

**ACCIDENT**

<b>Aircraft Type and Registration:</b>	Cameron Z-275 hot air balloon, G-CBZZ	
<b>No &amp; Type of Engines:</b>	None	
<b>Year of Manufacture:</b>	2003	
<b>Date &amp; Time (UTC):</b>	24 August 2011 at 0700 hrs	
<b>Location:</b>	Pearson Farm, Cromford, Derbyshire	
<b>Type of Flight:</b>	Commercial Air Transport (Passenger)	
<b>Persons on Board:</b>	Crew - 1	Passengers - 11
<b>Injuries:</b>	Crew - None	Passengers - 1 (Serious) 2 (Minor)
<b>Nature of Damage:</b>	Burner damage to four panels	
<b>Commander's Licence:</b>	Commercial Pilot's Licence	
<b>Commander's Age:</b>	59 years	
<b>Commander's Flying Experience:</b>	2,147 hours (of which 1,900 were on type) Last 90 days - 46 hours Last 28 days - 25 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

**Synopsis**

The pilot was landing the balloon in a large grass field. In the final stages of the approach, the balloon was caught in a downdraft and began a more rapid descent. The pilot attempted to climb the balloon but it struck a loose stone wall and a female passenger was seriously injured.

**History of the flight**

Prior to leaving home at 0500 hrs, the pilot had checked the forecast weather on the Met Office web site. The weather was good, with a surface wind of 210°/2-5 kt, increasing to 270°/9-15 kt at 2,000 ft, visibility in excess of 10 km, cloud FEW at 4,000 ft and an outside air temperature of 13°C.

On arrival at the departure site, the weather was as forecast and the pilot met the passengers and carried out the flight and safety briefings. This included inviting passengers to declare if they had any medical condition that might preclude them flying. They were given a verbal briefing at the balloon basket with a physical demonstration by the pilot of the landing position that the passengers must adopt. This position requires the passengers to stand facing away from the balloon's direction of travel with their backs braced against that side of the basket. They should bend their knees slightly and hold onto the handles provided. There were four passenger compartments in the basket, one at each corner with a central area for the pilot to control the gas-fuelled burners.

When the balloon was inflated, the passengers boarded the basket. The pilot reaffirmed his briefing and the passengers were instructed to adopt their landing positions. This was checked for correctness by the pilot and members of the ground crew.

The balloon departed for a one hour flight at 0600 hrs and was climbed to 1,500 ft in order to establish the actual wind direction and speed. At this altitude, the onboard GPS equipment indicated a wind speed of 16.8 mph, so the pilot descended to a lower altitude. For the next forty minutes the wind speed was between 1 and 6 mph.

At 0650 hrs, the balloon approached some high ground and the wind speed increased to 16 mph. The projected flight path, at this stage, was over horses, a rocky outcrop and some electricity pylons. Despite the wind starting to increase, these obstacles had to be cleared before the balloon could land. The pilot selected a large grass field ahead of the balloon, instructed the passengers to adopt their landing positions and, with the wind speed indicating 17 mph, commenced an approach.

On the final approach, the wind gusted, whereupon the balloon started a more rapid descent. The pilot used all three burners in an attempt to go around from the approach but this did not arrest the rate of descent. The basket struck a fence followed by a wall some 25 metres short of the intended landing point. The basket travelled on its side for approximately 50 metres into the field before coming to a stop. The passengers disembarked, apart from one female passenger who was complaining of pain in her legs. The pilot called an ambulance which conveyed her to hospital where she was found to have broken both her legs. Two other passengers sustained minor injuries.

## Discussion

The operator's Operations Manual makes the following statement regarding wind speed limits:

### *'Wind Speed Limits*

*Balloons shall not normally be operated in wind speed exceeding 8kts on the surface, and not in wind speeds between 8kts and the Flight Manual limit of 15kts without the specific approval of the Chief Pilot.'*

The pilot was authorised to operate the balloon between 8 and 15 kt. The forecast wind speeds and the wind at the departure point were within the limits stated in the Operations Manual. As the flight progressed towards the high ground, the windspeed increased and the pilot elected to land. However, he was unable to do so until the balloon had cleared the obstacles on the ground.

The passengers had all been briefed and instructed on how to adopt the landing position and this was called for by the pilot during the approach. The injured passengers had all adopted the landing position but the impact with the wall was immediately below their corner of the basket and this caused the injuries. The female passenger, who broke both her legs, was 64 years of age and had no medical history that may have contributed to her injuries.

The pilot's assessment of the cause of the accident was that a large gust of wind on the approach to the proposed landing site caused the balloon to increase its rate of descent. The balloon basket subsequently made contact with the fence and the stone wall prior to the proposed landing site.

In a report on a hot air balloon accident involving G-KTKT, published in AAIB Bulletin 8/2010, a reference

is made to the number of ballooning accidents which have resulted in 'serious injury' and that:

*'in a significant proportion of these reports, the injured passenger was described as 'elderly'.'*

Safety Recommendation 2010-052 was made as a result of that investigation. It stated:

Balloon landings can take place at unprepared sites and may occasionally be bumpy for the occupants, especially in higher wind conditions if the basket tips over and drags along the ground. At present, not all commercial balloon operators make passengers aware of this, either at the booking stage or prior to a flight. Therefore, it is recommended that the Civil Aviation Authority require all commercial balloon operators to make prospective passengers aware of the varied nature of balloon landings so that they can make an informed decision as to whether or not to undertake a flight. (Safety Recommendation 2010-052)

Following on from the Safety Recommendation, on 30 November 2011, the Civil Aviation Authority issued Safety Notice number: SN-2011/018, 'Balloon Operations-Safety Matters'. The Safety Notice is a comprehensive document and places particular emphasis on passenger related matters. In this respect, it summarises that:

*'Operators should ensure that prospective passengers are aware that ballooning is an outdoor activity, normally occurring in the open countryside, requiring a degree of fitness and activeness from participants.'*