Air Accident Investigation Unit Ireland

FACTUAL REPORT

ACCIDENT
Enstrom 280FX, N531TJ
Carrahane Strand, Co. Kerry

16 July 2018

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

Foreword

This safety investigation is exclusively of a technical nature and the Final Report reflects the determination of the AAIU regarding the circumstances of this occurrence and its probable causes.

In accordance with the provisions of Annex 13[1] to the Convention on International Civil Aviation, Regulation (EU) No 996/2010[2] and Statutory Instrument No. 460 of 2009[3], safety investigations are in no case concerned with apportioning blame or liability. They are independent of, separate from and without prejudice to any judicial or administrative proceedings to apportion blame or liability. The sole objective of this safety investigation and Final Report is the prevention of accidents and incidents.

Accordingly, it is inappropriate that AAIU Reports should be used to assign fault or blame or determine liability, since neither the safety investigation nor the reporting process has been undertaken for that purpose.

Extracts from this Report may be published providing that the source is acknowledged, the material is accurately reproduced and that it is not used in a derogatory or misleading context.

[1] **Annex 13**: International Civil Aviation Organization (ICAO), Annex 13, Aircraft Accident and Incident Investigation.
[2] **Regulation (EU) No 996/2010** of the European Parliament and of the Council of 20 October 2010 on the investigation and prevention of accidents and incidents in civil aviation.
[3] **Statutory Instrument (SI) No. 460 of 2009**: Air Navigation (Notification and Investigation of Accidents, Serious Incidents and Incidents) Regulations 2009.

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In accordance with Annex 13 to the Convention on International Civil Aviation, Regulation (EU) No 996/2010 and the provisions of SI No. 460 of 2009, the Chief Inspector of Air Accidents on 16 July 2018, appointed Kate Fitzgerald as the Investigator-in-Charge to carry out an Investigation into this Accident and prepare a Report.

Aircraft Type and Registration:	**Enstrom 280FX, N531TJ**
No. and Type of Engines:	**1 x Lycoming H10-360-F1AD**
Aircraft Serial Number:	**2059**
Year of Manufacture:	**1990**
Date and Time (UTC)[4]:	**16 July 2018 @ 16.22 hrs**
Location:	**Carrahane Strand, Co. Kerry**
Type of Operation:	**General Aviation**
Persons on Board:	**Crew - 1 Passengers - Nil**
Injuries:	**Crew - Nil**
Nature of Damage:	**Substantial**
Commander's Licence:	**Private Pilot License (Rotorcraft Helicopter), issued by the US Federal Aviation Administration (FAA)**
Commander's Age:	**72 years**
Commander's Flying Experience:	**749 hours, of which 50 hours were on type**
Notification Source:	**The Pilot**
Information Source:	**AAIU Report Form submitted by the Pilot** **AAIU Field Investigation**

[4] **UTC**: Co-ordinated Universal Time. All timings in this report are quoted in UTC; Local time is UTC + 1 hour

SYNOPSIS

Whilst carrying out practice exercises near Carrahane Strand, Co. Kerry, the Pilot, who was the sole occupant of the Enstrom 280FX helicopter, landed briefly for a break. The landing surface was soft, wet, sand. The skids of the helicopter had touched down lightly prior to it rolling over on to its left-hand side. The helicopter was substantially damaged. The Pilot was uninjured.

NOTIFICATION

The AAIU was notified of this accident by the Pilot. The Pilot organised the recovery of the helicopter prior to notifying the AAIU. This was due to the tidal location of the accident site and the fact that the incoming tide could have led to the total loss of the helicopter. The helicopter's rotor blades were cut-off to facilitate the recovery.

1. FACTUAL INFORMATION

1.1 History of the Flight

The Pilot, who was the sole occupant of the helicopter, was carrying out practice exercises in a tidal lagoon inshore of Carrahane Strand. These exercises included quick stops, hover, hover-taxi in a variety of wind directions and spot turns. The Pilot had decided to take a short break from practice and elected to land in the lagoon which had a landing surface of soft, wet sand. When the helicopter was touching the ground but still light on the skids, the Pilot's mobile telephone rang[5]. He glanced at the telephone which was mounted on a bracket beside the instrument panel in order to identify the caller. The Pilot reported that, at the same time as this momentary distraction, a gust of wind from the west hit the right-hand side of the helicopter. The helicopter rolled on to its left-hand side causing significant damage. The Pilot, who was uninjured, exited the helicopter through the right-hand door. The Pilot informed the Investigation that the accident sequence was over in an instant.

1.2 Field Investigation

Following the occurrence, two Inspectors of Air Accidents deployed to Carrahane Strand and inspected the accident site. Even though the accident site had been subjected to tidal flow, there were still clear witness marks from the two skids (**Photos No. 1 and 2**), which indicated that the helicopter had pivoted about the left-hand skid. The Investigation also inspected the helicopter, which had been recovered to a local warehouse, and interviewed the Pilot.

[5] The Pilot informed the Investigation that his mobile telephone contained software for navigation and flight planning but that he would never use it for communications during flight.

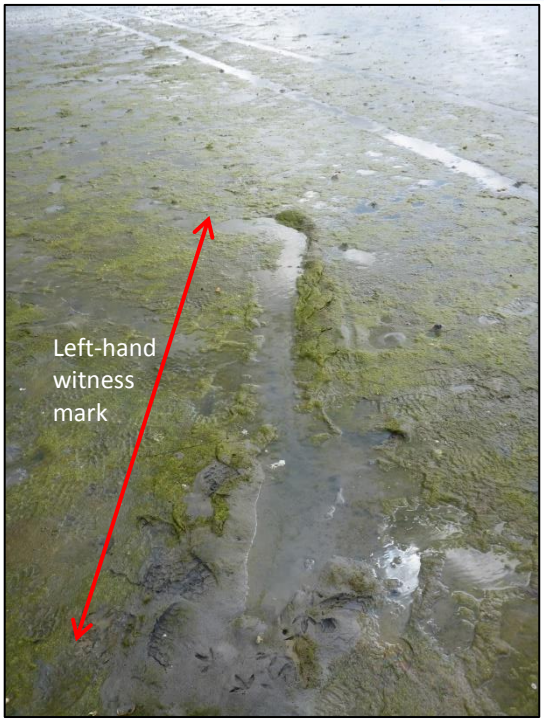

Photo No. 1: Witness mark from left-hand skid

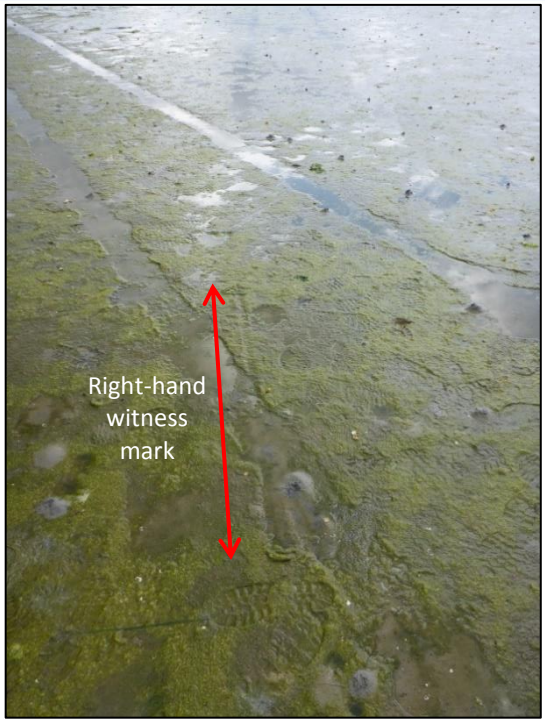

Photo No. 2: Witness mark from right-hand skid

1.3 Aircraft Information

The Enstrom 280FX helicopter (**Photo No. 3**) is powered by a single Lycoming H10-360-F1AD piston engine. The subject helicopter was manufactured in 1990 and was operated on a US Federal Aviation Administration (FAA) 'Standard Airworthiness Certificate' issued in October 2017.

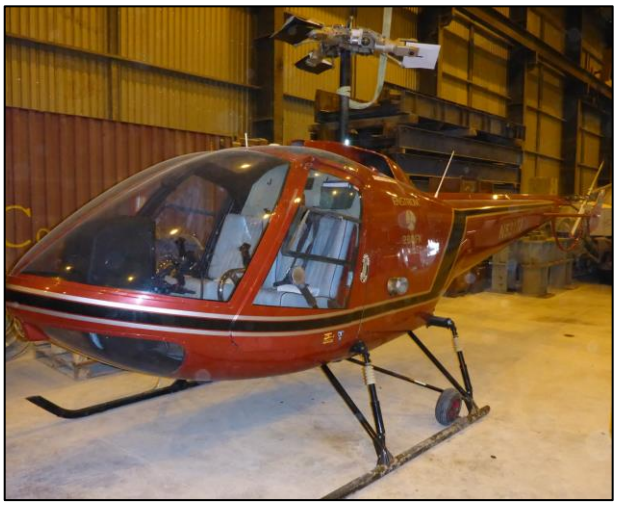

Photo No. 3: The occurrence helicopter following recovery

1.3.1 Damage to Aircraft

The helicopter sustained damage to the rotor blades (**Photo No. 4**), rotor head, rotor mast, main rotor gearbox, tail rotor, horizontal stabiliser and vertical stabiliser (**Photo No. 5**). It is also likely that the engine suffered shock loading.

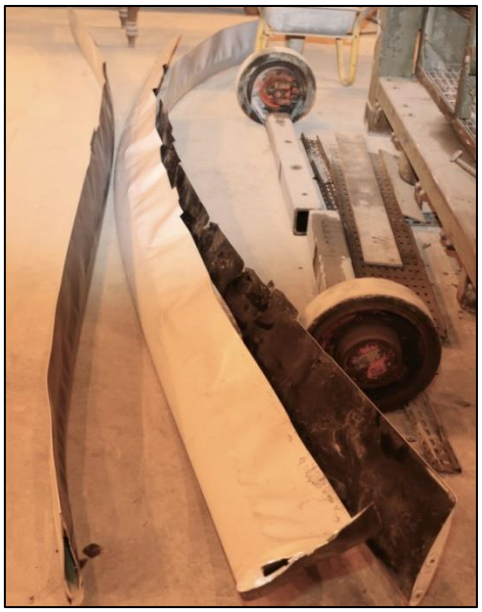

Photo No. 4: Rotor Blades

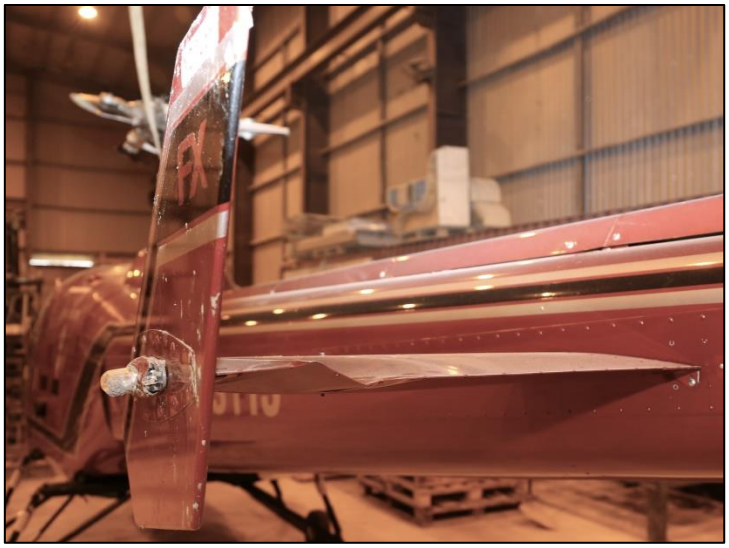

Photo No. 5: Vertical and Horizontal Stabiliser

1.4 Pilot Information

The Pilot held a Private Pilot Licence (Rotorcraft Helicopter) issued by the FAA in March 2004 and a Class 3 Medical Certificate issued by an FAA approved examiner in July 2017. The Pilot had undertaken a type rating in April 2018 and had accumulated 27 hours in the 90 days prior to the accident.

1.5 Meteorological Information

Met Éireann, the Irish meteorological service, was asked to provide details of the weather conditions prevailing in the area at the time of the occurrence. The meteorological aftercast received by the Investigation stated that the following weather could have been expected at the time of the accident:

Wind between surface and 300 ft:	Between southwest and north varying by 100 degrees at 7-10 knots (kts)
Surface Temperature:	17^{o} Celsius (C)
Mean Sea Level (MSL) Pressure:	1016 hectopascals (hPa)
Cloud:	Broken (5-7/8th of sky) layer of cloud with cloud bases between 2,500 and 3,000 feet (ft)
Visibility:	40 kilometres (km)

The Pilot informed the Investigation that there was no significant weather at the time of the Accident; visibility was good with broken clouds at 3,000 ft and there was a 12-15 kts wind from the west.

1.6 Dynamic Rollover

According to the FAA Rotorcraft Handbook[6], dynamic rollover refers to the susceptibility of a helicopter to lateral rolling in certain conditions. The roll is initiated by an external event, which causes the helicopter to pivot about a skid or landing gear wheel. Once the angle of roll exceeds a critical value, thrust from the main rotor causes the roll to continue and recovery becomes impossible. Common initiating events for dynamic rollover are; failure to remove a skid tie-down prior to an attempted take-off, contact by landing gear/skid with a fixed object whilst hovering, or the landing gear/skid becoming stuck in soft ground.

2. AAIU COMMENT

In this occurrence, the Pilot experienced a momentary distraction as the helicopter was settling to land with some power still applied. The Pilot reported that during this distraction, wind from the right pushed the helicopter towards the left. The left skid, which was now embedded in soft, wet, sand would have acted as a pivot point, and a dynamic rollover likely occurred.

The FAA Rotorcraft Handbook gives advice to pilots on how to recognise the onset of dynamic rollover. The FAA state that once started, dynamic rollover cannot be stopped by the application of opposite cyclic alone. Even when full opposite cyclic is applied, the main rotor thrust vector and its moment follows the helicopter as it continues to roll. Quickly applying down collective is the most effective way to stop dynamic rollover from developing.

Landing a helicopter is a critical phase of flight when circumstances can change rapidly. For this reason, any distraction during landing can contribute to an upset unless a prompt intervention is initiated. Many Pilots now carry Portable Electronic Devices (PEDs) such as mobile phones, tablets, GPS units in the cockpit; all of which may provide useful functions, but are also a potential source of distraction. The US National Transportation Safety Board (NTSB) Safety Alert SA-025[7], highlights the dangers associated with PED use during flight.

SAFETY RECOMMENDATIONS

This Investigation does not sustain any safety recommendations.

- END -

[6] **FAA Rotorcraft Handbook:** FAA publication number FAA-H-8083-21.
[7] **NTSB Safety Alert 025:** https://www.ntsb.gov/safety/safety-alerts/Documents/SA_025.pdf

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

Produced by the Air Accident Investigation Unit

AAIU Reports are available on the Unit website at www.aaiu.ie

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