ACCIDENT

Aircraft Type and Registration:	Rockwell Commander 112, G-LITE	
No & Type of Engines:	1 Lycoming IO-360-C1D6 piston engine	
Year of Manufacture:	1975 (Serial no: 291)	
Date & Time (UTC):	23 September 2020 at 1410 hrs	
Location:	Perranporth Airfield, Cornwall	
Type of Flight:	Private	
Persons on Board:	Crew - 1	Passengers - 2
Injuries:	Crew - None	Passengers - None
Nature of Damage:	Extensive damage to landing gear and left wing	
Commander's Licence:	Commercial Pilot's Licence	
Commander's Age:	67 years	
Commander's Flying Experience:	6,632 hours (of which 45 were on type) Last 90 days - 149 hours Last 28 days - 59 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot and further enquiries	

Synopsis

The aircraft stalled onto the runway during takeoff and overran the end. The aircraft was probably over its maximum takeoff weight and may have been affected by windshear due to the proximity of cliffs at the end of the runway.

History of the flight

The pilot, a qualified flying instructor, left his home base at Sleap Airfield in Shropshire on the morning of the accident to pick up a passenger from Perranporth Airfield in Cornwall. He took a member of the flying club with him who was learning to fly, but who did not operate the aircraft. On arrival at Perranporth he landed on Runway 27 without incident.

After a short time on the ground the pilot prepared for the return flight to Sleap Airfield. For the departure, the passenger boarding the flight at Perranporth occupied the front right seat of the aircraft with the other passenger now sat in the rear of the aircraft. Newquay Airport, 5 nm to the north, was reporting a wind of 14 kt from 300°, which the pilot considered favoured a takeoff from Runway 27. After start he taxied for Runway 27 and made a power check, which did not reveal any problems. He then entered Runway 27, carrying out a rolling takeoff with 10° of flap set.

The pilot reported that the aircraft appeared to accelerate normally and became airborne at about 60 kt, before it was halfway down the runway, but that it failed to climb. The

stall warner then “squeaked” and the aircraft settled back onto the runway briefly before becoming airborne again. He reported the aircraft then stalled, hitting the runway hard. There was then insufficient runway remaining in which to stop the aircraft and it overran the end, causing extensive damage. Once the aircraft came to rest the three occupants, who were uninjured, were able to vacate unaided using the cabin door.

Aerodrome information

Perranporth Airfield is an unlicenced aerodrome located on the north Cornish coast at an elevation of 330 ft amsl. It has two operational asphalt runways: Runway 05/23 (799m) and Runway 09/27 (741m). At the time of the flight, both runways were available for use. Due to the proximity of sea cliffs at the end of Runway 27 two popular VFR flight guides carried a warning that aircraft using this runway should expect windshear and severe turbulence in strong winds.

Since the accident, one of these guides has been updated to advise that Runway 09/27 is not now generally available due to these wind effects. The guide also now provides more detailed information in the related warning advising of ‘Rotor/Curl-over’ affecting approximately the last quarter of Runway 27 during onshore winds over 10 kt. It warns that this results in changes to head and tail wind components in excess of 10 kt and more than 1,000 ft/min sink rates with severe turbulence, stall and loss of control.

Both the airfield and the flying club based there had their own websites, although neither of these provided information on the wind effects possible on Runway 27. The airfield website stated that Runway 27 was only available by approval, either over the radio or when booking prior to flight, but suggested that this was due to other users of the runway rather than because of the possible wind effects. The flying club website provided users with links to two other published information providers: one included the warning about Runway 27, but the other provided only basic information, with no warnings included.

Pilots phoning to book into the airfield were asked to provide some basic information about the aircraft, departure point and any fuel required on landing. Operational information regarding the airfield, including the warnings associated with Runway 27 was not routinely passed on as it was considered the person normally taking the call was not suitably qualified to do so.

Flight planning

The pilot reported he had flown to Perranporth Airfield twice before during the year, the last time only about a week earlier. On both flights the pilot reported he used Runway 05/23. For the flight on the day of the accident he used a flight planning app to carry out his pre-flight planning. The software provided basic aerodrome information but did not include any aerodrome warnings. The pilot reported he did not refer to a flight guide or other sources of information to get additional information prior to the flight. He was not aware of the warning related to Runway 27 and had not been advised of it when contacting the airfield to book his flight or when at the airfield itself.

Weight and balance

The pilot had planned to take sufficient fuel for the return flight with an additional 45 minute reserve. He estimated each of the two flights would take 90 minutes and, as the aircraft used 9 USG per hour, this gave a total fuel requirement of 33.75 USG. He stated he had refuelled the aircraft prior to departure from Sleap, dipping the tanks to check he had the correct quantity on board. He had then calculated his fuel onboard when at Perranporth for his departure as weighing 158 lbs, but had not re-dipped the tanks.

The pilot reported he had asked the passengers their weights, which had each been given as 14.5 stone, equivalent to 203 lbs. The pilot stated his own weight was 11 stone, equivalent to 154 lbs. He also reported there was a single bag weighing 10 lbs.

Other evidence suggests that some of these weights may have been underestimated.

The pilot used these figures to calculate a takeoff weight of 2,635 lbs, 15 lbs under the maximum takeoff weight of 2,650 lbs. The same weights were also used to calculate the aircraft's Centre of Gravity (C of G), although the pilot used different lever arms to those quoted in the aircraft's C of G schedule. Despite this the aircraft was, using the weights provided, within the permitted C of G range.

Previous accident

A previous accident occurred at the airfield on 11 August 2016 and was investigated by the AAIB[1]. The aircraft involved also sunk back onto Runway 27 on takeoff and overran the end in virtually identical wind conditions. Both occupants received minor injuries and managed to vacate the aircraft, but the aircraft had then been destroyed by fire.

Analysis

Based on the information provided, at takeoff the aircraft was probably above its maximum permitted takeoff weight. This may well have accounted for the difficulties described by the pilot in trying to get airborne at the normal takeoff speeds described, resulting in the aircraft settling back onto the runway. When the aircraft became airborne for the second time it was then probably far enough down the runway to encounter the negative wind effects associated with the prevailing wind. This, combined with the aircraft's weight, are consistent with the stall described.

The accident emphasises the importance of using properly derived weights and figures, especially when an aircraft's weight is known to be close to any limits.

In addition, the accident highlights the variety of information sources available to pilots and the potential difficulty in ensuring they have secured the appropriate information required. Whilst the provision of reliable information for licenced aerodromes is formalised through Aeronautical Information Publications there is no equivalent system for unlicenced

Footnote

[1] Reference: AAIB Bulletin 11/2016, Piper PA-28-161 Cherokee Warrior II, G-CGDJ (EW/G2016/08/06).

aerodromes. These aerodromes generally rely on information they provide themselves directly or through others, such as the publishers of flight guides. Other sources of information, such as planning software, may intentionally only publish basic information in the expectation that pilots will refer to other sources.

It is important therefore that pilots understand the limitations of any sources of information they may use. Of equal importance therefore is the need for those providing information to ensure it is not only fit for the purpose for which it is intended but that those using it may understand the extent of what is being provided.

Safety action

Runway 09/27 has now been removed from normal operations. Whilst the runway may still be used, pilots can only do so after having received specific information on the associated limitations.

Both the airfield owner and resident flying club will also be reviewing their websites to incorporate this new information.