead. The Blanik appeared to pause and then nosed over into a near vertical descent before impacting the ground."* This same instructor also stated that after the 'All out' signal was given: "*At about that time or shortly after, we are talking seconds or part of seconds as the Blanik is moving forward I heard the Nimbus approaching behind the pine trees. The approaching sound is like a "whooshing" sound, only audible at close range, he was not a long way back. At that point the Blanik had become airborne and was about 1-2 metres off the ground. I then called "Stop, Stop, Stop" to the winch driver on the CB radio. I said this on the radio without even seeing the Nimbus, just on sound alone, I put this down to experience. I think by the time [the winch driver] acted on my command the Blanik was transitioning into a steeper climb attitude and was no less than 50 feet from the ground. I then observed the Nimbus connect with the tail plane section of the Blanik, shunting it nose upwards into a near vertical position and the Nimbus continued to glide underneath. On noticing the Nimbus glide on underneath, my focus was completely on the Blanik, which I notice hesitated momentarily, it nosed over into a vertical nose down position and vertically descend and then connect heavily with the ground."* The CFI and Winch observer described that the winch driver *"…reacted to the call and stopped the winch. The Mini-Nimbus then passed underneath the pitching, climbing Blanik. The Blanik pitched nose upwards into a near vertical attitude, then stalled with a possible left wing drop steeply nose down, hitting the ground in a near vertical descent."* Attempts to stop the winch launch were in this case demonstrably insufficient to prevent the collision. There is insufficient data to surmise that aborting the winch launch made any difference. Similarly, insufficient data is held to support the opposite proposition that continuation of the launch might have just averted the collision. The relative motion of the two gliders was probably low horizontally and high vertically. The Mini-Nimbus was probably approaching at about 55-65 kts airspeed. The Blanik was accelerating from stationary, through separation at about 38-40 kts into full climb, no flaps, at about 55 kts airspeed. The Command Pilot of the Mini-Nimbus stated *"Visually, in the fraction of a second that I saw the Blanik it appeared that the horizontal speed of both aircraft were identical."* The vertical rates at the moment of collision were probably higher than horizontal closing speed. 55 kts is about 102 km/hr, or 28m/sec, or 93 ft/sec. Let us assume a horizontal speed difference of, say, 10 kts, or 18.5 km/hr, 5.1 m/sec or 19.9 ft/sec. The Blanik is 8.4m or 27.7ft in length, the Mini-Nimbus 6.4m or 21ft length. From this account it appears that just a few seconds difference in time would have resulted in a near miss, rather than a collision. A fraction of a second time difference might also have changed the collision geometry, with even more tragic results. There was a direct correlation in the physical distances between impact points on both airframes. With the Mini-Nimbus undercarriage tyre touching the right elevator impact point, the scoring damage and rub points under the fuselage correlated exactly with the buckled upper surface of the tailplane, and the main leading edge impact point with the vertical stabiliser and remains of the rudder. The tail of the Blanik appears to have been pushed left, and the tip of the left tailplane impacted the left wing and underside to the lower flap surface. This damage correlation also supports the account of the Command Pilot of the Blanik, who stated that the elevator and rudder controls were not attached and ineffective. It appears highly likely that the Blanik was completely uncontrollable from the instant of the collision onwards.

Ground Impact Damage Views of Blanik

Flight Path and Reduced Visibility due to Tree line near Launch Point

The Mini-Nimbus was at low altitude and therefore low elevation whilst in the circuit area. On joining downwind leg and early in the circuit, the Mini-Nimbus would have been low in the up-sun sector, as seen from the launch point. It passed north of the line of pine trees before turning base leg. At the turn from downwind leg to base leg, it was probably at about 12 degrees above the horizontal, and at the turn from base leg to final approach, at about 16 degrees above the horizontal. The apparent elevation of the line of pine trees at the threshold of Runway 23, measured from the launch point adjacent to the launch point operations van, was 38 degrees at tree top level. The line of pine trees was reasonably dense, so visibility of airspace behind the trees was markedly impaired. There were some gaps in the foliage, but insufficient to allow a reliable visual search for gliders in the circuit. On 28 April 2013, the GFA Accident Investigator accompanied police investigators in helicopter flights in the circuit area. These flights confirmed that visibility of the operations van and launch point area was seriously impaired by the line of pine trees at the threshold of Runway 23. Afternoon shadows in this area also served to camouflage the launch point operations van. The launch point operations van was only visible momentarily through gaps in the trees at

limited positions on the base leg. It was not visible on the final approach path. With a flight path corresponding to a moderate approach on Runway 23 and 50ft obstacle clearance over the pine trees, the first 75 metres of the runway were not visible for much of the approach, due to obscuration by the trees. A shallower or flatter approach path would cause the trees to have obscured more of the runway length. The Blanik crash site was about 150 metres from the launch point. When the Mini-Nimbus was passing over the pine trees, the glider blind arcs forwards and below would have obscured the launch point and Blanik from view. A displaced threshold for the launch point, more distant from the pine trees, would have been required to reduce their apparent elevation. This was compounded by operational decisions made that day that did not achieve required separation of launching and landing operations. The operations crew did not use an alternate, laterally displaced landing area such as Runway 23 Left, due to long grass growth, infrequent mowing and presence of stock; and also conducted both launches and landings from the same runway, without a displaced threshold that might have improved visibility of other gliders in the circuit area.

Launch Point Views at Threshold of Runway 23

CONCLUSIONS

- All pilots were appropriately qualified for the flight.
- No known medical issues or pilot certification concerns affected the pilots in Mini-Nimbus and Blanik.
- Both gliders had a valid Maintenance Release and had been maintained and daily inspected prior to flight in accordance with relevant requirements.
- Both gliders appeared capable of normal operation up to the moment of impact.
- Weather conditions were generally favourable and the wind strength and direction made the choice of operational runway, Runway 23, appropriate.
- The presence of high voltage power transmission towers and power lines near the Eastern boundary of the airfield required Right hand circuits to be flown onto Runway 23, the operational runway.

- Right hand circuits on Runway 23 oriented gliders in the circuit up-sun in the late afternoon. The sun's elevation was close to apparent circuit elevation, as viewed from the launch point, at the time of the accident.
- The decision to use a common runway for winch launching and landing (without a laterally displaced landing area or displaced launching threshold) brought the gliders into potential conflict in the launch area.
- An alternate, laterally displaced landing area, Runway 23 Left, was un-mown for several weeks, had long grass tussocks and was not used that day. The presence of sheep and lambs may have limited mowing activity.
- The launch point location chosen was close to a windbreak tree line just north of the threshold of runway 23.
- Close proximity of the launch point to the tree line obscured clear visibility of gliders in the circuit area as seen from the launch point, as the dense foliage and high elevation masked gliders flying late downwind leg, base leg and much of final approach.
- The tree line obscured the launch point and Blanik from view from the perspective of the Mini-Nimbus, flying a Right hand base leg and final approach.
- The presence of the Mini-Nimbus on final approach was not seen in the "all clear above and behind" check pre-launch, and not detected by launch crew until after the winch launch had commenced.
- Distractions may have affected either or both winch and launch point operations, potentially detracting from vigilance and hazard awareness.
- Both Blanik pilots had very limited views of airspace above and behind the wingtips due to blind zone limits. There were limits on what they could do (unassisted) to clear airspace; therefore there was a high reliance on advice from others about launch safety.
- Blind zones exist for all gliders below the nose, cockpit fuselage area and instrument panel. Once the Mini-Nimbus pilot had lined the glider up on final approach aligned with the centre of the mown runway, and established an approach flight path clearing the tree line to an aiming point some distance into the runway, his ability to detect an emerging threat from below, behind the tree line was extremely limited.
- The landing Mini-Nimbus had right of way over the launching Blanik glider, but this pre-supposes situational awareness of intended movements.
- Normal "alerted see and avoid" processes used to achieve situational awareness were degraded by non-reception of circuit broadcast calls made on 122.7 MHz by the Command Pilot of the Mini-Nimbus.
- Intermittent microphone and radio communications system performance was observed in functional testing of the Mini-Nimbus radio. On the day of the accident some radio calls were not received.
- Any simultaneous transmissions may have degraded receipt of messages broadcast on that frequency.
- It cannot be stated definitively whether launch point operations van radio mode and frequency settings may, or may not, have caused a failure to hear transmissions on the gliding frequency by the Mini-Nimbus. Such setting errors would have significantly increased the risk of non-reception of the circuit joining broadcast, and therefore increased the risk of potential conflict. The risk of setting errors was probably increased by a lack of clear instructions and use of alternate radio modes by different people.
- The Mini-Nimbus and Blanik collided when the Blanik was transitioning from separation and initial climb into full climb, in the early stages of flight on a winch launch. The descending Mini-Nimbus impacted the tail control surfaces of the ascending Blanik, then passed underneath the pitching, climbing Blanik.

- As a result of the collision the Blanik pitched nose upwards into a near vertical attitude, then stalled with a possible left wing drop steeply nose down, hitting the ground in a steep, near vertical descent.
- No evidence was found of any pre-existing defect in the Blanik that may have contributed to the collision. All Blanik damage found was clearly attributable to either the mid-air collision or subsequent impact with the ground.
- The impact of the collision destroyed the Blanik's rudder, severely damaged the right elevator, disconnected the actuating rods for both elevators, and severely damaged the right tailplane. Yaw and pitch controls were therefore lost. The Blanik command pilot reported disconnected controls. The Blanik was most likely completely uncontrollable from the instant of the collision onwards.
- Post-collision damage to Blanik was extensive, consistent with a high vertical kinetic energy collision with the ground from a stall.
- Post ground impact, the winch rope was found disconnected from the glider. This may have been due to the rope back-releasing from the glider's centre of gravity release mechanism during the pitch-up manoeuvre post-collision.
- The damage to the tail control surfaces of the Blanik was so severe that the winch rope's attachment or release would have had no bearing on the glider's lack of controllability post-collision. The collision damage caused the loss of control and crash, and once winch power was stopped the presence or absence of the winch rope in all probability had no bearing on the crash.
- Attempts to stop the winch launch were insufficient to prevent the collision. There is insufficient data to surmise that aborting the winch launch made any difference. Similarly, insufficient data is held to support the opposite proposition that continuation of the launch might have just averted the collision.
- With the combined vertical rates of the descending Mini-Nimbus and ascending Blanik, plus aerodynamics limitations and inertial effects, plus blind arc limitations in the cockpits of both gliders, the time available from a late visual detection of the threat to avoidance of a collision would have been miniscule. The collision would have been almost impossible to avoid once the winch launch had commenced below the landing glider.

Date	4-May-2013	Region	GQ	SOAR Report Nbr		S-0272	
Level 1	Operational	Level 2	Flight Preparation/Navigation	Level 3		Aircraft preparation	
A/C Model 1		SZD-50-3 Puchacz		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	72
Wrong Maintenance Release used for DI. Error discovered by another pilot prior to flight and correct Maintenance Release found. Checking the maintenance release is an essential part of pre-flight preparation.							

Date	5-May-2013	Region	NSWGA	SOAR Report Nbr		S-0243	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Airframe overspeed	
A/C Model 1		SZD-50-3 Puchacz		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	39
While demonstrating a barrel roll, the pilot in command mishandled the initial entry and the aircraft exceeded Vne by 16 kts (+14% above placarded Vne). Fortunately, the pilot elected to recover from the dive gently rather than pull high 'g' loads or extend airbrakes (RAAF trained). The airframe did not suffer damage from manoeuvre and was landed without further incident. This incident highlights that aerobatic flying can be dangerous and that things can go wrong quickly for even properly trained Pilots. Anyone intending to undertake rolling or negative 'g' manoeuvres should be trained in the manoeuvres to be flown and taught how to recover when things go awry.							

Date	12-May-2013	Region	GQ	SOAR Report Nbr	S-0270
Level 1	Operational	Level 2	Aircraft Control	Level 3	Incorrect configuration
A/C Model 1	Astir CS Jeans	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	57
The pilot was on his second flight in the single-seater when the airbrakes deployed during launch. This was the last flight of the day and the pilot was keen to get airborne after the pre-flight briefing with his instructor. During his pre take-off checks the pilot was distracted by the tow pilot seeking launch instructions and hew forgot to lock the airbrakes. The airbrakes opened during the ground roll and ground crew alerted the pilot by radio. The airbrakes were closed and the flight proceeded without further incident. This incident highlights the importance of conducting uninterrupted pre-flight checks, and if interrupted to recommence the entire process. Other causal factors include inexperience on type and a hurried launch.					

Date	13-May-2013	Region	SAGA	SOAR Report Nbr	S-0244
Level 1	Technical	Level 2	Systems	Level 3	Other Systems Issues
A/C Model 1	SF 25C Falke	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	71
The wheel-brake cable snapped upon application of brakes during the landing roll. The cable was replaced but again snapped when the aircraft was taxied for launch. Further investigation revealed the bolt restraining the braking mechanism to the Tost hub had fractured while in shear load. The aircraft was repaired and returned to service.					

Date	19-May-2013	Region	GQ	SOAR Report Nbr	S-0245
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing
A/C Model 1	ASK-21Mi	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	65
During a cross-country flight the powered sailplane got low. The command pilot selected a paddock at about 1,000 ft and attempted to start the motor to avert a landing. Unfortunately, the pilot extended the motor above the designed speed and the engine started prematurely, with the propeller striking the engine-bay doors. The command pilot shut the engine down but was committed to a landing but in a different paddock due to the high sink rate with the motor extended. The aircraft landed heavily in the alternate paddock and ran across a hole in the ground causing damage to the main-wheel fairing and steerable nose wheel. Landing with the motor extended but not operating often results in a steep reduction in performance, which can be comparable to flying with the airbrakes extended. Therefore, to avoid landing mishaps it is important to commence the engine start procedure at sufficient height to allow for alternatives should it fail to start or run properly. Pilots should always be aware that high workload situations during the landing phase often lead to poorly executed landings, sometimes with serious outcomes. Well-developed fundamentally sound landing procedures and techniques are a good safeguard against these outcomes.					

Date	25-May-2013	Region	WAGA	SOAR Report Nbr	S-0247
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	PW-5 Smyk	A/C Model 2	DG-1000S		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	61
At a height of 2,000ft AGL, the pilot of a PW5 released from tow to avoid collision with a DG1000 thermalling close by. Investigation revealed the tow combination and the glider probably were at their closest point a few hundred feet apart. The tow pilot did not see the DG 1000 at the time as he was looking in the opposite					

direction, which was the direction of his turn. The pilot of the DG 1000 saw the tug combination but did not believe a conflict was likely and kept thermalling. The pilot of the PW5 was relatively inexperienced with a lower threshold for risk but made the right decision.

Date	25-May-2013	Region	WAGA	SOAR Report Nbr	S-0248
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	38

Undercarriage was placed in the landing position but not locked in place. The manual undercarriage operation in the DG1000S is similar to the DG-505 but the down lock mechanism is much more critical and ambiguous, requiring a secondary check of the audio and visual alarms by rotating the airbrake handle inboard in order to confirm a wheel down and locked condition when lowering the wheel prior to landing. Due to the pilot's lack of experience on type, this check was not undertaken.

Date	25-May-2013	Region	GQ	SOAR Report Nbr	S-0280
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing
A/C Model 1	SZD-50-3 Puchacz	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	70

While conducting a practice 'short field' landing under instruction, the student rounded out high and applied full airbrake. The instructor was too late to take over and the aircraft landed heavily resulting in minor damage. It was later determined that the student misunderstood the instructor's guidance on the use of airbrakes to land short. This incident highlights the importance of instructors maintaining a defensive stance with hands near relevant controls in order to react quickly, and to ensure the student fully understands the exercise being attempted.

Date	2-Jun-2013	Region	WAGA	SOAR Report Nbr	S-0249
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	Astir CS 77	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	52

Post solo student pilot recently converted into single seat Astirs. While carrying out downwind checks the pilot's concentration was disturbed by local CTAF radio calls and landing gear was not put down and locked. Training in a non-retractable two-seater considered to have been a casual factor.

Date	22-Jun-2013	Region	GQ	SOAR Report Nbr	S-0250
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	ASK-21	A/C Model 2	Tecnam 96G		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	66

At about 1340 EST on 22 June 2013, a Cessna 150 was conducting a glider tow when the Tecnam passed between the glider and tug, missing the tow rope by less than 10 metres. The incident happened too quick for the glider pilot to react. The Tecnam was descending from behind and slightly above and the glider in the pilot's blind spot. The Tecnam pilot did not see the towing combination, which may have been under his nose initially. The Tecnam pilot was recently solo and returning from a cross country navigation exercise. The Tecnam pilot may have been overloaded and concentrating on his circuit.

Date	29-Jun-2013	Region	VSA	SOAR Report Nbr	S-0251

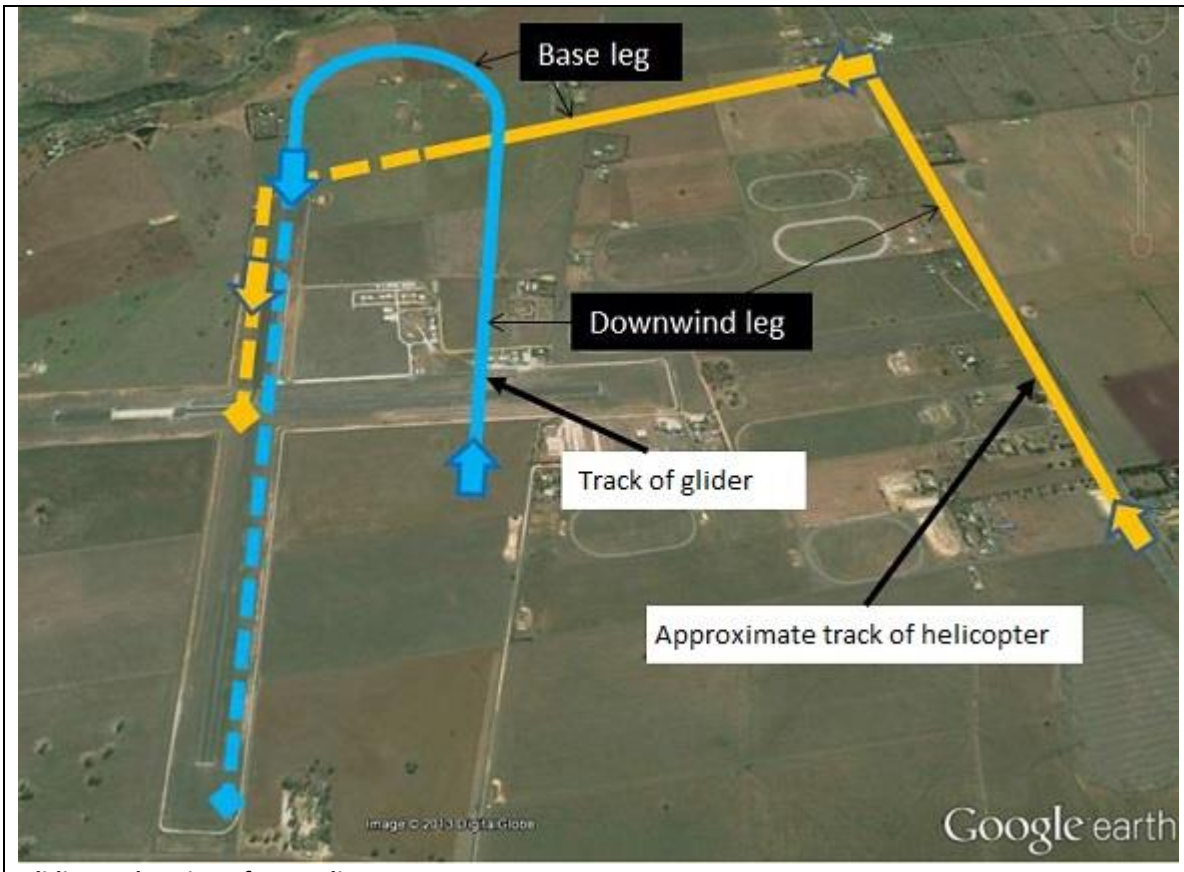
Level 1	Airspace	Level 2	Aircraft Separation		Level 3	Near collision	
A/C Model 1		Janus B		A/C Model 2		McDonald Douglas 520N	
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	69

GFA/ATSB INVESTIGATION - WHAT HAPPENED

On 29 June 2013, a Janus glider departed runway 27 at the Bacchus Marsh aeroplane landing area (ALA) to conduct a local flight. During the flight, the wind direction at the ALA changed, resulting in runway 19 becoming the active runway. At about the same time, the pilot of a McDonnell Douglas 500N helicopter was conducting circuits. He was on his fifth circuit and had reported broadcasting on the common traffic advisory frequency (CTAF) immediately prior to turning base for runway 19. At about 1430 Eastern Standard Time, the glider joined the downwind leg of the circuit for runway 19. After ensuring the radio volume was turned up, the pilot reported broadcasting a downwind call on the CTAF. Towards the end of the downwind leg, while descending through about 500 ft, the passenger in the front seat of the glider observed a helicopter in his 12 o'clock position. The glider pilot then observed the helicopter below him, on a diagonal track for runway 19. The glider pilot estimated that the helicopter passed about 100 ft below the glider. He further reported that he did not hear any calls from the pilot of the helicopter on the CTAF. When established on late base, at 500 ft, the pilot of the helicopter reported sighting the glider on downwind, in his 10 o'clock position, about 100 ft above and 100m away. The helicopter pilot stated that he did not believe there was any risk of a collision with the glider and continued with the circuit. He reported that he did not hear a downwind call from the glider pilot.

Bacchus Marsh gliding operations

Three gliding clubs operate at Bacchus Marsh (ALA). The En Route Supplement Australia (ERSA) for Bacchus Marsh indicated that gliding operations occur during hours of daylight. It also stated that gliders and tugs normally operate inside and below the standard 1,000 ft circuit, and when gliding operations are in progress, the active runway is the runway in use by the gliding operation.



Gliding Federation of Australia comments

The Gliding Federation of Australia identified that the limitations of unalerted see-and-avoid may have contributed to the incident as neither pilot heard any radio calls from each other. It also found that the limited forward and downward view from the rear seat due to the glider's natural blind spots and the large frame of the front seat occupant may have affected the pilot's ability to see KXS until it was in close proximity. In addition, the incident may have been avoided had the helicopter pilot flown a more conventional circuit. The GFA notes that while the principles of un-alerted and alerted see-and-avoid remain crucial for aircraft separation, particularly when operating in the vicinity of nontowered aerodromes, this incident also highlights the need for pilots to ensure they are predictable in the circuit area and conform to documented circuit procedures.

Safety message

The ATSB SafetyWatch highlights the broad safety concerns that come out of its investigation findings and from the occurrence data reported by industry. One of the focuses is safety around non-towered aerodromes (www.atsb.gov.au/safetywatch/safety-around-aeros.aspx). The ATSB has issued a publication called A pilot's guide to staying safe in the vicinity of non- towered aerodromes, which outlines many of the common problems that occur at non-towered aerodromes, and offers useful strategies to keep yourself and other pilots safe. The report found that insufficient communication between pilots and breakdowns in situational awareness were the most common contributors to safety incidents in the vicinity of non-towered aerodromes. In addition, issues associated with unalerted see-and-avoid have been detailed in the ATSB's research report Limitations of the See-and-Avoid Principle. The report highlights that unalerted see-and-avoid relies entirely on the pilot's ability to sight other aircraft. Broadcasting on the CTAF is known as radio-alerted see-and-avoid, and assists by supporting a pilot's visual lookout for traffic. An alerted traffic search is more likely to be successful as knowing where to look greatly increases the chances of sighting traffic. The

report is available at www.atsb.gov.au/publications/2009/see-and-avoid.aspx. The following publications provide information on operations at non-towered aerodromes:

- A pilot's guide to staying safe in the vicinity of non-towered aerodromes: www.atsb.gov.au/publications/2008/ar-2008-044(1).aspx
- Operations at non-towered aerodromes - Be heard, be seen, be safe: carry & use your radio: www.casa.gov.au/wcmswr/_assets/main/pilots/download/nta_booklet.pdf
- Civil Aviation Advisory Publication (CAAP) 166-1(1) – Operations in the vicinity of non-towered (non-controlled) aerodromes: www.casa.gov.au/wcmswr/_assets/main/download/caaps/ops/166-1.pdf

Date	30-Jun-2013	Region	GQ	SOAR Report Nbr	S-0273
Level 1	Technical	Level 2	Systems	Level 3	Avionics/Flight instruments
A/C Model 1	Astir CS Jeans	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	57

During flight through a rain shower, the Airspeed indicator ceased to work. The pilot also noted degraded performance due to wet wings. Investigation post-flight found a wasp nest in the pitot system. The pilot made the following salient observations: Upon reflection about my training I recall times where I really didn't understand why anyone would ever need to fly without instruments like altimeters and airspeed indicators because in my limited flying history they never failed but I think that the above clearly shows the reason for their inclusion into the syllabus and I'm pretty glad that they were covered too just quietly. I have learned a couple of valuable lessons:- 1. Regardless of how lame it looks in the first instance, accept what is being taught in the training syllabus as some day you may have to utilize that training when you may least expect it; 2. As the instructors tell you fly predominately by visual attitudinal references and cues (e.g. where is the horizon when cruising, turning, thermalling and landing?) as there may be a time where you won't have confirmation from an instrument for either speed or height and don't always believe the instrument blindly - judgement in these instances is critical; 3. Always utilise your in-built human sensory inputs to guide and assist you when soaring in conjunction with the instrumentation to ensure safe flight in all circumstances (e.g. comfort, control stick feedback and external wind noise); 4. Personally, I will make every attempt in my future flying adventures to stay well clear of storms, rain and showers as the effect on the aircraft's ability to fly doesn't warrant the risks; and 5. Always ensure that when the aircraft is hangered for the evening that all 'Remove Before Flight' tags are serviceable and correctly positioned to stop insects invading spaces that can cause problems.

Date	7-Jul-2013	Region	GQ	SOAR Report Nbr	S-0252
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	Duo Discus T	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	68

Command pilot of a mutual flight failed to do a pre-landing check upon taking control of the aircraft prior to joining the downwind leg and did not lower the undercarriage. The pilot admitted to being somewhat relaxed and complacent.

Date	20-Jul-2013	Region	NSWGA	SOAR Report Nbr	S-0253
Level 1	Consequential Events	Level 2	Low Circuit	Level 3	Low Circuit
A/C Model 1	SZD-51-1 Junior	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	67

Pilot of moderate experience and in medium performance glider misjudged conditions and flew too far downwind for the prevailing winds. A very low final approach was conducted and the glider only just cleared the boundary fence.

Date	27-Jul-2013	Region	SAGA	SOAR Report Nbr	S-0254
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion
A/C Model 1	ASH 25 M (Rotax 505A)	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	63
During commencement of a winch launch a car towing a glider entered the runway resulting in the launch being abandoned. Car driver assumed that person standing outside the winch was the winch driver. Pilots towing gliders should monitor the appropriate frequency and make appropriate radio calls in the same manner as a taxying aircraft to enhance situational awareness.					

Date	25-Aug-2013	Region	VSA	SOAR Report Nbr	S-0259
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion
A/C Model 1	SZD-50-3 Puchacz	A/C Model 2	Piper PA-25-235		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	48
After landing and while the glider was still rolling on the ground at touchdown speed, the pilot took evasive action to avoid a tug 70 metres ahead. The tug had just completed its landing and taxied across the path of the glider.					

Date	1-Sep-2013	Region	WAGA	SOAR Report Nbr	S-0256
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing
A/C Model 1	SZD-50-3 Puchacz	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	61
Pilot conducting a hangar flight landed heavily and overshot the runway. The pilot flew the aircraft well but without airbrake. While some intentional sideslipping was observed it was insufficient to slow the aircraft resulting in the pilot forcing the aircraft onto the ground. The pilot was experienced in power and gliding and it appears he reverted to his the power training under stress. Damage was restricted to a deflated tailwheel.					

Date	7-Sep-2013	Region	NSWGA	SOAR Report Nbr	S-0257
Level 1	Operational	Level 2	Runway Events	Level 3	Runway excursion
A/C Model 1	Ventus bT	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	59
Failure of sustainer engine to deliver sufficient power post-deployment at low height led to a modified circuit due to a high drag configuration. The glider was landed in long grass and ground looped. No damage, no injury.					

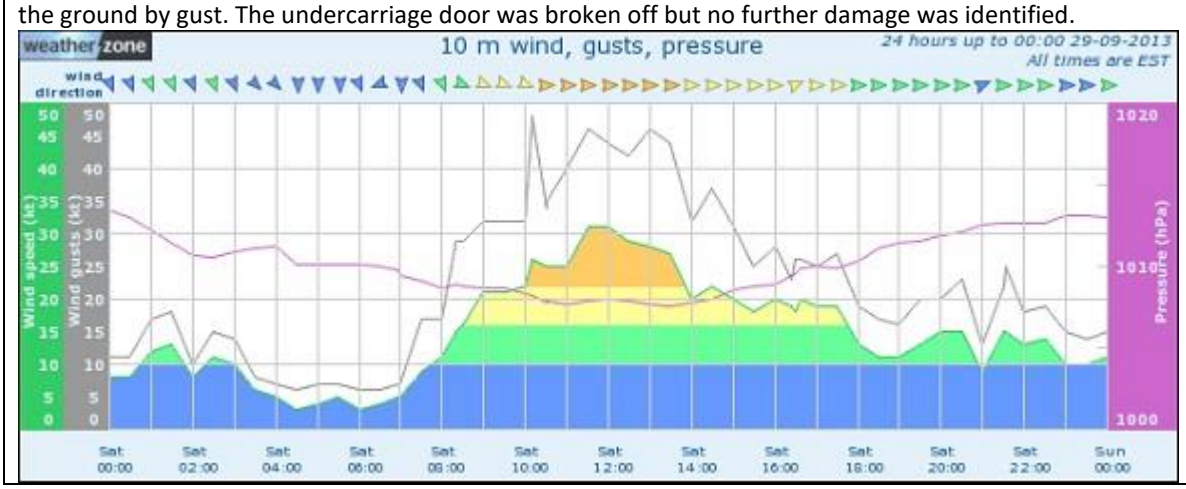
Date	14-Sep-2013	Region	VSA	SOAR Report Nbr	S-0266
Level 1	Operational	Level 2	Aircraft Control	Level 3	Incorrect configuration
A/C Model 1	SZD-50-3 Puchacz	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	39
Airbrakes opened on take-off during air experience flight. The command pilot was interrupted by the student while completing his pre take-off checks and he failed to close and lock the airbrakes. Additionally, the command pilot had reduced the radio volume in order to better communicate with the student pre-					

launch and forgot to turn it up. The ground crew failed to notice that airbrakes were not closed and radio calls from the tow pilot to alert the glider pilot to the situation were not heard. The command pilot was aware the tow was not proceeding as normal and eventually identified the airbrakes were open and closed them. The tow proceeded normally thereafter.

Date	15-Sep-2013	Region	GQ	SOAR Report Nbr	S-0258
Level 1	Operational	Level 2	Miscellaneous	Level 3	Other Miscellaneous
A/C Model 1	Discus b	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Outlanding	PIC Age	48
During an outlanding a glider was landed under powerlines branching from the main SWER line. The pilot had identified the main line running to the house and approached with sufficient height to clear same. However, the branch line was not visible against the dark fallow paddock until round out.					

Date	23-Sep-2013	Region	NSWGA	SOAR Report Nbr	S-0261
Level 1	Technical	Level 2	Powerplant/Propulsion	Level 3	Engine failure or malfunction
A/C Model 1	ASW 20	A/C Model 2	Piper PA-25-235		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	58
During aerotow launch and at 200ft AGL the Pawnee tug lost power. The tug pilot rocked the wings sharply in emergency release signal and the glider pilot immediately released from tow. The glider pilot was forced to turn quite sharply to the left to avoid a collision with the tug, during which manoeuvre his speed decreased. Regaining airspeed, the pilot continued his turn and landed between runways 12/30 and 09/27. The tug pilot set glide attitude but managed to restart the motor. Unfortunately, he could not get more that 800 RPM before the engine again stopped and he made a dead-stick landing on runway 09. The engine magneto was found to be faulty.					

Date	28-Sep-2013	Region	NSWGA	SOAR Report Nbr	S-0275
Level 1	Environment	Level 2	Weather	Level 3	Turbulence/Windshear /Microburst
A/C Model 1	Duo Discus	A/C Model 2			
Injury	Minor	Damage	Minor	Phase	Landing	PIC Age	52
Returning from wave flight the pilot was advised of deteriorating conditions, with winds gusting to 52 knots. Conditions during descent and on final approach were rough. During round-out the glider was slammed onto the ground by gust. The undercarriage door was broken off but no further damage was identified.					



Date	28-Sep-2013	Region	NSWGA	SOAR Report Nbr		S-0262	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Hard landing	
A/C Model 1		DG-1000M		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	50
Severe turbulence was encountered as the pilot descended below 5,000 AGL following a wave flight to FL245. Due to conditions, final approach was flown at 80 knots. Application of airbrake to counter a "balloon" resulted in the aircraft landing heavily onto soft ground, which quickly brought the aircraft to a halt causing damage to the undercarriage struts.							

Date	4-Oct-2013	Region	VSA	SOAR Report Nbr	S-0265

Level 1	Airspace	Level 2	Aircraft Separation		Level 3	Near collision	
A/C Model 1	SZD-50-3 Puchacz			A/C Model 2	Piper PA-28-161		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	64
While on the downwind leg of the duty runway, the glider was overtaken by a power aircraft at the same height but displaced laterally by less than 50 metres that was conducting a crosswind circuit on the non-duty runway. The glider pilot did not hear radio calls that would have alerted him to the other traffic as his radio was not tuned to the correct frequency. While a common circuit direction aids in an orderly and safe flow of traffic, pilots at busy training airfields need to be alert to the fact that crosswind operations may occasionally be conducted.							

Date	7-Oct-2013	Region	GQ		SOAR Report Nbr	S-0268	
Level 1	Operational	Level 2	Aircraft Control		Level 3	Incorrect configuration	
A/C Model 1	SZD-50-3 Puchacz			A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	34
Airbrakes came open during launch. Solo pilot was on second flight in the glider and was unfamiliar with the force of the over centre mechanism. Pilots flying aircraft for the first time need to have a thorough briefing on the use of all controls and should also read the aircraft flight manual prior to flying the aircraft. They should then be able to demonstrate to the instructor doing the check the locations and operation of all the aircraft controls. Checking instructors need to pay particular attention to the way the pilot conducts checks in order to ensure that all parts of the check have been completed correctly.							

Date	7-Oct-2013	Region	NSWGA		SOAR Report Nbr	S-0276	
Level 1	Operational	Level 2	Terrain Collisions		Level 3	Collision with terrain	
A/C Model 1	Ventus b			A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Outlanding	PIC Age	69
In an attempt to get home, the pilot allowed safe landing options to deteriorate to the point where he became committed to land in an unsuitable paddock. A low circuit was followed by a downwind and uphill landing in a paddock with numerous concrete blocks scattered throughout. The left wing caught the ground and the glider ground-looped, skidding sideways for some distance and tearing out the undercarriage. The glider was lucky not to have contacted a concrete block during its excursion. When flying cross-country it is important that pilots plan and think ahead so that they are always in a position 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. This requires good flight management and discipline because flying at low level is unsafe.							

Date	7-Oct-2013	Region	GQ		SOAR Report Nbr	S-0279	
Level 1	Environment	Level 2	Weather		Level 3	Turbulence/Windshear /Microburst	
A/C Model 1	ASW 15			A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	69
An experienced pilot landed with a cross-wind component near the limits of the aircraft's capabilities. A firm landing ensued but the aircraft was not damaged. Pilots need to remain aware of the crosswind components of their aircraft and land as near as possible into wind.							

Date	7-Oct-2013	Region	GQ		SOAR Report Nbr	S-0264	
Level 1	Operational	Level 2	Runway Events		Level 3	Runway excursion	
A/C Model 1	Duo Discus T			A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	59
During an aerotow launch on a gusty day with a strong crosswind component, the downwind wing dropped to the ground and the glider commenced a ground loop. The pilot could not recover the situation and released. It is noted that the pilot made an assessment on the suitability of the conditions for take-off based on the previous launch of the same aircraft type under the same conditions. The pilot had also positioned the wing runner on the correct wing for take-off and had the wing in the correct configuration for the start of the take-off run (i.e. wing low). Flying operations ceased for the day after this.							

Date	8-Oct-2013	Region	WAGA	SOAR Report Nbr	S-0263
Level 1	Environment	Level 2	Weather	Level 3	Turbulence/Windshear /Microburst
A/C Model 1	AMT-200	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	58
Glider landed heavily after flying through a 'willy willy' in gusty conditions during the landing flare resulting in the tailwheel being driven up into the rear fuselage.							

Date	9-Oct-2013	Region	GQ	SOAR Report Nbr	S-0267
Level 1	Consequential Events	Level 2	Low Circuit	Level 3	Low Circuit
A/C Model 1	SGS 1-35	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	62
Pilot flew a low base and final but landed safely. Potential causal factors include unfamiliarity with site, distraction by other aircraft in circuit and spatial disorientation due to runway being significantly longer than home airfield.							

Date	10-Oct-2013	Region	GQ	SOAR Report Nbr	S-0269
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	DG-400	A/C Model 2	LS 7		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	56
While thermalling east of the airfield, the pilot of an LS7 noticed a DG400 motor glider on climb-out just south of the airfield. During subsequent thermalling turns the LS7 pilot noticed the DG400 getting closer, to the point where he ceased thermalling to avoid a potential collision. The LS7 pilot maintained visual contact with the DG400 as it passed about 70 metres away at a similar height. The DG400 pilot, who was on his second flight in the type did not see the other glider as he was focusing on engine management at the time. Causal factors include inexperience on type, high workload management, unfamiliarity with the site, and compromised lookout.							

Date	12-Oct-2013	Region	SAGA	SOAR Report Nbr	S-0281
Level 1	Operational	Level 2	Miscellaneous	Level 3	Warning devices
A/C Model 1	Discus b	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	64
The pilot had been working around the airfield for most of the day and in the afternoon took off in the expectation of having a good flight. However, he found the conditions weaker than reported. The aircraft flew through strong sink but some broken lift was eventually encountered and the pilot attempted to climb away. The pilot persisted but was not climbing and he left the decision to abandon the flight at too low a height to fly a normal circuit. The pilot could have joined downwind for a right-hand circuit but chose to fly into wind for a left-hand circuit, resulting in him joining on late downwind. By now the pilot was							

concentrating on his landing and he forgot to complete his pre-landing checks. On late final approach he deployed airbrakes and the undercarriage warning went off. The pilot immediately changed hands to lower the undercarriage and in so doing allowed the aircraft to pitch up and lose speed. The pilot quickly recovered to normal flight and made a successful landing. Good flight management as it relates to good landing means that, at low altitude and regardless of whether the pilot actually intends to land, the glider is flown so as to ensure it can always join circuit at a safe height and commence a normal downwind leg. Below 2,000' AGL, searching for lift should normally be conducted upwind of the circuit joining area. Pilots electing to ignore this norm must ensure they maintain sufficient height to get back to the circuit area, avoiding conflict with other traffic, and execute a normal downwind leg. Potential causal factors include fatigue, stress brought on by the desire to have a good flight, and poor workload management.

Date	15-Oct-2013	Region	GQ	SOAR Report Nbr	S-0271
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Collision
A/C Model 1	ASW 27-18E	A/C Model 2	Nimbus-4DM		
Injury	Nil	Damage	Minor	Phase	Thermalling	PIC Age	56
On 15 October 2013 at 1430, two gliders competing in the Multi-Class Nationals at Kingaroy flown by very experienced pilots collided while entering a thermal. The wingtip of one glider came into contact with the underside of the other glider's fuselage. Both pilots flew back to the airfield, which was only a few miles from the incident point. One Aircraft suffered superficial scratches but the wing-tip of the other aircraft was damaged. This accident highlights the importance of maintaining good situational awareness. Pilots must lookout at all times and judge the entry into the thermal so as to position their glider roughly opposite the established glider. When joining a circling glider, fly towards the outside of the circle made by the other glider from a safe distance out. When pulling into a turn, remember that the situation will change significantly so the joining pilot needs to take primary responsibility for remaining clear of other gliders.					

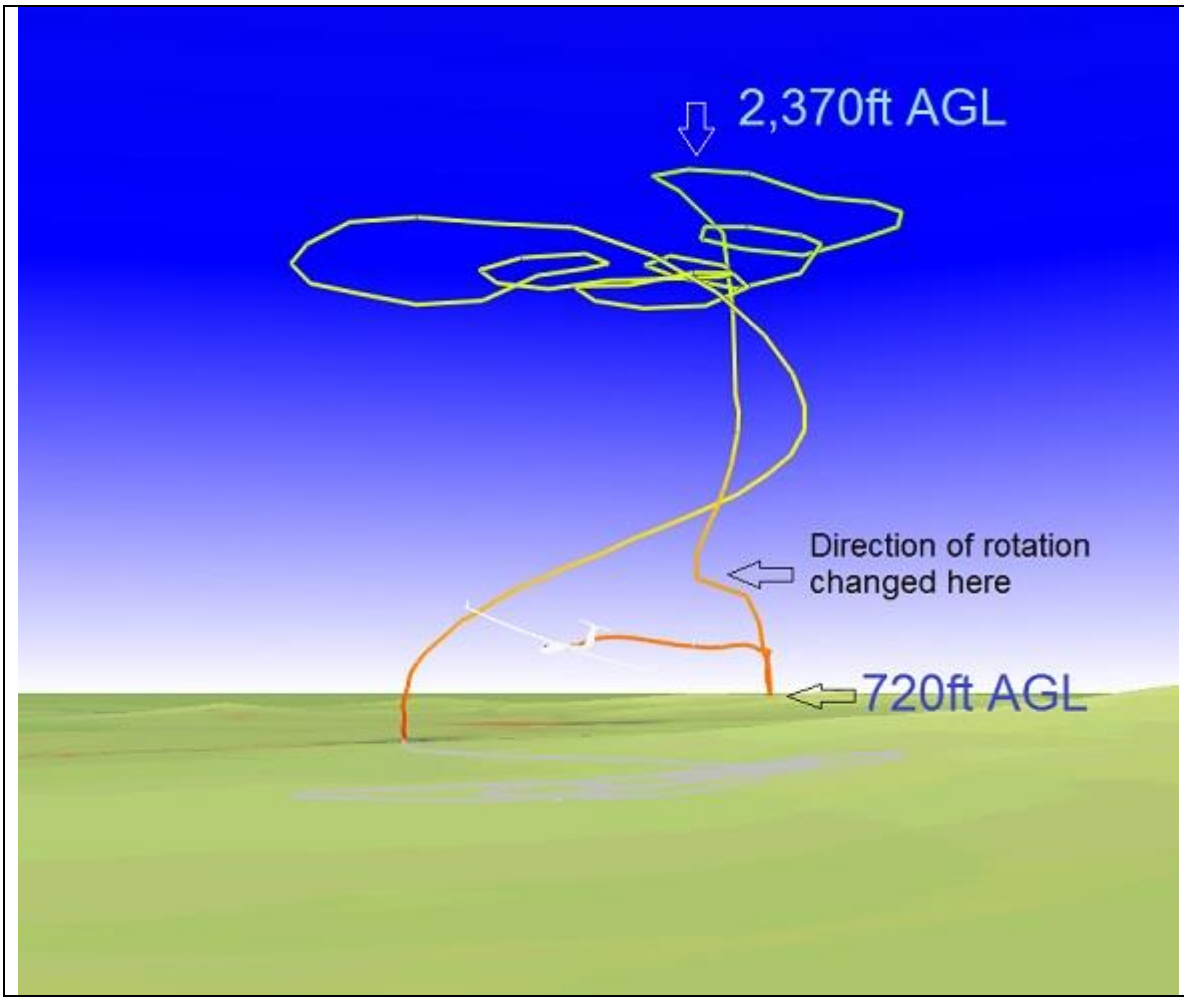
Date	15-Oct-2013	Region	GQ	SOAR Report Nbr	S-0282
Level 1	Operational	Level 2	Ground Operations	Level 3	Taxiing collision/near collision
A/C Model 1	LS 8-a	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	63
While rolling to a stop following a competition flight, a landing glider passed very close to a glider which had already landed. The pilot was reminded of the need to exercise due care and attention.					

Date	15-Oct-2013	Region	GQ	SOAR Report Nbr	S-0283
Level 1	Operational	Level 2	Runway Events	Level 3	Depart/App/Land wrong runway
A/C Model 1	Ventus a	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	30
After the completion of a competition flight the pilot landed on the reciprocal to the operating runway. The pilot recognised his error too late to adjust. Fortunately there were no other aircraft landing at the time. The pilot arrived back at the airfield without adequately assessing the conditions. The pilot may have been fatigued, resulting in reduced situational awareness.					

Date	15-Oct-2013	Region	GQ	SOAR Report Nbr	S-0284
Level 1	Operational	Level 2	Runway Events	Level 3	Depart/App/Land wrong runway

A/C Model 1		LAK 17A		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	75
After the completion of a competition flight the pilot landed on the reciprocal to the operating runway off a marginal straight-in approach and with a tailwind component. Fortunately there were no other aircraft landing at the time. When flying cross-country it is important to plan and think ahead so that you are always in a position to make a safe landing. This requires good flight management and discipline. 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 options is a high risk situation that must be avoided.							

Date	16-Oct-2013	Region	GQ	SOAR Report Nbr	S-0274
Level 1	Operational	Level 2	Aircraft Control	Level 3	Loss of control
A/C Model 1	Standard Cirrus B		A/C Model 2		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	23
The aircraft was climbing in a thermal and then suddenly stalled at about 2,370ft AGL. A full spin occurred immediately. The pilot recovered from the spin at around 700ft AGL and returned to the airfield for a normal landing. Witnesses observed the glider change direction of spin at least once during the descent. Investigation revealed the pilot with parachute was just above minimum cockpit weight, which would have made the aircraft susceptible to spinning if mishandled at low speed. The pilot was from overseas and had completed a flight review, including recovery from an incipient spin. The pilot was trained in spin recovery but had not conducted spinning in controlled conditions for some time prior. This incident highlights the importance of the GFA's system of recurrent full spin training.							



Date	21-Oct-2013	Region	GQ	SOAR Report Nbr	S-0286
Level 1	Consequential Events	Level 2	Low Circuit	Level 3	Low Circuit
A/C Model 1	Mosquito	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Outlanding	PIC Age	46

The pilot was flying a long and marginal final glide. At the very last moment, the pilot made a late decision to outland in the paddock he was overflying that necessitated a low level turn of about 100 degrees. Had the pilot made the decision earlier he could have landed off a safer straight-in approach. Fortunately the pilot landed without damage. Arriving at the paddock at too low a height to make the necessary assessments and allow alternatives is the most common reason for outlanding accidents. When flying cross-country it is important to plan and think ahead so that you are always in a position to make a safe landing. 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.

Date	22-Oct-2013	Region	NSWGA	SOAR Report Nbr	S-0285
Level 1	Operational	Level 2	Runway Events	Level 3	Runway incursion
A/C Model 1	Nimbus 3T	A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	40
Following a competition flight the pilot landed and taxied through an adjacent landing area to be close to the glider tie-down. This action is contrary to GFA procedures, which require sailplanes to 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.							

Date	25-Oct-2013	Region	VSA	SOAR Report Nbr	S-0278
Level 1	Operational	Level 2	Runway Events	Level 3	Depart/App/Land wrong runway
A/C Model 1	Discus 2B	A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	71
During a competition, the aircraft arrived at the airfield during a very busy arrivals sequence. The pilot landed downwind on the operational runway in winds gusting to 14 knots in potential conflict with other traffic and despite there being another runway that could have been used. Situational awareness may have been compromised by a non-functioning radio.							

Date	25-Oct-2013	Region	WAGA	SOAR Report Nbr	S-0287
Level 1	Operational	Level 2	Runway Events	Level 3	Depart/App/Land wrong runway
A/C Model 1	Nimbus-3DM	A/C Model 2			

Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	67
On the last day of a competition a Nimbus pilot elected to land on the reciprocal runway of an alternative runway being used by the other gliders. During the landing the glider flew across the preferred operational runway. Incoming aircraft adjusted their landings to accommodate the Nimbus pilot.							

Date	26-Oct-2013	Region	WAGA	SOAR Report Nbr	S-0293
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	DG-1000S	A/C Model 2			

Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	61
During a routine normal landing with the undercarriage locked in position the aircraft touched down rolled for a few feet and the undercarriage retracted. Inspection revealed bolt had come loose and overcentre mechanism worn ('pre-load' rubber buffer compressed). Clubs operating this type should be inspecting the overcentre lock at least monthly. Compression could occur even with no use. Tell-tale signs are the undercarriage unlocking in flight.							

Date	1-Nov-2013	Region	WAGA	SOAR Report Nbr	S-0290
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	Pik 20E	A/C Model 2			

Injury	Nil	Damage	Minor	Phase	Outlanding	PIC Age	69
During a competition flight and under difficult thermalling conditions, the pilot decided to abort the task due to reducing altitude. Because the engine battery voltage was low, the pilot made the abort decision earlier than normal in the event that windmilling speed may be needed for engine starting. A paddock was selected and the engine was deployed at about 800ft AGL. The engine did not start and at 300ft AGL the pilot elected abort the start and conduct an outlanding. The flare and touchdown were normal but the aircraft landed with the wheel retracted. The pilot advised that he became so occupied with the engine management that							

he forgot to complete his pre-landing checks. Landing mishaps usually occur due to poor workload management, so it is important to get some of the tasks out of the way early. When self-retrieving, powered sailplane pilots should configure the aircraft for landing before attempting to start the engine. It is also worth remembering that landing with the motor extended but not operating often results in a steep reduction in performance, so pilots of powered sailplanes should break-off the flight to self-retrieve at a safe height and preferably not lower than 1500ft AGL.

Date	7-Nov-2013	Region	GQ	SOAR Report Nbr	S-0288
Level 1	Operational	Level 2	Miscellaneous	Level 3	Rope break/Weak link failure
A/C Model 1	Duo Discus T	A/C Model 2	Piper PA-25-235		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	55
During aerotow and at a height of 1,000ft AGL the aerotow rope broke but the weak link remained intact. A safe modified circuit and landing was conducted. It was determined that the rope was not to specification and was removed from service.					

Date	10-Nov-2013	Region	SAGA	SOAR Report Nbr	S-0289
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	64
Airspace infringement due to misinformation on flight line. Pilot did not check NOTAM to confirm airspace availability. This incident highlights the need for members to read and check NOTAMS, and to use mobile technology when available to confirm airspace limits prior to flight.					

Date	13-Nov-2013	Region	NSWGA	SOAR Report Nbr	S-0304
Level 1	Operational	Level 2	Miscellaneous	Level 3	Rope break/Weak link failure
A/C Model 1	AS-K 13	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	69
The 'Tost' weak link broke during aerotow training in turbulent conditions. The instructor reported a large bow in the rope at low level and when the slack was taken up the weak link broke. The glider was in low tow and rope was draped over it but the glider's flight capabilities were not affected. The glider landed safely. It is likely that the first leaf of the weak link had broken during similar circumstances in the previous flight. 'Tost' weak links should be inspected before each flight and especially after a significant strain has been applied to the tow rope.					

Date	17-Nov-2013	Region	WAGA	SOAR Report Nbr	S-0291
Level 1	Operational	Level 2	Airframe	Level 3	Objects falling from aircraft
A/C Model 1	SZD-48 Jantar Standard 2	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Launch	PIC Age	39
During the early stage of an aerotow launch, the pilot moved his left hand to close the side vent on canopy. In so doing, the strap of his wristwatch caught on left side canopy release and unlocked it. The canopy lifted on left side and departed the aircraft. The pilot released from tow and landed ahead safely. The canopy was damaged on impact with runway surface.					

Date	17-Nov-2013	Region	VSA	SOAR Report Nbr	S-0294
Level 1	Operational	Level 2	Aircraft Control	Level 3	Pilot Induced Oscillations
A/C Model 1	Astir CS 77	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Landing	PIC Age	61

A heavy landing was followed by a classic PIO that resulted in the undercarriage collapsing. While the pilot had some recent experience, he had little time in the accident aircraft and may have misused the airbrakes during roundout. He also stated he felt anxious landing on the runway in use and may have been distracted by the winch retrieve vehicle.

Date	17-Nov-2013	Region	NSWGA	SOAR Report Nbr	S-0323
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	Nimbus-4DM	A/C Model 2	Piper PA-25-235		
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	65

While flying prior to competition start, the Pawnee towing a glider appeared under the starboard wing of the Nimbus travelling in the same direction and overtaking. The Nimbus was rolled left immediately and collision avoided. The tow pilot did not see the Nimbus but the pilot of the towed glider did see the potential conflict and made several radio calls to alert the tow pilot to no avail. The Airprox occurred during the launch phase of the competition fleet, a period of 90 minutes with approx. 130 aircraft movements. The tow pilot was fixated on the previous tow plane to maintain the 'racecourse pattern' as advised by the Tugmaster at briefing. The Glider pilot saw the previous tow plane pass by but not the tow plane in question. The trace shows the Glider and the tow plane in positions where they should have been able to see each other. The Nimbus pilot may have had his vision compromised with a visually impaired passenger of large stature occupying the front seat. It is not known why the tow pilot did not hear the radio calls. Heightened lookout is warranted for all competition events where there are a large number of aircraft, including gliders attempting to climb away from launches.

Date	19-Nov-2013	Region	VSA	SOAR Report Nbr	S-0314
Level 1	Technical	Level 2	Systems	Level 3	Other Systems Issues
A/C Model 1	Cessna 180c	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	

During aerotow the rope prematurely released from the tug at 3,500ft AGL. Investigation revealed the release cable was too short and when the tug's tail wheel was pulled down during the tow the release activated.

Date	20-Nov-2013	Region	VSA	SOAR Report Nbr	S-0292
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing
A/C Model 1	ASK-21	A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Landing	PIC Age	61

During an instructional flight the aircraft touched down heavily nose-wheel first. The aircraft rebounded into the air, at which time the student deployed full airbrake and pushed forward on the stick. The Instructor was late to take control and the aircraft again impacted the runway; suffering substantial damage (partial delamination of the bulkhead supporting the nose wheel and rudder controls, and damage to the lower outer surface and tailwheel). Instructors need to adopt a defensive posture during the critical stages of flight, which in this case would include having one's right hand close to stick, feet towards rudder and the left hand in very close reach to airbrakes in order to react quickly to a deteriorating situation.

Date	24-Nov-2013	Region	SAGA	SOAR Report Nbr	S-0298
Level 1	Operational	Level 2	Aircraft Loading	Level 3	Loading related
A/C Model 1	DG-500 Elan Orion	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	67

The aircraft was flown on three flights outside of CG as fin ballast had not been emptied. This glider has two fin tanks but only one of which can be emptied from the cockpit. The other tank can only be filled and emptied while on the ground. The person undertaking the DI was unfamiliar with the system and thought the tanks were empty when he activated the cockpit dump system. Although lights on the instrument panel showed ballast remained in the tank, the lights may not have been visible under the bright conditions that prevailed or the inspector saw what he expected to see (it is well known that if a person has a strong expectation of seeing something, when the expected situation arrives the person will see what is expected rather than what is actually there). Additionally, three pilots doing their pre take-off checks also did not notice the lights were on indicating ballast was still in the tail tank. The CFI noted that most club pilots were unfamiliar with the ballast system and comprehensive re training and full familiarisation with the operating systems was undertaken involving all club pilots.

Date	30-Nov-2013	Region	SAGA	SOAR Report Nbr	S-0295
Level 1	Technical	Level 2	Systems	Level 3	Other Systems Issues
A/C Model 1	SZD-41A Jantar Standard	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	48

Following what appeared to be a normal winch launch, the pilot was advised by the winch that the weak link had broken and the cable trace had not been retrieved and was still attached to the aircraft. Several attempts to release were made without success. The pilot circled the field and after about a minute the cable departed the aircraft and was retrieved by the ground crew. The aircraft landed later without incident. The cable was inspected but no damage was identified to either the rings or the trace cable. Examination of the aircraft release did not find any problem.

Date	4-Dec-2013	Region	GQ	SOAR Report Nbr	S-0303
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	SZD-51-1 Junior	A/C Model 2	Bell 206 helicopter		
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	68

On 4 December 2013, at about 1440 Eastern Standard Time (EST), a SZD-51 Junior was winched at the Gympie aeroplane landing area (ALA), Queensland. About 20 minutes later, the glider entered the circuit on downwind at about 900 ft above ground level (AGL), and the pilot broadcast a downwind call on the common traffic advisory frequency (CTAF). At about the same time, a Bell 206 helicopter was conducting circuits from runway 32. On board the helicopter were a flight instructor and two student pilots. The helicopter had been conducting circuits for about 1 hour and the pilot reported that he was in constant communication with the glider operators. The helicopter instructor broadcast on the CTAF when turning base and subsequently heard the glider pilot's downwind call. At that time he sighted the glider on mid-downwind. Soon after, the glider pilot broadcast turning base. The glider pilot then commenced a diagonal base leg, on about a 45° angle from the downwind leg. The helicopter turned onto final approach and the instructor reported that he then broadcast a final call when at 500 ft AGL; 0.78 NM from the threshold of runway 32, and at a speed of 60kt. The instructor reported that, at that time, he believed the glider was on the late downwind or base leg of the circuit. The glider pilot then reported broadcasting a final call. Both pilots reported not hearing each other's finals broadcast. The glider pilot then broadcast a call to the helicopter pilot asking whether he had the glider in sight, but no response was received. The crew of the helicopter did not hear this call, despite hearing other transmissions from aircraft on the CTAF. About 90 seconds later, the helicopter instructor sighted the glider to his right, at about the same height and about 10

metres away. The glider pilot also observed the helicopter to his left and slightly above. In response, he lowered the nose of the glider to increase the airspeed to 60 kt to stay below the helicopter. The glider then landed on the grass to the left of the runway. The instructor took control of the helicopter from the student, conducted a clearing turn and subsequently landed on the sealed runway. He then attempted to communicate with the glider pilot on the CTAF and received a response from the glider base operator. GFA analysis indicated it was most likely the helicopter was in the glider pilot's blind spot during the diagonal base leg and turn onto final. If the glider turned onto final above, and in front of the helicopter, the pilots of each aircraft would not have been able to sight the other. The glider pilot had then applied the airbrakes, steepening the approach path. This incident highlights the importance of broadcasting radio calls to alert pilots and assist in see-and-avoid practices. It also serves as a reminder to keep a good lookout for other aircraft, particularly around non-controlled aerodromes. This incident also demonstrates the importance of understanding the differences in performance and circuit patterns flown by gliders and helicopters or other powered aircraft.

Date	7-Dec-2013	Region	NSWGA	SOAR Report Nbr		S-0296	
Level 1	Technical	Level 2	Powerplant/Propulsion	Level 3		Engine failure or malfunction	
A/C Model 1		ASK-21Mi		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	53
As the glider passed through 3,000ft on launch the engine suddenly lost power and the propeller continued to windmill. The propeller brake would not initially engage until the aircraft was slowed to near stalling speed, at which point the pilots successfully folded the motor away and a safe landing was made. Subsequent inspection revealed a lack of engine compression that allowed the propeller to spin freely. The PIC noted that even with two pilots sharing the workload, dealing with the engine problem was a big distraction from flying the glider.							

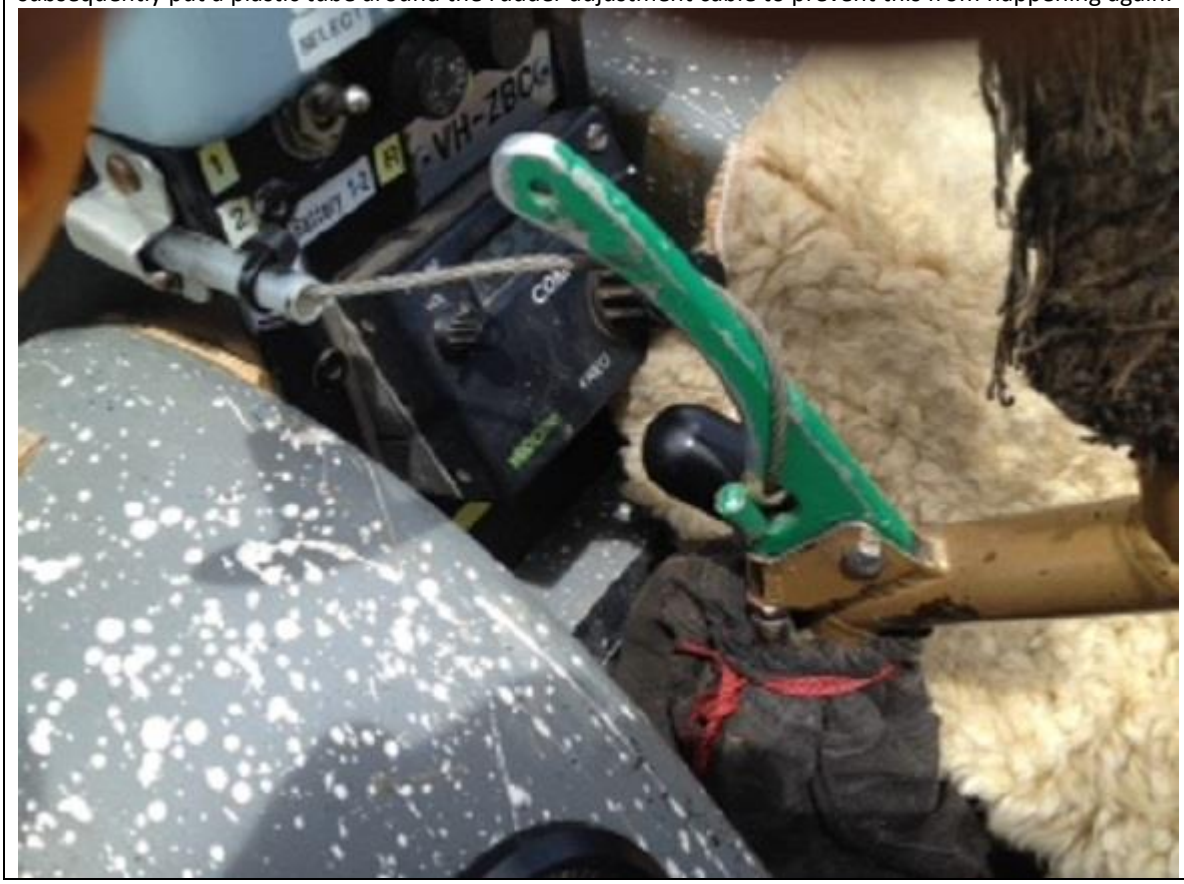
Date	7-Dec-2013	Region	NSWGA	SOAR Report Nbr		S-0317	
Level 1	Operational	Level 2	Terrain Collisions	Level 3		Collision with terrain	
A/C Model 1		Astir CS 77		A/C Model 2			
Injury	Nil	Damage	Substantial	Phase	Outlanding	PIC Age	55
Pilot is an experienced military and hang glider pilot who converted to gliders a few years ago. During the course of an outlanding and just as the aircraft was flaring to land, the pilot noticed a light picket and wire fence across the paddock. The pilot pulled up to avoid the fence but did not retract the airbrakes, resulting in the glider 'mushing' through the top wires. The aircraft suffered substantial damage. Photographs of the site reveal the wire fence would have been extremely difficult to detect during the circuit.							

Date	8-Dec-2013	Region	GQ	SOAR Report Nbr		S-0297	
Level 1	Operational	Level 2	Aircraft Control	Level 3		Incorrect configuration	
A/C Model 1		Glasflugel 304C		A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	72
Pre-flight checks were not completed by this experienced pilot resulting in the unlocked airbrakes going unnoticed. The airbrakes progressively opened during take-off. Ground observers tried to alert the pilot over the radio but were unsuccessful. The tug pilot was aware of the problem but, because the combination was climbing satisfactorily, delayed signalling in case the pilot misunderstood the signal and released prematurely. At about 300 feet the tug pilot gave a rudder waggle twice, and the glider pilot released and safely executed an outlanding. The tug pilot tried to alert the glider pilot by radio to no avail. In this case the pre take-off checks were not undertaken and the pilot reacted inappropriately to the emergency signal from							

the tow pilot. It is very easy for experienced pilots to become complacent. However, such an attitude reflects poor airmanship. All pilots must take care to ensure they adhere to proven protocols and remain alert to the possibility of an emergency situation developing in order to respond in a safe and appropriate manner.

Date	8-Dec-2013	Region	VSA	SOAR Report Nbr	S-0310
Level 1	Operational	Level 2	Aircraft Control	Level 3	Control issues
A/C Model 1	LS 4-a	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	67

The pilot adjusted the rudder pedals towards him prior to take-off and satisfactorily conducted a control check. During take-off one wing dropped that resulted in significant lateral stick movement, at which time the handle of the rudder adjustment cable lodged in the trim handle thereby restricting back elevator movement. The pilot released while about 1 metre above ground and landed safely. The club workshop subsequently put a plastic tube around the rudder adjustment cable to prevent this from happening again.



Date	8-Dec-2013	Region	GQ	SOAR Report Nbr	S-0299
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	Duo Discus T	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	59

The undercarriage was not raised on release from tow. When the pre-landing checks were done, the undercarriage lever was moved from the down position to the up position. The pilot in command was in the rear seat in which he had little recent experience and did not notice that the wheel was down during the

flight, or that it was raised on downwind. The P2 had limited time on type and made the same errors. This incident highlights the importance of post-release checks and visually checking the undercarriage lever position is in the correct position for the phase of flight.

Date	13-Dec-2013	Region	GQ	SOAR Report Nbr	S-0300
Level 1	Environment	Level 2	Weather	Level 3	Other Weather Events
A/C Model 1	Duo Discus	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	59
While thermalling with other gliders at about 6,000ft the canopy began fogging up near the air vents on the left hand side. This got progressively worse until all the forward canopy was fogged up and there was no forward visibility and only outlook along the wings. The pilot deployed airbrakes and the fog slowly cleared as the glider descended. This particular aircraft has a history of fogging up. (Note: There are a number of anti-fogging agents sold by motor cycle outlets that can be applied to canopies that will prevent fogging).					

Date	13-Dec-2013	Region	GQ	SOAR Report Nbr	S-0301
Level 1	Operational	Level 2	Aircraft Control	Level 3	Wheels up landing
A/C Model 1	DG-400	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	Landing	PIC Age	57
Undercarriage was not locked and collapsed on landing. While there are multiple reasons while this continues to occur, pilots need to physically confirm during the pre-landing check that their undercarriage is down and locked and ensure that during the release sequence that the undercarriage is correctly up and locked.					

Date	14-Dec-2013	Region	WAGA	SOAR Report Nbr	S-0306
Level 1	Operational	Level 2	Crew and Cabin Safety	Level 3	Other Crew and Cabin Safety Issues
A/C Model 1	DG-500 Elan Orion	A/C Model 2			
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	54
Glider was launched without an operating oxygen system and continued to climb to 16,000ft QNH. The pilots flew cross-country while maintaining approximately 10,000ft peaking at 15,000ft on numerous occasions. CASA regulation (CAO 20.4) requires the carriage and use of oxygen above 10,000ft AMSL, as flying above this altitude comes with considerable additional safety issues other than reduced oxygen in the atmosphere. Above the 10,000 feet threshold (or below it for people who are smokers, unfit, or fighting off an illness) the symptoms of hypoxia begin to show. They include loss of vision, in which light is perceived as dimmed, visual acuity diminished, and peripheral vision narrowed. Psychomotor effects include slower reaction time and impaired hand-eye coordination. Memory becomes impaired, as do cognitive functions such as mental calculations.					

Date	15-Dec-2013	Region	VSA	SOAR Report Nbr	S-0302
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing
A/C Model 1	LS 7-WL	A/C Model 2			
Injury	Serious	Damage	Substantial	Phase	Outlanding	PIC Age	59
What Happened On 15 December 2013, at about 0900 Eastern Daylight-savings Time, the pilot of a Rolladen Schneider Flugzeugbau LS7 glider attended the daily pilots' briefing. Following an analysis of the weather forecast and discussion of the day's gliding operations, the pilot planned to head to the north of the airfield. While					

waiting to be towed aloft, the pilot discussed his plans with the chief flying instructor, who advised the pilot that there would be better lift to the southeast of the airfield as indicated by the presence of cumulus clouds. The pilot then amended his planned flight to follow the clouds and lift to the south-east of the airfield. At about 1320, the glider was launched and climbed to about 4,500 ft above mean sea level, overhead the airfield. The pilot tracked towards a quarry and a series of small hills and then followed the clouds to the south-east. While flying, the pilot maintained a lookout below for suitable paddocks for an outlanding. Once over the hills, the pilot reported that at about 1430, the wind changed from a south-easterly to a south-westerly direction. The pilot reported that at about the same time, the Cu clouds dissipated and the lift disappeared. The pilot observed that the glider was not within range of a return to Benalla or the last suitable field he had identified, and commenced looking for a suitable field for an outlanding. The pilot identified a field about 1 to 2 NM ahead in a valley. The selected paddock appeared to be suitable, however, when at about 500 ft above ground level, the pilot observed that the surface had rocks and holes and quickly chose an alternative field. The alternative field was perpendicular to the planned landing area and the glider would be landing towards the north-east. There was a row of trees on the approach end of the field and a ditch at the far end. The pilot conducted an approach to the field and the glider passed over the trees at about 50 ft AGL. The pilot then attempted to reduce altitude and airspeed by conducting shallow turns and flying diagonally across the field. The glider landed heavily in the north-eastern corner of the field. The pilot sustained a serious injury due to the hard landing and the glider was substantially damaged.

Figure 1: Landing area

Pilot comments

The pilot provided the following comments:

- he had recently completed a successful outlanding about 2 NM north of Benalla and a 110 NM cross-country flight
- he had a total of 28.5 hours' gliding experience
- the decision to head to the south was a combination of confidence from successful previous flights and advice from the chief flying instructor; however, flying towards the hills increased the risk of having to conduct an outlanding and of having fewer suitable landing areas
- he did not recognise early enough that the lift indicated by the cumulus clouds was not as good as on his previous flight
- outlandings are an inherent part of gliding operations and pilots are taught to remain within range of a safe landing paddock at all times.**Chief flying instructor comment**

The chief flying instructor reported that he had conducted a briefing with the pilot prior to the flight, including a discussion of the weather conditions, and a reminder regarding selection of a suitable landing area.

Safety message

This incident highlights the importance of pilots of recognising their abilities and limitations, and to ensure they feel confident with the planned flight. It is a reminder for glider pilots to keep a constant lookout for suitable fields in which to conduct an outlanding.

Date	16-Dec-2013	Region	NSWGA	SOAR Report Nbr		S-0307	
Level 1	Operational	Level 2	Miscellaneous	Level 3		Rope/Rings Airframe Strike	
A/C Model 1		ASK-21		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	68

About 300ft AGL on aerotow launch the combination struck a gust which caused a bow in the tow rope. The bow was resolved with slight application of air brakes, and as the rope straightened the airbrakes were put away. A second gust was encountered and another bow in the rope occurred. As the rope came tight the tow rope broke away at the "weak-link". The rope then travelled rearwards and the remaining weak-link assembly struck the leading edge of the port wing causing minor damage and then wrapped around the wing. The instructor performed a 180 degree turn and landed successfully along take-off path.

Date	19-Dec-2013	Region	VSA	SOAR Report Nbr		S-0308	
Level 1	Operational	Level 2	Airframe	Level 3		Doors/Canopies	
A/C Model 1		SZD-42-2 Jantar 2B		A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Launch	PIC Age	67

While taking up slack during an aerotow launch the pilot unlocked the canopy to retrieve his drinking water tube. As the pilot was busy organizing his water supply, he rushed through the pre take-off checks and did not lock the canopy. The canopy came open during the launch at about 150ft AGL. A low modified circuit was flown into a crop to avoid a taxying aircraft resulting in a heavy landing and ground loop. Fortunately, damage was restricted to the canopy and frame.

Date	27-Dec-2013	Region	VSA	SOAR Report Nbr	S-0319
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	ASK-21			A/C Model 2	L-39 Jet Fighter
Injury	Nil	Damage	Nil	Phase	In-Flight	PIC Age	45

At 1650 on 27 December 2013, while on final glide into Benalla following a 4 hour cross-country flight and at about 6,000ft, the glider pilots saw what looked like a large model jet about 200m ahead and climbing from below left to above right at about 60 degrees up and closing. The jet appeared to be performing a number of rolls before performing other aerobatic manoeuvres close off the glider's right wing tip. No avoiding action was taken and none was thought to have been possible if required, either at the time or afterwards due to the speed of the jet. Following research, it was concluded that the most likely source of the other aircraft was a joy flight from "Air Combat Australia", who were operating out of Wangaratta airport.

Date	28-Dec-2013	Region	VSA	SOAR Report Nbr	S-0365
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	Landing	PIC Age	46

During final approach the aircraft flew through a strong wind gradient and landed heavily resulting in damage to the undercarriage. Contributing factors include low experience, high workload, and inadequate speed control.

Date	28-Dec-2013	Region	GQ	SOAR Report Nbr	S-0382
Level 1	Operational	Level 2	Aircraft Control	Level 3	Hard landing
A/C Model 1	BG 12A			A/C Model 2	
Injury	Nil	Damage	Substantial	Phase	Landing	PIC Age	62

The pilot was flying an aircraft that did not have airbrakes but used flap for glide-path control. During final approach in strong wind conditions with full flap deployed, the aircraft experienced a high rate of descent. At low height the pilot attempted to correct for the sink by reducing the flap setting, which resulted in the aircraft landing heavily and pushing the main wheel into the fuselage. Causal factors include retracting flaps at too low a height and at an insufficient speed to prevent the aircraft stalling onto the ground.

Date	29-Dec-2013	Region	VSA	SOAR Report Nbr	S-0329
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	Minor	Phase	Landing	PIC Age	57

Pilot became overloaded during downwind leg following a failed attempt to stay airborne. Distracted by the ground operations, affected by the crosswind and the need to reassess his landing position, the pilot forgot to complete his pre-landing check and landed with the wheel up.

Date	30-Dec-2013	Region	GQ	SOAR Report Nbr	S-0309
Level 1	Operational	Level 2	Aircraft Control	Level 3	Pilot Induced Oscillations
A/C Model 1	Glasflugel 304C			A/C Model 2	
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	50

Pilot appears to have misjudged the round-out and flare during a ground effect landing. The aircraft bounced a number of times before stopping, during which time the Pilot's head broke the canopy. Pilot underwent further training.

Date	31-Dec-2013	Region	SAGA	SOAR Report Nbr	S-0328
Level 1	Airspace	Level 2	Aircraft Separation	Level 3	Near collision
A/C Model 1	Piper PA-25-235	A/C Model 2	Piper PA-25-235		
Injury	Nil	Damage	Nil	Phase	Launch	PIC Age	71
At 1230 on 31 December 2013 during launching of gliders at the South Australian State Championships at Gawler, a Pawnee towing a glider took avoiding action to avert a head-on collision with a descending Pawnee. Neither tug pilot saw the other until within about 100 metres. The glider pilot on tow did not see the other tug and believes it was shielded by her tow plane. A causal factor was an unalerted deviation from the agreed towing pattern by the climbing combination to avoid a gaggle of gliders. A radio call advising of this deviation may have enhanced the situational awareness of the descending tug pilot.					

Date	31-Dec-2013	Region	NSWGA	SOAR Report Nbr	S-0330
Level 1	Operational	Level 2	Airframe	Level 3	Landing gear/Indication
A/C Model 1	LS 6-b	A/C Model 2			
Injury	Nil	Damage	Minor	Phase	Landing	PIC Age	78
Undercarriage collapsed on landing on rough airstrip. Known problem with type.					

Date	31-Dec-2013	Region	SAGA	SOAR Report Nbr	S-0374
Level 1	Operational	Level 2	Ground Operations	Level 3	Taxiing collision/near collision
A/C Model 1	LS 4-a TOP	A/C Model 2	Nimbus 2		
Injury	Nil	Damage	Nil	Phase	Ground Ops	PIC Age	21
While being towed by vehicle to a tie-down point, the RH wingtip of the LS4 collided with the rudder of a parked Nimbus 2. Contributing factors included inattention/distraction of vehicle driver, and proximity of roadway to parked gliders.					

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.