



BULLETIN

Accident

3-6-2018

involving

Partenavia P68B

D-GATA

FOREWORD

This bulletin 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 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 bulletin for purposes other than preventing future accidents and serious incidents may lead to erroneous or misleading interpretations.

A reprint with source reference may be published without separate permit.

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BULLETIN

General

File number:	2018-307
UTC date:	3-6-2018
UTC time:	14:22
Occurrence class:	Accident
Location:	Endelave (EKEL)
Injury level:	Serious

Aircraft

Aircraft registration:	D-GATA
Aircraft make/model:	Partenavia P68B
Current flight rules:	Visual Flight Rules (VFR)
Operation type:	Private
Flight phase:	Landing
Aircraft category:	Fixed wing
Last departure point:	Rendsburg Schachtholm (EDXR)
Planned destination:	Endelave (EKEL)
Aircraft damage:	Destroyed
Engine make/model:	Lycoming IO-360-A1B6

SYNOPSIS

Notification

All times in this report are UTC.

The Area Control Centre (ACC) at Copenhagen Airport, Kastrup (EKCH), notified the Aviation Unit of the Danish Accident Investigation Board (AIB) on 3-6-2018 at 14:47 hours.

The Bundesstelle für Flugunfalluntersuchung (BFU), the Agenzia Nazionale per la Sicurezza del Volo (ANSV), the Comision de Investigacion de Accidentes e Incidentes de Aviacion Civil (CIAIAC), the European Aviation Safety Agency (EASA), the Directorate General for Mobility and Transport (DG MOVE) and the Danish Transport, Construction and Housing Authority (DTCHA) were notified on 4-6-2018 at 07:11 hours.

The BFU and the ANSV appointed accredited non-travelling representatives to the AIB safety investigation.

Summary

Flying a low approach at a shallow angle to runway 29 overhead high crops on short final might have disturbed the depth perception of the pilot leading to an undershoot landing and touchdown at an upslope roadside next to a road crossing perpendicularly to the beginning of runway 29.

The left main landing gear collapsed upon touchdown at the upslope roadside resulting in an uncontrollable veering to the left, a collision with a parked aircraft, and impact with a tree and a farm building.

The aircraft caught an explosive fire.

The resolute actions by witnesses and the local community in combination with an effective rescue mission was the difference between fatal and serious injuries.

The accident occurred during daylight and under visual meteorological conditions (VMC).

FACTUAL INFORMATION

History of the flight

The accident occurred during a private VFR flight from EDXR (Rendsburg Schachtholm) to Endelave (EKEL).

When arriving overhead EKEL, the pilot made a visual inspection of the airstrip conditions.

Upon a low approach at a shallow angle to runway 29 at EKEL, the pilot on short final reduced engine power and initiated the flare.

Approximately 10 meters in front of the beginning of runway 29, the aircraft landed in a wheat field, and the main landing gear touched down at and collided with an upslope roadside next to a road crossing perpendicularly to the beginning of runway 29.

When colliding with the upslope roadside, the left main landing gear collapsed.

The aircraft started veering uncontrollably to the left and ran off the side of the airstrip.

In the grass parking area next to the airstrip, the left wing of the aircraft collided with the nose landing gear of a parked aircraft.

The aircraft continued veering to the left, impacted with a tree and a farm building, and came to rest.

After impact with the tree and the farm building, the aircraft caught an explosive fire.

Witnesses observing the landing and the impact with the tree and the farm building initiated a rescue mission.

Injuries to persons

<i>Injuries</i>	<i>Crew</i>	<i>Passengers</i>	<i>Others</i>
Fatal	-	-	-
Serious	1	2	-
Minor	-	1	-

Damage to aircraft

The post-crash fire destroyed the aircraft.

See [appendix 1](#).

Other damage

During the sequence of events, the aircraft damaged the nose landing gear and the fuselage of a parked aircraft in the grass parking area.

The post-crash fire damaged a tree and a farm building.

See [appendix 2](#).

Personnel information

License and medical certificate

The pilot - male, 53 years - was the holder of a valid European Union Private Pilot Licence (PPL) (A)) issued on the 11-8-1994.

The rating Multi Engine Piston Land (MEP) (L)) was valid until 31-8-2018.

The medical certificate - class 2 - was valid until 5-1-2019. The medical certificate held no limitations.

Flying experience

	Last 24 hours	Last 90 days	Total
All types	-	-	950
This type	-	-	70
Landings this type	-	20	-

Airstrip familiarization

The pilot had no previous flying experience of flying to EKEL in twin-engine aircraft. The pilot had previous flying experience of flying to EKEL in single-engine aircraft.

Aircraft information

General information

Manufacturer:	Partenavia.
Type:	P68B Victor.
Serial number:	82.
Airworthiness review certificate:	Valid until 10-11-2018.
Engine manufacturer:	Lycoming.
Engine type:	IO-360-A1B6.
Propeller Manufacturer:	Hartzell Propeller.
Propeller type:	HC-C2YK-2CUF/ FC7666AB-4.
Maximum take-off mass (MTOM):	1960 kilos (kg) (4321 pounds (lbs)).
Maximum landing mass (MLM):	1860 kg (4100 lbs).
Fuel on board at the time of the accident:	Unknown.
Aircraft total flight hours	Unknown but at recent 100-hour maintenance inspection on 6-11-2017, the total flight hours were 3260 hours.
Latest maintenance inspection:	On 6-11-2017.

Landing distance

Due to the post-crash fire and a partial pilot post-traumatic memory loss, the pilot subsequently was incapable of providing actual landing performance data to the AIB.

For that reason, the AIB has not been able to reconstruct the exact landing performance data at the time of the accident.

Premises for an AIB theoretical reconstruction of landing performance were:

- The AIB landing distance calculation referred to the conditions of the Vulcan Aircraft Flight Manual (AFM) revision number 2 page 5-17:

1. *Throttle - Idle at 50 feet above ground level.*
2. *Flaps - 35°.*
3. *Maximum effective braking.*
4. *Level, hard surface, dry runway.*
5. *Speed at 50 feet obstacle - 1.3 V_{so}.*

Note.

Increase landing distance by 12% when operating from a grass surface

- The outside air temperature at Hans Christian Andersen airport (EKOD) was +24° Celsius.

- Aerodrome altitude at sea level.
- The wind conditions at EKEL were 250° 14-16 knots (a headwind component of 10 knots).
- A landing at a MLM of 4100 lbs.

The AIB calculated landing distance at a MLM of 4100 lbs was 1350 feet (411 meters).

With an addition of 12% (grass airstrip), the AIB calculated the total landing distance at a MLM of 4100 lbs to be 1512 feet (461 meters).

Note.

Since around 1998, Vulcanair S.p.A acquired the production of Partenavia aircraft.

Before landing checklist

With reference to the AFM revision number 2 page 4-6:

1. *Fuel selectors: RH. ENG - RH. TANK/LH. ENG. - LH. TANK*
2. *Auxiliary Fuel Pumps - ON*
3. *Mixtures - FULL RICH*
4. *Propellers - FULL FORWARD*
5. *Wing flaps - DOWN 15° below 157 KIAS*
6. *Wing flaps - DOWN 30° below 143 KIAS*
7. *Wing flaps - DOWN 35° below 101 KIAS*
8. *Approach speed - 76 KIAS Minimum*
9. *Air Minimum Control Speed - 62 KIAS.*

Aircraft technical status

During the flight, the pilot did not experience any technical abnormalities.

During the flight, the passengers did not notice anything unusual until touchdown at EKEL.

Meteorological information

Aftercast valid for EKEL

Visibility: 10 kilometers or more.

Weather and clouds: No significant weather and sky clear.

Surface wind: 250° 14-16 knots.

Aerodrome Forecast (TAF)

The nearest public aerodrome was EKOD.

ekod 031151z 0312/0316 26010kt 9999 few040=

Aviation Routine Weather Report (METAR)

The nearest public aerodrome was EKOD.

metar ekod 031350z 25009g19kt 190v290 9999 few035 25/17 q1016=

metar ekod 031450z 25010kt 210v290 9999 few035 24/17 q1016=

Airstrip information

General information

EKEL was a private grass airstrip located 0.9 nautical miles west of the village of Endelave.

The airstrip owner published airstrip information in Danish, in German, and in English on a dedicated website. The below text in italic is an extract of the website:

<i>Aerodrome Reference Point:</i>	<i>55 45.4 N / 10 14.9 E</i>
<i>Elevation:</i>	<i>16 feet</i>
<i>Runway directions:</i>	<i>11/29</i>
<i>Runway dimensions</i>	<i>650 meter (m) x 25 m</i>
<i>Surface:</i>	<i>Grass</i>

There is a windsock south of the runway near the farm.

Airstrip conditions

At the time of the accident, the airstrip was close-cropped and dry.

An overview of the airstrip

An overview of the airstrip (westerly direction) - see [appendix 3](#).

Airstrip precautions

Due to previous undershoot accidents at runway 29, the airstrip owner on a dedicated website issued a warning in Danish, in German, and in English.

The below text in italic is an extract of the website:

Do not touch down too early on approach to runway 29, as there is a road and a small ditch between the neighbours field and the runway. And beside, the neighbour gets upset if you touch his barley crops.

Furthermore, by mowing the grass in a specific way across the airstrip approximately 50 meters west of the beginning of runway 29 the airstrip owner encouraged pilots to make use of the mowed displaced threshold.

See marking in yellow at [appendix 3](#).

A red and a white plastic can located to the right of the specific mowed area marked the displaced threshold to runway 29. During the rescue mission, someone removed the plastic cans. For that reason, appendix 3 does not present their right position.

The dedicated website did not contain information on the mowed and marked displaced threshold to runway 29.

Three painted white crosses on the road perpendicularly to the beginning of runway 29 had the purpose of warning pilots of not to land short of runway 29 and preventing car parking in the marked area.

The three painted white crosses were visible from the air.

The dedicated website did not contain information on the three painted white crosses.

See [appendix 3](#).

The AIB safety investigation was not able to reveal whether or not the pilot was aware of the airstrip precautions.

AIB safety investigation

General information

The post-crash fire and a partial pilot post-traumatic memory loss subsequently hampered the AIB safety investigation process.

However, witnesses standing on a nearby road video recorded the final approach, the landing in a wheat field and the beginning of the landing roll.

The video recording was of a good quality and useful to the AIB safety investigation.

In order to view an extract in slow motion of the video recording, please make sure that an appropriate internet connection is available.

Click on the below picture.



Final approach and landing

Due to a partial post-traumatic memory loss, the pilot was neither able to recall his decision making process nor the sequence of events during the final approach, the flare, the landing, the landing roll and the impact with a tree and a farm building.

The video recording of the landing sequence revealed:

- The pilot flew a low approach at a shallow angle to runway 29.
- The aircraft was in landing configuration.
- The crops were high.
- On short final, the pilot reduced engine power and initiated the flare by a slight increase of pitch.
- The aircraft flight path remained constant until touchdown.

Wreckage trail

- During the flare phase, the aircraft landed (right main wheel first) in a wheat field approximately 10 meters in front of the beginning of runway 29. See [appendix 4](#).
- The main landing gear touched down at and collided with an upslope roadside next to a road crossing perpendicularly to the beginning of runway 29.
- The left main landing gear collapsed. The aircraft crossed the road. See [appendix 4](#).
- The aircraft started an uncontrollable veering to the left.
- 142 meters from the beginning of runway 29, the left wing of the aircraft collided with the nose landing gear of a parked aircraft.

- The aircraft continued veering to the left, impacted with a tree and a farm building, and came to rest 160 meters from the beginning of runway 29.

Presence of fire

An explosive fire erupted upon final impact with a tree and a farm building, and on-board fuel sustained the fire.

Survival aspects

Upon impact, the pilot was unconscious.

The left hand engine was still running, and the passenger seated in the right hand pilot seat and the two passengers in the cabin evacuated the aircraft through the right hand side located emergency window.

The right hand wing, the right hand engine, the right hand propeller, and the aircraft tail section close on to the farm building trapped the three passengers on the right hand side of the aircraft.

By crawling above the aircraft tail section, the three passengers escaped.

During the evacuation sequence, aircraft fuel wetted one of the passengers.

While running away from the aircraft, an explosive fire erupted, and a fireball hit one of the escaping passengers. The fireball set the passenger on fire.

Another passenger got burns as well.

The pilot got conscious and evacuated the aircraft through the passenger entrance door. The pilot was on fire.

Witnesses to the accident alerted the rescue services and initiated firefighting and treatment of pilot and passenger burns.

Lack of water at the farm initially hampered effective firefighting and treatment of pilot and passengers burns.

However, within approximately 10 minutes the witnesses in cooperation with the local community arranged accessibility to water.

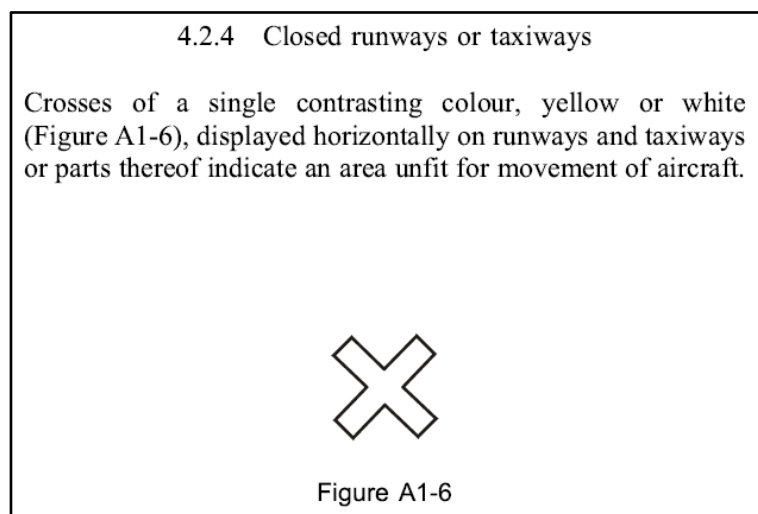
Two civilian ambulance helicopters arrived at the accident site at 14:49 hours and at 15:06 hours respectively. On board the two civilian ambulance helicopters were doctors and paramedics.

Shortly after the arrival of the second civilian ambulance helicopter, two military rescue helicopters arrived at the accident site.

The two military rescue helicopters brought the pilot and the passengers to Copenhagen University Hospital.

Rules of the air

International Civil Aviation Organization (ICAO) Annex II (extract).



Note.

A private airstrip did not have to comply with international standards for aerodromes.

ANALYSIS

The AIB safety investigation in general

Due to the post-crash fire, some operational and technical documentation were lost, which in combination with a partial pilot post-traumatic memory loss to some point hampered the AIB safety investigation.

However, the license, the qualifications and the medical status held by the pilot, and the technical status of the aircraft had, in the AIB's opinion, no influence on the sequence of events.

Approach and landing

Before the approach to runway 29, the pilot flew an overhead visual inspection of the airstrip.

The three white painted crosses on the road perpendicularly to the beginning of runway 29 were visible from the air.

Whether or not the pilot was aware of their existence was unknown.

The airstrip was a private airstrip and did not have to comply with international standards for aerodromes.

However, the three white painted crosses had a similar meaning and look like the crosses described in ICAO Annex II (*an area not meant for movement of aircraft*).

Whether or not the pilot was aware of the airstrip precautions on short field landings on runway 29 and the displaced threshold to runway 29 was unknown.

Taking the video recording in consideration, the AIB believes that the pilot most likely aimed for a touchdown at the beginning of runway 29 and not at the displaced threshold to runway 29.

Taking the theoretical landing performance calculation in consideration, landing on runway 29 under the prevailing conditions was not marginal.

Because the pilot had no previous flying experience of flying in twin-engine aircraft to EKEL, the focus of the pilot might have been to make a short field landing as short as possible.

Flying a low approach at a shallow angle to runway 29 overhead high crops on short final might have disturbed the depth perception of the pilot leading to an undershoot landing and touchdown at an upslope roadside next to a road crossing perpendicularly to the beginning of runway 29.

The left main landing gear collapsed upon touchdown at the upslope roadside resulting in an uncontrollable veering to the left, a collision with a parked aircraft, and impact with a tree and a farm building.

The aircraft caught an explosive fire.

Survival aspects

The resolute actions by witnesses and the local community in combination with an effective rescue mission was the difference between fatal and serious injuries.

CONCLUSIONS

An undershoot landing and touchdown at an upslope roadside next to a road crossing perpendicularly to the beginning of runway 29 resulted in a left main landing gear collapse.

The aircraft uncontrollably veered to the left, ran off the side of the airstrip, collided with a parked aircraft, and impacted with a tree and a farm building.

The aircraft caught an explosive fire.

The resolute actions by witnesses and the local community in combination with an effective rescue mission were the difference between fatal and serious injuries.

APPENDIX 1

Return to [damage to aircraft](#).



APPENDIX 2

Return to [other damage](#).



APPENDIX 3

Return to [an overview of the airstrip](#) or return to [airstrip precautions](#).



APPENDIX 4

Return to [wreckage trail](#).

