



Australian Government

Australian Transport Safety Bureau

Hard landing involving a Grob G-115C2, VH-ZIV

Merredin (ALA), Western Australia, 11 October 2013

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Published by: Australian Transport Safety Bureau
Postal address: PO Box 967, Civic Square ACT 2608
Office: 62 Northbourne Avenue Canberra, Australian Capital Territory 2601
Telephone: 1800 020 616, from overseas +61 2 6257 4150 (24 hours)
Accident and incident notification: 1800 011 034 (24 hours)
Facsimile: 02 6247 3117, from overseas +61 2 6247 3117
Email: atsbinfo@atsb.gov.au
Internet: www.atsb.gov.au

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Addendum

Page	Change	Date

Hard landing involving a Grob G-115C2, VH-ZIV

What happened

On 11 October 2013, the student pilot of a G-115C2 Grob aircraft, registered VH-ZIV, departed the Merredin aeroplane landing area (ALA) on his first solo flight to the designated training area located near Lake Brown, Western Australia.

After about 1.4 hours in the training area, the student elected to return to Merredin, tracking via Burracoppin Township. The student navigated to what he believed was the township; however, when overflying the town he discovered that it was not Burracoppin. The student altered the aircraft's heading in the direction that he thought the town was. After about 10 minutes, the student again believed he had located Burracoppin, but after a further 6 minutes, he was unable to sight Merredin (ALA). The student became concerned and broadcast on the universal communications (UNICOM)¹ frequency indicating that he was unsure of his position. The UNICOM operator gave him directions to locate the commercial radio station 6MD transmitter that was located about 6 NM north-west of Merredin, and then track to Merredin.

The student located Merredin and joined the circuit for runway 28. When turning onto the base leg of the circuit, the student reported that the aircraft's airspeed was low so he adjusted the engine power and aircraft attitude. When on short final he determined that he was too high and initiated a go-around. The student commenced a second circuit to runway 28. When on short final, the student reported there was a crosswind with slight windshear, and the glare from the sun was making it increasingly difficult to see the runway. The student indicated that, at the height of the windsock, he reduced the engine power to idle and the aircraft sank quickly. At about 1700 Western Standard Time (WST),² the aircraft touched down heavily and bounced. The student reported that the sun glare made it very difficult to judge the height of the aircraft and he believed that the aircraft had not bounced very high. The aircraft touched down again on the nose landing gear, which subsequently collapsed. The aircraft slid along the runway and came to a stop. The student pilot was uninjured and the aircraft sustained substantial damage (Figure 1).

Figure 1: Accident site



Source: Aircraft operator

¹ UNICOM operators provide air-ground radio services at some non-controlled aerodromes to provide further operational information to pilots, and to support broadcasts on the common traffic advisory frequency (CTAF).

² Western Standard Time was Coordinated Universal Time (UTC) + 8 hours.

Aircraft operator investigation

The aircraft operator conducted an internal investigation and determined the following:

- The student pilot had a total of 35.8 hours dual and 2 hours solo flying experience.
- The student’s last meal was at 0600, which consisted of a sandwich.
- On the day of the accident, the student began his duty at 0600. The student had completed a long duty period with very little sustenance, which was insufficient for the training tasks completed.
- The wind was from 260° at 15 kt gusting to 20 kt, visibility was greater than 10 km, and light turbulence was present. Light turbulence had been experienced by a flight just prior to the accident. The student was also landing into the western sun.
- The operator’s flight risk assessment tool (FRAT) (Figure 2) for the accident flight was incomplete. If all values for the flight had been entered, the total risk value for the flight would have been in the red area stating ‘No dispatch’.

Figure 2: Flight risk assessment tool (FRAT)

Flight Risk Assessment Tool			
Date: _____ Current Time: _____ ETD: _____ Tail No: _____			
Departure Airport: _____ Arrival Airport: _____ IP: _____			
Student #1: _____ Student #2: _____			
			Risk Value*
			Flight Value
Qualifications and Experience			
1-1	Pilot in command with less than 100 hours in make and model	4	
1-2	Single Pilot (Solo) Flight	5	
1-3	Pilot in command with less than 100 hours in last 90 days	3	
1-4	Duty day projected greater than 11 hours	4	
1-5	Flight time of Pilot-in-Command greater than 7 hours in the duty day	4	
1-6	Rest less than 10 hours prior to the duty day	4	
1-7	Impairing prescription drug or alcohol use within 24 hours	3	
1-8	Domestic/family illness/distraction issues	5	
1-9	Last meal more than 4 hours ago	3	
Operating Environment			
2-1	Mountainous considerations in IMC or at night	5	
2-2	Control tower not operational at ETA or ETD, or uncontrolled airport	4	
2-3	Circling approach required	3	
2-4	Density altitude greater than 4,000 feet	5	
2-5	Wet runway	3	
2-6	Twilight operation	2	
2-7	Night operation	3	
2-8	Contaminated runway	4	
2-9	Reported or forecasted weather within 200 feet or one half mile of minimums	5	
2-10	Less than 2 hours notice to beginning of duty period	3	
2-11	Unimproved or unpaved runway	4	
2-12	No destination weather report	3	
2-13	Thunderstorms at departure or destination	4	
2-14	Moderate turbulence reports	4	
2-15	Winds greater than 25 knots	4	
2-16	Winds within 5 knots of max documented crosswind proficiency of the PIC or AFM	5	
2-17	A manager waived any operating limitations or company policies	4	
Equipment			
3-1	Some on board equipment is inoperative and AFM limitations impact plan	5	
3-2	Maintenance ferry flight	3	
			Total:
Insert a Check Mark <input checked="" type="checkbox"/> next to the assessment			
If total <= 16 Go			
If total >= 17 Consult with flight supervisor about mitigations; consider not dispatching			
If total >= 23 No dispatch			

Source: Aircraft operator

Student pilot comments

The student provided the following comments regarding the accident:

- He had last eaten and drank at about 0615, which was a piece of bread and water. Due to his schedule on that day, lunch was no longer available when he had a break.
- He had felt rushed in his pre-flight preparation and had forgotten his sunglasses.
- He reported feeling nervous when he was unable to locate Merredin (ALA), but was very relieved when he had found it.
- He felt uncomfortable about the wind and windshear experienced on the day, but he just wanted to land safely to finish a very long day.
- He had about 6 hours sleep the night before the accident as he was finishing his ground school homework and preparing for the next day.
- He has had several instructors during his training and had been given different instructions on when to initiate a go-around when a bounce occurred during landing.

Safety action

Whether or not the ATSB identifies safety issues in the course of an investigation, relevant organisations may proactively initiate safety action in order to reduce their safety risk. The ATSB has been advised of the following proactive safety action in response to this occurrence.

Aircraft operator

As a result of this occurrence, the aircraft operator has advised the ATSB that they are taking the following safety actions:

Instructor brief

A brief will be given to all company flying instructors at Merredin on the reasoning for, and the accurate completion of the flight risk assessment tool (FRAT). Plans are also in place for the training of instructors at the Jandakot base.

Training

- The accident will be used as a training scenario to help guide student pilots through the FRAT form, instilling an understanding of the information that the form provides.
- The accident will underpin the required understanding.
- Student pilot training using the FRAT will be undertaken and recorded.
- The student pilot training guidelines are being reviewed to ensure understanding of the FRAT is included with training for future courses.

Operations manual

- The operations manual will be amended to include that, when student pilots are scheduled for an extended tour of duty and the last training event is a flight, that flight must be conducted with an instructor. The definition of extended tour is a tour of more than 8 hours.
- Comprehensive instructions on the preparation and use of the FRAT form will be included in the operations manual.

Safety message

While pilots conduct a pre-flight inspection of their aircraft to determine airworthiness, this accident highlights the importance of pilots also assessing their own wellbeing. Tools such as the FRAT form (Figure 2), the Federal Aviation Administration’s (FAA) (United States) ‘I’m safe checklist’ (Figure 3), and the Civil Aviation Safety Authority’s (CASA) personal minimums checklists allows pilots to determine if they are physically and mentally prepared, and if the operating conditions are suitable for the conduct of the flight.

Figure 3: I’m Safe Checklist

I’M SAFE Checklist
Illness - Symptoms
Medication - Prescription or OTC
Stress - Job, Financial, Health, Family
Alcohol - 8 Hrs? 24 Hrs?
Fatigue - Adequately rested
Eating - Adequately Nourished

Source: Federal Aviation Administration

The following provide additional information on these tools:

- Flight risk assessment tool:
www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/info/all_infos/media/2007/inFO07015.pdf
- I’m Safe Checklist:
www.faa.gov/regulations_policies/handbooks_manuals/aviation/pilot_handbook/media/phak%20-%20chapter%2017.pdf
- CASA personal minimums checklists:
casa.cart.net.au/epages/casa.sf/en_AU/?ObjectPath=/Shops/casa1/Categories/Safety_Publications

The effect of sun-glare when relying on visual cues is an important consideration for all pilots. The FAA has conducted research into sunlight and its association with aviation accidents. This research found that:

- 85 per cent of accidents where glare from natural sunlight was considered among the reasons for the accident occurred in clear weather and optimal visual conditions.
- 55 per cent were during the approach/landing and take-off/departure phase of the flight.

The report suggests a number of preventative techniques to reduce the effects of sun glare including wearing sunglasses, using the aircraft’s sun visor or a brimmed hat to shield the pilot’s eyes from exposure to glare. The research report is available at:

www.faa.gov/data_research/research/med_humanfacs/oamtechreports/2000s/media/0306.pdf

General details

Occurrence details

Date and time:	11 October 2013 – 1700 WST	
Occurrence category:	Accident	
Primary occurrence type:	Hard landing	
Location:	Merredin (ALA), Western Australia	
	Latitude: 31° 31.37' S	Longitude: 118° 19.82' E

Aircraft details

Manufacturer and model:	Grob G-115C2	
Registration:	VH-ZIV	
Serial number:	82081/C2	
Type of operation:	Flying training - solo	
Persons on board:	Crew – 1	Passengers – Nil
Injuries:	Crew – Nil	Passengers – Nil
Damage:	Substantial	

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 fare-paying passenger operations.

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.

