Australian Government
Australian Transport Safety Bureau

Near collision between Schempp-Hirth Janus glider, VH-GWQ, and Rolladen-Schneider LS3-A glider, VH-CQP

3 km NW of Mount Beauty, Victoria, 28 March 2016

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Addendum

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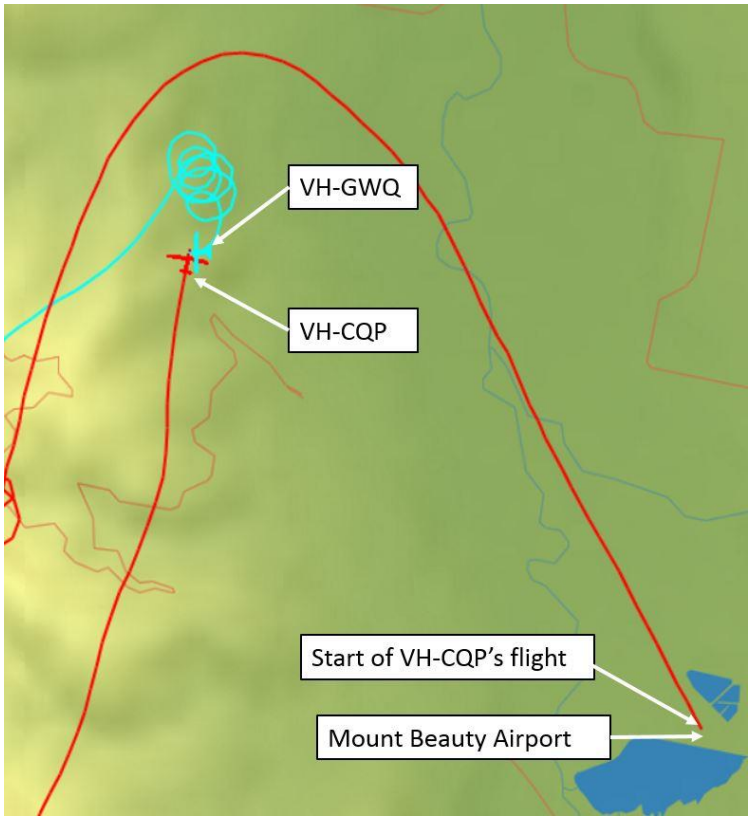
What happened

On 28 March 2016, at about 1306 Eastern Daylight-saving Time (EDT), a Schemp-Hirth Janus glider, registered VH-GWQ (GWQ) launched from Porepunkah Airfield, Victoria, for a pleasure flight. On board were two pilots. The pilot seated in the rear seat was the pilot in command for the flight. The glider tracked over Simmons Gap, to a ridge about 3 km north-west of Mount Beauty Airport (Figure 1). The pilots could hear and see other gliders being towed onto the ridge. They joined a thermal[1] and climbed in tight orbits ('thermalling') in a clockwise direction.

Figure 1: Relative tracks of gliders VH-GWQ and VH-CQP and positions at 1355:02



Source: Gliding Federation of Australia

At about 1335, the pilot of a Rolladen-Schneider LS3-A glider, registered VH-CQP (CQP), launched from Mount Beauty Airport, Victoria, for a pleasure flight. At about 1355, the glider was 3 to 4 km north-west of the airfield and descending through about 4,000 ft, when the pilot heard an alarm sounding, but did not identify it as issuing from the FLARM collision avoidance system (see *FLARM* below) fitted to the glider. The glider was tracking to the north, and the pilot reported that they had been keeping a lookout for other gliders but were not aware of any in the vicinity at the time.

[1] An ascending current of air caused by local heating, used by glider pilots to attain height.

The pilot tried to identify the source of the alarm inside the cockpit, which diverted their attention from looking outside. As the pilot became stressed by the noise, particularly as it became 'quite shrill', the cockpit fogged up, further reducing the pilot's ability to see outside.

At that time, GWQ was thermalling and in a right bank at about 40–45°, and had completed four orbits. The front seat pilot sighted a glider approaching from the opposite direction at about the same altitude. They assumed that the glider would join the thermal behind them, in the same direction, and on the opposite side of the orbit, in accordance with normal procedures. The front seat pilot asked the rear seat pilot whether they could see the glider, who responded 'no'. The FLARM fitted to their glider indicated that there was another glider in close proximity and the rear seat pilot looked outside to see where it was.

The front seat pilot assessed that the approaching glider was not going to manoeuvre to join the thermal or to avoid a collision, so took control of the glider and pushed the stick forwards to descend rapidly. The other glider (CQP) passed overhead.

The pilot of CQP sighted a glider pass below, and estimated there was less than 100 ft vertical separation. Both gliders continued their flight for about another hour after which GWQ landed at Porepunkah and CPQ landed at Mount Beauty without further incident.

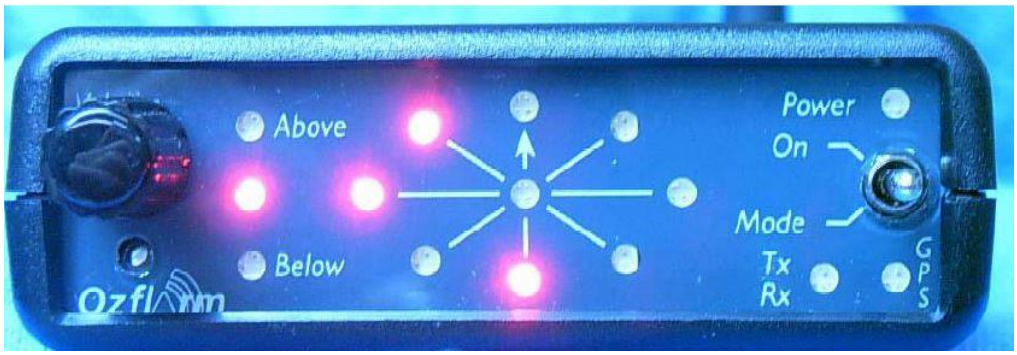
Flight data

According to the flight data recorded by the gliders' flight logger, at 1354:58, CQP was at 3,606 ft and GWQ at 3,523 ft. Four seconds later as the gliders' paths crossed, CQP was at 3,605 ft and GWQ had descended to 3,458 ft.

FLARM

FLARM is a collision avoidance system that shows other similarly equipped aircraft in the vicinity. The display shows the approximate direction of detected traffic and whether it is above, below or at about the same level (Figure 2).

Figure 2: OZflarm display



Source: OZflarm

According to the FLARM website,

> Each FLARM device determines its position and altitude with a highly sensitive state of the art GPS receiver. Based on speed, acceleration, heading, track, turn radius, wind, altitude, vertical speed, configured aircraft type, and other parameters, a very precise projected flight path can be calculated. The flight path is encoded and sent over an encrypted radio channel to all nearby aircraft at least once per second.
>
> At the same time, the FLARM device receives the same encoded flight path from all surrounding aircraft. Using a combination of own and received flight paths, an intelligent motion prediction algorithm calculates a collision risk for each received aircraft based on an integrated risk model. The FLARM device communicates this, together with the direction and altitude difference to the intruding aircraft, to the connected FLARM display. The pilots are then given visual and aural warnings and can take resolutive action.

Pilot comments

Pilot of VH-CQP

The pilot of CQP reported that they had flown gliders fitted with FLARM for 7–8 years and had never heard it make a noise before. This may have been because they had never been close enough to another glider to trigger the alarm before. They were briefed and had a briefing note circulated by the gliding club when they were first installed. The pilot did not think there were any other gliders in the vicinity, and did not associate the alarm with FLARM.

The pilot had a VHF radio with the local area frequency selected, but did not make or hear any broadcasts regarding GWQ.

Pilots of VH-GWQ

The pilot in the front seat of GWQ reported that there were some radio broadcasts at the time, mainly from the glider tug pilots in the circuit at Mount Beauty and Porepunkah. They had not made any broadcasts, and had not heard any from CQP.

The pilot in the rear seat commented that the head and shoulders of the pilot in the front seat obscured their vision immediately ahead at the same level. When the FLARM sounded, rather than looking at the display, they looked outside for the other glider.

The pilot in the rear seat further reported that the FLARM unit in CQP had recently been upgraded to a PowerFlarm. This may have included a new display, and also may have been indicating ADS-B transmissions. Changes to display and aural warnings of the FLARM fitted to CQP may have been confusing for the pilot of CQP.

Safety message

The glider pilots reported that see and avoid was the usual means of maintaining separation from other gliders. It was not uncommon to be in close proximity to other gliders, particularly when thermalling. They did not normally broadcast their position or intentions when thermalling, and expected other glider pilots to adhere to standard procedures.

Avoidance systems such as FLARM can enhace safety in non-controlled airspace by detecting conflicting aircraft also fitted with a compatible system. These assist in alerting pilots to the presence of other aircraft and directing them where to look. The ATSB report *Limitations of the See-and-Avoid Principle* outlines the major factors that limit the effectiveness of un-alerted see-and-avoid. Insufficient communication between pilots operating in the same area is the most common cause of safety incidents near non-controlled aerodromes.

It is essential that when equipment is installed in an aircraft, pilots have an understanding of its operation and are familiar with its characteristics.

The following publications provide valuable and relevant references for glider pilots:

- Operational Safety Bulletin (OSB) 02/12 - *Lookout for Glider Pilots*
- Operational Safety Bulletin (OSB) 02 14 - *See and Avoid for Glider Pilots*

General details

Occurrence details

Date and time:	28 March 2016– 1355 EDT	
Occurrence category:	Serious incident	
Primary occurrence type:	Near collision	
Location:	3 km NW of Mount Beauty (ALA), Victoria	
	Latitude: 36° 42.63' S	Longitude: 147° 08.90" E

Aircraft details: VH-GWQ

Manufacturer and model:	Schempp-Hirth Flugzeugbau Janus	
Registration:	VH-GWQ	
Serial number:	24	
Type of operation:	Gliding – Pleasure/Travel	
Persons on board:	Crew – 2	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Aircraft damage:	Nil	

Aircraft details: VH-CQP

Manufacturer and model:	Rolladen-Schneider Flugzeugbau LS3-A	
Registration:	VH-CQP	
Serial number:	3467	
Type of operation:	Gliding – Pleasure/Travel	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Aircraft damage:	Nil	

About the ATSB

The Australian Transport Safety Bureau (ATSB) is an independent Commonwealth Government statutory agency. The ATSB is governed by a Commission and is entirely separate from transport regulators, policy makers and service providers. The ATSB's function is to improve safety and public confidence in the aviation, marine and rail modes of transport through excellence in: independent investigation of transport accidents and other safety occurrences; safety data recording, analysis and research; and fostering safety awareness, knowledge and action.

The ATSB is responsible for investigating accidents and other transport safety matters involving civil aviation, marine and rail operations in Australia that fall within Commonwealth jurisdiction, as well as participating in overseas investigations involving Australian registered aircraft and ships. A primary concern is the safety of commercial transport, with particular regard to operations involving the travelling public.

The ATSB performs its functions in accordance with the provisions of the *Transport Safety Investigation Act 2003* and Regulations and, where applicable, relevant international agreements.

The object of a safety investigation is to identify and reduce safety-related risk. ATSB investigations determine and communicate the safety factors related to the transport safety matter being investigated.

It is not a function of the ATSB to apportion blame or determine liability. At the same time, an investigation report must include factual material of sufficient weight to support the analysis and findings. At all times the ATSB endeavours to balance the use of material that could imply adverse

comment with the need to properly explain what happened, and why, in a fair and unbiased manner.

About this report

Decisions regarding whether to conduct an investigation, and the scope of an investigation, are based on many factors, including the level of safety benefit likely to be obtained from an investigation. For this occurrence, a limited-scope, fact-gathering investigation was conducted in order to produce a short summary report, and allow for greater industry awareness of potential safety issues and possible safety actions.