



TITLE



GENERAL INFORMATION:

Name of Operator:	Domestic Airways
Aircraft Manufacturer:	Cessna Aircraft Company
Aircraft Model:	Cessna U206G
Nationality and Registration Marks:	8R-GHB
Place of Accident/Region:	Near to Eteringbang Airstrip/Region#7, Guyana – 06 04 07.64N 060 20 06.09W
Date of Accident:	21 st February 2019.
Time of Accident:	21:45 UTC

REPORT No. GAAIU 3/1/25

This investigation was conducted in accordance with ICAO Annex 13 and therefore, it is not intended to apportion blame, or to assess individual or collective liability. Its sole objective is to draw lessons from the occurrence which may help to prevent future accidents. Consequently, the use of this report for any purpose other than for the prevention of future accidents could lead to erroneous conclusions.

Note: - All times in this report are Coordinated Universal Time (UTC) unless otherwise stated. UTC is four hours ahead of Guyana Standard Time (GST).



CONTENTS:

GLOSSARY OF ABBREVIATIONS	4
Synopsis:	5
1. Factual Information	6
1.1. History of the Flight	6
1.3. Damage to aircraft	6
1.4. Other Damage	6
1.5 Personnel Information – Pilot.....	7
1.6 Aircraft Information	7
1.6.1 General	7
1.6.2. Maintenance	8
1.6.3. Mass and Balance.....	8
1.7 Meteorological Information	8
1.8 Aids to Navigation	8
1.9 Communications.....	9
1.10 Aerodrome Information.....	9
1.11 Flight Recorders.....	9
1.12 Wreckage and Impact Information.....	9
1.13 Medical and Pathological Information	9
1.14 Fire	10
1.15 Survival Aspects.....	10
1.16 Tests and Research.....	10
1.16.1 The Engine	10
17. Organisational and Management Information	15
1.17.1 Domestic Airways Inc.....	15
1.17.2. FENIX Maintenance Services Inc.....	17
1.17.3 Company Interviews	17
1.17.3.1 <i>Interview with Accountable Manager</i>	17
2. Analysis	23
2.1. The Pilot	23
2.2. The Aircraft	23
2.2.1. Maintenance	23
2.2.2. Mass and Balance	23
2.3. The Weather	23
2.4. The Wreckage Site	24



2.5. Survivability	24
2.6. Organisation and Management	24
2.6.1. The Company	24
2.6.2. The GCAA	25
3. Conclusion	26
3.1. Cause	26
3.2. Contributory Factors	26
3.3. Findings	26
3.3.1. The Pilot	26
3.3.3. The Aircraft	27
3.3.4. The Weather	28
4. Safety Recommendations	28
4.1. The Company	28
4.2. The GCAA	29
5. Actions Taken	29



GLOSSARY OF ABBREVIATIONS

AIP	-	Aeronautical Information Publication
AMO	-	Approved Maintenance Organisation
AOC	-	Air Operator Certificate
APC	-	Aircraft Proficiency Check
ATC	-	Air Traffic Control
CAVOK	-	Ceiling and Visibility OK
CPL	-	Commercial Pilot Licence
EFCIA	-	Eugene F. Correia International Airport
FOM	-	Flight Operations Manual
GAAIU	-	Guyana Aircraft Accident and Incident Investigation Unit
GARs	-	Guyana Aviation Requirements
GCAA	-	Guyana Civil Aviation Authority
GCARs	-	Guyana Civil Aviation Regulations
ICAO	-	International Civil Aviation Organisation
MEL	-	Minimum Equipment List
NGO	-	Non-Governmental Organisation
P/N	-	Part Number
RWY	-	Runway
S/N	-	Serial Number
SYEC	-	Eugene F. Correia International Airport (Ogle)
SYEK	-	Ekereku Bottom Airstrip
SYET	-	Eteringbang Airstrip
TBO	-	Time before Overhaul
TSN	-	Time since New
TSO	-	Time since Overhaul
VMC	-	Visual Meteorological Conditions



Synopsis:

On 21st February 2019, the aircraft was shuttling between Ekereku Bottom Airstrip (SYEK) and Eteringbang Airstrip (SYET). On the last flight of the day, when the aircraft was flying from Ekereku Bottom to Eteringbang, it crashed and burned near to Eteringbang. It was reported that the aircraft was observed flying low, West to East along the Cuyuni River. The aircraft was observed pulling up in a steep climb. Thereafter the engine sound diminished, and the climb transitioned into a steep descent. At this point the engine was heard sputtering. The aircraft then disappeared from sight. Shortly after an explosion was heard and smoke and fire were seen in the location where the aircraft disappeared.

The pilot was the sole occupant of the aircraft and he perished in the crash.

The aircraft was destroyed.



1. Factual Information

1.1. History of the Flight

The aircraft left its base at the Eugene F. Correia International Airport (SYEC), Ogle, the day before the accident and proceeded to Eteringbang Airstrip to shuttle fuel between Eteringbang and Ekereku Bottom. The aircraft was on its last flight for the day having completed fifteen previous shuttle legs. The aircraft departed Ekereku Bottom at 21:31hrs with the intention of landing at Eteringbang. When the aircraft was in the vicinity of Eteringbang, eyewitnesses, who were in the border village of San Martin, observed the aircraft flying low, West to East along the Cuyuni River. They reported that the aircraft was flying at eye-level. The aircraft was observed pulling up steeply and then appeared to go into a steep dive. When the aircraft was at the top of the climb, the engine sound diminished. The aircraft started to descend, nose down, and a sputtering sound was heard. The aircraft then disappeared. There was the sound of an explosion and smoke and flames were seen in the area.

1.2. Injuries to Persons

Table: 1- Showing Injuries to Persons

Injury	Crew	Passengers	Others	Total
Fatal	1	0	0	1
Serious	0	0	0	0
Minor/None	0	0	0	0
Total	1	0	0	1

1.3. Damage to aircraft

The aircraft was destroyed

1.4. Other Damage

There was no other damage.



1.5 Personnel Information – Pilot

Gender:	Male
Date of Birth/Age:	13 th February 1986/33 years
Nationality:	Guyanese
License:	Guyana CPL #301
Date of issue:	24 th April 2012
Date of last medical:	24 th January 2019
Valid until:	31 st July 2019
Aircraft type rating:	C172, C206
Last Proficiency Check on Type:	6 th February 2019
Total hours:	Unknown
Hours in last 30days:	121hrs 10mins
Hours in last 7 days	29hrs 21mins
Hours in last 24 hours:	4hrs 40mins

There are no limitations on the pilot's Class 1 Medical.

The pilot had completed all the required training as listed in the company's Flight Operations Manual.

Review of the pilot's personal file held by the GCAA shows that despite several requests, the pilot failed to submit his Personal Flying Logbook since 2013. The above stated hours were extracted from Company records.

Reports of APC flights done in 2017 and 2018 were reviewed.

1.6 Aircraft Information

1.6.1 General

Manufacturer:	Cessna Aircraft Company
Year of Manufacture:	1979
Aircraft Model:	Cessna U206G
Aircraft S/N:	U2060-4889
Certificate of Registration:	Issued – 31 st March 2010
Certificate of Airworthiness:	Valid until 23 rd May 2019
Total Airframe Hours:	12,297:27hrs +
Maximum Take-off Weight:	3,800lbs



Last Scheduled Inspection:	50hrs
Time since last Inspection:	4 days before accident
Next Inspection Due:	200hrs
Engine Model:	Teledyne Continental Motors IO-550 F12B
Engine S/N:	1034360
Engine TSN:	838:15hrs
Propeller Type:	Mc Cauley-D3A34C402-B/90DFA-10
Propeller S/N:	778323
Propeller TSN:	N/A
Propeller TSO:	848:11hrs
Fuel Type:	AVGAS 100LL

The Cessna U206G is a six-seater single-engine general aviation utility aircraft. It is equipped with a pilot side door and large clamshell rear door serving the two rows of seats at the rear of the aircraft. This allows for easy loading of oversized cargo. The aircraft has a conventional tail unit and fixed tricycle landing gear.

1.6.2. Maintenance

Examination of the aircraft maintenance records indicates that there were no outstanding maintenance issues. All required and scheduled maintenance had been performed and all Airworthiness Directives had been complied with. There were no outstanding MEL items on the aircraft.

1.6.3. Mass and Balance

It was reported that there was no cargo on the aircraft.

1.7 Meteorological Information

This accident occurred in daylight. There is no weather observation or recording facility in the vicinity of the accident location. The weather reported, at the time of the occurrence, was CAVOK.

1.8 Aids to Navigation

Not applicable.



1.9 Communications

The aircraft was not in contact with the Air Traffic Services. Takeoff and landing reports were relayed to ATC by the Company. The last report stated that the aircraft departed from Ekereku Bottom at 21:32hrs and estimated landing at Eteringbang at 21:43hrs, with one person on board and 01:45hrs of fuel.

1.10 Aerodrome Information

Not applicable.

1.11 Flight Recorders

This aircraft is not required by regulation to be equipped with a flight recorder.

1.12 Wreckage and Impact Information

The aircraft crashed about 2nm from Eteringbang Airstrip. Spot tracker information shows the last recorded location of the aircraft as 06.68587N 61.07230W.

The first point of impact was observed to be a 50ft tall tree with which the aircraft's right wing made contact. This wing was torn off from the fuselage and was left hanging in the tree. This was approximately 60ft from the point of impact of the rest of the aircraft. The engine had separated from the fuselage and this and other debris from the wreckage, along with the fuselage were found within an area approximately 20ft wide. The cabin and fuselage were burnt almost beyond recognition. It is apparent that when the aircraft hit the ground, it tipped over and the tail, which was recognizable, was in the opposite direction from which it had come.

1.13 Medical and Pathological Information

The postmortem was performed by a Government Forensic Pathologist. The postmortem report states that the body was totally carbonized. There was the presence of soot in the bronchii. The vital reaction of tissues suggest that the pilot was alive when the fire started. The cause of death was stated as burns.



1.14 Fire

Persons, who were reportedly the last to see the aircraft in flight, reported hearing a loud explosion and then saw smoke and flames emanating from the area of the wreckage.

1.15 Survival Aspects

Intense fire damage negated attempts to assess the condition of the pilot's seat and seatbelt.

There was no report pertaining to the ELT.

1.16 Tests and Research

On site tests were carried out on the aircraft's propellers by Aircraft Engineers attached to the Guyana Aircraft Accident and Incident Investigation Unit (GAAIU). It was determined that the aircraft was fully powered at the time of impact.

Tests were also carried out on the aircraft's engine by Continental Aerospace Technologies, Alabama, USA, under the supervision of the National Transportation Safety Board (NTSB) of the USA on behalf of the GAAIU.

1.16.1 The Engine

The engine was completely disassembled and documented.

Engine Model:	Teledyne Continental Motors IO-550 F12B
Engine S/N:	1034360
Engine TSN:	838:15hrs

External examination of the engine showed that it sustained thermal damage that destroyed the fuel lines and damaged the ignition leads. The starter motor was separated from the starter adapter. Wood and dirt debris were impaled in the cooling fins of the oil cooler and a semicircular indentation was observed on the bottom of the cooler. The induction balance tube was deformed around the front of the engine and the propeller governor. The intake tubes were thermally damaged and fractured. The exhaust pipes were damaged and deformed. The oil sump was dented and deformed up around the bottom of the engine. The throttle body was



damaged and deformed and the throttle and mixture levers were bent. However, the throttle and mixture control cable rod ends remained attached to the levers.

Engine Components Examination.

The Exhaust system was deformed, with one side of the exhaust pipes being flattened. No pre-accident anomalies were noted with the tail pipes, manifold and right muffler.

The induction system was thermally damaged, the intake filter was not observed.

Both the right magneto, (P/N: BL-349350-5; S/N: F171FA074R), and the left magneto, (P/N: BL-349350-4; S/N: F17EA137R), remained attached to the engine but sustained thermal damage that distorted the cam follower and wires.

The ignition harness, (P/N & S/N illegible), remained attached to the magnetos and the thermal ends remained attached to their respective spark plugs. The leads were thermally damaged.

The spark plugs (P/N: RHB32E), electrodes displayed a normal worn condition and the combustion deposits were consistent with normal operation. There was corrosion noted on the sparkplugs that could be attributed to the length of time between the accident and examination. Additionally, dirt and debris were noted on some sparkplugs consistent with that found on some of the cylinders.

The engine-driven fuel pump (P/N:646212-45A3; S/N: B17FA048R), remained secured to the backside of the engine, but it sustained thermal damage. Removal of the pump revealed that the drive coupling was intact.

The throttle body metering unit (P/N: 629399A22; S/N: 17FA072R), – The throttle body sustained impact and thermal damage. The metering unit remained attached but was also damaged. The throttle and mixture control cables remained attached to their respective control levers.

The fuel Injector Nozzles remained attached to each cylinder and the fuel lines remained attached to the nozzles. No pre-accident anomalies were noted.

The Lubrication System - The Oil Sump remained attached to the bottom side of the engine but sustained deformation damage. The drain plug was in place, but that area of the sump was deformed and partially melted. Numerous punctures were observed in the sump and a plug was missing.



The oil pickup tube and screen remained attached to the bottom side of the engine but both sustained deformation damage. Re-solidified molten metal was observed on the sides of the screen, (likely from the partially melted sump).

The oil pump remained secured to the backside of the engine. No pre-accident anomalies were noted with the housing walls or gears. There was no debris noted on the oil pressure valve seat.

The oil filter (Manufacturer - not legible, P/N: not legible), remained attached to the oil filter adapter with the safety wire in place. The oil filter was exposed to post accident fire. Residual oil coated the filter interior.

The oil cooler (Manufacturer-Niagara, P/N:654595, S/N: F17-14009-142) remained attached to the front right side of the engine but sustained deformation damage and was impacted with dirt and wood debris. No pre-accident anomalies were noted with the unit or the mounting adapter.

Cylinders

Cylinder#1 (P/N: 658592A1, S/N: AC17DB906, Head date: 6/17), The cylinder remained secured to the crank case with no pre-accident anomalies noted with the rockers or valve springs. Removal of the cylinder revealed some corrosion (likely developing since the time of the accident) and normal combustion deposits. The cylinder, valves, and valve seats displayed normal operating signatures.

Cylinder#3 (P/N:658592A1, S/N: AC17DB971, Head Date 6/17), remained secured to the crankcase with no pre-accident anomalies noted with the rockers or valve springs. Removal of the cylinder revealed normal combustion deposits, with no pre-accident anomalies noted with the cylinder, valves, and valve seats.

Cylinder #5 (P/N:658592A1, S/N: AC17DB971. Head Date 6/17) remained secured to the crankcase with no pre-accident anomalies noted with the rockers or valve springs. Removal of the cylinder revealed normal combustion deposits, with no pre-accident anomalies noted with the cylinder, valves, and valve seats. Dirt and debris were observed in the cylinder.

Cylinder#2 (P/N:658592A1: S/N: AC16JAQ929, Head Date 6/17), remained secured to the crankcase with no pre-accident anomalies noted with the rockers or



valve springs. Removal of the cylinder revealed some corrosion (likely developing since the time of the accident) and normal combustion deposits. The cylinder, valves and valve seats displayed normal operating signatures.

Cylinder #4 (P/N:658592A1, S/N:AC17EA686, Head Date 6/17), remained secured to the crankcase with no pre-accident anomalies noted with the rockers or valve springs. Removal of the cylinder revealed normal combustion deposits with no pre-accident anomalies noted with the cylinder valves, and valve seats. Dirt and debris were observed in the cylinder.

Cylinder#6 (P/N: 658592A1, S/N: AC17DB910, Head Date 6/17), remained secured to the crank case with no pre-accident anomalies noted with the rockers or valve springs. Removal of the cylinder revealed normal combustion deposits with no pre-accident anomalies noted with the cylinder valves, and valve seats.

#1, #3 & #5 Pistons (P/N; 654857), - Rings and Pin of these pistons displayed normal combustion deposits and were otherwise unremarkable.

#2, #4 & #6 Pistons (P/N: 654857), Rings and Pin of these pistons displayed normal combustion deposits and were otherwise unremarkable.

Crankcase Assembly- Crankcase, (Casting Number: 1-3-5:653961 – 2-4-6:653960, S/N: R17EA162), remained intact and the two halves were secured together. There were no pre-accident anomalies noted with the crank case.

#1, #2, & #3 Main Bearings, (P/N: 634503, Date Code: 05/16), all the bearing halves displayed normal wear with no signs of bearing migration.

#4, #5, & #6 Main Bearings, (P/N: 653547, Date Code: 03/17), all the bearing halves displayed normal wear with no signs of bearing migration.

Crankshaft Assembly - Crankshaft, (Forging Number: 649130, S/N: N17CA123, Heat Code: KASA), remained intact with all connecting rods, counterweights and gears secured in place. No pre-accident anomalies were noted with the crankshaft.

Transfer Collar: the oil transfer collar was intact and unremarkable.

Counterweights: all the counterweights remained in place with their snap-rings properly oriented.



Internal timing: the engine internal timing was correctly set.

#1 Connecting rod, (P/N: 655911, Forging or Serial Number: AE17EA229), remained secured in place around the crankshaft and the piston pin remained attached. No pre-accident anomalies were noted.

Main Correcting Rod Bearing, (P/N: 642369, Date Code: 12/16), displayed normal wear.

#3 Connecting Rod, (P/N: 655911, Forging or Serial Number: AE17DA578), remained secured in place around the crankshaft and the piston pin remained attached. No pre-accident anomalies were noted.

#3 Connecting Rod Bearing, (P/N:642398, Date Code: 12/16), displayed normal wear.

#5 Connecting Rod, (P/N: 655911, Forging or Serial Number: AE17DA578), remained secured in place around the crankshaft and the piston pin remained attached. No pre-accident anomalies were noted.

#5 Connecting Rod Bearing, (P/N:642398, Date Code: 12/16), displayed normal wear.

#2 Connecting Rod, (P/N: 655911, Forging or Serial Number: AE17DA578), remained secured in place around the crankshaft and the piston pin remained attached. No pre-accident anomalies were noted.

#2 Connecting Rod Bearing, (P/N:642398, Date Code: 12/16), displayed normal wear.

#4 Connecting Rod, (P/N:655911, Forging or Serial Number, AE17EA232), the connecting rod remained secured in place around the crankshaft and the pin remained attached. No pre-accident anomalies were noted.

#4 connecting rod bearing, (P/N 642398, Code Date: 12/16), displayed normal wear.

#6 Connecting Rod, (P/N:655911, Forging or Serial Number, AE17EA232), the connecting rod remained secured in place around the crankshaft and the pin remained attached. No pre-accident anomalies were noted.



#6 connecting rod bearing, (P/N 642398, Code Date: 12/16), displayed normal wear.

Camshaft - (P/N:655384, S/N: 351756), remained intact with no pre-accident anomalies noted with the lobes. The gear and gear teeth remained intact.

Lifters - Intake, (P/N: 6580881); Exhaust, (P/N: 6580771), the lifters remained in place with normal wear patterns on their face.

ACCESSORIES

Starter- (Manufacturer: not observed, P/N: Not observed, S/N: Not observed). The starter motor was not available for examination.

Accessory Gears, the teeth remained intact with no pre-accident anomalies noted.

Starter

Starter Adapter, remained in place and the mounting flange for the motor was fractured. No pre-accident anomalies were noted.

ALT/GEN, (the manufacturer, P/N and S/N were unknown), the alternator remained attached to the engine and was thermally damaged.

Vacuum Pump, (Manufacturer: Temptest, P/N & S/N not legible) The vacuum pump remained in place on the backside of the engine. The drive coupling remained intact but was thermally distorted.

Propeller Governor, (Manufacturer: Mc Cauley, P/N: C290D4-RT, S/N:190015), The propeller governor remained in place with no pre-accident anomalies noted.

17. Organisational and Management Information

1.17.1 Domestic Airways Inc.

Domestic Airways obtained its first Guyana Air Operator Certificate (AOC) in 2014. Shortly after, the company had an accident and lost its only aircraft. This AOC was suspended.

Another aircraft was acquired, and the owner reapplied for, and was granted AOC No.014 on 5th January 2018. The company's Flight Operations Manual (FOM) was approved by the GCAA in January 2018. It was noted that Section 6 of the



company's Flight Operations Manual places emphasis on general crew health and working conditions. It stated that pilots should lead a life that results in excellent balance physically and psychologically.

In keeping with the associated Operations Specifications (Ops Specs), the company was given approval to perform commercial air operations within Guyana, from its operations base at the EFCIA, Ogle. The company has approval to operate one Cessna 172 – Registration 8R-JIL, and one Cessna 206 – Registration 8R-DAC. The accident aircraft was not included in the company's Ops Specs. The company operates charters between EFCIA and airstrips in the area between Imbaimadai and Eteringbang.

Although the company has approval for commercial operations, it reported that most of its operations are in the private category, as the owner uses his own aviation resources to supply fuel to his business outlets. These outlets retail the fuel to their customers. This is where the bulk of his revenue comes from and where the bulk of the company flying is done.

The company has a sub-base at Eteringbang where a significant amount of aircraft refueling is done. Company surveillance, at this sub-base which was necessary to ensure that quality control was up to acceptable standards, was not in place. Apart from this, another challenge was communications between the main base and the sub-base. However, recently the company started to use available technology, WHATSAPP, to monitor away from base operations.

As required by the GCAA, a shuttle manual, titled Remote Repetitive Short Sector Procedures, was submitted to the Authority under covering letter dated 8th October 2017 and approved on 13th October 2017. This manual has an arrival procedure for Eteringbang that requires the aircraft to “arrive overhead the runway at 1500ft, join a left downwind for landing on runway 35”.

The company is staffed with two pilots, one is the owner and Accountable Officer. The other was the accident pilot, who was also the Operations Manager. This pilot did most of the flying, he was a hard worker and he carried the brunt of the flying for the company. The owner was dependent on him to keep the company going and considered him to be very valuable to the company.



1.17.2. FENIX Maintenance Services Inc.

The company's maintenance is done by FENIX Maintenance Services Inc., which holds Guyana Approved Maintenance Organization (AMO) Certificate #005, that was first issued on 22nd December 2011. The company's current AMO, which is valid until 21st December 2019 gives approval for base and line maintenance, preventive maintenance or modification, up to but not including overhaul, on Piper PA-32, Cessna 206 and Cessna 172 aircraft; the TCM IO-520 and IO-550, Lycoming O-320, O-360, O-540 and IO-540 power plants; McCauley D3A34C404 and IC-160-DTM7553 propellers and Hartzell PHC-J3YCF-1R, HC-C3YR-1RF and HC-C2YK-1BF propellers. The company utilizes the AMEL system as the basis for maintenance certification.

A sister company, FENIX Airways Inc. was issued an Air Operator Certificate, AOC#:011, on 12th July 2012. The accident aircraft Cessna 206; Registration 8R-GHB was included in this Operations Specifications. The last AOC found in GCAA records was valid up to 11th July 2016.

1.17.3 Company Interviews

1.17.3.1 Interview with Accountable Manager

In an interview with the Accountable Manager, he stated that the company was started as an NGO in 2010. He saw the need for commercial operations and applied for and obtained an AOC in 2014. This AOC was suspended when its only aircraft was damaged in an accident. He reapplied and was granted another AOC in 2018. The company was set up to supply fuel to his own business in the hinterland and this still continues. Explaining why the company was using an aircraft that was not approved in its Ops Specs, he said that the operation was a private one. He further stated that all his operations are private. He also indicated that he is the owner of both FENIX Airways Inc. and FENIX Maintenance Services.

The company had two pilots, the accident pilot and himself. The accident pilot had been flying with the company for four years and was shuttling with another company before joining Domestic Airways. The accident pilot was very reliable, and the owner depended on him to do most of the flying for the company. No free-lance pilots are used, but trainee pilots are allowed to fly as observers to build required



hours to gain their licences. In addition to the pilots, the company's operations staff are trained and experienced.

He stated that after the accident he got reports from his staff and other persons that the pilot was a maverick. He was pressed to explain why such reports were not shared with him prior to the accident. He explained that the staff knew that the pilot was important to the operation and they were probably afraid that they may have lost their jobs. He further said that the pilot was pulling the company and without him the company stood to lose considerable sums of money. The pilot was allowed to make decisions that occasionally went counter to decisions made by him, but he never insisted that the pilot should adhere to his instructions. He said that the pilot did not like unexpected changes to plans, he added that generally pilots needed to be settled especially when shuttling. Further, because of how valuable the pilot was to the operations, he avoided upsetting him as far as possible.

Although he recognised that the pilot was doing most of the flying, he stated that the pilot never exceeded his duty time, he flies within the confines of the regulations and in the process the two of them managed to keep the company going.

When asked, he stated that he did not know the cause of the accident, but he believed that the general lifestyle in the area may have had an adverse impact on the pilot's behaviour. It is apparent that this lifestyle is typical of a border town in which the 'joie de vivre' was normal. He stated that shuttling in the area could be tedious, but he expected that pilots would recognise the need to balance their lifestyles.

Since the accident, he has introduced several changes in human factors policies.

He said that the reports, along with the existence of certain videos involving the pilot, prior to the accident, gave him some relief, as he is satisfied that he provided a safe aircraft and satisfactory conditions and benefits for the pilot's comfort, thus he felt vindicated as he believed that he did not contribute to the tragedy.

It must be noted that the video(s) mentioned were never made available to the Accident Investigation Team. Persons who saw the video reported that it was 6sec long, it did not positively identify the aircraft nor the pilot and there was no time stamp to indicate time or date.



1.17.3.2 Interview with Trainee Pilot

The trainee pilot has an engineering background. He joined the company as a trainee pilot to build the hours required, before being released as flight crew. Although he expected to occupy the co-pilot seat, it was his understanding that this was at the discretion of the pilot. Notwithstanding this, he was initially upset when the pilot told him to sit in the back of the aircraft, because he felt that he was being deprived of the opportunity to gain observer hours. He looked forward to flying with the pilot, who was a pillar of the company. He respected this pilot's seniority, experience, and skill; and hoped to learn from him. He expressed the opinion that he was told to sit at the back because of the pilot's ego, as when this happened a female passenger would normally occupy the front seat.

He never reported this to the owner because he recognised that the pilot was the mainstay of the operations, and he had authority and many privileges. He did not think that complaining would make a difference and he did not see the need to report it. He also stated that at the time, he did not know that the owner of the company had given an instruction for him to sit in the cockpit. He considered that the company was doing him a favour by allowing him to achieve the necessary observer hours and he did not want to overstep his boundary as a trainee pilot.

He explained what he thought may have been the root of his problem with the pilot. With his engineering background, he was given approval by the company to assist with minor maintenance at the end of the day's shuttling in the hinterland. However, it was normal for the pilot to want to retire to their accommodation immediately after shuttling was finished for the day, so no maintenance would be done at the end of the day, but it would be done the next morning. He further explained that their accommodation was several miles away, by river, and only one trip was done, so he had no option but to leave the airstrip when the pilot was leaving. This was raised at a company meeting, in the absence of the pilot, where the owner stated that preparation of the aircraft should be done at the end of the day to facilitate an early start the next day. At the meeting, he explained that the decision to refuel the next day was based on the pilot's decision. It is apparent that the pilot heard that he had spoken about this and was not pleased. After this, the



owner restricted his flying with the pilot, but he was allowed to fly more with the owner himself. Thus, he was still able to acquire the required observer hours.

He spoke about what he considered to be a particularly dangerous manoeuvre executed by the pilot about one week before the accident. He reported that it seems that the aircraft went into a moderate dive, leveled out low over the water, so the aircraft appeared to be almost in ground effect, it built up airspeed and then was yanked up in a steep climb, during which the stall warning was sounding. He felt that the climb out caused the aircraft to adopt an unusual attitude, it was so steep that he believed that if the nose was not pushed down, the aircraft would have stalled. However, apparently the aircraft had acquired the required speed, which gave it the lift to climb out. After a few seconds, he felt that the aircraft was configured into a steep dive and again pulled up steeply. He said that he experienced both negative and positive G-forces in the dive and climb of the aircraft. He noted that the straight part of the river where these manoeuvres were executed is short, so the manoeuvres would have had to be extreme to be done within that distance. The female passenger was sitting in the front seat, while he was sitting in the back of the aircraft. He did not know if the owner knew that the pilot was carrying a passenger in the front seat. But this is not unusual provided there was a seat available.

He said that during ground training, he was briefed on the specifics of local flying, such as terrain, weather, company operations etc. He said that during CRM training the responsibilities of the co-pilot were emphasized, but he could not fight with the pilot.

He said that after the accident, persons from various locations expressed sympathy for the accident and went further to say that the pilot was a “Stuntman”. His opinion was that persons thought that the pilot was a good pilot, but this was because of the manoeuvres that he did. He therefore surmised that acrobatic manoeuvres may have been a regular feature of the pilot’s flying.

Notwithstanding the foregoing, he said that the pilot was normally very cautious with the aircraft. He questioned any item or feature that did not seem to be normal on the aircraft and would refuse to fly until any identified problem was resolved to his satisfaction. He went on to say that the pilot took no chances with the integrity



of the aircraft, but he surmised that maybe the pilot did not take the time to properly assess at his own limitations.

1.17.3.3 Interview with the Safety/Quality Officer

The Quality and Safety Officer of the company is responsible for safety and accident prevention in the company. He is based overseas and travels to be in situ with the company every three months. Generally, he has a good relationship with most of the staff and they seek his advice on various issues. He sees himself as the go-between for staff and the owner. He also liaises between the company and the GCAA.

He prepared the company's Operations Manual, the Training Manual and the Shuttle Manual. He does most of the required ground training for the company, including company procedures, indoctrination training and single crew resource management as detailed in the manual. He also advises on resource personnel for other types of training such as dangerous goods, security and aircraft ground and flight training. The safety and quality functions are based on the requirements laid out in the Company Manual and he strives to ensure that standards are maintained. He has never been to the sub-base at Eteringbang, but he agreed that given the amount of activity there, this is necessary. He explained that the company had a system, by use of WHATSAPP that allowed him to be in constant contact with staff at the sub-base, so he has a fair idea of what is happening there in real time. He can actively monitor what is happening and he does intervene to remind pilots about issues such as weather minima and fuel requirements. He noted that the company only had two pilots, and he felt that they both heeded his advice. Apart from the pilots, he was also in contact with ground staff, whom he actively engaged to ensure that standards were not violated.

He felt that he had a professional relationship with the accident pilot. He was told that this pilot was a hard worker who got the job done for the company and was experienced in shuttle operations. He thought that the pilot had an ebullient personality. He noted that the pilot had an excellent academic background, and he was not intimidated by having to read or study any material presented.



With regard to the issue of reckless flying, the Safety/Quality Officer said that he was surprised by this, not only because it was very non-standard but also because he did not have a hint that the pilot was capable of such behaviour. Despite the pilot's personality he never got the impression that the pilot had any tendency towards egotistical behaviour. In fact, he was very encouraged by the pilot's positive reaction to him. He also noted that in discussions with the pilot fraternity, there was much surprise, as his peers considered the pilot to be very cautious and sensible and was wise enough to follow established SOPs.

The relationship between the pilot and the owner of the company was raised. He noted that the owner and the pilot were good friends and the owner depended on the pilot to get the job done. He was aware of a situation when the pilot contravened a direct instruction from the owner. However, because of the relationship between the owner and the pilot, and the fact that the pilot was also the Operations Manager, he determined that it would be more appropriate for the owner to speak to the pilot about this situation.

He was asked if he had an opinion as to why staff who were allegedly aware that the pilot was breaching standards, did not find it necessary to bring this to the attention of the owner. He thought that it was likely that these persons had a good relationship with the pilot and probably did not want to jeopardise him. He also agreed that it was possible that the relationship between the owner and the pilot was such that other employees did not want to say anything against the pilot.

He noted that he had only known the trainee pilot for about a month, so maybe the trainee pilot was not comfortable to relate any breaches to him.

The Safety/Quality Officer was asked if he thought that the company could be vindicated in this accident. He said that the company was not totally blameless as in some cases, the atmosphere in the company tended to stifle sharing of information.



2. Analysis

2.1. The Pilot

He was properly qualified for the flight.

Eyewitness reports suggest that the pilot did not adhere to the stated and approved arrival procedure for the airstrip. Based on eyewitness accounts it is believed that the pilot made a steep right turn. This placed the aircraft in an attitude that resulted in the right wing hitting a tree and being torn from the fuselage. This wing was left hanging in the tree while the fuselage plunged to the ground. This, and other reported similar unapproved manoeuvres indicated that the pilot may not have been as disciplined as expected.

The pilot died in this accident.

2.2. The Aircraft

2.2.1. Maintenance

The aircraft has a Certificate of Airworthiness which is valid until 23rd May 2019. Records indicate that the aircraft was being maintained in accordance with the approved maintenance schedule. There were no noted defects or deferred maintenance items from the previous flight.

The summary of the engine report shows that the engine sustained impact related damages and thermal exposure as a result of a post crash fire. The damage precluded the functional testing of the engine. However teardown examination revealed no pre-accident anomalies with the engine and engine related systems that would have precluded its ability to produce full power.

2.2.2. Mass and Balance

There was no cargo on board the aircraft. The aircraft was not overweight.

2.3. The Weather

This accident occurred during the afternoon in daylight.



2.4. The Wreckage Site

Assessment of the wreckage site indicates that the aircraft was over the canopy with a low right-wing attitude. This caused the right wing to impact a tree and became separated from the rest of the wreck. The main portion of the wreck was within a compact area, indicating that the aircraft may have impacted the ground in a nose down attitude. The cockpit and most of the fuselage were burnt beyond recognition, so that the aircraft's instruments were just burnt out casings.

2.5. Survivability

There was fire, which consumed the aircraft and caused the death of the pilot according to the postmortem report. This accident was not survivable.

2.6. Organisation and Management

2.6.1. The Company

This is a small company that had acquired its AOC less than one year ago. It operated two small aircraft, but its flight crew is relatively well experienced.

Its Safety/Quality Officer is also very experienced, having previously served as a Flight Operations Inspector in the GCAA. The company's manuals are well written and provides detailed information on the standards and procedures that are expected to be adhered to.

Notwithstanding this, more can be done to ensure that the intended discipline is ingrained in the company's staff especially those who are expected to operate away from the main base. This is more so applicable to the company pilots, who will usually oversee the away-from-base operations and who are expected to set an example to other staff under their control.

The owner allowed his need to get the job done, to influence how he related to the pilot. He had no control over the pilot and allowed him to do as he pleased. This may have contributed to the pilot's alleged indiscipline and was conducive to an unsafe environment within the company, and especially its away from base operations. Staff who observed the indiscipline did not report it, because they thought that reporting these activities would at best, make no difference and at



worst could possibly cause them to lose their jobs. This was a weakness demonstrated by the company's Accountable Manager/Owner and this filtered down throughout the entire organisation.

The company's claim that all of its operations were private should be subjected to greater scrutiny. This situation provides a loophole that allows the company to operate at the lower standards permitted for private operations, rather than complying with the stringent requirements for commercial operations. It also results in unfair competition with other commercial operators in the same business.

2.6.2. The GCAA

1. GCAA did not properly manage its oversight of this company as there was no insistence that the pilot should submit his personal flying logbook to allow checks to be made of his flying activities.

2. Being aware of the amount of refueling activity taking place at the sub-base, GCAA could have had a greater presence here. This may have tempered the pilot's behaviour.



3. Conclusion

3.1. Cause

The probable cause of this accident is attributed to the aircraft allegedly being flown in an unusual manner which involved abrupt changes in aircraft altitude and air speed and unusual flight attitudes which are not associated with standard operating procedures. These unusual attitudes may have resulted in the acceptable aircraft limitations being exceeded.

3.2. Contributory Factors

1. The possibility, as reported after the accident, of the pilot's tendency to display his aerobatic skills in the hinterland, may have contributed to this accident.
2. The non-reporting of these occurrences by ground personnel, to the owner or the GCAA, even though they were aware of the inherent danger of such manoeuvres.
3. The lack of adequate surveillance at the sub-base. This may have tempered the behaviour of both the pilot and ground staff at the sub-base.

3.3. Findings

3.3.1. The Pilot

1. The pilot's licence was valid.
2. The pilot was qualified and experienced to carry out the intended operation.
3. His last APC on type was satisfactorily completed on 6th February 2019.
4. From eyewitness accounts, the pilot may have unsuccessfully attempted an illegal and unsafe manoeuvre.
5. Peers of the pilot expressed surprise that he would execute such a manoeuvre because he usually portrayed a cautious and stable demeanour.

3.3.2. The Company

1. The company holds an Air Operator Certificate. Its maintenance is done by a sister organisation that has an Approved Maintenance Organisation Certificate.
2. The company is suitably staffed and equipped for its operations.



3. The company depended on this pilot to do most of its work and felt that it would have lost a considerable amount of business without the pilot's input.
4. The owner was aware that the pilot did not always abide by his instructions but made no attempt to correct this situation.
5. The company was dependent on the pilot to the extent that his indiscipline was encouraged. The owner should have taken control of this situation to prevent it from continuing.
6. Poor discipline contributed to an unsafe situation, which gave rise to tragic results.
7. The company did not provide suitable supervision of the away-from-base operations. This is applicable in the case of the Safety/Quality Manager.
8. The company did not engender an atmosphere which allowed the tenets of a Safety Management System to be observed. Some staff were aware of the pilot's wrongdoings, but they believed that speaking out may have put them in jeopardy.
9. The Safety/Quality Manager is working to encourage a safety culture. His efforts must be supported by the owner. It is however questionable if he spends enough time physically at the company to realise these goals.

3.3.3. The Aircraft

1. The aircraft had a valid Certificate of Airworthiness and was maintained in compliance with regulations.
2. There were no outstanding maintenance or MEL issues with the aircraft.
3. The engine report noted that it sustained impact related damages and thermal exposure as a result of a post crash fire. The damage precluded the functional testing of the engine. However teardown examination revealed no pre-accident anomalies with the engine and engine related systems that would have precluded its ability to produce full power.



3.3.4. The Weather

The weather at the time of the accident was VMC. The weather did not contribute to this occurrence.

4. Safety Recommendations

4.1. The Company

1. Extra effort should be made to ensure that all staff adhere to the requirements in the company's manual.
2. While acknowledging the owner's belief that conflict should be avoided in the company, this should not be at the expense of maintaining discipline throughout the organisation.
3. The owner must establish a culture in the company which has safety as its most important element.
4. The company must stress the importance of Crew Resource Management for all its staff and more especially its flight crew. The need for crew to be always self-disciplined, to operate in accordance with established Standard Operating Procedures and to maintain a high level of situational awareness must be emphasised.
5. The company should implement more planned and spontaneous surveillance at the sub-base.
6. The company should ensure that notwithstanding relationships, if standards are breached then action must be taken to correct and prevent it from happening.
7. The owner should strive to develop a management style and methods of discipline that are suitable for this type of operation. He should encourage a safety culture where staff would feel free to report wrongdoing without fear of retribution.
8. The owner should develop a mindset that insists on discipline and safety first rather than profitability of the company.



4.2. The GCAA

1. The GCAA should consider a requirement for small aircraft to install a basic FDR so that there would be a recording of what the aircraft was doing. This may serve two purposes.
 - a) it could provide a record of what the aircraft was doing and could lead to a more definitive understanding of the cause of the accident, especially if the pilot is demised.
 - b) It may serve as a deterrent to unsafe manoeuvres, as the pilot would be aware that his actions would be recorded, and this will provide proof of his unsafe activities or absolve him if falsely accused.
2. The GCAA should require all companies involved in shuttle operations to implement more robust surveillance away from SYEC. The opportunity should also be taken for GCAA Inspectors to be part of this surveillance. The visits to these locations should be both planned and spontaneous. These inspections may also serve as a deterrent to bad behaviour at hinterland locations.
3. GCAA should require all general aviation aircraft operators to implement relevant Aircraft Performance examinations, this will help to ensure that pilots are aware of and are regularly reminded of the limitations of the aircraft which they operate, and hopefully always be aware of the dangers of exceeding these limitations.

5. Actions Taken

1. The Director General GCAA requested pilots to attend a safety briefing in which they were given advice and reminded of the need for safe aircraft operations.
2. The GCAA has implemented a programme which involves the general public in reporting any unusual actions or operations in the aviation industry. This programme is called “SEE SOMETHING, SAY SOMETHING.”

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