Air Accident Investigation Unit Ireland

ACCIDENT REPORT
Piper PA 16 Clipper, EI-EMT
Letterkenny Airfield (EILT), Co Donegal
29 April 2011 @ 12.30 hrs

An Roinn Iompair Turasóireachta agus Spóirt
Department of Transport, Tourism and Sport

AAIU Report No: 2012-008
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In accordance with the provisions of SI 460 of 2009, the Chief Inspector of Air Accidents, on 29 April 2011, appointed Mr. Graham Liddy as the Investigator-in-Charge to carry out a Field Investigation into this Accident and prepare a Report. Due to retirement, the Chief Inspector, Mr. Jurgen Whyte appointed himself on the 29 February 2012 as the Investigator-in-Charge to complete the Investigation. The sole purpose of this Investigation is the prevention of aviation Accidents and Incidents. It is not the purpose of the Investigation to apportion blame or liability.

Aircraft Type and Registration:	Piper PA 16 Clipper, EI-EMT
No. and Type of Engines:	1 x Lycoming O-320-A2A
Aircraft Serial Number:	16-29
Year of Manufacture:	1949
Date and Time (UTC):	29 April 2011 @ 12.30 hrs
Location:	Runway (RWY) 07 Letterkenny Airfield (EILT), Co Donegal. N54° 57. 080', W 07° 40. 200'
Type of Operation:	General Aviation
Persons on Board:	Crew - 1 Passenger - 1
Injuries:	Crew - None Passenger - None
Nature of Damage:	Substantial
Commander's Licence:	UK PPL(A)
Commander's Details:	Male, aged 68 years
Commander's Flying Experience:	1,346 hours, of which 900 were on type
Notification Source:	Maintenance Organisation Director
Information Source:	AAIU Pilot Report Form submitted by Pilot

SYNOPSIS

Having landed normally on Runway (RWY) 25, in gusty conditions, the Pilot was conducting a turn to back-track along RWY 07 towards the airfield hangar when a gust of wind lifted the tail, resulting in the aircraft nosing into the ground and flipping over on its back. While the aircraft was substantially damaged, there were no injuries to persons on board.

1. FACTUAL INFORMATION

1.1 History of the Flight

The Pilot/Owner, who was well-experienced on the aircraft type, said that following a 15 minute local flight he landed his tail wheeled aircraft on RWY 25. He said that it was a good landing on the dry asphalt runway. He recalled that the wind earlier on take-off was almost on the runway, at 260/15 kts.

At the end of the landing roll-out (at about 2/3rds of the runway length), he initiated a turn to back-track along runway (RWY 07) in order to access the airfield hangars. When manoeuvring through 90 degrees of the 180 degree turn, a *'freak gust of wind lifted the tail and took the aircraft onto its nose…then right over on its back'* (See **Photo No. 1**). While the Pilot and passenger exited the cockpit quickly and safely, there was substantial damage to the wings, tail, propeller and wing struts.

Photo No. 1: Aircraft in final inverted position (Pilot's Photo).

1.2 Meteorological Information

The Aviation Services of Met Éireann supplied the following weather report for 12.30 hrs UTC on 29 May 2011, for the area:

Wind (surface): 250-270/18-22kt

Visibility: 10+km

Weather: Isolated light rain showers

In a further comment, Met Éireann stated that the surface wind could have been somewhat blustery and this could have been accentuated by local topography. Radar and satellite analysis, along with reports from local stations, suggest that there were few showers and any occurring would have been light. Nonetheless, the possibility of convective downdrafts amplifying the surface wind to some degree could not be ruled out.

1.3 Technical Information

The aircraft was found to have been well maintained and at the time of the accident had a valid Flight Permit (18 June 2011) which had been issued by the Irish Aviation Authority (IAA) on the 18 June 2010.

Following repair, the aircraft recently returned to service having been issued with a Flight Permit on the 24 January 2012.

2. ANALYSIS

The normal procedure for taxiing tail wheel aircraft is to hold the control stick or column firmly in the aft position. This ensures that there is a download on the tail and this assists in preventing the aircraft nosing over.

While taxiing/turning a tail wheel aircraft in a quartering headwind, the wing on the upwind side will usually tend to be lifted by the wind unless the aileron control is held in that direction (upwind aileron UP). Moving the aileron in the UP position reduces the effect of wind striking that wing, thus reducing the lifting action. This control movement will also cause the opposite aileron to be placed in the DOWN position, thus creating drag and possibly some lift on the downwind wing, further reducing the tendency of the upwind wing to rise.

As the tail wheel aircraft continues its taxiing/turn towards downwind, (quartering tailwind), the elevator should be held in the full DOWN position (stick or column full forward), and the upwind aileron down. Since the wind is striking the aircraft from behind, these control positions reduce the tendency of the wind to get under the tail and the upwind wing possibly causing the aircraft to nose over. The application of these crosswind taxi corrections also helps to minimize the weathervaning tendency and ultimately results in increased controllability. When the tail wheeled aircraft is taxiing downwind in strong winds, the stick should be pushed forward, thereby lowering the elevator and maintaining a down-thrust on the tailplane.

The ground manoeuvring of a tail wheeled aircraft in blustery wind conditions can be challenging and requires many different control inputs as the aircraft transitions through the associated wind directions during the turn. In particular the aircraft is vulnerable as it moves, from the quartering headwind, to the quartering tailwind, to full downwind.

If insufficient or inappropriate control inputs are used during the transition and/or if the wind gusts are sufficiently strong, the wind effect can be sufficient to strike and lift the upwind wing and the tail to such a degree that the aircraft flips over.

This subject is comprehensively discussed in Chapter 13 *"Transition to Tail Wheel Airplanes"* of the Federal Aviation Agency Airplane Flying Handbook which can be found at **FAA-H-8083-3A, Airplane Flying Handbook -- 6 of 7 files**.

3. CONCLUSIONS

(a) Findings

1. While executing an out of wind back-track turn on RWY 25, an unexpected gust of wind lifted the tail and the aircraft nosed over and inverted.

2. Operation in gusty conditions was the main factor in this accident, as reports from the Pilot and Met Éireann show that blustery winds were a feature of the weather at Letterkenny Airfield at the time of the accident.

3. While there were no injuries to the occupants, the aircraft was substantially damaged.

(b) Probable Cause

Ground manoeuvring out of wind in blustery wind conditions.

4. SAFETY RECOMMENDATIONS

This Investigation does not sustain any Safety Recommendations.

-END-

In accordance with Annex 13 to the International Civil Aviation Organisation Convention, Regulation (EU) No 996/2010, and Statutory Instrument No. 460 of 2009, Air Navigation (Notification and Investigation of Accidents, Serious Incidents and Incidents) Regulation, 2009, the sole purpose of these investigations is to prevent aviation accidents and serious incidents. It is not the purpose of any such accident investigation and the associated investigation report to apportion blame or liability.

A safety recommendation shall in no case create a presumption of blame or liability for an occurrence.

Produced by the Air Accident Investigation Unit

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