

REPUBLIC OF NAMIBIA

MINISTRY OF WORKS AND TRANSPORT

DIRECTORATE OF AIRCRAFT ACCIDENT INVESTIGATION

CIVIL AIRCRAFT ACCIDENT REPORT

ACCID / 040816 / 1-04

OPERATION : PRIVATE

AIRCRAFT : V5-HFW

LOCATION : 8.7 NM SE OF EROS AIRPORT

DATE : 08 APRIL 2016

FOREWORD

This report presents the factual information, data analysis, conclusions, and safety recommendations reached during the investigation. The purpose of the investigation was to establish the circumstances surrounding this accident.

In accordance with the provisions of Annex 13 to the contention on International Civil Aviation Organization, the accident's analysis, conclusions, and safety recommendations contained therein are intended neither to apportion blame nor to single out any individual or group of individuals. The main objective was to identify the systematic deficiencies and draw lessons, from the occurrence, which might help to prevent accidents and incidents in the future. To this end, many a time, the reader may be interested in whether or not an issue was a direct cause of the accident (that has already taken place), whereas the investigator is mainly concerned with the prevention of future accidents/incidents.

As a result, usage of this report for any purpose other than (the latter and spirit of Annex 13 and other relevant statutes) prevention of similar occurrences in the future might lead to erroneous interpretations and applications.

ABBREVIATION

ATPL - Airline Transport Pilot License

AGL - Above Ground Level

UTC - Universal Time Co-ordinate

MPI - Mandatory Periodic Inspection

AD - Airworthiness Directive

SB - Service Bulletins

CRM - Crew Resources Management

FDR - Flight Data Recorder

CVR - Cockpit Voice Recorder

AOC - Air Operated Certificate

ICAO - International Civil Aviation Organization

C of A - Certificate of Airworthiness

C of R - Certificate of registration

AMO - Aircraft Maintenance Organization

CPL - **Commercial Pilot License**

ETA - Estimated Time of Arrival

FYKH - Kiripotib Airfield

Km - Kilometers

SOPs - **Standard Operating Procedures**

NM - Nautical Miles

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MINISTRY OF WORKS AND TRANSPORT ACCIDENT REPORT – EXECUTIVE SUMMARY

| CEITI TOWN CUSTOM | | | | | | | | |
|-----------------------------------------------------------------------------------------------------------------|-----------------------|--------------------|-------------------|-----------|---------------|-------------|------------------|-----------|
| Aircraft Registration | V5-HFW | | Date of Accident | 08 Ap | ril 2016 | | Time of Accident | 03:58 UTC |
| Type of Aircraft | ROBINSON R44 RAVEN II | | Type of Operation | | Private | | | |
| Pilot-in-command license type Commercial pi | | Commercial pilot | Age | 44 | Lic | cense valid | Yes | |
| Pilot-in-command flying experience | | Total flying hours | 1700.2 | 2 | Hours on type | | 588.0 | |
| Last point of departure Eros (FYWE) Namibia | | | | | | | | |
| Next point of intended landing Dordabis 80 Nm South East of | | | East of | Windhoek, | Nar | nibia | | |
| Location of the accident site with reference to easily defined geographical points (GPS readings if possible) | | | | | | | | |
| 8.7 Nm South East of Eros Airport in the Moltkeblick Mountain (GPS position: South 22° 37'48" East 017° 11'56") | | | | | | | | |
| Meteorological Information FYWE O8O500Z 34005KT 9999 SCT020 BECOMG 0807/0809 SCT035 | | | | | | | | |
| Number of people on | board 1+ | - 0 | No. of people inj | ured | 0 | No. | of people kil | lled 1 |
| Synopsis | | | | | | | | |

On Friday 08 April 2016 around 03:38 UTC, a Robinson R44 helicopter with reg no. V5-HFW departed Eros Airport (FYWE) in Windhoek with only the pilot onboard. The intention was a ferry flight to reposition the helicopter for game capture work at a farm near Dordabis after a mandatory 50 hour maintenance inspection. The owner of the farm, which drop the pilot off at the helicopter, drove to the farm and waited for the helicopter to arrive but became worried when it did not arrive. He made some calls and around 08:00 UTC, the ATC Search and Rescue Centre were activated to coordinate the effort for locating the helicopter. Four helicopters took part in the search effort and although the ELT Beacon was sending information about the crash site, the wreckage was only located at 14:00 UTC high-up in the Moltkeblick mountain range completely destroyed. The pilot was fatally injured. The mountain ridge at the time of the accident was covered in cloud with limited visibility.

The Directorate of Aircraft Accident Investigation (DAAI) in Namibia was informed of the accident and an official investigation commenced the same day.

The last Annual Inspection (AI) was carried out and certified on 14 March 2016 in accordance with the Robinson Helicopter Maintenance Manual and Nam Cars 2001 by a Namibian AMO with approval No. 0781 issued on the 25 Aug 2015 with the expiry date of the 24 Aug 2016 at the time of 1478.7 airframe hours (472.7 Hobbs). The approval was issued in accordance with Part 145 of the Nam Cars 2001. At the time of the accident the helicopter had accumulated a further 53.6 hours since the last (AI) was certified.

Probable Cause

The pilot failed to comply with visual meteorological flight conditions and the helicopter impacted with mountainous terrain during flight.

Contributing factors

- 1. IMC conditions prevailing at the time of accident in the area.
- 2. Low level VMC flight into IMC conditions during pre dawn light conditions
- 3. Pilot held no rating for IFR flight in IMC conditions.



AIRCRAFT ACCIDENT REPORT

Name of Owner : Windhoek Flight Training Centre cc

Manufacturer : Robinson Helicopter Co.

Model : R 44 Raven II
Nationality : Namibian
Registration Marks : V5 - HFW

Place : Farm Moltkeblick, Central Namibia

Date : 08 April 2016

All times given in this report are Co-ordinated Universal Time (UTC), unless otherwise stated. Namibian Standard time was UTC + 2 hours.

Disclaimer:

The report is produced without prejudice to the rights of the Directorate of Aircraft Accident Investigations, which are reserved.

Purpose of the Investigations:

In terms of the Aviation Act (Act No 6 of 2016) and ICAO Annex 13, this report was compiled in the interest of the promotion of aviation safety and the reduction of risk of aviation accident or incidents and **not to apportion blame or establish legal liability.**

This report contains facts relating to aircraft accident or incident which have been determined at the time of issue. The report may therefore be revised should new and substantive facts be made available to the investigating authority.

1. FACTUAL INFORMATION

1.1 History of Flight

- 1.1.1 On 08 April 2016 around 03:38 UTC, a Robinson R44 helicopter with registration no. V5-HFW took off from Eros airport (FYWE) with one pilot onboard for a ferry flight to a farm near Dordabis in central Namibia. The helicopter received a 50 hour inspection the previous day and was filled up to capacity with fuel for the flight.
- 1.1.2 The prevailing weather was overcast at 600 ft AGL in fog with an upper ceiling at 9600 ft AMSL reported from inbound aircraft to Eros tower.
- 1.1.3 The pilot express his concern on the weather when requested for start and take-off clearance and was advised by Eros Tower to fly the outbound route via Windhoek Intl to remain VFR and clear of clouds.



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- 1.1.2 The prevailing weather was overcast at 600 ft AGL in fog with an upper ceiling at 9600 ft AMSL reported from inbound aircraft to Eros tower.
- 1.1.3 The pilot express his concern on the weather when requested for start and take-off clearance and was advised by Eros Tower to fly the outbound route via Windhoek Intl to remain VFR and clear of clouds.

- 1.1.4 After take-off runway direction 01 the pilot made a turn to the right and fly an southerly heading not complying with the ATC instruction however did the compulsory radio call at 5 Nm. The pilot was then advised to continue low level and to contact the Hosea Kutako Intl Tower on frequency 118.1 Mhz for guidance through the airspace of Hosea Kutako International Airport. That should have taken the helicopter out of the way of the approaching two aircraft that was inbound to Eros from the South East at that time.
- 1.1.5 The pilot of the helicopter confirm that he will comply with the instruction but no radio call was made or received on the suggested frequency. The pilot continue to turn to the south east and progressively started a climb towards the mountain range following the desired track towards the farm 88 Nm onwards.
- 1.1.6 At 7 Nm the pilot slowed the helicopter down while turning 90° and started a climb to 7100 feet. At that height the helicopter started a right turn of 180° again, gaining speed which was followed by an abrupt climb to 7500 feet. With little forward speed at this point the helicopter turned left and started a turn of 235° while picking up speed again exceeding the VNE speed recommended by the manufacturer. No radio calls was made or received from the helicopter indicating his where about or intentions. The helicopter crashed halfway up the mountain at 7000 AMSL following a high speed downward flight path and was totally destroyed with the pilot fatally injured.
- 1.1.7 The farm owner who waited for the arrival of the helicopter became worried after the ETA was overdue and start making phone calls to try to locate the helicopter whereabouts and alert the Authorities which started the SEARCH and RESCUE formalities.
- 1.1.8 At 08:00 UTC two Robison helicopters start their route search and were followed by two NAMPOL Air Wing helicopters at 11:00 UTC with Para medics and an Aircraft Accident Investigator from the DAAI.
- 1.1.9 The ELT beacon from the helicopter was sending the crash location coordinates via the satellite system and was relayed to Namibia, however no wreckage could be found in that area and the helicopters widen their search area considerable for the next 3 hours.
- 1.1.10 The pilot's cell phone signal was then also triangulated by the local cell network for it was still working and that information was then used to narrow the search area and locate the wreckage at 14:00UTC.
- 1.1.11 No radar data was available to the search effort because the transponder was not switched on by the pilot, nor was a squawk code issued by the ATC at the time of departure. This information could have helped to locate the wreckage more easily and saved a lot of money and time.
- 1.1.12 The inbound flights early morning to FYWE confirmed the weather provided by the weather office and after a call to public by the investigator, a lot of visual materials from videos and photos were received confirming the weather phenomenon that morning in the mountain ridge area.
- 1.1.13 The helicopter weight and balance was within limits for the flight as required.

1.2 Injuries to Persons

| Injuries | Pilot | Crew | Pass. | Other |
|----------|-------|------|-------|-------|
| Fatal | 1 | - | 0 | - |
| Serious | - | - | - | - |
| Minor | - | - | - | - |
| None | _ | - | - | - |

1.3 Damage to Aircraft

1.3.1 The helicopter was destroyed on impact.



Image 1

1.4 Other Damages

1.4.1 No other damage was caused.

1.5 Personnel information

| Nationality | | South Afric | can | | | | |
|--------------------------|----------------------|-----------------|------------------------------------------------------|-----|----|--|--|
| Licence No | 11366 | Gender | Male | Age | 44 | | |
| Licence valid | | Yes | Type endorsed | Yes | | | |
| Ratings | | Game culli | ng | | | | |
| Medical expiry date 30 S | | 30 Septeml | 30 September 2016 | | | | |
| Restrictions | ns Corrective lenses | | | | | | |
| Previous accid | dents | Helicopter 2014 | Helicopter accident on Farm Cauas N on 25 April 2014 | | | | |

Note: The pilot licence showed an expired medical date of 31 March 2015 and the newly application for an update license after his yearly flight test on 3 March 2016 was accompanied with another expired medical certificate dated 25 September 2015. However the Investigator found a new medical certificate dated 08 March 2016 in the pilot's personal documentation at the crash site. This document was not presented to the regulator at the time of the accident for reasons unknown.

Flying Experience:

| Total hours | 1700.2 |
|----------------------------|--------|
| Total past 90-days | 100.3 |
| Total on type past 90-days | 100.3 |
| Total on type | 588.0 |

Note: The hours reflected in the pilots logbook was captured and certified to be a true reflection of his flying experience.

1.6 Aircraft information



Image 2 – File photo

Airframe:

| Type | Robinson R44 Raven II | | |
|--------------------------------------------|-------------------------|--|--|
| Serial No. | 11925 | | |
| Manufacture | Robinson Helicopter Co. | | |
| Year of manufacture | 2007 | | |
| Total airframe hours (at time of accident) | 1533.1 | | |
| Last annual inspection (hours & date) | 662.0 14 March 2016 | | |
| Hours since annual inspection | 53.6 | | |
| Authority to Fly (issue date) | 17 March 2010 | | |
| Authority to Fly (expiry date) | 19 May 2016 | | |
| C of R (issue date) present owner | 19 May 2014 | | |
| Operating categories | Standard A,C,D,E,F | | |

Engine:

| Туре | Lycoming IO 540 AE 1A5 |
|----------------------|------------------------|
| Serial No. | L-32168-48E |
| Hours since New | 1533.1 |
| Hours since Overhaul | T.B.O. not yet reached |

Main rotor:

| Туре | N/A | |
|----------------------|------------------------|--|
| Serial No. | 4274 / 4295 | |
| Hours since New | 1533.1 | |
| Hours since Overhaul | T.B.O. not yet reached | |

1.7 Meteorological Information

- 1.7.1 The DAAI was able to obtain some visual information of the mountain ridge area from private people after a public request, that confirmed the weather phenomenon as received from the Namibian Metrological Services.
- 1.7.2 The below information was obtained from the Namibian Metrological Services for the time frame before and after the accident happened:

METARS FOR FYWE, FYWW & FYWH

METAR FYWH 080200Z 32003KT 9999 BKN020 16/15 Q1026=

METAR FYWH 080300Z 30003KT 9999 OVC015 18/15 Q1026=

METAR FYWE 080400Z 35004KT 9999 BKN020 19/16 Q1026=

METAR FYWH 080400Z 34005KT 9999 OVC015 18/15 Q1027=

METAR FYWE 080500Z 35006KT 9999 OVC007 19/16 Q1026=

METAR FYWH 080500Z 34007KT 9999 BKN006 18/16 Q1027=

METAR FYWW 080500Z 36006KT CAVOK 18/16 Q1026=

METAR FYWE 080600Z 35008KT 9999 BKN007 19/16 Q1027=

METAR FYWH 080600Z 34007KT 9999 BKN010 18/15 Q1027 NOSIG=

METAR FYWW 080600Z 36005KT 9999 OVC015 18/16 Q1027=

METAR FYWE 080700Z 36010KT 9999 BKN007 19/16 Q1027=

METAR FYWH 080700Z 34008KT 9999 BKN012 18/15 Q1028 NOSIG=

METAR FYWW 080700Z 01007KT 9999 OVC015 19/16 Q1027=

TAF FOR FYWE & FYWH

FCNM40 FYWW 080500

TAF FYWE 080500Z 0806/0815 34005KT 9999 SCT020 BECMG 0807/0809

SCT035 =

FCNM40 FYWW 080800

1.8 Aids to navigation

1.8.1 The aircraft was equipped with standard navigation equipment and a panel mounted GPS.

1.9 Communications

1.9.1 The aircraft was equipped with standard communication equipment for this type.

1.10 Aerodrome information

1.10.1 The accident occurred high -up in the Molteblick Mountain range 8.7 Nm SE of Eros Airport

1.11 Flight recorders

- 1.11.1 The aircraft was not equipped with a Flight Data Recorder (FDR) or a Cockpit Voice Recorder (CVR), nor was it required for this type of aircraft.
- 1.11.2 The GPS (Garmin 196) of the helicopter was recovered and send for data retrieval. The flight data of the last flight was recovered and used for the reconstruction of the ill-fated flight.



Image 3

LEFT OPEN INTENTIONALLY

1.12 Wreckage and impact information

1.12.1 Aerial View

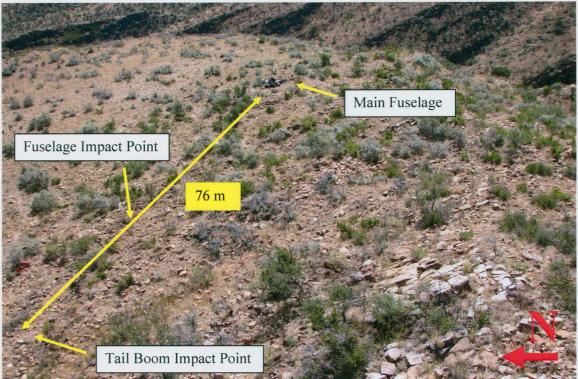


Image 4

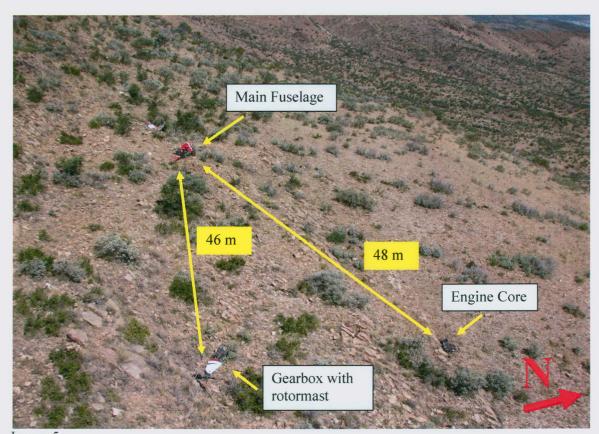


Image 5

1.12.2 Main Wreckage – after stumbling 76m from impact.



Image 6

1.12.3 Point of impact

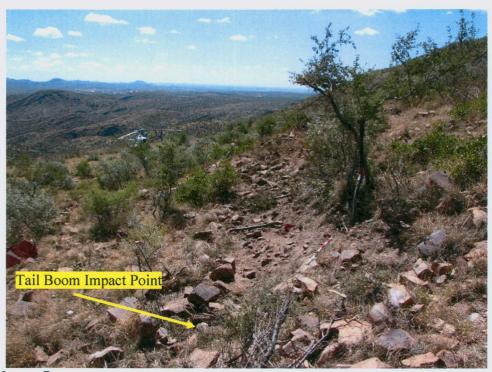


Image 7

1.12.4 Rotor mast

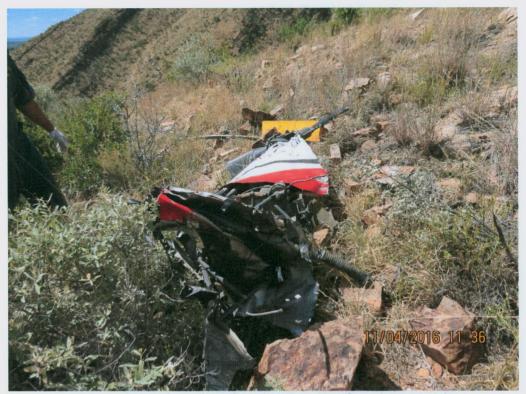


Image 8 - Rotor mast and gearbox found 117 meters from impact point

1.12.5 Engine

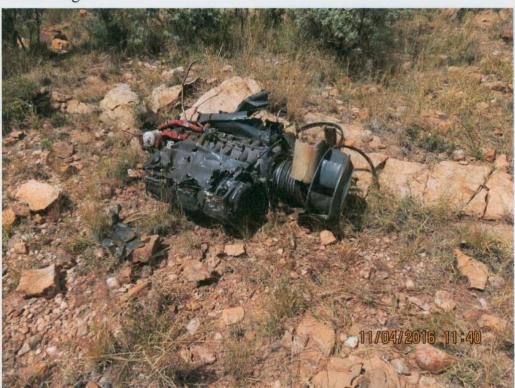


Image 9 - Engine found 117 meter from impact point and 10 meters from rotor mast.

1.13 Medical and pathological information

1.13.1 The pilot suffered from severe high impact poly trauma.

1.14 Fire

1.14.1 There was no pre or post-impact fire due to the mandatory crash proof fuel tanks installed.

1.15 Survival aspects

1.15.1 Due to high impact forces, the accident was deemed not to be survivable.

1.16 Tests and research

- 1.16.1 The damaged GPS was recovered at the accident site and taken for possible data downloads.
- 1.16.2 The data of the last flight was retrieved and converted to construct the flight path for use in the investigation.

1.17 Organizational and management information

- 1.17.1 The helicopter was owned by a local Flight school at Eros Airport and chartered for game capture work. A 50 hour inspection was done the previous day and certified airworthy for flight operations.
- 1.17.2 The helicopter was on a repositioning ferry flight for another game capture program near Dordabis.

1.18 Additional Information

1.18.1 Download of helicopter flight path from takeoff to accident site.

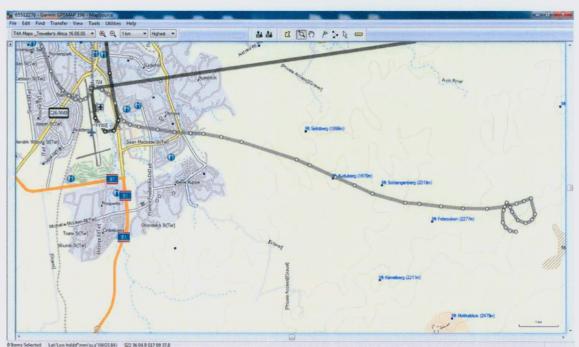


Image 10 - Data extracted by official GARMIN agent situated in Namibia. (Radio Electronics)

1.18.2 Download of vertical flight path of helicopter from takeoff to accident site.



Image 11 - Data extracted by official GARMIN agent situated in Namibia. (Radio Electronics)

LEFT OPEN INTENTIONALLY

1.18.3 Download of flight data from GPS which indicate the time frame, speed ,height and directions flown by the helicopter for the flight from takeoff till the point of impact.

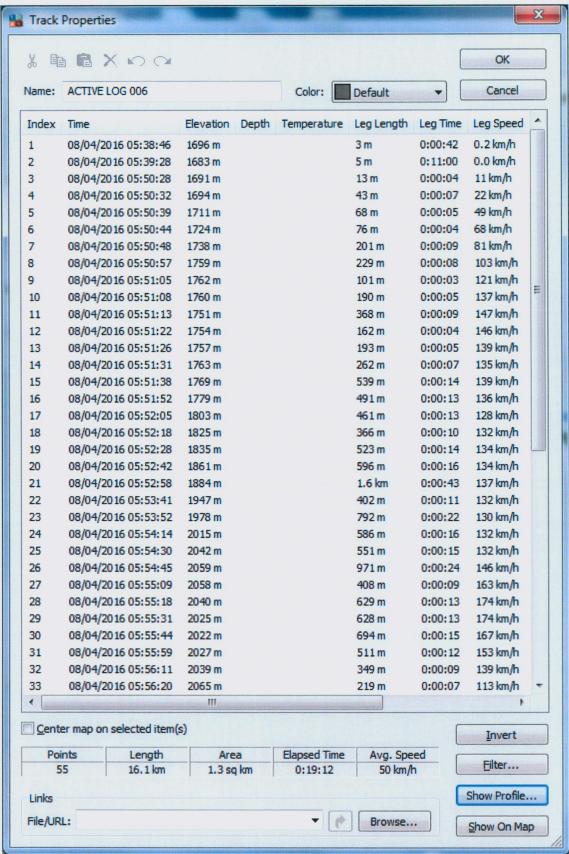


Image 12 – Data extracted by official GARMIN agent situated in Namibia. (Radio Electronics)

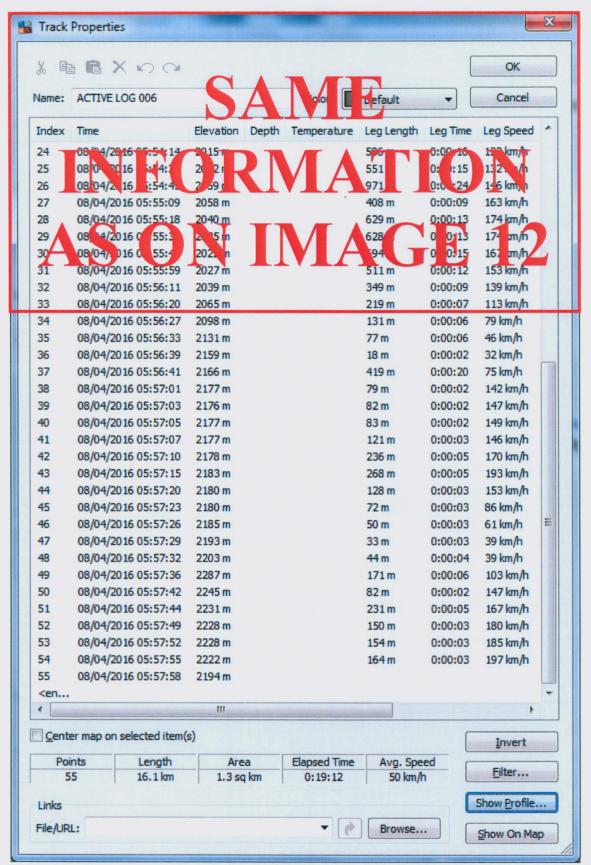


Image 13 - Data extracted by official GARMIN agent situated in Namibia. (Radio Electronics)

1.18.4 The fight path of the helicopter for the last 120 seconds (POINT 30 to point 55 extract from above data in para 1.18.3) imposed on a google map image of the terrain where the accident took place. Note: This image does not reflect a 3 D version of the flight path.

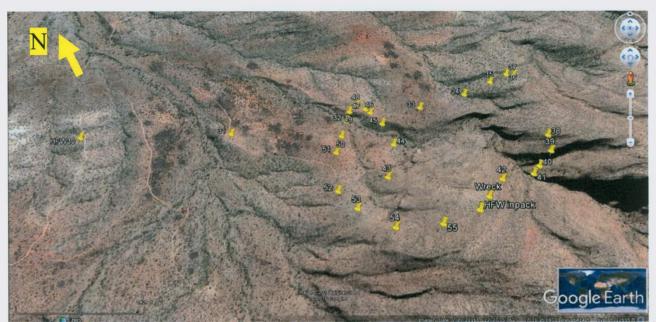


Image 14 – Obtained from Google Earth.

1.19 Useful or effective investigation techniques

1.19.1 None.

2. ANALYSIS

- 2.1 On the 8th April 2016 a helicopter R44 took off at around 03:38 UTC from Eros Airport in Windhoek for a repositioning flight to a farm near Dordabis in central Namibia. Onboard was the pilot which was offloaded at the helicopter earlier that morning by the owner of the helicopter. The owner then left by road for the farm where the game capturing operation should have taken place near Dordabis .The flying time for the helicopter to the farm was + 40 minutes. Fuel onboard was sufficient for the helicopter and was filled to capacity the previous day.
- 2.2 No flight plan was filed by the pilot, nor was a weather report obtained by the pilot for the flight. The cellular phone records of the pilot also confirmed that information after an official forensic download was done. The pilot however mentioned the "rainy conditions" on his first call to the Eros ATC. Although the airport was still officially closed at the time, the ATC responded to the call from the pilot out of courtesy and advised the pilot to fly the route to HKIA to avoid incoming traffic from the south east estimating Eros on the hour.
- 2.3 The pilot confirmed to the ATC that he will comply with the instruction and took off while it was still lowlight conditions at the time. The pilot made a radio call at 5 Nm and was given the instruction to make contact with the HKIA tower to be rerouted through that airspace and kept clear from the descending aircraft inbound to Eros airport.

- 2.4 The pilot however did not comply with that instruction and was already heading towards the Mountain range south of Windhoek. GPS flight data recovered for the last flight showed the pilot flew adjacent to the mountain in an easterly direction and then turn abruptly onto a southerly direction while commencing a climb. During the climb the heading change to a Northerly direction and the speed increase to almost the VNE speed in a level flight configuration before the helicopter were pulled into a steep climb again.
- 2.5 When the speed dropped off to almost in a hover, the helicopter turned again abruptly onto a southerly direction picking up speed while descending in a slow left turning manoeuvre reaching the VNE speed again before crashing into the mountain on a easterly heading.
- 2.6 The weather was overcast in the area with a base of 6400 ft up to 9600 ft and restricted visibility.

3. CONCLUSION

3.1 Findings

- 3.1.1 The pilot was the holder of a valid helicopter pilot licence and had a game capture rating endorsed in his logbook. The medical certificate validity date as displayed in the licence has lapsed but a new medical certificate was found in the pilots personal belongings. This certificate was not presented to the DCA for notification at the time of the accident. The most recent application forms presented to the DCA only include another lapse medical report with the flight test.
- 3.1.2 The pilot did not acquire a weather report or filed a flight plan for his intended flight.
- 3.1.3 The pilot took off at 05h38 local time while the airport was still officially closed. Eros Airport opens at 06h00 local.
- 3.1.4 The pilot flew a different route as suggested by ATC and did not comply with the radio instructions given by ATC.
- 3.1.5 The pilot flew into known IMC conditions without an IFR rating.
- 3.1.6 The Robinson helicopter was not certified for IFR flight nor equipped for that flight condition.
- 3.1.7 The pilot only received Instrument flying training during the time when he did his Commercial license in 2007 which count to his night rating of 8.3 hours. No further experience of such nature was recorded in his logbook for night or IMC conditions.
- 3.1.8 The pilot did not switch on his transponder and squawk 2000 as mandatory for the radar to track the flight which could have result in an early warning that an emergency was on hand when the helicopter disappeared from the radar system.

3.2 Probable cause

3.2.1 The pilot failed to comply with visual meteorological flight conditions and the helicopter impacted with mountainous terrain during flight.

4. SAFETY RECOMMENDATIONS

- ATC management to put measures in place to ensure ATC comply with the operating hours 4.1 of operation as lay down and published in the Notams. (DAAI 01/2017)
- Eros Airport ATC must not allow non IFR flights to depart out of Eros Airport if the 4.2 weather is below minima's. The rising ground around Windhoek present a serious danger to aircraft when low cloud ceiling phenomenons are present. (DAAI 02/2017)
- 4.3 Eros Airport ATC to ensure that aircraft squawk 2000 on their Transponder even if no squawk code was issued to them at the time of departure for an proper Radar image capture. (DAAI 03/2017)
- Pilots must adhere to the regulations as laid down to the documentation processes of their 4.4 licences. (DAAI 04/2017)
- Pilots must refrain from flying outside the scope of their licence privileges or ratings as this 4.5 will have dire consequences with insurance compliances. (DAAI 05/2017)

Compiled by:

Date: 27 January 2017

O.V. Plichta

Investigator-in-charge

M. Abraham

Co-investigator

Released by:

Alpheus G. !Naruseb (MP)

MINISTER: MINISTRY OF WORK

0 6 FEB 2017

Date 2017 /02/06