

# Safety Investigation Report

Ref. AAIU-2013-8

Issue date: 1 January 2017

Status: Final

## Scope: Limited

As per ICAO Annex 13 and EU regulation EU 996/2010, decisions regarding whether to conduct a civil aviation safety investigation, and the extent of an investigation, are based on many factors, including the level of safety benefit expected to be drawn from such an investigation.

For this occurrence, a limited-scope, fact-gathering investigation and analysis was conducted in order to produce a short summary report. The investigation mainly focussed on the actions and conditions directly relating to the occurrence and might not cover all aspects of the aircraft operation and/or possible underlying safety factors due to the expected safety benefit of it and/or the extent of evidence/resources available.

## SYNOPSIS

Occurrence class	Accident
Occurrence category	Loss of control - ground (LOC-G)
Date and time <sup>1</sup>	Tuesday 23 April 2013 14:00 UTC
Location	Industrial site in Geel 51° 7' 46.50 "N - 004° 57' 1.53"E
Aircraft	Robinson R44
Aircraft category	Rotorcraft - Small helicopter
Location of departure	Industrial site in Geel
Planned destination	Heliport of Diest/Webbekom (EBDW)
Type of operation	Non-commercial - Cross-country
Phase of flight	Takeoff
Injuries	None
Aircraft damage	Substantial

## What happened

The helicopter was rented from the company 'Paramount Helicopters'<sup>2</sup> based at the heliport of Diest/Webbekom (EBDW). The pilot, holding a Private Pilot License, took off from EBDW with one cameraman on board. The purpose was to take aerial footage of the (transport) site of the company which the pilot was working for.

<sup>1</sup> All time data in this report are indicated in UTC, unless otherwise specified

<sup>2</sup> Both the company and the heliport ceased activities in 2016

Apart from the fact that the pilot reported that the ‘governor-off’ light came on during the approach, the helicopter landed uneventfully on an open asphalt area on the site, normally used for the stacking of shipping containers.

After the cameraman had disembarked the aircraft, the pilot prepared for the flight back to EBDW. The helicopter was standing headed towards the northwest. A calm wind (+- 7 kt) was coming from the south-westerly direction. At lift-off, the helicopter violently rotated clockwise and rolled over the righthand skid to finally end onto its right side. The main rotor abruptly came to a stop when the blades came into contact with the asphalt underground. The pilot was uninjured and was able to climb out the aircraft via the opposite door.

Afterwards the pilot declared that the ‘governor-off’ light popped on again when he raised the collective lever.

### What the AAIU(Be) found as safety topics

Systemic	Organisational	None determined
	Technical	None determined
	Operational	None determined
	Human	Task performance – Aircraft control Action – Delayed action
	Environmental	Physical environment – Take-off area surroundings – Effect on personnel

### AAIU(Be) comments and probable cause

The investigation could not declare the intermittent lighting up of the governor off light. Anyway, this light get it’s power from the governor switch. It receives no information on the governor itself, if it is actually working or not, just if the switch is in the ON or OFF position.

The accident was highly probable the result of a dynamic roll-over caused by a distracted pilot not applying enough left rudder and not reacting by immediately lowering the collective control.

The take-off area surrounded by industrial buildings and containers might have influenced/stressed the pilot.

## FACTUAL INFORMATION

### Personnel information

Table 1 : General pilot data

Age	51
License	PPL(H) issued on 19 July 2007
Medical certificate	Class 2 valid until 13 February 2014
Ratings	R22 and R44 valid until 30 November 2011

Flight experience: 140 flight hours of which 10 hours PIC and 5 hours dual on R44, the other on R22.

### Aircraft information

Table 2: Aircraft data

Model:	Robinson R44 – Raven I
Year of built:	2010
MTOW:	1089 kg
Registration:	Belgian
Airworthiness:	CofA issued on 24 June 2010 by Belgian CAA ARC Issued on 21 June 2012 by Belgian CAA valid up to 24 June 2013
Total hours:	1429.4
Engine manufacturer and model	Lycoming O-540-F1B5

### Wreckage and impact information

The aircraft sustained substantial damage, considered as being beyond economical repair. Both the fuselage and the tail boom were deformed by the impact. The main rotor mast assembly was displaced slightly forward

The root of the main rotor blades remained attached to the rotor hub and mast assembly but the pitch links of both blades failed due to overload. Both of the main rotor blades were extensively damaged due to bending by impact on the ground. They broke up in several pieces which were ejected away. The tip parts of one blade impacted the wall of an hangar about 90 metres away. The impact of the blades also caused some damage on the asphalt underground.

The helicopter was equipped with bladder tanks but still some fuel was leaking from the wreckage. This was treated by scattering absorbent granules.

There were no pre-accident mechanical anomalies discovered during the on-scene review of the wreckage.

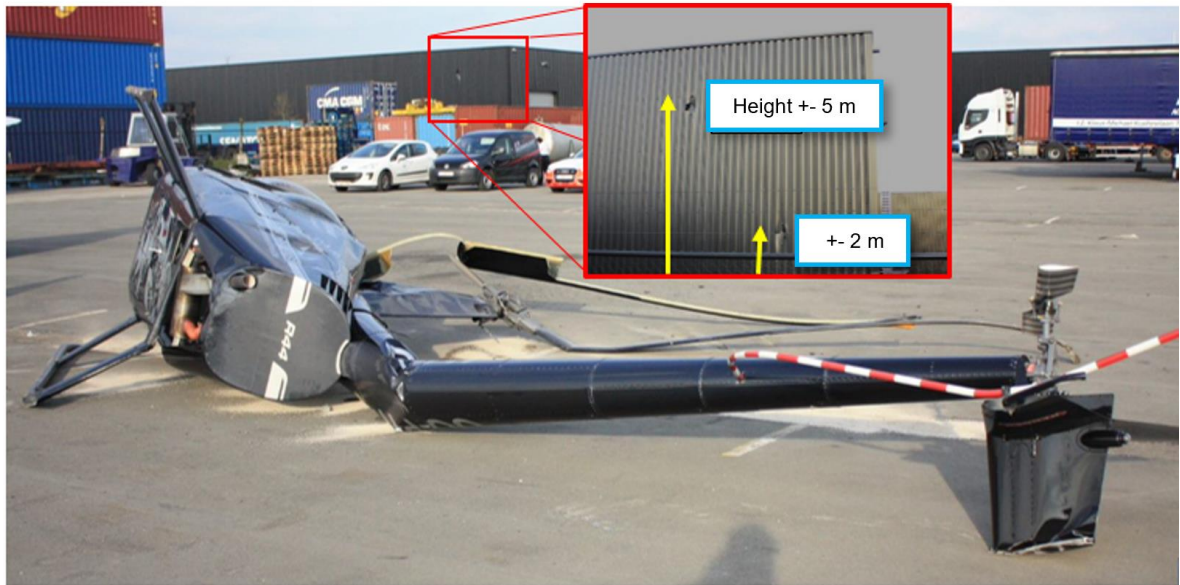


Figure 1 : helicopter after accident and blade impact damage in hangar

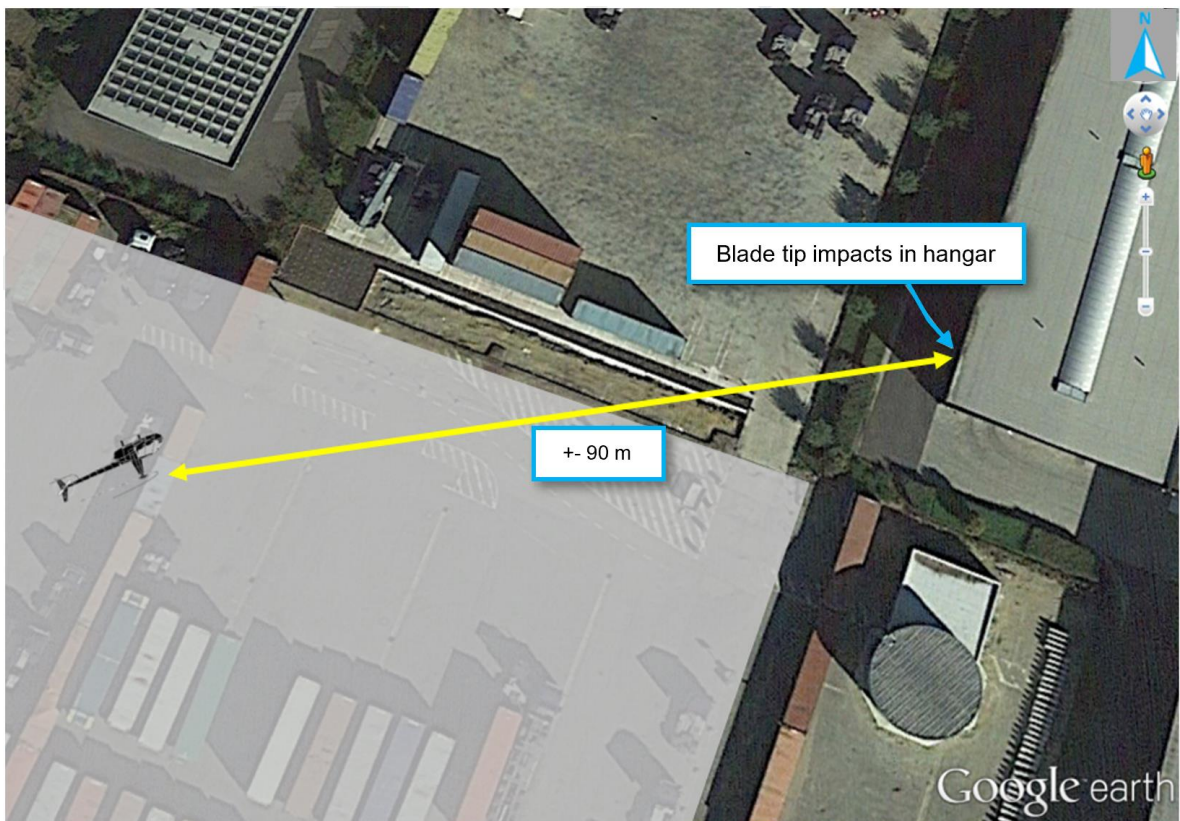


Figure 2 : distance of the blade tip impact and the main wreckage  
(the set-up of the shipping containers is not representative for the situation that day)

### Survival aspects

The pilot wore a three-point upper restraint.

## ABOUT THIS REPORT

General	
<b>What?</b>	Safety investigation reports are a technical document that reflects the views of the investigation team on the circumstances that led to the accident or serious incident and is conducted in accordance with Annex 13 to the Convention on International Civil Aviation and Regulation (EU) No 996/2010.
<b>Objective</b>	<b>The sole objective of safety investigations is the determination of the causes, and to define safety recommendations in order to prevent future accidents and incidents. It is not the purpose of this investigation to apportion blame or liability.</b> In particular, Article 17-3 of Regulation (EU) 996/2010 stipulates that the safety recommendations made in this report do not constitute any suspicion of guilt or responsibility.
<b>Investigation authority</b>	The Air Accident Investigation Unit of Belgium, (AAIU(Be) for the rest of this publication). It is the Belgian permanent national civil aviation safety investigation authority as defined in Article 4 of Regulation (EU) No 996/2010 and established in accordance with the Royal Decree of 8 December 1998. This unit is part of the Federal Public Service Mobility and Transport and is functionally independent from the Belgian Civil Aviation Authority and other interested parties.
This investigation	
<b>Investigation initiation</b>	AAIU(Be) was notified of the occurrence by the helicopter owner at 14:15 UTC. 2 investigators arrived at the site of the accident at 15:40 UTC.
<b>Scope</b>	Limited  For this occurrence, a limited-scope, fact-gathering investigation and analysis was conducted in order to produce a short summary report. The investigation mainly focussed on the actions and conditions directly relating to the occurrence and might not cover all aspects of the aircraft operation and/or possible underlying safety factors due to the expected safety benefit of it and/or the extent of evidence/resources available.