Havarikommissionen
Accident Investigation Board Denmark

Summary 2020-307

Summary on accident to D-EQCA (Rockwell Commander 114B) near Fur (EKFU) on 30-8-2020.

ISSUED JANUARY 2021

INTRODUCTION

This summary reflects the opinion of the Danish Accident Investigation Board regarding the circumstances of the occurrence and its causes and consequences.

In accordance with the provisions of EU Regulation 996/2010, the Danish Air Navigation Act and pursuant to Annex 13 of the International Civil Aviation Convention, the safety investigation is of an exclusively technical and operational nature, and its objective is not the assignment of blame or liability.

The safety investigation was carried out without having necessarily used legal evidence procedures and with no other basic aim than preventing future accidents and serious incidents.

Consequently, any use of this summary for purposes other than preventing future accidents and serious incidents may lead to erroneous or misleading interpretations.

CONTENTS

GENERAL

State file number:	2020-307
UTC date:	30-8-2020
UTC time:	14:11
Occurrence class:	Accident
Location:	Near Fur (EKFU)
Injury level:	3 fatal injuries / 1 serious injury
Aircraft registration:	D-EQCA
Aircraft make/model:	Rockwell Commander 114B
Current flight rules:	Visual Flight Rules (VFR)
Operation type:	Private
Flight phase:	Take-off
Aircraft category:	Fixed wing
Last departure point:	Fur (EKFU)
Planned destination:	Billund (EKBI)
Aircraft damage:	Destroyed
Engine make/model:	1 x Lycoming IO-540 T4B5

SYNOPSIS

Notification

All times in this summary are UTC.

The Danish Police notified the Aviation Unit of the Danish Accident Investigation Board (AIB) of the accident on 30-8-2020 at 14:20 hours (hrs).

The Danish AIB notified the Danish Transport, Construction and Housing Authority (DTCHA), the US National Transportation Safety Board (NTSB), the European Aviation Safety Agency (EASA), the Directorate-General for Mobility and Transport (DG MOVE) on 20-8-2020 at 20:16 hrs.

The NTSB accredited a non-travelling representative to the AIB safety investigation.

Summary

The focus of the pilot on his deliberate decision on a take-off in tailwind on runway 12, supported by his perception of the degree of the runway slope, most likely mentally shadowed the operational consequences of an increased take-off distance.

A required take-off distance longer that the available take-off distance led to the aircraft collision with nearby trees and the accident.

The accident occurred in daylight under Visual Meteorological Conditions (VMC).

FACTUAL INFORMATION

History of flight

The accident occurred during a private VFR pleasure flight from Fur (EKFU) to Billund (EKBI).

Before the departure from EKFU and for runway selection, the pilot took into consideration the actual wind conditions, the runway dimensions, and the runway slope.

The pilot decided to perform a take-off in tailwind on runway 12, and during the sequence of events the pilot closely observed the indications of the airstrip wind sock (*did not "hang" but was not fully inflated*).

The pilot estimated the tailwind component for take-off on runway 12 to be approximately 2-5 knots.

A pre-flight inspection of the aircraft did not give rise to remarks.

Upon engine start, the pilot in take-off position for runway 12 performed an engine run-up check without remarks.

The pilot extended the flaps to flap position 20° and crosschecked the flap indicator and the flap position.

The pilot added full power and released the brakes, and the aircraft started accelerating.

The pilot noted an expected and good initial acceleration, and the sound picture was normal.

It was the expectation of the pilot that rotation of the aircraft would be possible, when the degree of the runway downslope increased.

At an airspeed of approximately 65 knots (kt), the pilot had a feeling of a *ceased* acceleration.

The pilot was aware of nearby trees at the end of runway 12, and after a ground roll of at least 450 meters the pilot tried to rotate the aircraft at an airspeed of approximately 65 kt.

The aircraft got airborne, and the pilot experienced temporary activation of the stall warning.

In order to avoid trees and buildings at the end of the runway, the pilot made a steep turn to the right. Immediately before the aircraft collided with trees, the aircraft flew straight and level.

The aircraft collided with trees and crashed.

Immediately upon ground impact, the aircraft caught fire. The pilot instructed the passengers to release their seat belts.

The pilot in the left front seat and the passenger in the right front seat managed to evacuate the aircraft.

Witnesses observing the sequence of events launched a rescue mission.

Throughout the sequence of events, the pilot experienced no technical problems.

Injuries to persons

Injuries	*Crew*	*Passengers*	*Others*
Fatal		3	
Serious	1		
Minor / None			

Damage to aircraft

As a consequence of the collision with trees and the post impact fire, the aircraft was destroyed.

Photo no 1 - The wreckage site.

Personal information

License and medical certificate

The pilot - male, 43 years - was the holder of a valid Airline Transport Pilot License (ATPL).

The rating B737 300-900/IR PBN was valid until 31-10-2020.

The rating Single Engine Piston Land (SEP (L)) was valid until 31-5-2022.

The medical certificate (class 1) was valid until 6-4-2021 The medical certificate held no limitations.

Flying experience

	Last 24 hours	Last 90 days	Total
All types	-	-	App. 8000
This type	-	-	App. 12
Landings this type	-	-	-

Grass runway experience on aircraft type

On this aircraft type, the pilot had no previous flying experience on grass runways.

Meteorological information

Airstrip wind sock

At 14:38 hrs, the wind direction was approximately 300°.

Photo no 2 - The airstrip wind sock.

Wind tunnel test

See appendix 1.

Aerodrome information

General information

EKFU:	Private airstrip
Aerodrome Reference Point:	56° 49’ 27.58“N 8° 59’ 22.79“E
Elevation:	30 feet (information from a private provider of aerodrome information)
Runway directions:	12/30
Runway dimensions	600 meters (m) x 20 m
Runway surface:	Grass

Overview of airstrip

Information from a private provider of aerodrome information - see appendix 2.

Drone photo

A drone photo containing AIB measured distances - see appendix 3.

Note. The drone photo is not to scale.

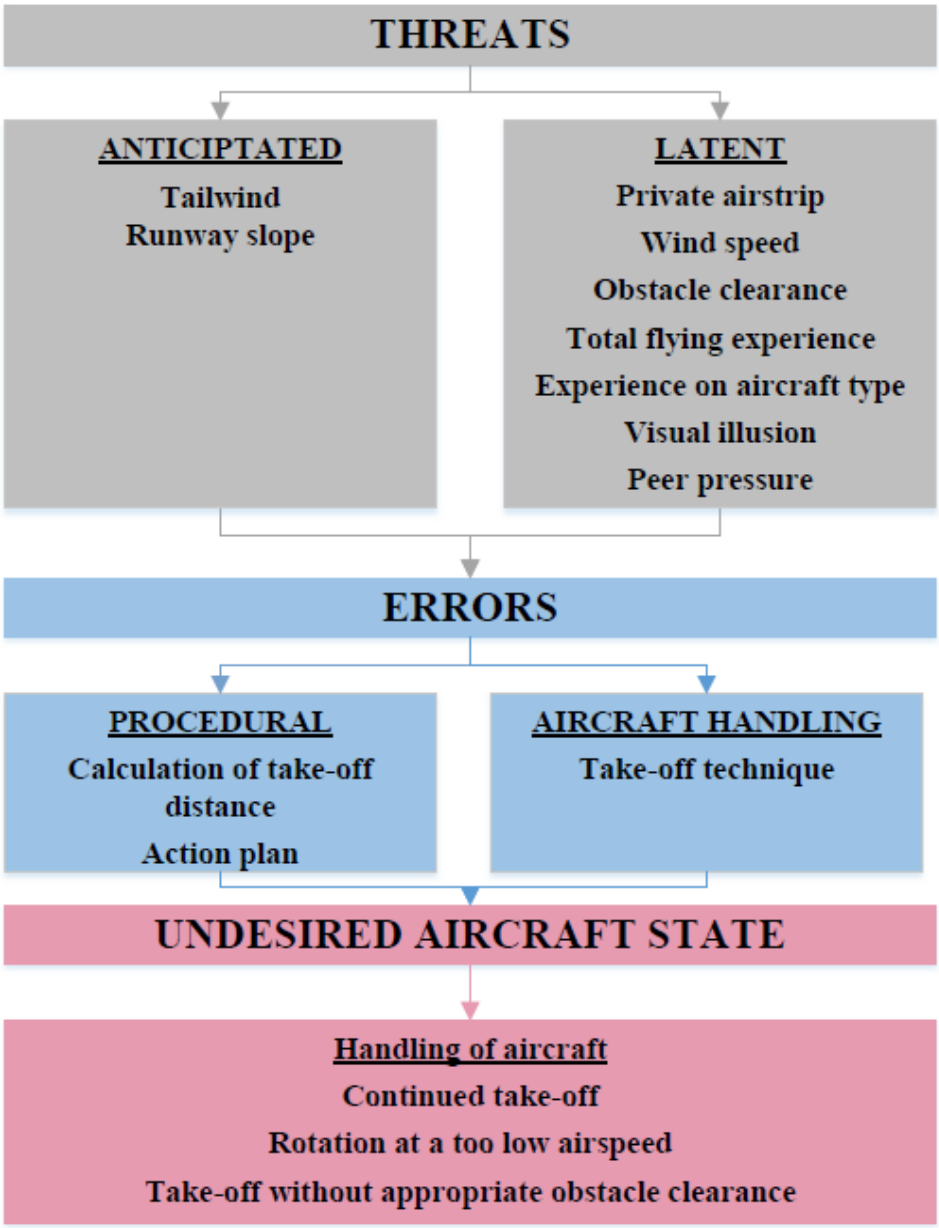
Downslope of runway 12

See appendix 4.

Note. The graphic illustration is not to scale.

ANALYSIS

Treat and error management



CONCLUSIONS

Findings

1. The pilot was properly licenced.
2. The pilot felt at ease and well-rested.
3. The documented and actual technical status of the aircraft and the aircraft mass and balance had no influence on the sequence of events.
4. The forecasted weather conditions at EKFU were generally consistent with the actual weather.
5. EKFU was privately owned.
6. The grass runway surface was close-cropped and solid.
7. Flight operations on privately owned airstrips increase the demands on individual pilot decision making processes.
8. A private provider of aerodrome information presented obstacles (trees) at each end of the runway.
9. The pilot was aware of presented obstacles.
10. During landing on runway 30 in the morning, the pilot was surprised of the degree of the runway upslope.
11. The runway slope was not officially documented.
12. At the time of the accident, there were no formalized requirements to the presence and the dimensions of wind socks at privately owned airstrips.
13. There were no formalized requirements to the wind sock at EKFU.
14. The dimensions of the wind sock at EKFU deviated from the regulation for CAA VMC approved aerodromes.
15. The deviation might have prevented pilots from making an objective evaluation of wind direction and wind speeds at EKFU.
16. AIB calculations of ground roll and take-off distances (calm wind) for both runway 12 or runway 30 revealed marginal operations for this aircraft type.
17. The pilot was aware of a take-off in tailwind on runway 12.
18. Considering the wind sock indications, the pilot estimated the tailwind component for a take-off on runway 12 to be 2-5 kt.
19. Before departure, the pilot calculated the ground roll distance for runway 12 to be approximately 400 m but did most likely not include the take-off distance in his risk assessment.
20. AIB calculations on ground roll and take-off distance for runway 12 in calm wind revealed a required ground roll distance of 418 m and a required take-off distance of 649 m.
21. AIB calculations on ground roll and take-off distance for runway 12 (with a tailwind component of 4 kt) revealed a required ground roll distance of 460 m and a required take-off distance of 714 m.
22. AIB calculations on ground roll and take-off distance for runway 12 (with a tailwind component of 8 kt) revealed a required ground roll distance of 502 m and a required take-off distance of 779 m.
23. The AIB considers the actual tailwind component during the ground roll on runway 12 to be most likely larger than the pilot estimate.

24. The focus of the pilot on his deliberate decision on a take-off in tailwind on runway 12, supported by his perception of the degree of the runway slope, most likely mentally shadowed the operational consequences of an increased take-off distance.
25. A required take-off distance longer that the available take-off distance led to the aircraft collision with nearby trees and the accident.
26. The pilot expected to rotate the aircraft at the beginning of the increasing runway downslope.
27. At an airspeed of approximately 65 kt, the pilot had a feeling of a *ceased* acceleration.
28. A visual illusion, peer pressure and target fascination might have provoked the pilot to continue the take-off.
29. An attempt of rotating the aircraft at a too low airspeed might have increased aircraft total drag, ceasing the acceleration and increasing the ground roll and take-off distances.
30. Immediately upon lift-off, the pilot experienced temporary activation of the stall warning, which likely supported the absence of optimum acceleration and airspeed.
31. The accident was survivable for the pilot in the left front seat and the passenger in the right front seat.
32. The accident was non-survivable for the aft seat passengers.

Factors

1. The focus of the pilot on his deliberate decision on a take-off in tailwind on runway 12, supported by his perception of the degree of the runway slope, most likely mentally shadowed the operational consequences of an increased take-off distance.
2. A required take-off distance longer that the available take-off distance led to the aircraft collision with nearby trees and the accident.

SAFETY RECOMMENDATIONS

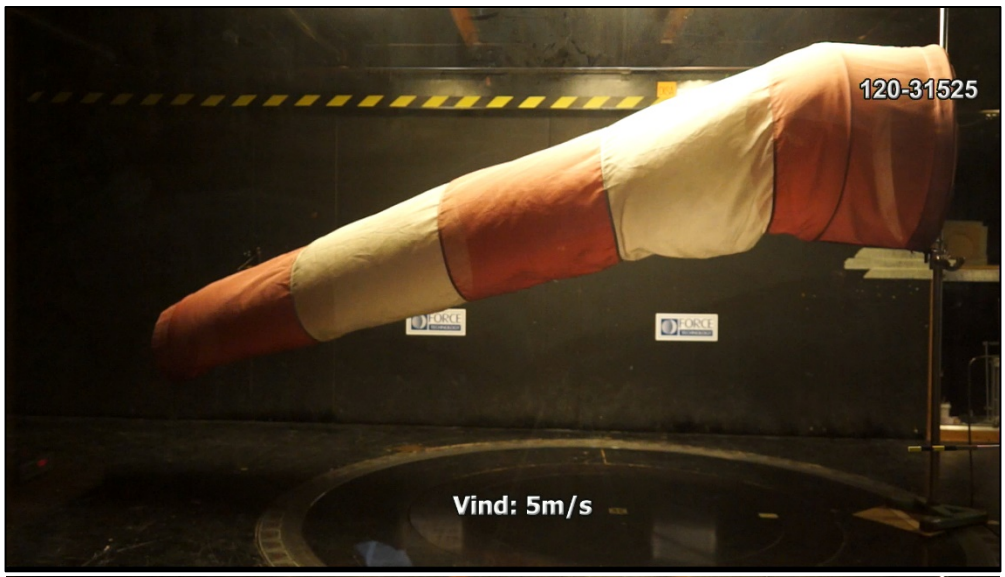
This safety investigation did not result in the issue of safety recommendations.

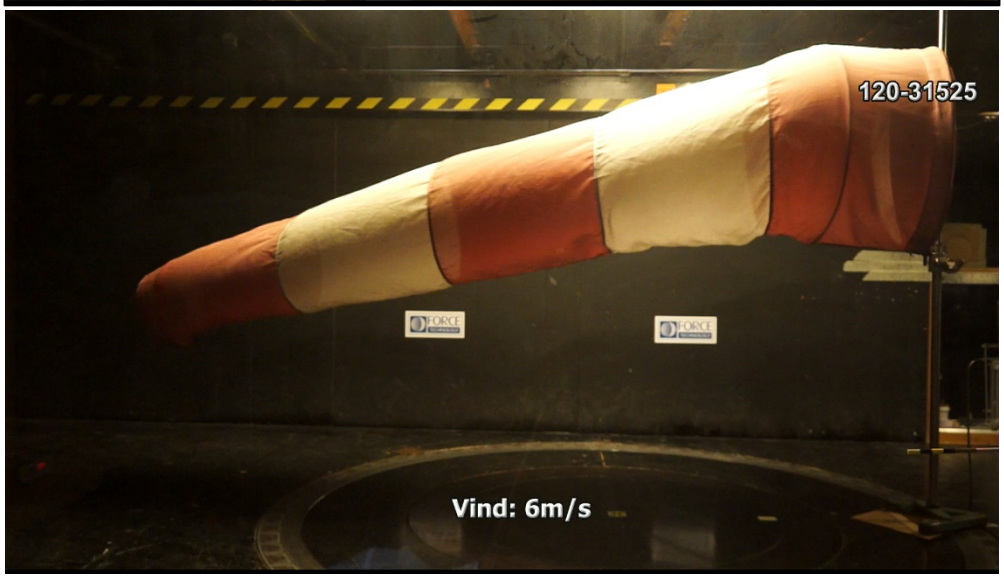
Appendix 1

APPENDIX 1

Return to wind tunnel test

APPENDIX 1 (CONTINUED)





APPENDIX 2

Return to overview of airstrip

Note. The text is in Danish, and the AIB has removed contact data.

Fur EKFU

PPR: Nej	Afgift: 50,00	FUEL: Nej	Info Tlf.: +

Pos: 1.3 NM VNV for Nederby. 56° 49' 27.58" N 8° 59' 22.79" E. **Elev:** 30 fod

Radio: Ingen	NAV: Ingen
Tlf.:	Taxi:
	2020

Told: Nej	Café : Nej	Hangar: Nej	WC: Ja

❶ Der findes 13 nye cykler på pladsen, som kan lejes for Dkr 50,00 pr dag. ❷ Undgå overflyvning af Debel by. Specielt ved start bane 12, lav højre drej. ❸ Høje træer for baneenderne.

APPENDIX 3

Return to drone photo

Appendix 4

APPENDIX 4

Return to downslope of runway 12

Note. The height in meters is mean sea level.