

MINISTRY OF COMMUNICATIONS AND TRANSPORT

ACCIDENT INVESTIGATION BRANCH

CIVIL AIRCRAFT ACCIDENT NO. CAV/ACC/5/80

REPORT ON THE ACCIDENT TO AN AGUSTA/BELL 206B
HELICOPTER REGISTRATION NO. 5H-MOR WHICH OCCURED
ON 13.9.1980 AT VILIMA SABA (36°55'E/02°47'S;
ELEVATION 4800FT) ARUSHA REGION

MAY 1981

AIRCRAFT TYPE : AGUSTA/BELL 206B HELICOPTER
 NATIONALITY AND REGISTRATION MARKS: 5H-MOR
 ENGINE : ALLISON 250-C20
 REGISTERED OWNER : TANZANIA POLICE AIRWING,
 P.O. BOX 9141, DAR ES SALAAM.
 OPERATOR : TANZANIA POLICE AIRWING,
 P.O. BOX 3011, ARUSHA.
 PILOT : 1
 PASSENGERS : 2
 PLACE OF ACCIDENT : VILIMA SABA
 DATE : 13.9.1980
 TIME : 1535 HRS
 ELEVATION : 4800 FT

ALL TIMES IN THIS REPORT ARE GMT

SYNOPSIS

The Pilot was returning ^{from} to Vilima Saba, where he was to night stop, after Police patrol duties. He encountered unusually dusty conditions, and made two unsuccessful attempts to land. While on the third attempt, the helicopter made a hard landing, bounced twice before tipping on its port. The resulting damage was caused by the accident. There were no injuries nor fire.

1. FACTUAL INFORMATION

1.1 HISTORY OF THE FLIGHT

The pilot, who was on Police patrol duties, departed his base (Arusha Airport) at 1205 hours with two other Police Officers aboard the helicopter. He landed at Kilimanjaro International Airport at 1230 hours and after refuelling departed at 1310 hours bound for Vilima Saba where he landed at 1340 hours. After departing Vilima Saba at 1410, hours, the pilot patrolled for about 45 minutes and en route back to Vilima Saba, where he was to night stop, he made a 5 minute stop at Ngare Naibor. He departed at 1455 hours, arriving Vilima Saba at 1520 hours. The flight through all these sectors was uneventful.

At Vilima Saba, he made two attempts to land in different spots but each time he approached the ground his efforts were frustrated by poor visibility from dust blown up by the main rotor. The pilot further stated that as it was already twilight (he had no training in night flying), he decided he had no alternative but to land.

On the third attempt, the helicopter made a hard landing, bounced (the pilot did not recollect the number of times the helicopter bounced but witness reports stated he bounced twice) before tipping to the left. It was a write-off but there was no fire and there were no injuries.

1.2 INJURIES TO PERSONS

Injuries	Crew	Passengers	Others
Fatal	-	-	-
Serious	-	-	-
None	1	2	-

1.3 DAMAGE TO AIRCRAFT

Substantially damaged and considered a write-off.

1.4 OTHER DAMAGE

None.

1.5 CREW INFORMATION

(a) Born on 15.5.1950 at Arusha, the Pilot held a Tanzanian Private Pilot's Licence No. H-200 first issued on 14.1.77. It has since been kept current with the present validity which expires on 3.8.1982. This licence is rated for all single-engined Helicopters not exceeding 12,500 lbs (5,682 kg approximately)MTWA. He also held a Radio-telephony operator's licence No. H 36 issued on 24.1.75 and kept current in line with his PPL.

(b) EXPERIENCE

At the time of the accident, the Pilot claimed a total of 777.30 hours (day) flying experience to his credit broken down as follows:-

Solo : 528.15
 Second Pilot : 249.15

Experience on type (Agusta/Bell 206B):

Solo : 76.10
 Second Pilot : 85.05

1.6 AIRCRAFT INFORMATION

(a) The aircraft, an Agusta/Bell 206B, Serial No. 8264, arrived in Tanzania with an Italian Export Certificate of Airworthiness No. 8548/E dated 17.6.1971. On 19.6.1972, a Certificate of Registration No. 172 was

issued and on 25.8.1972 a certificate of Airworthiness No. 130 in the Private Category was issued initially for 12 months. It has since been kept current with the present validity due to expire on 15.11.1980.

The aircraft had flown a total of 2315.50 hours since manufacture. The engine, an Allison 250-C20, Serial No. 800574B had completed respectively 3494.15 and 680.20 hours since manufacture and complete overhaul.

(b) MAINTENANCE HISTORY

The aircraft was maintained by Police Airwing in Arusha to their Approved Maintenance Schedule reference MS/TPAW/206B/1SS.I. A check 2 was completed in accordance with this schedule on 5.8.1980 and since then the aircraft had flown a total of 58.50 hours. All maintenance required by this schedule had been carried out.

All Airworthiness Directives and DCA Notices applicable to the aircraft, its engine, rotor and equipment had been complied with.

(c) AIRCRAFT WEIGHT AND CENTRE OF GRAVITY LIMITS

The aircraft weight and centre of gravity were within the prescribed limits.

1.7 METEOROLOGICAL INFORMATION

Twilight was already rife. Sunset for that time of the year at this place was given as at 1529 hours. The site of the accident was extremely dry and dusty.

1.8 AIDS TO NAVIGATION

Not applicable.

1.9 COMMUNICATIONS

Not applicable.

1.10 AERODROME AND GROUND FACILITIES

Not applicable.

1.11 FLIGHT RECORDER

Not fitted and none required to be fitted.

1.12 WRECKAGE AND IMPACT INFORMATION

- (a) The aircraft which rolled over to port after a hard landing in a dusty area sustained the following damage:-
- Cabin roof structure at the attachment points for support A-frames-broken.
 - Front door posts - distorted.
 - R.H. floor at front and rear crosstube attachment points - broken.
 - Most cabin windows - broken.
 - Cabin section - considered beyond economic repair.
 - Skid gear assembly - torn off.
 - Main rotor blades - destroyed.
 - Main rotor hub assembly - considered beyond economic repair.
 - Main rotor mast head - total scrap.
 - Transmission - considered beyond economic repair.
 - Main engine to transmission drive shaft - destroyed.
 - Engine - considered to have been over-torqued, over-revved and over-heated.
 - All tail rotor drive-shafts, hub and blade assembly - scrap.
 - Tail rotor gearbox - considered beyond economic repair.
 - Tail boom, horizontal stabilizer and vertical fin - considered beyond economic repair.
 - Hydraulic pump assembly - scrap.

(b) POSITION OF INSTRUMENTS/CONTROLS

- Fuel valve - OFF
- Control Boost - ON
- Battery Sw - OFF
- Start/Gent. - START POSITION
- Invt/Power - INVERTER
- DRM Compass - 070°
- Altimeter - 3500 FT

1.13 PATHOLOGICAL INFORMATION

Not applicable.

1.14 FIRE

There was no fire.

1.15 SURVIVAL ASPECT

The accident was survivable. The starboard door did not jam. Safety equipment present in the aircraft were life belts and a fire extinguisher.

1.16 TESTS AND RESEARCH

Not applicable.

2. ANALYSIS

That the site of the accident was dry and dusty was a fact. The Inspector of Accidents who landed at the same place the following day in a Bell 47G helicopter attests this; except this time he was flown by a training Captain who demonstrated to him the proper technique when landing in such conditions.

The Pilot of 5H-MOR was no stranger to this place. In fact he had successfully landed and taken off from the same place some two hours earlier. As mentioned before, he had already made two unsuccessful attempts to land before the accident.

The Pilot had no night flying training and being a PPL holder, would not have qualified, as this would have required a CPL holder with Instrument Rating. Had this been the case then the helicopter, which had approximately 150 litres of fuel (enough for 1½ hours flying) would have comfortably made it to the Kilimanjaro International Airport - a mere 20 minutes flying away.

The damage caused to the helicopter suggests that it must have stalled from a considerable height before hitting the ground, and clearly showed that the pilot had no idea about his height above the ground. This was caused by the dust blown upwards by the main rotor aggravated by the fact that twilight conditions were already prevalent.

3. CONCLUSIONS

3.1 Findings

- (a) The Pilot was properly licensed.
- (b) The helicopter's documents were in order.
- (c) All the maintenance required by the relevant Approved Maintenance Schedule had been carried out.
- (d) All mandatory modifications and inspections applicable to the helicopter, its engine, rotors and equipment had been complied with.
- (e) The helicopter was properly loaded.
- (f) There was no malfunction of any part of the helicopter prior to the accident.
- (g) The damage to the helicopter was the direct result of the accident.
- (h) The site of the accident was extremely dusty owing to drought.

- (i) The pilot attempted two landings prior to the accident.
- (j) The available fuel in the tanks was approximately 40 US gallons (150 litres) - sufficient for total flying time of approximately 1½ hours.
- (k) The alternate for night landing would have been Kilimanjaro International Airport, some 20 minutes flying time away.
- (l) The helicopter bounced twice when it made a hard landing.

3.2 CAUSE

The report concludes that the accident was caused by a hard landing following improper landing techniques in dusty conditions. As a result, the helicopter bounced twice before tipping to its port.

3.3 CONTRIBUTORY FACTORS

- (a) Dusty and twilight conditions, which were prevalent at the time.
- (b) Lack of night flying training for the pilot.

4. SAFETY RECOMMENDATIONS

The Police Airwing should acquire helicopters that are equipped for night flying and it should in addition train its Pilots to CPL standard with Instrument Rating for these types of operation.

Opio Ewinyu

INSPECTOR OF ACCIDENTS