COMMAND OF AERONAUTICS

AERONAUTICAL ACCIDENT INVESTIGATION AND PREVENTION CENTER

FINAL REPORT
IG - 140/CENIPA/2013

OCCURRENCE:	**SERIOUS INCIDENT**
AIRCRAFT:	**PP-ITZ**
MODEL:	**C-208B**
DATE:	**03 OCTOBER 2012**

NOTICE

According to the Law nº 7565, dated 19 December 1986, the Aeronautical Accident Investigation and Prevention System – SIPAER – is responsible for the planning, guidance, coordination and execution of the activities of investigation and prevention of aeronautical accidents.

The elaboration of this Final Report was conducted taking into account the contributing factors and hypotheses raised. The report is, therefore, a technical document which reflects the result obtained by SIPAER regarding the circumstances that contributed or may have contributed to triggering this occurrence.

The document does not focus on quantifying the degree of contribution of the different factors, including the individual, psychosocial or organizational variables that conditioned the human performance and interacted to create a scenario favorable to the accident.

The exclusive objective of this work is to recommend the study and the adoption of provisions of preventative nature, and the decision as to whether they should be applied belongs to the President, Director, Chief or the one corresponding to the highest level in the hierarchy of the organization to which they are being forwarded.

This Report does not resort to any proof production procedure for the determination of civil or criminal liability, and is in accordance with item 3.1, Annex 13 to the 1944 Chicago Convention, which was incorporated in the Brazilian legal system by virtue of the Decree nº 21713, dated 27 August 1946.

Thus, it is worth highlighting the importance of protecting the persons who provide information regarding an aeronautical accident. The utilization of this report for punitive purposes maculates the principle of "non-self-incrimination" derived from the "right to remain silent" sheltered by the Federal Constitution.

Consequently, the use of this report for any purpose other than that of preventing future accidents, may induce to erroneous interpretations and conclusions.

N.B.: This English version of the report has been written and published by the CENIPA with the intention of making it easier to be read by English speaking people. Taking into account the nuances of a foreign language, no matter how accurate this translation may be, readers are advised that the original Portuguese version is the work of reference.

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SYNOPSIS

This is the final report of the serious incident involving the C-208B aircraft, registration PP-ITZ, on 3 October 2012. The incident was classified as inflight engine failure.

During a flight in which the aircraft was transporting passengers and cargo, there was oscillation of the oil pressure, resulting in the feathering of the propeller and loss of engine power, leading the crew to make an emergency landing.

None of the aircraft occupants (two pilots and 10 passengers) was injured.

The aircraft sustained substantial damage.

An accredited representative of the Transportation Safety Board of Canada was designated for participation in the investigation.

GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS

ANAC	(Brazil's) National Civil Aviation Agency
ATS	Air Traffic Services
CA	Airworthiness Certificate
CHE	Enterprise Homologation Certificate
CMA	Aeronautical Medical Certificate
CENIPA	Aeronautical Accident Investigation and Prevention Center
CHT	Technical Qualification Certificate
CTM	Technical Maintenance Control
IFR	Instrument Flight Rules
IFRA	IFR Rating (Airplane category)
INFRAERO	Brazilian Airports Infrastructure Enterprise
Lat	Latitude
Long	Longitude
MNTE	Airplane Single-Engine Land (ASEL)
MPI	Inspection Procedures Manual
PCM	Commercial Pilot (Airplane category)
PLA	Airline Transport Pilot (Airplane category)
PPR	Private Pilot (Airplane category)
RBAC	Brazilian Civil Aviation Regulation
RT	Technical Report
SWKO	ICAO location designator – Coari aerodrome, State of Amazonas
SBTF	ICAO location designator – Tefé aerodrome, State of Amazonas
SERIPA	Regional Aeronautical Accident Investigation and Prevention Service
SIPAER	Aeronautical Accident Investigation and Prevention System
UTC	Coordinated Universal Time
VFR	Visual Flight Rules

AIRCRAFT	**Model:** C-208B **Registration:** PP-ITZ **Manufacturer:** CESSNA AIRCRAFT	**Operator:** *Amazonaves Táxi-Aéreo Ltda.*
OCCURRENCE	**Date/time:** 03 OCT 2012 / 12:35 UTC **Location:** Tefé Aerodrome (SBTF) **Lat.** 03º22'49"S – **Long.** 064º43'31"W **Municipality – State:** Tefé-AM	**Type:** Inflight engine failure

1 Factual information

1.1 History of the occurrence

The aircraft departed from SWKO at about 11:45 UTC, destined for SBTF, transporting passengers and cargo, with two pilots and 10 passengers on board.

Approximately 20 minutes into the flight, the engine oil pressure indication began to oscillate.

The crew decided to continue the flight to SBTF. When the aircraft was being aligned for the final approach to runway 33, the propeller feathered without commandment by the pilot, leading the crew to shut down the engine and to make an emergency landing.

During the landing run, the aircraft traveled along the entire runway, and there was an incipient fire in the wheels of the main landing gear.

1.2 Injuries to persons

Injuries	Crew	Passengers	Third parties
Fatal	-	-	-
Serious	-	-	-
Minor	-	-	-
Unhurt	02	10	-

1.3 Damage to the aircraft

There was substantial damage to the main landing gear brakes assembly.

1.4 Other damage

Nil.

1.5 Personnel information

1.5.1 Information on the crew

HOURS FLOWN		
	PILOT	COPILOT
Total	3,375:21	572:00
Total in the last 30 days	60:39	44:15
Total in the last 24 hours	01:15	04:51
In this type of aircraft	564:00	362:33
In this type in the last 30 days	25:27	44:15
In this type in the last 24 hours	01:15	04:51

NB.: Data provided by the operator.

1.5.1.1 Professional formation

The pilot did his Private Pilot course (Airplane category) in the Flying School of Presidente Prudente, State of São Paulo, in 2001.

The copilot did his Private Pilot course (Airplane category) in the Flying School of Votuporanga, State of São Paulo, in 2009.

1.5.1.2 Validity and category of licenses and certificates

The pilot had a valid Airline Transport Pilot license (Airplane category), and valid CHT, ASEL, and IFR rating.

The copilot had a Commercial Pilot license (Airplane category), as well as valid CHT, ASEL, and IFR rating.

1.5.1.3 Qualification and flight experience

The pilots had qualification and enough experience for the flight in question.

1.5.1.4 Validity of the medical certificate

The pilots had valid Aeronautical Medical certificates.

1.6 Aircraft information

The serial number 208B0499 airplane was manufactured in 1996 by CESSNA AIRCRAFT.

The aircraft airworthiness certificate was valid.

The airframe, engine, and propeller logbooks were up to date.

The last aircraft inspection (Phase-1 type) was done on 28 September 2012 by a workshop homologated by the ANAC. The aircraft flew 14 hours and 30 minutes after the inspection.

The last aircraft overhaul (Phase-12 type) was done on 25 May 2012 by a workshop homologated by the ANAC. The aircraft flew 210 hours and 15 minutes after the overhaul.

The Phase-1 inspection was done in accordance with the Caravan I PhaseCard Inspection Program Compliance Record, which prescribed the performing of TASK 243622, relative to the Area 1, STDBY ALTERNATOR item. Specifically in this task, there were signatures of both the mechanic responsible for the service and of the maintenance inspector, confirming that the procedure was performed correctly.

1.7 Meteorological information

The prevailing weather conditions were VMC.

1.8 Navigational aids

Nil.

1.9 Communications

Nil.

1.10 Aerodrome information

The aerodrome is public under the administration of INFRAERO, operating VFR and IFR during day and night-time.

It has an asphalt runway with thresholds 15/33, measuring 2,200m x 45m, at an elevation of 188ft.

1.11 Flight recorders

Neither required nor installed.

1.12 Wreckage and impact information

The aircraft did not present signs of impact previous to the emergency landing on the runway.

The touch down was made at a distance of 1,060 meters past the threshold of runway 33, and the aircraft had an available distance of 1,200 meters to stop.

The approach was made at a speed of more than 110kt with the flaps retracted. The aircraft stopped after making a 180º turn on the ground. Its tail touched the ground, and there were signs of fire in the brake assembly.

1.13 Medical and pathological information

1.13.1 Medical aspects

Not investigated.

1.13.2 Ergonomic information

Nil.

1.13.3 Psychological aspects

Not investigated.

1.14 Fire

There was an incipient onset of fire in the wheels of the main landing gear. The pilots put it out by means of a fire extinguisher available in the aircraft.

1.15 Survival aspects

The occupants abandoned the aircraft through the front doors, since the rear compartment had been isolated on account of the cargo that was being transported.

1.16 Tests and research

The aircraft was taken to the parking area of the aerodrome, and its engine cowling was opened by the company's maintenance inspector before the arrival of the investigation team at the site of the occurrence.

On an initial verification of the aircraft, several marks of oil were observed, which had originated from the frontal part of the engine.

The significant amount of oil, with the corresponding marks which had been left, was an indication of a pronounced oil leak in flight.

When the engine was inspected, it was observed that all the oil had leaked, with the exception of residual fluid.

The maintenance technician of the investigation commission, together with the company's maintenance inspector, refilled the engine with oil and commenced a start-up cycle.

During the engine start-up, with the cowling open, it was possible to confirm an oil leak concentrated in the engine oil pump, more specifically in the oil seal.

The engine was shut down, and the location of the leak was cleaned. A second start-up was made and again the leak location was confirmed.

The oil seal was removed and handed over to the investigation commission.

The oil seal was analyzed by specialists of the engine manufacturer and nothing abnormal was found. However, the company's maintenance team replaced the old oil seal with a new one, and the leak problem was completely solved.

So that the exams could be continued, the aircraft was taken to the hangar of the company in Manaus. The company was asked to remove the engine oil pump, which showed to have a fracture in the SPLINED COUPLING.

The oil pump was connected to the aircraft alternator by means of pulleys and a belt, maintaining the operation of the system.

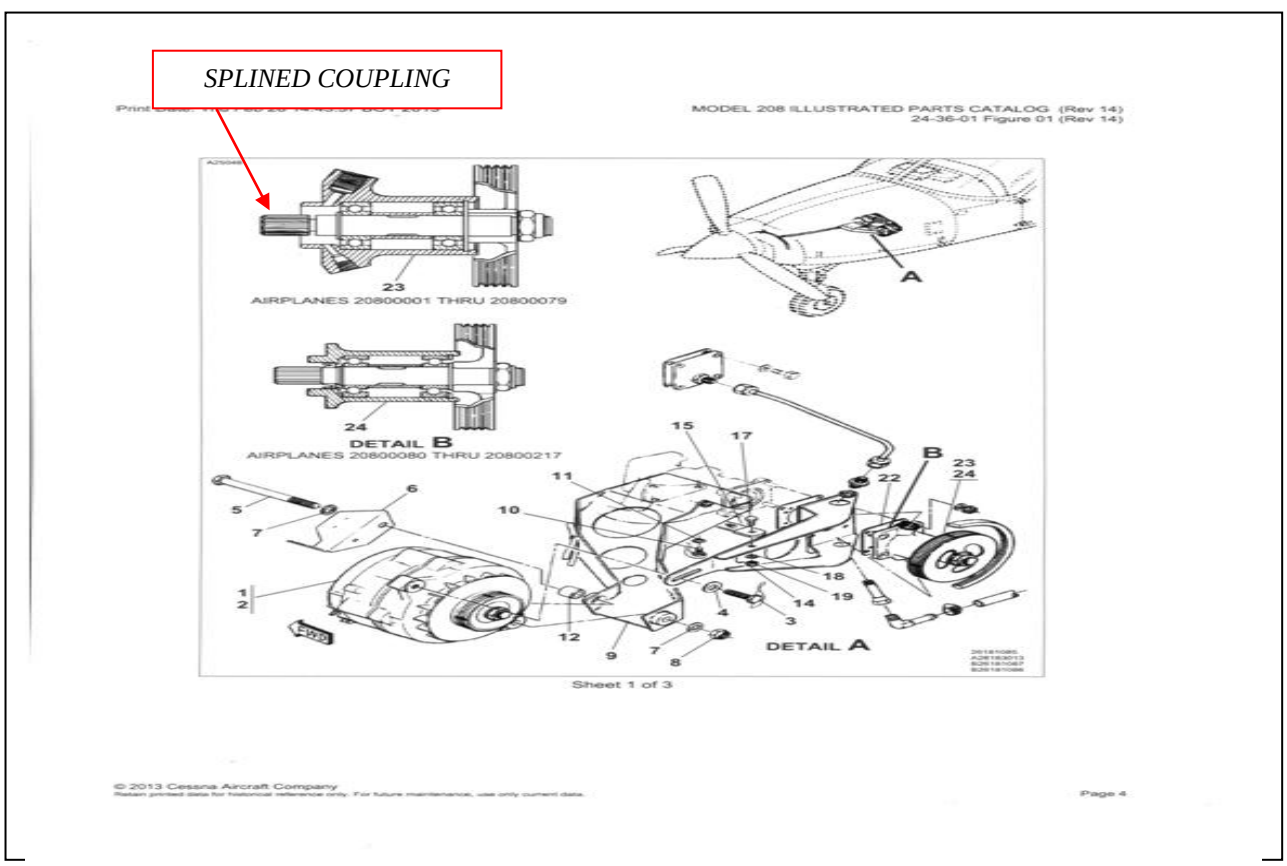

Figure 1 – Catalog of component parts.

According to the aircraft Maintenance Manual, the Phase-1 inspection, which had been done 14 hours of flight before the Occurrence, prescribed the verification of the item STBY ALTERNATOR by means of the TASK 243622, and had to be accomplished in the following manner:

1. Standby Alternator, Mount and Drive (If installed).

a. Inspect alternator for condition, security, proper safety of mount bolts and proper mounting.

NOTE

Reference SNL00-7 for allowable leakage rates.

b. Inspect alternator drive for condition, leaks and security.

l) Rock drive pulley by hand to check for free play. If free play is questionable, remove drive for detailed inspection of drive splines and coupling.

c. Inspect mount for condition, cracks, corrosion and security.

d. Inspect ground strap for condition and security.

e. Inspect drive belt for condition and proper tension.

l) Adjust belt tension to obtain a 0.50" deflection when measured midway between pulleys with a force of 12 pounds applied to the belt.

f. Inspect alternator electrical boots, and components for condition and security.

g. Inspect wiring for condition and security of connectors at alternator terminals.

NOTE

Ensure in-line resistor is mounted with plastic screw, washers and nut.

h. Inspect drive drain (if installed) for condition and security. Inspect drain hose for proper routing, kinks, and security. Inspect drain can for condition and security. Drain contents of can.

i. Inspect alternator filter capacitor, mounting bracket and wire lead for security and condition.

The operator was homologated by the ANAC for performing maintenance services (CHE 0808-71/ANAC), but the investigation commission observed that they did not have appropriate tools for verification of the alternator belt tension, as prescribed in item 1, letter E of TASK 243622.

1.17 Organizational and management information

The company had a fleet of about 14 aircraft of several models used for executive hiring, transport of cargo, and transport of passengers.

It operated under the RBAC 135, and was homologated for performing maintenance services in its aircraft, according to the CHE 0808-71/ANAC.

In the year 2011, the company underwent a change of administration, on account of the decease of its owner in an aircraft accident.

In addition to charter flight contracts, the company had contracts for regular cargo transport.

1.18 Operational information

According to information provided by the aircraft captain, the copilot did the preflight inspection before the aircraft took off from SWKO, observing the aircraft oil level, which was in accordance with the prescriptions of the manufacturer.

The aircraft was transporting 10 passengers and an amount of cargo that was concentrated in the rear section of the fuselage, obstructing the access of the occupants to the rear door.

The aircraft took off from SWKO and, after approximately 20 minutes of flight, at 4,500ft altitude (FL045), an oscillation of the engine oil pressure was observed by the copilot.

Since they were at a distance of about 45NM from Coari when they observed the oil leak seemingly coming from the front part of the aircraft, the pilot in command decided to continue the flight towards SBTF, judging that a more appropriate ground support would be available there when compared to Coari Aerodrome.

The estimated flight time between SWKO and SBTF was approximately 50 minutes.

The procedure adopted by the crew was to accelerate the engine to 101.6% Ng, with the purpose of arriving earlier at the destination.

According to the manufacturer's Operation Manual, Section 3, Amplified Emergency Procedures, in case of loss of oil pressure, it is recommended to reduce the engine power, preferably to the minimum power necessary for keeping the intended flight level, and land as soon as possible.

The crew made radio contact with Tefé Radio on the frequency 125.60 MHz, and declared emergency.

At about 50NM from SBTF, the aircraft captain reported his intention to make a forced landing on the river bank, but ended up losing acceleration and started climbing to 6,500ft (FL065), and managed to arrive close to the aerodrome where he intended to land.

At 12:31 UTC, the crew informed Tefé Radio that they had lost engine power, but already had runway 33 in sight and would make a maneuver (an "S") to lose altitude as they were high on the final approach (at about 3,000ft).

The approach for landing was made at speed of about 110kt and without flaps. According to the pilot in command, this type of approach was chose so that the aircraft could touch on the runway more quickly.

According to the graph of Section 3 of the manufacturer's Operation Manual (amplified Emergency Procedures), the best gliding speed with the propeller feathered, without flaps and with a maximum weight of 8,750lb was approximately 95kt, resulting in the aircraft being capable of traveling a distance of 15NM from an altitude of 6,500ft.

After passing over the threshold, the aircraft traveled over the runway for approximately 1,060 meters before touching down, and had about 1,300 meters of runway available for completion of landing.

However, even after depressing the brakes at maximum amplitude, it was necessary to make a 180-degree turn (already in the stopway) so that the aircraft did not go beyond the runway limits.

The application of maximum braking capacity by the crew resulted in an onset of fire in the aircraft brake assembly and, since the pilot had moved the yoke to produce a pitch-up attitude, the tail cone of the aircraft impacted the ground.

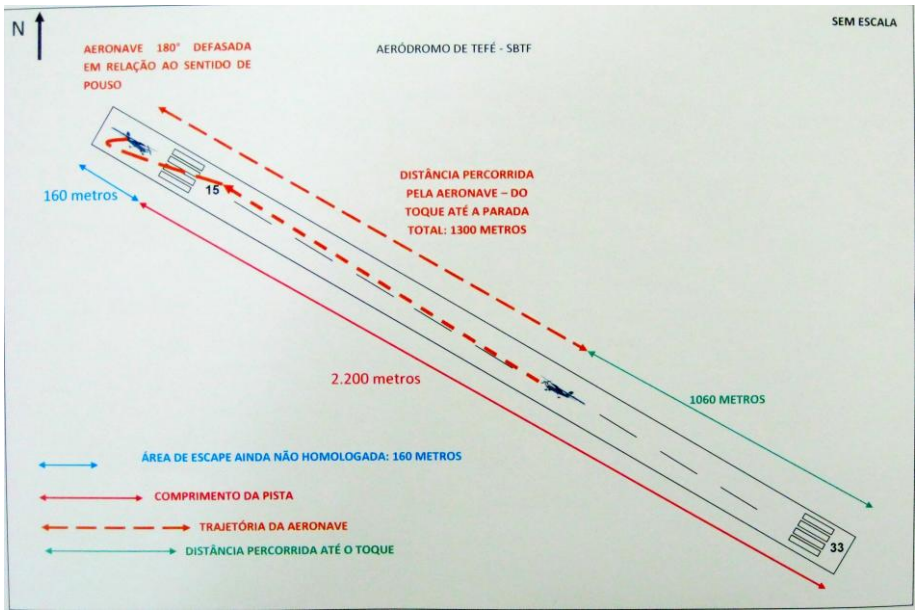

Figure 2 - Croquis of the aircraft landing path.

To evacuate the aircraft, all the occupants had to use the pilots' doors, since the access to the rear doors was blocked on account of cargo and baggage in the back of the cabin without the prescribed securing devices.

The RBAC 135, item 135.87 – Transport of cargo, including hand luggage, determines that:

No person is allowed to transport cargo in an aircraft, including hand luggage, unless such cargo

(c) is transported in accordance with the following:

(1) appropriately secured by means of a safety belt or arrest strap with sufficient strength to prevent the possibility of cargo sliding under all the conditions normally expected on the ground or in flight; in the case of hand luggage, it should be held in a way that its movement is prevented during turbulence.

(4) neither placed in a position that obstructs access to or the use of any normal or emergency exit, or the use of the corridor between the pilot's and passengers' compartments, nor placed in a way that hinders visibility of the "no smoking" or "fasten seat belt" signs by any passenger, unless auxiliary signs or other means approved are available for warning the passengers.

After evacuation from the aircraft, the pilots deployed the fire extinguisher in the brake assembly upon noticing the onset of fire.

The runway was cleared from the obstruction by the local INFRAERO team, and the aircraft was towed to the parking area.

Upon arriving at the occurrence aerodrome, the investigation commission noticed that the passengers' baggage had been removed from the aircraft, and that the engine cowling had been opened by the company's maintenance inspector, configuring an incompliance of the legislation in force.

1.19 Additional information

On several visits of the Company during the process of investigation, it was observed that the Technical Manager (RT) had delegated his responsibilities to the Maintenance Inspector.

However, the very MPI utilized by the Company allowed the Technical Manager to delegate all of his duties to a qualified person in case of absence. Nevertheless, this did not exempt him from his responsibility for the services provided by the workshop.

In addition, the Technical Manager was responsible for ensuring that all inspections be done appropriately, and that all log books and forms be filled out correctly.

It was observed on several occasions that the Technical Manager was not in the Company. According to information provided by workers of the Maintenance Technical Control of the company, he was absent more often than not, as a matter of fact.

1.20 Utilization of other investigation techniques

Nil.

2 ANALYSIS

The estimated flight time from SWKO to SBTF was 50 minutes approximately.

The aircraft was approximately 20 minutes into the flight, cruising at FL045, when the pilot noticed that the engine oil pressure was oscillating.

After becoming aware of the oil pressure oscillation and seeing that there was a leak coming from the front part of the aircraft, the crew decided to continue the flight toward the locality of Tefé (a 30-minute flight), instead of returning for landing in Coari, a 20-minute flight from their position at that moment.

According to the crew, their decision was based on the fact that there was a more appropriate ground support in Tefé. However, if the pilots had decided to return to the airport of origin, the aircraft would likely be able to land safely with the engine operating with an amount of power (reduced) necessary for the maintenance of flight.

Upon choosing to proceed to SBTF, the pilot in command accelerated the aircraft to 101.6% Ng, with the objective of getting more quickly to the destination.

Therefore, the pilot did not follow the procedure recommended by the aircraft manufacturer.

His procedure was not in accordance with the manufacturer's Manual of Operation, Section 3 (Amplified Emergency Procedures), which recommended that, in the event of loss of oil pressure, the pilot should maintain a minimum regime of power compatible with the maintenance of the desired flight level.

Probably, with the excessive increase of the engine power and, consequently, of the oil pressure, the leak problem was aggravated, reducing the operation time of the engine, resulting in the failure that occurred near the final approach to runway 33 of SBTF.

The crew decided to climb to 6,500ft, with the purpose of strengthening the safety margin, should the engine fail completely.

At a distance of 8NM from SBTF (3 minutes out), the aircraft left 6,500ft in order to start the approach for landing on runway 33.

The *GROUND DISTANCE - NAUTICAL MILES* graph in Section 3 (Emergency Procedures) indicated that the best rate of glide of the aircraft without flaps would take place at a speed of 95kt, enabling the aircraft to fly over a distance of approximately 15NM.

In view of the facts, the conclusion is that the crew, despite having performed an “S” maneuver to lose altitude, was maintaining a speed that was higher than the one prescribed. according to the aforementioned graph, the ideal altitude for them to start the approach with a speed of 95kt would be around 4,000ft.

Thus, it is estimated that the rate of descent utilized by the pilot was around 1,300ft/min, resulting in a speed that was higher than the one prescribed for approach and landing.

In such sequence of events, it was impossible for the aircraft to approach the first third of the runway length, touching down at a distance of 1,060 meters from the threshold.

Considering the total length of the runway (2,200 meters), plus the stopway segment of 160 meters, the resulting distance available for controlling the aircraft after landing was approximately 1,300 meters, which, according to the Manual of Operation of the aircraft, would be sufficient, provided the aircraft was moving at the prescribed speed of 83kt.

The captain was questioned on the reason for not utilizing the flaps at landing, since they would help him to reduce the approach speed, favoring the aircraft to touch on the runway at a lower speed, in addition to increasing lift and reducing the landing distance.

He said that his intention was to land the soonest possible. Landing without flaps adds up to 40% to the aircraft total landing distance. All the information previously mentioned was available in the manufacturer’s Manual of Operation.

The occupants evacuated the aircraft through the pilots’ doors, since access to the rear doors was blocked by cargo and baggage, in contrast with the legislation in force, increasing the risk associated with the operation.

During the investigation, it was possible to observe a fracture in the item known as SPLINED COUPLING, a type of cover of the engine oil pump axle, which was connected to the STBY ALTERNATOR by means of pulleys and a belt.

After research and analyses done in conjunction with a representative of the engine manufacturer, the investigation commission concluded that one of the possible contributing factors for the occurrence of this fracture was the application of a belt tension higher than the one recommended in the Manual of Maintenance of the aircraft.

The excessive tension of the belt may have forced the oil pump axle, which transferred the effort to the SPLINED COUPLING, resulting in the fracture of this component.

With the fracture of the component, in addition to the application of power and time of repetitive effort over the pump axle, the oil leak worsened, resulting in total loss of the fluid and, consequently, loss of power and feathering of the propeller.

The analysis of the aircraft documentation revealed that the Phase-1 Inspection conducted in accordance with the *Caravan I PhaseCard Inspection Program Compliance Record*, requiring the performance of *TASK 243622*, relative to the Area 1, item *STDBY ALTERNATOR*, was done 14 flight hours before the occurrence.

In interviews with the company mechanics, the investigation commission learned that the verification of the alternator belt tension was done in an empirical manner, without utilizing the tools prescribed in the TASK 243622.

On several visits of the Company, it was observed that the Technical Manager had delegated his functions to the Maintenance Inspector.

Although listed in the MPI utilized by the Company, this procedure discarded a protection barrier in the inspections, weakening the supervision of the maintenance services.

3 CONCLUSIONS

3.1 Facts

a) The pilots had valid CMA's;

b) The pilots had valid CHT's;

c) The pilots had qualification and enough experience for the flight in question;

d) The aircraft had a valid airworthiness certificate;

e) The aircraft airframe, propeller and engine logbooks were up to date;

f) Approximately 20 minutes after departing from the locality of Coari, the pilot noticed an oscillation in the engine oil pressure;

g) The pilots verified visually an oil leak coming from the front part of the aircraft;

h) The crew decide to proceed to the destination (Tefé), and climbed to FL065;

i) With the purpose of reaching the destination more quickly, a regime of 101.6% Ng was applied;

j) At a distance of 8nm from the intended landing runway, the propeller inadvertently feathered, configuring an inflight engine failure;

k) The approach was made so that the aircraft touched down on the second third of the runway;

l) The aircraft touched down on the 1060-meter line of runway 33;

m) The crew could not stop the aircraft before the end of the runway in a normal fashion and needed to make a 180º-turn to remain within the runway limits;

n) The was an incipient onset of fire in the aircraft brake assembly;

o) The aircraft occupants got out uninjured through the aircraft front doors on account of the cargo being transported in the rear section of the aircraft;

p) It was verified that the *SPLINED COUPLING* of the oil pump was fractured; and

q) The aircraft sustained substantial damage to the brake assembly of the main landing gear wheels.

3.2 Contributing factors

3.2.1 Human Factor

3.2.1.1 Medical aspect

Nil.

3.2.1.2 Psychological aspect

3.2.1.2.1 Individual information

Nil.

3.2.1.2.2 Psychosocial information

Nil.

3.2.1.2.3 Organizational information

Nil.

3.2.2 Operational factor

3.2.2.1 Concerning the operation of the aircraft

a) Piloting Judgment – a contributor

The decision of the crew to proceed to the destination on a 30-minute flight, with the engine presenting oscillation of the oil pressure, contributed to the occurrence in a direct manner, since the aerodrome of origin (Coari) was at a distance of 20 minutes. Their decision went against the instructions listed in the manufacturer's Operations Manual, which recommended to land as soon as possible in case of engine oil pressure loss.

b) Application of controls – a contributor

The pilot did not maintain the speed and configuration recommended by the manufacturer, and made the aircraft touch down at a distance of 1,060 meters from the threshold of runway 33, at a well higher speed than the one prescribed, making it impossible to stop normally within the runway limits.

c) Aircraft maintenance – undetermined

It is possible that the performing of Task 243622 without utilization of the appropriate tools contributed to the incorrect application of tension on the STBY ALTERNATOR belt, therefore causing an effort in the oil pump shaft with the functioning of the engine and, consequently, a fracture in the SPLINED COUPLING. Such fracture gave origin to the oil leak and loss of pressure, resulting in the inflight engine failure.

d) Managerial Oversight – undetermined

It was verified that the Maintenance Inspector of the Company was also the person responsible for the verification of the quality of the services performed, a fact that eliminated a protection barrier of the inspections. It is a fact that the inadequate supervision on the part on the Maintenance Director could be contributed to the task 243622 to be executed without the necessary tools.

3.2.2.2 Concerning ATS units

Nil.

3.2.3 Material Factor

3.2.2.1 Concerning the aircraft

Nil.

3.2.2.2 Concerning ATS equipment and technology systems

Nil.

4 SAFETY RECOMMENDATION

A measure of preventative/corrective nature issued by a SIPAER Investigation Authority or by a SIPAER-Link within respective area of jurisdiction, aimed at eliminating or mitigating the risk brought about by either a latent condition or an active failure. It results from the investigation of an aeronautical occurrence or from a preventative action, and shall never be used for purposes of blame presumption or apportion of civil liability.

In accordance with the Law n°12970/2014, recommendations are made solely for the benefit of the air activity operational safety.

Compliance with a Safety Recommendation is the responsibility of the holder of the highest executive position in the organization to which the recommendation is being made. An addressee who judges to be unable to comply with a Safety Recommendation must inform the CENIPA on the reason(s) for the non-compliance.

Safety Recommendations made by the CENIPA:

To the National Civil Aviation Agency (ANAC):

IG-140/CENIPA/2013 – 001 Issued on 15/May/2015

In view of the facts observed during the investigation and listed in this report, conduct a Technical Audit of the operator with the objective of refining the operation and maintenance processes applied.

5 CORRECTIVE/PREVENTATIVE ACTION ALREADY TAKEN

Nil.

6 DISSEMINATION

−Brazil's Civil Aviation Agency (ANAC)

−*Amazonaves Táxi-Aéreo Ltda.*

−SERIPA VII

−Transportation Safety Board of Canada (TSB)

7 APPENDICES

Nil.

On 15/May/2015.