Aviation Safety Investigation Report 199000091

Grob Twin Astir

9 July 1990

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NOTE: All air safety occurrences reported to the ATSB are categorised and recorded. For a detailed explanation on Category definitions please refer to the ATSB website at www.atsb.gov.au.

Occurrence Number: 199000091 **Occurrence Type:** Accident
Location: Stirling Range WA
Date: 9 July 1990 **Time:** 645
Highest Injury Level: Serious
Injuries:

	Fatal	Serious	Minor	None
Crew	0	1	0	0
Ground	0	0	0	-
Passenger	0	0	0	0
Total	**0**	**1**	**1**	**0**

Aircraft Details: Grob Twin Astir
Registration: VH-IKL
Serial Number: N/K
Operation Type: Aerial Work
Damage Level: Destroyed
Departure Point: Stirling Range WA
Departure Time: N/A
Destination: Stirling Range WA

Approved for Release: 2nd December 1991

Circumstances:

The accident occurred on the first gliding flight of the day. The air temperature was approximately two degrees celsius and a shallow low-level layer of moist air was present. Shortly after takeoff on a dual tow, and at approximately 300 ft above the ground, what appeared to be ice formed on the outside of the canopies of both gliders causing a complete loss of forward vision. Although the pilots were able to see the ground through their clear view panels (left hand side) visibility was severely restricted. The pilots of both gliders released their tow ropes (short tow first) and attempted emergency landings. The long tow glider turned left through 90`, sighted a suitable paddock, turned left through 270` and completed a successful landing. The short tow glider (VH-IXL) turned left through 240`, sighted the airfield and had commenced a right turn to line up for a landing when it struck the top branches of a tree, crashing near the base of the tree. The Bureau of Meteorology reported that the most likely cause of the loss of visibility was the rapid deposition of hoar frost on the canopy after the cold aircraft (having radiated energy all of the previous night) ascended from a 200 to 300 ft thick, cold but relatively dry band of air into an inversion layer of warm and relatively moist air. In the Bureau's opinion, it would be virtually impossible to routinely give prior warnings of such an unusual phenomenon, or for aircrew to be able to determine the state of the atmosphere from a purely visual observation. It was considered that the time of the occurrence was significant. The two layers would have mixed together as the sun continued to rise thus diminishing the potential for the occurrence. The air temperature had risen to six degrees celsius within 75 min of the accident. The pilots were aware of the standard procedure to attempt to land straight ahead following a low level tow release. However this procedure assumes forward visibility and on this occassion visibility was severely resticted. Both pilots were forced to manoeuvre in an attempt to sight a clear landing area through their clear vision panels. The procedure worked for one aircraft and it almost worked for the second. Consideration was given, by at least one of the pilots, to jettisoning the canopy however, this was not done because of the possibility of tail damage and complete loss of control.

Significant Factors:

The following factors were considered relevant to the development of the accident

1. There were unusual unobserved meteorological conditions which created a situation where frost could form suddenly on the aircraft's windscreen.

2. Inflight visibility was suddenly restricted due to frost deposits.

3. The pilot was unable to see a large tree to the right and below the aircraft during his final turn towards the landing area.

4. The aircraft became uncontrollable following the collision with the tree.

Reccomendations:

The Gliding Federation of Australia (GFA) recommended three specific procedures for operations at the Stirling Range strip.

1. That early morning launches be delayed until the rising sun has caused some mixing of the air, possibly as late as 0800 hours.

2. If ice is present on the parked gliders it will be allowed to melt off rather than be scraped off thus allowing the airframe to warm up before the first DEPARTURE.

3. The tug check flight will occur as near as practical to the first glider launch, will follow the same flight path as is intended for the gliders and will climb to at least 800 ft before returning. On its return the tug will be checked for signs of leading edge ice. If ice is present launching will be delayed until further warming has occurred. A further GFA recommendation related to the jettisoning of the canopy when complete icing occurs. BASI recommends that the GFA consult with the particular aircraft manufacturer before this course of action.