FINAL REPORT

AIRCRAFT ACCIDENT INVESTIGATION REPORT

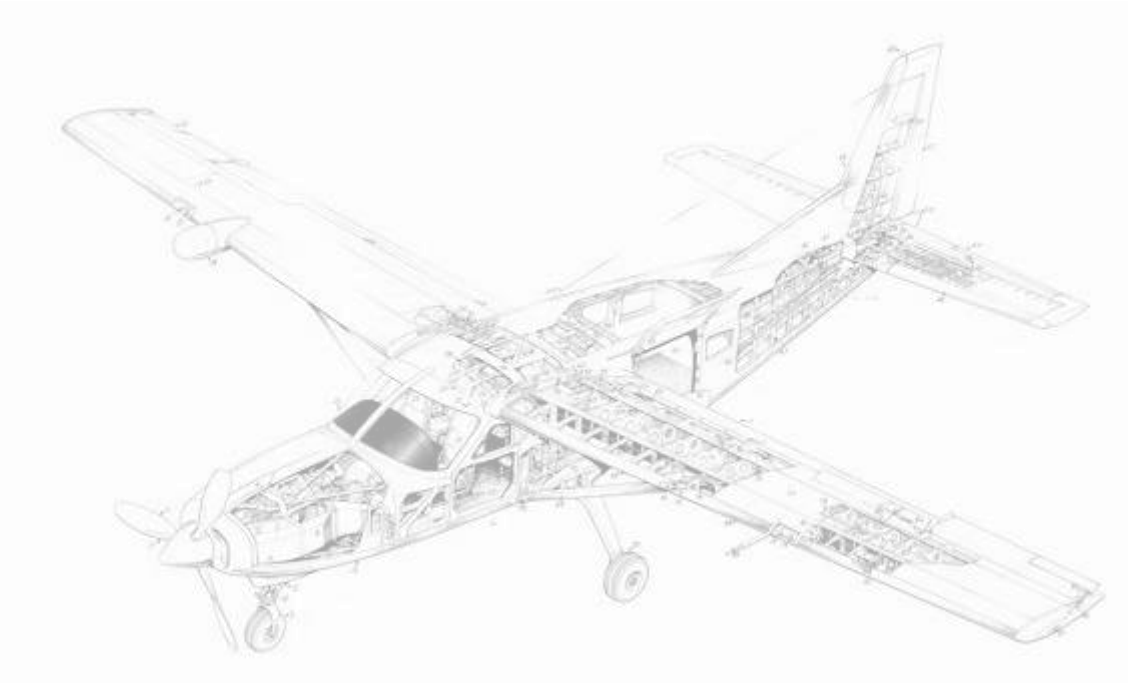
GENERAL INFORMATION

Report / File. No:	-	**AAIIU: 3/1/32**
Registered Owner / Operator	-	**AIR SERVICES LIMITED**
Aircraft Model / Type	-	**CESSNA 208B GRAND CARAVAN**
Nationality	-	**GUYANESE**
Registration	-	**8R-GFA**
Place of Accident / Region	-	**SYKM (KAMARANG AERODROME), REGION 7, GUYANA**
Coordinates	-	**5°51'55" N, 60°36'50" W**
Aircraft Manufacturer	-	**CESSNA**
Date of Accident	-	**15 OCTOBER 2021**
Time of Accident	-	**18:54 UTC (14:54 GST)**

REPORT / FILE #: GAAIU 3.1.32

This investigation was conducted in accordance with the methodology and requirements of 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). That is GST+4.



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ACRONYMS / ABBREVIATIONS / TERMS AND THEIR MEANING AS USED IN THIS REPORT

TERMS	MEANING
ACCREP	Accredited Representative
AMO	Approved Maintenance Organisation
AOC	Air Operator Certificate
ASL	Air Services Limited
CVR	Cockpit Voice Recorder
FDR	Flight Data Recorder
GAAIIU	Guyana Aircraft Accident & Incident Investigation Unit
GAR	Guyana Aviation Requirements
GCAA	Guyana Civil Aviation Authority
GST	Guyana Standard Time
ICAO	International Civil Aviation Organisation
IIC	Investigator-In-Charge
LH	Left Hand (Port)
LHS	Left Hand Side (Port Side)
MLG	Main Landing Gear
MSL	Mean Sea Level
NLG	Nose Landing Gear
NTSB	National Transportation Safety Board (USA)
RH	Right Hand (Starboard)
RHS	Right Hand Side (Starboard Side)
SYKM	ICAO Designator for Kamarang Aerodrome
SYMD	ICAO Designator for Mahdia Aerodrome
USA	United States of America
UTC	Universal Time Coordinated or Coordinated Universal Time

SYNOPSIS (SUMMARY OF EVENTS)

Air Services Limited, the owner/operator of the aircraft, notified the Guyana Civil Aviation Authority (GCAA) of the accident via telephone at approximately 19:25 UTC (15:25 GST) on 15 October 2021 and the investigation began that same day.

On 15 October 2021 at approximately 18:54 UTC (14:54 GST), the Air Services Limited aircraft, a Cessna 208B Grand Caravan, bearing Nationality & Registration Marks 8R-GFA departed the Mahdia Aerodrome (SYMD), Region 7, Guyana, to perform its second flight which was one of a series of planned commercial cargo flights (Shuttling Operations) for that day to the Kamarang Aerodrome (SYKM) in Region 7, Guyana. The aircraft departed with one (1) crew member (01 Commander/Pilot), and a cargo of five (5) 55-gallon plastic containers containing motor fuel.

At approximately 18:54 UTC (14:54 GST), the aircraft landed at SYKM. It taxied down Runway 25 and stopped at the end of the Runway at approximately 45º to its centreline. The Commander feathered the propeller but did not "shut-off" the engine. He said that he was waiting for someone to install the tail support strut before he shut off the engine. He said that he opened the pilot's door, leaned outward and indicated to one of the two (2) persons approaching the tail of the aircraft to install the aircraft tail support strut.
He said that he observed that one of the two persons was installing the tail support strut, but he lost sight of the other person. He felt a "thud" and heard an abnormal noise and then observed a body jumping laterally on the ground towards the left side of the aircraft.

The Commander that he then heard the person who was installing the tail support strut shouted that the propeller hit someone. He immediately shut off the engine power. He then exited the aircraft and realised that the person he saw jumping on the ground was the one hit by the propeller. The person was lying in front the aircraft, bleeding with lacerations and was motionless. He immediately informed the Owner/Operator of the accident via telephone. Police Officers at the location arrived and took control of the site.

The initial investigation and interviews identified the following contributary and consequential factors:

a. The aircraft engine was feathered but was not turned off (still under power) after parking.

b. Pilots were not shutting off aircraft engine(s) on landing, mostly during shuttle operations.

c. The deceased was a new employee (second day on the job), inexperienced and untrained in his roles and responsibilities and company procedures, including safety at an aerodrome.

d. The person who installed the tail support strut was not a full-time employee of ASL, he worked on request as a freelancer and he was not trained in his roles and responsibilities and company procedures, including safety at an aerodrome.

e. The following safety issues were observed on 16 October 2021 which may have, or could have, contributed to the accident:

    1. Adults, children and dogs were observed on the Runway on 16 October 2021 after aircraft landed, and investigations revealed that this is a regular trend.
    2. ASL do not have a planned and systematic operation at the Kamarang Aerodrome. They do not have a properly trained supervisor, and ground staff were local residents employed on an adhoc basis (freelance).
    3. The deceased started duties the day before the accident and was not trained.
    4. The person who installed the tail support strut was not trained and said that he was on a "hustle" (he was a freelancer).
    5. The aerodrome was not secured, there was no fence or safety signages.

f. Consequently, the following safety recommendations were made to the GCAA for immediate action to prevent further occurrences:

    1. The Aerodrome owner/Operator ***must*** place signages at strategic points in large clear fonts in ***English*** and ***Spanish*** (some residents were Venezuelan migrants and they speak Spanish) which must state that "persons and animals must keep clear of the Runway at all times and only approach the aircraft after its engines are shut off (turned off) and only when requested by the pilot or operations staff to approach

the aircraft". The fonts should be in **BOLD RED**. Persons approaching the aircraft must be company operations staff responsible for loading/offloading the aircraft, or for boarding of passengers, or the passengers who are boarding.

2. Aircraft Operators must have their staff adequately trained for their roles and responsibilities and be given company indoctrination training on company policies, procedures and safety at aerodromes.
3. Companies that have regular operations at domestic interior aerodromes must have proper supervision of their operations at all times.
4. A **Directive** should be sent out to Operators that aircraft engines ***must be shut off*** (turned off) after the aircraft is parked before passengers and cargo are removed and boarded the aircraft. This is required for all types of operations (including shuttling operations). If this policy is not already included in the company operations manual, then it must be required that their operations manual be amended to include this policy.

1. FACTUAL INFORMATION

1.1 HISTORY OF FLIGHT

1.1.1 FLIGHT DATA /AERODROME INFORMATION

a.	Flight Number	-	**NONE**
b.	Aircraft Registration	-	**8R-GFA**
c.	Type of Operation	-	**COMMERCIAL / CARGO (SHUTTLING OPERATION)**
d.	Last Point of Departure	-	**SYMD**
e.	Date/Time of Departure	-	**18:17 UTC (14:17 GST)**
f.	Time of Accident	-	**18:54 UTC (14:54 GST)**
g.	Point of Landing	-	**SYKM**
h.	Coordinates of Accident Site	-	**5°51'55" N / 60°36'50" W**
i.	Aerodrome Orientation	-	**07 / 25, EAST / WEST**
j.	Aerodrome Length	-	**3,311 FEET / 1009.19 METRE**

k. Aerodrome Width - **65 FEET / 19.81 METRE**

l. Aerodrome Elevation - **1,596 FEET / 486 METRE MSL**

Investigations and interviews revealed that the aircraft was operated by a single Pilot (Commander alone). On 15 October 2021, the aircraft was conducting shuttle operations, it was shuttling motor fuel from SYMD to SYKM, it departed SYMD at approximately 18:17 UTC (14:17 GST). It was the second flight for the day, and the aircraft landed Runway 25 at SYKM at approximately 18:54 UTC (14:54 GST) without incident. The Commander taxied the aircraft down Runway 25 and continued to the end of the Runway before making a right turn and stopped with the nose of the aircraft at approximately 45º to the centreline at a north-easternly direction. The Commander feathered the propeller, opened the pilot's door, leaned outward, and observed that two (2) persons were approaching the aircraft from the tail area from a north-westerly direction. When they were close to the left rear of the aircraft, he gave the order for them to install the tail support strut.

One individual installed the tail support strut while the other disappeared from his line of sight. He subsequently felt a "thud" and heard an abnormal noise, and the person who was installing the tail support strut shouted and indicated that someone was struck by the propeller. The Commander observed someone was on the ground and the body was "jumping" laterally and then came to rest on the port side next to the engine. He shut off the engine power and exited the aircraft.

Further investigations and interviews revealed that after the aircraft stopped, one of the ground staff who had approached the aircraft from the tail area had proceeded to the right side of the aircraft and then to the right pilot's door, he rapped on the door, then tried to open the door, at which time his cap fell to the ground, he bent down to retrieve his cap and upon rising up came in contact with the rotating propeller. The person was fatally wounded and suffered a very large open chest wound and exposed/protruding internal organs.

The aircraft structure, engine and propeller when visually inspected showed no signs of damage.

The integrity of the engine and propeller was confirmed by ASL AMO. It was inspected and tested on 16 October 2021 for Propeller Sudden Stoppage/Strike Inspection in accordance with Pratt & Whitney PT6A-140 Maintenance Manual Chapter 5-50-00, Task 05-50-00-210-812 and was found satisfactory. The inspection was observed by GCAA Airworthiness and Operations Inspectors, after which, the Director General Civil Aviation was informed, and he permitted the aircraft to be flown to base at SYEC. The aircraft arrived SYEC on 16 October 2021.

1.2 Injuries to Person

Injuries	Crew	Passengers	Other	Total
Fatal	-	-	1	1
Serious	-	-	-	-
Minor / None	-	-	-	-
Total	-	-	1	

A ground staff was fatally wounded.

1.3 Damage to Aircraft

There were no damages to aircraft, engine, or propeller.

1.4 Other Damage

No other damage was observed.

1.5 Personnel Information – Commander

a. Commander - **Newell Morales Gonzales**
b. Licence - **ATPL AA000133**
c. Instrument Rating - **Valid until 31 January 2022**
d. Aircraft Proficiency Check - **Valid until 31 January 2022**
e. Date of Birth - **29 June 1966**
f. Medical Certificate - **Valid until 31 January 2022**
g. Flying Experience:

Total All Types	-	**18,574:11 HRS**
Total On Type	-	**208B 14,019:11 HRS**
Total Last 28 Days	-	**105:23 HRS**
Total Last 24 Hours	-	**4:13 HRS**

h. Previous Rest Period:

Off Duty	-	**24 HRS**
On Duty	-	**8 HRS**

1.6 AIRCRAFT INFORMATION

1.6.1 GENERAL

The aircraft is a Cessna 208B Grand Caravan, built in 1995. It carried the manufacturer's serial number C208B0478 and is operated by Air Services Limited (ASL) holder of a GCAA Air Operator Certificate (AOC) No: 001 and maintained by Air Services Limited (ASL) GARs Part 6 Approved Maintenance Organisation (AMO). At the time of the accident, the aircraft had accumulated 32,813:14 hours and 89,500 landings since new. The aircraft is fitted with a single Pratt & Whitney PT6A-140 turbine engine and a three-bladed constant-speed Hartzell propeller HC-B3TN-3AF. The aircraft was registered in Guyana on 20 May 2009. It has a valid Certificate of Airworthiness (C of A) which was renewed on 18 August 2021 and is valid until 17 August 2022.

1.6.2 ENGINES

ENGINE MANUFACTURER		PRATT & WHITNEY
ENGINE:	TYPE	**PT6A-140**
	SERIAL NUMBER	**PCE-VA0521**
	TIME SINCE NEW:	**3,386:53 HRS**
	TIME SINCE OVERHAUL:	**N/A**
PROPELLER:	TYPE	
	SERIAL NUMBER	**BUA33971**
	TIME SINCE NEW:	**3,261:45 HRS**
	TIME SINCE OVERHAUL:	**264:36 HRS**

1.7 METEOROLOGICAL INFORMATION

Weather was not relevant to this accident.

1.8 AIDS TO NAVIGATION

The performance of navigational aids was not relevant to this accident.

1.9 COMMUNICATIONS

There were no communication issues relevant to this accident.

1.10 AERODROME INFORMATION

The Aerodrome is an ***uncontrolled aerodrome*** that is owned by the Government of Guyana. It is constructed from asphalt and in excellent condition. It is located at Latitude 5°51'55" North, Longitude 60°36'50" West, in the Village of Kamarang, Region 7 (Cuyuni-Mazaruni), Guyana. Its orientation is 07/25, and it has an elevation of 1,596 Feet (MSL), Length of 3,311 Feet and Width: 65 Feet. There is on location a Windsock to provide basic guide to wind direction and speed. However, the aerodrome conditions or size was not relevant to this accident since it did not contribute to the accident.

1.11 FLIGHT RECORDERS

Flight data recorders and cockpit voice recorders were not fitted or required to be fitted to this class of aircraft.

1.12 WRECKAGE AND IMPACT INFORMATION

1.12.1 GENERAL

The aircraft and surrounding area had no damage.

1.12.2 ENGINEERING INVESTIGATION

The integrity of the engine and propeller was checked by ASL AMO for propeller sudden stoppage/strike in accordance with Pratt & Whitney PT6A-140 Maintenance Manual Chapter 5-50-00, Task 05-50-00-210-812 and was found satisfactory.

1.13 MEDICAL AND PATHOLOGICAL INFORMATION

One ground staff was fatally wounded.

Commander was tested at a hospital for alcohol, narcotics and psychoactive substances in the blood and the result was negative. A psychiatric evaluation was done on the pilot by a qualified doctor, and he was found to be functioning at a Neurotic Level. No medication was prescribed for him.

1.14 FIRE

There was no fire.

1.15 SURVIVAL ASPECTS

Not relevant for this accident. The person died on the spot, thus there was no need for medical treatment of the deceased.

1.16 TESTS AND RESEARCH

Not applicable.

1.17 ORGANISATIONAL AND MANAGEMENT INFORMATION

The Guyana Civil Aviation Authority is responsible for safety oversight and certification of all aviation organisations, aircraft and airmen in Guyana.

Air Services Limited, the Owner/Operator of the aircraft holds a valid Air Operator Certificate and an Approved Maintenance Organisation Certificate issued by the GCAA. It currently has on its fleet, one (1) BN2 Islander, one (1) Cessna 172, two (2) Cessna 206, nine (9) Cessna 208B Grand Caravans, two (2) Bell 206 L4 Helicopters and four (4) Ayres Thrush Commanders.

The Commander for the accident flight holds a valid Airline Transport Pilot's Licence, the Cessna C208 Type Rating and a Medical Certificate issued by the GCAA, all of which were valid at the time of the accident.

1.18 ADDITIONAL INFORMATION

None.

1.19 USEFUL AND EFFECTIVE INVESTIGATION TECHNIQUES

Not applicable.

2. ANALYSIS

2.1 FLIGHT CREW ACTION

a. After the Commander was informed about the accident, he shut off engine power and exited the aircraft.

b. The Commander checked and confirmed that someone was struck and wounded by the propeller. He subsequently informed Air Services Limited of the accident.

c. The Commander cooperated with the police investigation at the time of the accident.

2.2 HUMAN FACTORS

a. Pilot was off duty the previous day therefore pilot fatigue was not a factor.

b. Ground staff was not trained thus they were ill prepared for their tasks which resulted in serious safety issues and death of a staff.

3. CONCLUSIONS

3.1 FINDINGS

a. The Commander did not shut off engine power after the aircraft was parked. He waited until the tail support strut was installed and after he heard a "thud" and abnormal noise before shutting off engine power.

b. The Commander claimed that it is normal practice for the tail support strut to be first installed before cargo and passengers are loaded or off-loaded to prevent the aircraft from falling on its tail.

c. The ground staff were not trained in their duties and responsibilities and safety procedures when operating at an aerodrome and when approaching an aircraft with its engine running.

d. There was no company operation's supervisor on location to have control of ground operations.

e. There was no fence or safety signage at the aerodrome to warn people not to enter the aerodrome when aircraft is operating.

f. There was no ground control at the aerodrome. The aerodrome appeared to be a "free for all" space where people and animals approach the aircraft and traverse the aerodrome at free will.

g. The fatality could have been averted had the Commander shut off engine power after he parked the aircraft and if the staff did not approach the engine area while the engine was still under power.

3.2 CASUAL FACTORS / PROBABLE CAUSE

a. Ground staff approached the aircraft while the engine was running and came in contact with the rotating propeller. The propeller impacted his body causing grievous bodily harm and he was fatally wounded.

b. Lack of training. Ground staff were not trained in their duties and responsibilities, company procedures and safety when operating at an aerodrome.

4. SAFETY RECOMMENDATIONS

a. No one should approach an aircraft when the engine is under power.

b. All domestic aerodromes, controlled or uncontrolled, must have adequate safety signages at strategic points in large clear fonts in English and Spanish and which must state that persons and animals must keep clear of the Runway at all times and only approach the aircraft after its engines are shut off, and when so requested by the pilot or operations staff. The fonts should be in **bold red**.

c. Persons approaching the aircraft must be passengers to be boarded, or employees responsible for loading and offloading the aircraft. Other persons should be kept off the aerodrome unless permission is granted for their presence, and their presence is being supervised.

d. Operators must have their staff adequately trained in ground operations, safety at an aerodrome, their duties and responsibilities and company indoctrination training on company policies and procedures before they are allowed to work at the aerodrome.

e. Operators that have regular operations at domestic aerodromes, especially in the interior, must have proper supervision of their operations at all times.

f. The GCAA should issue a **Directive** to all Operators that aircraft engines must be shut off after landing and aircraft is parked, for all types of operations (including shuttling operations) before passengers and cargo are removed and boarded the aircraft. If this policy is not already included in the company operations manual, then the manual must be amended to include this policy.