

COMANDO DA AERONÁUTICA
CENTRO DE INVESTIGAÇÃO E PREVENÇÃO DE
ACIDENTES AERONÁUTICOS



FINAL REPORT
A - 037/CENIPA/2018

OCCURRENCE:	ACCIDENT
AIRCRAFT:	PT-IEL
MODEL:	V35B
DATE:	27FEB2018



NOTICE

According to the Law n° 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 Final Report was provided to ANAC and DECEA so that the technical-scientific analyzes of this investigation can be used as a source of data and information, aiming at the identification of hazards and risk assessment, as established in the Brazilian's Program Operational Safety of Civil Aviation (PSO-BR).

This Report does not resort to any proof production procedure for the determination of civil or criminal liability, and is in accordance with Appendix 2, Annex 13 to the 1944 Chicago Convention, which was incorporated in the Brazilian legal system by virtue of the Decree n° 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.

SYNOPSIS

This is the Final Report of the 27FEB2018 accident with the V35B aircraft model, registration PT-IEL. The accident was classified as “[UIMC] Unintentional IMC and [LOC-I] Loss of Control in Flight”.

On a private flight, after flying a distance of approximately 110 nautical miles, the aircraft crashed into the ground and caught fire.

The aircraft was destroyed.

The pilot suffered fatal injuries as a result of the accident.

An Accredited Representative of the National Transportation Safety Board (NTSB) - USA, (State where the aircraft and the engine were designed) was designated for participation in the investigation.



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GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS

ACC-CW	Area Control Center - Curitiba
AIP	Aeronautical Information Publication
ANAC	Brazil's National Civil Aviation Agency
APP-DN	Approach Control - Presidente Prudente
BECMG	Becoming
BKN	Broken (5-7 oktas)
CA	Airworthiness Certificate
CAPPI	Constant Plan Position Indicator
CG	Center of Gravity
CIV	Pilot's Flight Logbook
CMA	Aeronautical Medical Certificate
CU	Cumulus
IAM	Annual Maintenance Inspection
ICA	Command of Aeronautics' Instruction
IFR	Instrument Flight Rules
IMC	Instrument Meteorological Conditions
METAR	Meteorological Aerodrome Report
MNTE	Airplane Single Engine Land Rating
NOTAM	Notice to Airmen
NTSB	National Transportation Safety Board (USA)
PPR	Private Pilot License – Airplane
RADAR	Radio Detection and Ranging
RBAC	Brazilian Civil Aviation Regulation
RBHA	Brazilian Aeronautical Certification Regulation
ROTAER	Auxiliary Air Route Manual
SBDN	ICAO Location Designator - Presidente Prudente Aerodrome - SP
SG	Stratocumulus
SIGWX	Significant Weather
SIPAER	Aeronautical Accident Investigation and Prevention System
SSCI	ICAO Location Designator – Coxim Aerodrome - MS
TAF	Terminal Aerodrome Forecast
TCU	Towering Cumulus
TEMPO	Temporary or temporarily
TMA-DN	Terminal Control Area - Presidente Prudente
TPP	Registration Category of Private Service - Aircraft
TWR-DN	Aerodrome Tower Control - Presidente Prudente
UTC	Universal Time Coordinated

VCSH Shower Vicinity of the aerodrome
VFR Visual Flight Rules



1. FACTUAL INFORMATION.

Aircraft	Model: V35B Registration: PT-IEL Manufacturer: Beech Aircraft	Operator: Private
Occurrence	Date/time: 27FEB2018 - 1240 UTC Location: São José da Alvorada Farm Lat. 20°42'54"S Long. 052°37'40"W Municipality – State: Brasilândia – MS	Type(s): "[UIMC] Unintentional IMC [LOC-I] Loss of Control in Flight" Subtype(s): NIL

1.1 History of the flight.

The aircraft took off from the Presidente Prudente Aerodrome (SBDN) - SP, to the Coxim Aerodrome (SSCI) - MS, at 1126 UTC, in order to carry out a private flight, with a pilot on board.

After flying for approximately 110 nautical miles, the aircraft crashed into the ground and caught fire.

The aircraft was destroyed and the pilot suffered fatal injuries.

1.2 Injuries to persons.

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

1.3 Damage to the aircraft.

The aircraft was destroyed.

1.4 Other damage.

None.

1.5 Personnel information.

1.5.1 Crew's flight experience.

Flight Hours	Pilot
Total	50:15
Total in the last 30 days	00:40
Total in the last 24 hours	00:40
In this type of aircraft	12:13
In this type in the last 30 days	00:40
In this type in the last 24 hours	00:40

N.B.: The data related to the flown hours were obtained through the pilot's Digital CIV records, contained in the database of the ANAC.

1.5.2 Personnel training.

The pilot took the PPR course at the CHB *Escola de Aviação*, in Conselheiro Lafaiete -MG, in 2015.

1.5.3 Category of licenses and validity of certificates.

The pilot had the PPR License and had valid MNTE Rating.

1.5.4 Qualification and flight experience.

It was not possible to precisely establish what the pilot's experience in the type of flight was, as his CIV was on board the aircraft and was consumed by fire.

The pilot had obtained a PPR License and the aircraft type Rating three years before the occurrence. In 2017, he performed his first and only revalidation of his license.

He was not qualified for the IFR flight.

1.5.5 Validity of medical certificate.

The pilot had valid CMA.

1.6 Aircraft information.

The aircraft, serial number D-9348, was manufactured by Beech Aircraft, in 1972, and it was registered in the TPP category.

The aircraft had valid Airworthiness Certificate (CA).

The airframe, engine and propeller logbook records were updated.

The last inspections of the aircraft, the "50hours and IAM" type were carried out on 24MAY2017 by the maintenance organization Birigui *Manutenção de Aeronaves*, in Guararapes – SP.

Due to the destruction of the logbook, it was not possible to measure the number of hours flown after the inspection.

1.7 Meteorological information.

The Presidente Prudente Aerodrome (SBDN) METAR, departure location, was compatible with the visual flight and had the following information:

METAR SBDN 271000Z 10003KT 9999 FEW008 BKN080 22/21 Q1014=

METAR SBDN 271100Z 10005KT 9999 FEW008 BKN080 22/20 Q1015=

METAR SBDN 271200Z 07006KT 9999 SCT009 BKN080 23/21 Q1016=

The Terminal Aerodrome Forecast for the location predicted the probability of rain showers in the vicinity of the Aerodrome, on a temporary basis, between 1600 and 1800 (UTC), according to the following information:

TAF SBDN 270930Z 2712/2724 10006KT 9999 SCT015 TN25/2712Z TX30/2718Z
BECMG 2712/2714 04007KT SCT040 PROB30 TEMPO 2716/2718 VCSH SCT030
FEW040TCU RMK PER=

The SIGWX chart generated at 2036 (UTC), valid until 1200 (UTC) on 27FEB2018, illustrated the presence of Cumulus (CU) and Stratocumulus (SC) clouds based at 1,300 ft and top to 7,000 ft, with coverage of 5 to 7 oktas (BKN) and possibility of rain showers in the region where the first half of the flight would occur (Figure 1).

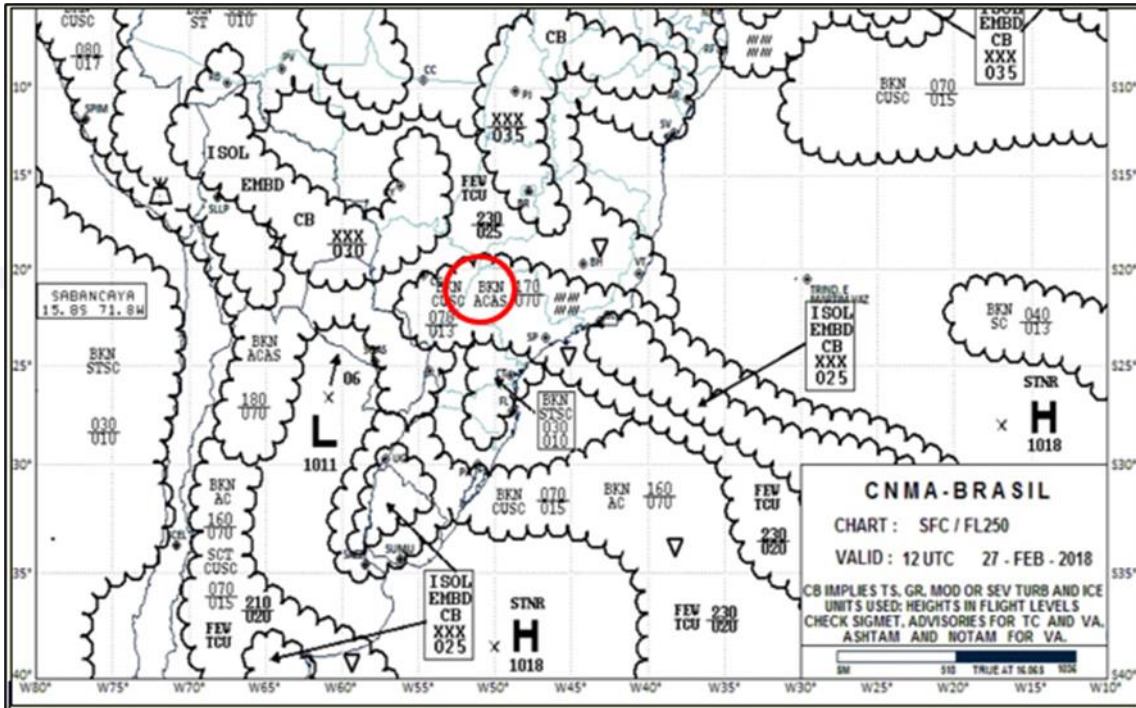


Figure 1 - SIGWX chart from the surface to FL250. Accident area highlighted in red.

The satellite image, generated at 1215 (UTC), illustrated the synoptic situation of the region with the existence of a meteorological system and a humidity corridor in a Northwest-Southeast direction, with the presence of some clouds of the Towering Cumulus (TCU) type.

In the region of the accident, there was cloudiness at low and medium levels (Figures 2 and 3).

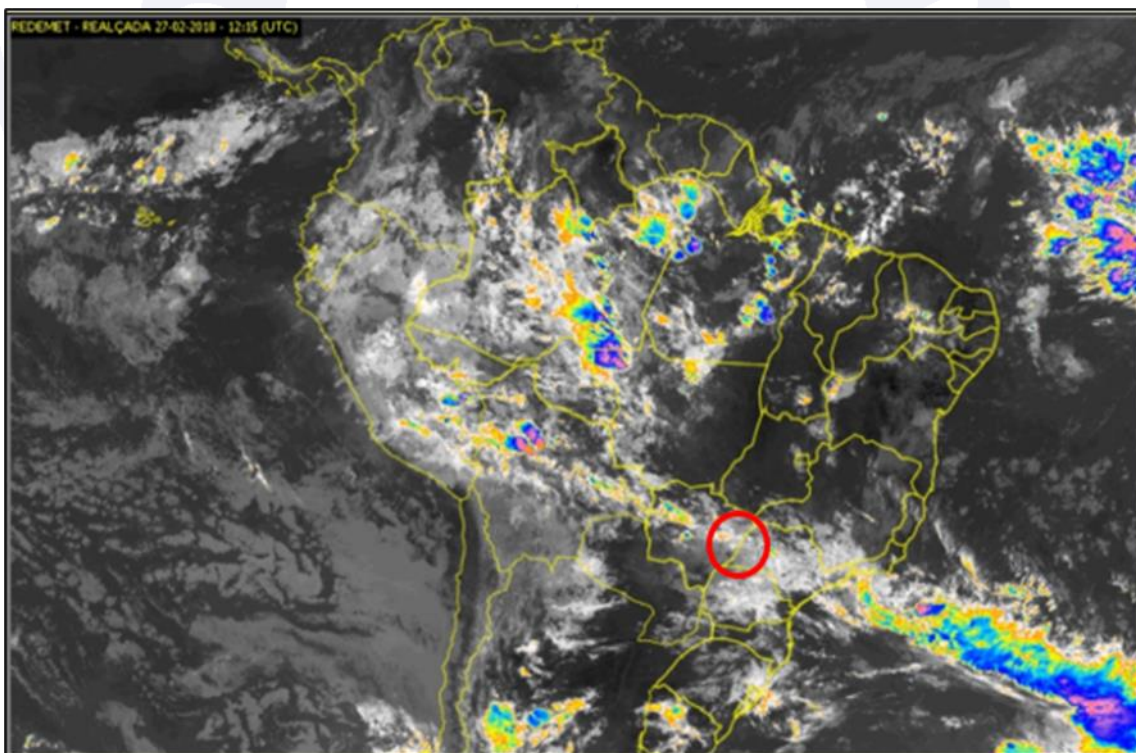


Figure 2 - Satellite image (enhanced) at 1215 (UTC). Origin and destination areas highlighted in red.

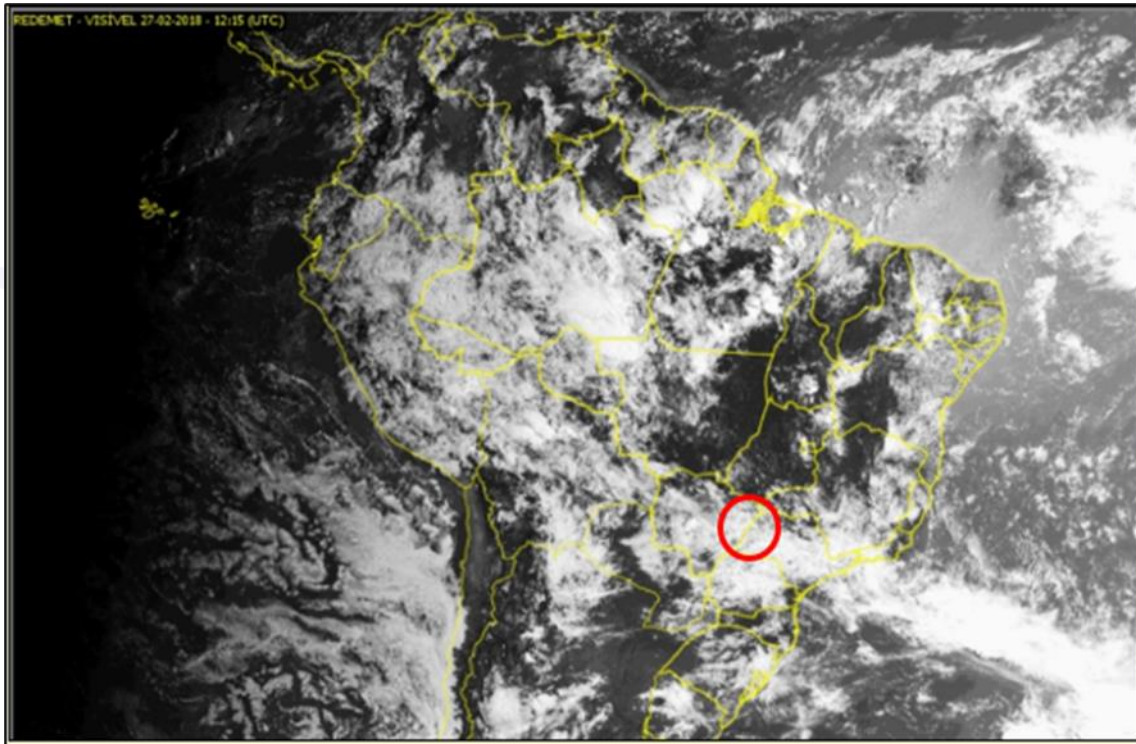


Figure 3 - Satellite image (visible) at 1215 (UTC). Origin and destination areas highlighted in red.

The image generated by the Jaraguari meteorological RADAR, at 1224 (UTC), with the horizontal projection of the precipitation information obtained for the FL100, presented a rainy region between the cities of Água Clara, Três Lagoas and Brasilândia (Figure 4).

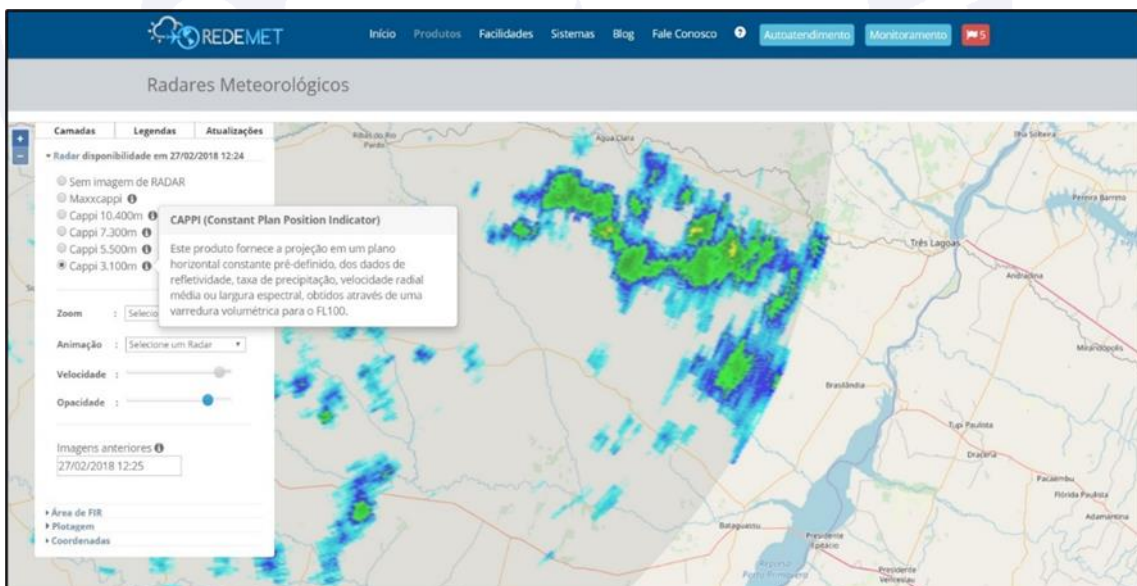


Figure 4 - Jaraguari meteorological RADAR (CAPPi 3.100m), at 1224 UTC.

The region limits defined a polygon (Figure 5) for comparison purposes with the aircraft route in field 1.18 of this report.

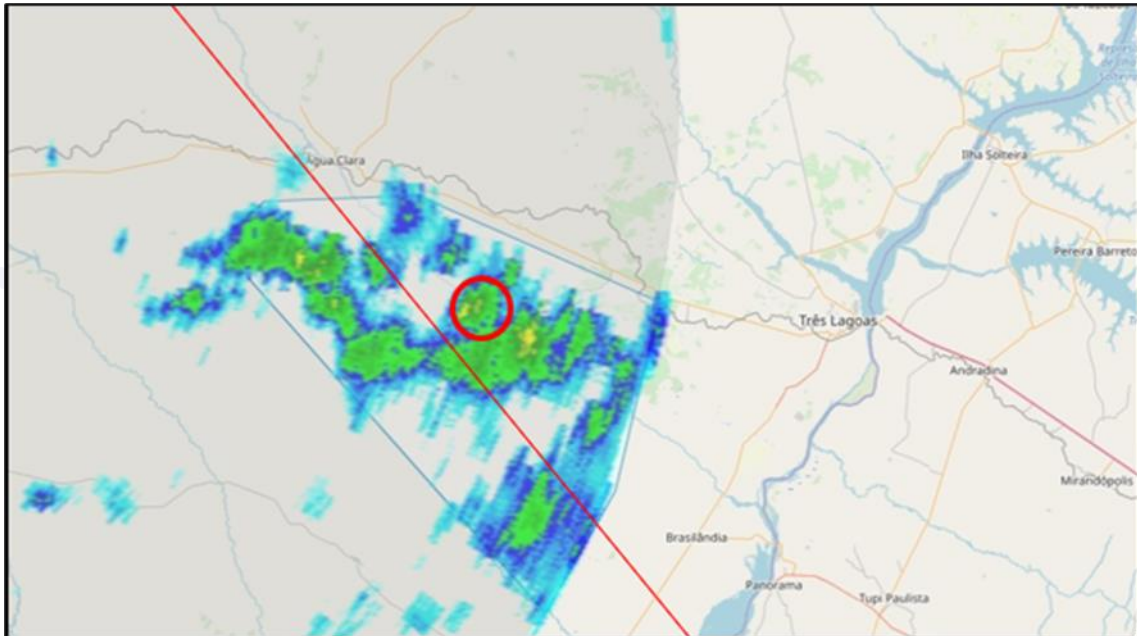


Figure 5 - Precipitation region. Red dash and circle indicate the route and region of the crash, respectively.

Observers who were at the scene of the occurrence reported that it was raining in the region at the time of the accident.

1.8 Aids to navigation.

Nil.

1.9 Communications.

According to the audio transcripts of the communications between the PT-IEL and the control agencies, it was found that the pilot performed all the planned communications with the TWR-DN and with the APP-DN, which he kept listening to until 11h49min16s (UTC), the moment that he cleared the TMA-DN.

After clearing the TMA-DN, the pilot was supposed to change the frequency to the ACC-CW, and kept listening without making calls. However, in case of emergencies, he should communicate with that control agency on the frequency he was listening to or use the 121.5 MHz.

There was no communication between the PT-IEL and the ACC-CW.

1.10 Aerodrome information.

The occurrence took place out of the Aerodrome.

1.11 Flight recorders.

Neither required nor installed.

1.12 Wreckage and impact information.

The collision of the aircraft against the terrain was observed by a person who was on the ground and followed the final moments of the flight. She described the aircraft's final trajectory as "rotating".

There was a single point of impact, and this one occurred in a pitch down attitude (approximately 10 degrees) and with practically no inclination. The aircraft's nose was buried in the soft ground. The wing tip tanks have separated from the wings. Some light objects, which were being transported, were projected out of the aircraft, to the right side, stopping near the tip of the right wing.

Such impact characteristics indicated the possibility of sinking in a flat spin (Figure 6).



Figure 6 - Layout of the aircraft wreckage.

There was fire, which consumed the entire cabin of the aircraft, as well as the central part of the fuselage and the fuel inside the wing tanks. The degree of destruction and carbonization of the aircraft made it difficult to check equipment and instruments.

The landing gear and flaps were retracted.

1.13 Medical and pathological information.

1.13.1 Medical aspects.

The vestibular system (gravitoreceptor organ of the inner ear) as well as the bodily sensations give the pilot the ability to perceive acceleration, deceleration and rotation movements around the three axes of his body (pitch, roll and yaw), but only vision is able to confirm or deny this information.

Without visual contact with the natural horizon (or artificial, in the case of a pilot qualified for instrument flight), the pilot is easily “fooled” by his senses.

An example of misinterpretation of vestibular system inputs and acceleration sensations, regardless a pilot's experience level, is demonstrated by the following sequence:

- the pilot commands the aircraft to make a turn of medium rolling to the left;
- this condition is perceived through the displacement of the fluid that fills one of the semicircular canals of the inner ear;
- the movement of the fluid stabilizes inside the inner ear (inertia), giving the pilot the wrong feeling that the aircraft is leveled (when it is still in a medium-inclination turn to the left);
- the pilot commands again the turn to the left, thinking that he started from the leveled aircraft condition, thus increasing the turn rate; and
- the process is repeated until the aircraft exceeds its maximum inclination and starts a downward spiral trajectory.

1.13.2 Ergonomic information.

Nil.

1.13.3 Psychological aspects.

The pilot was the owner of the aircraft and exercised the aerial activity only in his work trips to the farm he owned, in the city of Coxim - MS.

He was 49 years old, in good health, living a good time, with no reports of personal problems that could influence his performance in flight.

He was considered very responsible, organized and correct in his work activities. He liked to work things out in advance or when the problem or commitment arose, "he didn't leave anything for later".

He was described as a steady and calm person. He was seen as a cautious, meticulous and careful pilot, especially with the maintenance and general care of the aircraft.

The flight in question was planned for two days before the occurrence, but it was postponed due to weather conditions.

It was found that the pilot used to obtain weather information through phone calls to people he trusted at the destination.

On the day of the flight, there were still known weather formations on the route and the pilot was alerted by a person at the airport. The pilot informed that he would make the flight, saying that he would fly over the rain formations and that, on his farm, the weather was fine.

He also said that he was late for his appointment at the destination, as he had already delayed the flight on two occasions.

Interviewees informed that, a month before the accident, the pilot faced rain when arriving in Coxim - MS, when he had to circulate a few times in order to land. On other occasions, he took off from the Presidente Prudente Aerodrome with weather on route unfavorable for the visual flight.

The pilot said, to people close to him, that he had already flown inside clouds. In one of the interviews, it was reported that "he was not intimidated by bad weather".

1.14 Fire.

The aircraft caught fire after crashing into the ground.

The fire consumed the entire cabin, the central part of the fuselage and the fuel inside the wing tanks.

1.15 Survival aspects.

Nil.

1.16 Tests and research.

The Investigation Team organized a mock-up of the aircraft to analyze its wreckage.

As for the structural part of the aircraft, only damage caused by fire and impact with the ground were observed.

Regarding the powertrain group, an analysis of its external evidence was performed. Crankshaft rupture cracks were observed close to the coupling flange with the propeller. These cracks had an angle of 45 degrees (Figure 7).



Figure 7 - Crankshaft rupture cracks.

The propeller had one of its blades bent forward and the other facing backwards (Figures 8 and 9).



Figure 8 – Bending on the propeller blades.

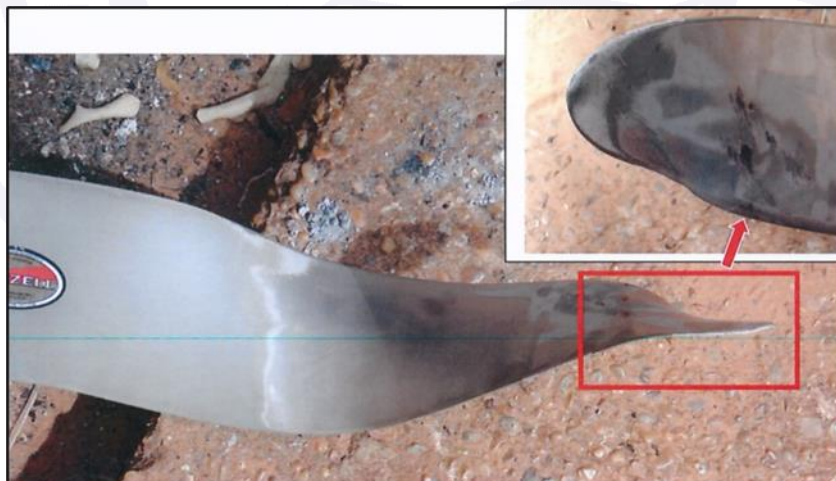


Figure 9 - Damage detail on the forward bent blade.

1.17 Organizational and management information.

Nil.

1.18 Operational information.

According to the information gathered, the flight should have taken place two days before the accident, however, it was postponed due to weather conditions.

On the third day, visual flight conditions in SBDN prevailed. The pilot decided to fly, and the flight plan was transmitted over the telephone, as he was accustomed to.

At the airport, the pilot accompanied the pre-flight performance by an employee who had this task. The aircraft was fueled to its maximum capacity and loaded with approximately 50 kg of cargo.

On that occasion, a distant curtain of rain was observed, near the Paraná River, in the same direction as the route to be flown.

The pilot took off at 1126 UTC. The magnetic heading was straight to the target and the chosen level was FL065. The aircraft left TMA-DN at 1149 am (UTC).

Through the RADAR review, some changes in the direction of flight in the accident region were noticed, between 1214 and 1223 UTC.

Only the primary surveillance RADAR information was captured (no aircraft altimetry information). At 1223 UTC, the last RADAR synthesis of the aircraft was captured, close to the fixed UTRAG and ASEPO (Figure 10).

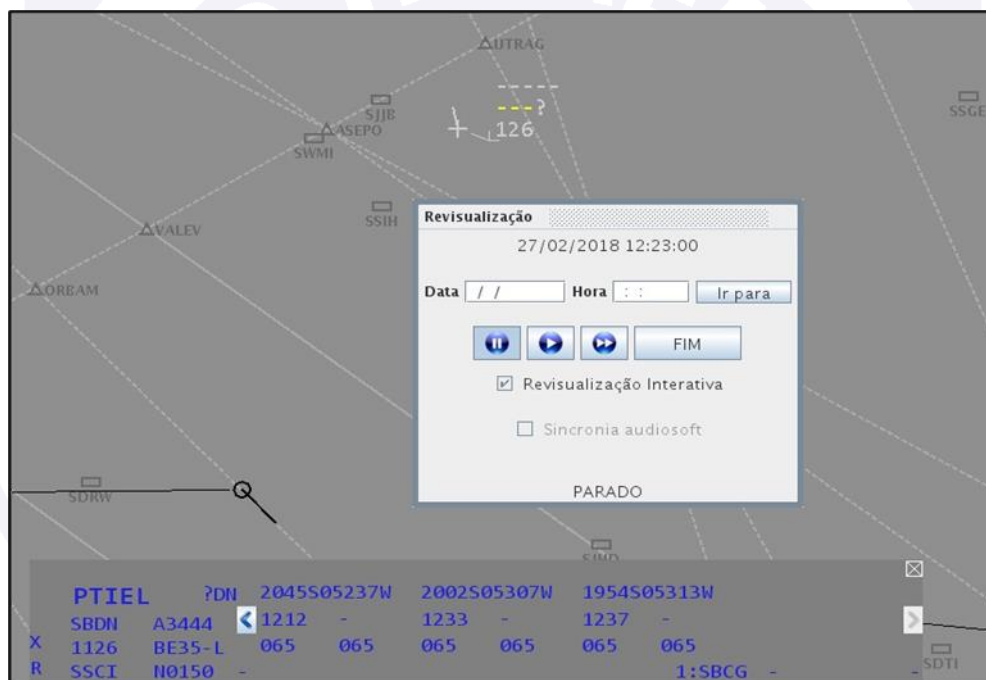


Figure 10 - RADAR Review with last position at 1223 UTC.

The information of known positions of the aircraft (last RADAR plot and final position after the accident) and of the fixed and Aerodromes close to it, was superimposed with the polygon determined in item 1.7, related to the rain area captured by the meteorological RADAR of Jaguarari (Figure 11).

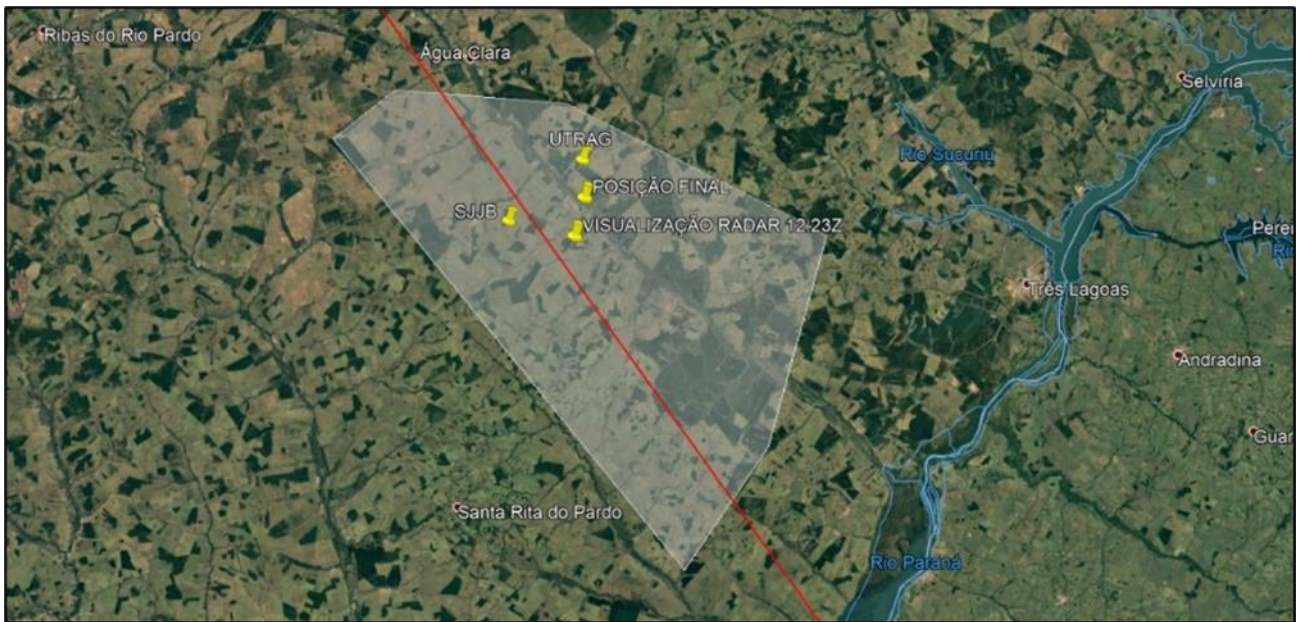


Figure 11 - Known positions of the aircraft, superimposed on the rain polygon (horizontal plane). Red line representing the route of flight.

People at the scene of the occurrence reported that they heard the aircraft circling over the region, in the rain, for a few minutes, before seeing its fall.

The aircraft was within the weight and balance limits specified by the manufacturer. Its center of gravity (CG) at the time of the occurrence was estimated at 82 inches and the front and rear limits were 78 inches and 85.7 inches, respectively.

1.19 Additional information.

At the time of the accident, the RBAC No. 61, Amendment 07, established the following requirements:

61.3 Conditions relating to the use of licenses, certificates, ratings and authorizations

(a) Pilot license/certificate and ratings: may only act as a pilot-in-command or second-in-command aboard civil aircraft registered in Brazil whoever holds and is in possession of a pilot license/certificate with their valid ratings, issued accordingly with this Regulation, and appropriate to the aircraft operated, the operation performed and the role it performs on board (our emphasis).

[...]

(d) Instrument Flight Rating (IFR): no one may act as a pilot-in-command or second-in-command of an aircraft under instrument flight rules or in meteorological conditions below the minimum prescribed for visual flight, unless he or she holds a Pilot license with a valid instrument flight rating, appropriate to the category of aircraft in operation, issued in accordance with these Regulations.

Also, at the time of the accident, the RBHA No. 91 established the following requirements:

91,102 - GENERAL RULES

(a) No person may operate a civil aircraft within Brazil, unless the operation is conducted in accordance with this regulation and in accordance with the air traffic rules contained in the ICA 100-12 "Rules of Air and Air Traffic Services", the information contained in the Aeronautical Information publications (AIP BRASIL, AIP BRASIL MAP, ROTAER, AIP Supplement and NOTAM) and in other documents published by the Airspace Control Department.

The ICA No. 100-12 "Rules of the Air", of 24OCT2016 (ICA 100-12/2016) regulated, in Brazil, the Rules of the Air provided for in Annex 2 to the Convention on International Civil Aviation. Chapter 5 had the following requirements about visual flight rules (Figure 12):

[...]

5.1.1 Except when operating as a special VFR flight, the VFR flights shall be conducted in such a way that the aircraft fly under conditions of visibility and cloud distance equal to or greater than those specified in the table in table 1.

5.1.2 Notwithstanding the provisions of 5.1.1 above, the VFR flights will only be performed when they can simultaneously and continuously meet the following conditions:

a) maintain reference to the ground or water so that meteorological formations below flight level do not obstruct more than half of the pilot's area of vision. [...]

Classe de Espaço Aéreo	B	C D E	FG	
			Acima de 900 m (3000 pés) AMSL ou acima de 300 m (1000 pés) sobre o terreno o que for maior	A 900 m (3000 pés) AMSL abaixo ou 300m (1000 pés) acima do terreno, o que for maior
Distância das Nuvens	Livre de Nuvens	1500 m horizontalmente 300 m(1000 pés) verticalmente	1500 m horizontalmente 300m verticalmente	Livre de nuvens e avistando o solo
Visibilidade	8 km se voando no ou acima do FL100	8 km se voando no ou acima do FL100	8 km se voando no ou acima do FL100	5 km
	5 km se voando abaixo do FL100	5 km se voando abaixo do FL100	5 km se voando abaixo do FL100	
Limite de Velocidade	380 kt	250 kt IAS se voando abaixo do FL100		
		380 kt IAS se voando acima do FL100		

Figure 12 - Table 1 of the ICA 100-12/2016, separations foreseen in flights under visual conditions.

1.20 Useful or effective investigation techniques.

Nil.

2. ANALYSIS.

It was a private flight between SBDN and SSCI, with a pilot on board.

The PT-IEL aircraft, model V35B, had a valid CA and the planned inspections had been carried out in maintenance organizations certified by the ANAC.

During the investigation process, it was found that damage to the aircraft structure was caused by the impact against the ground and by fire after the accident.

The type of deformation found in one of the propeller blades, associated with the crankshaft breaking due to overload (sudden stop) indicated that the engine was developing power at the moment of impact.

The absence of any previous collision points on the terrain evidenced a vertical trajectory. The placement of objects that were projected out of the aircraft and the twisting of the fuselage indicated a likely impact with the aircraft rotating on its vertical axis.

There was also a report from an observer who said he saw the plane “going down in a spin”. The disposition on the impact, the negative pitch of approximately 10 degrees, and the almost zero inclination evidence a flat spin sinking.

Concerning meteorological conditions, it was concluded that the possibility of the aircraft having faced IMC was high.

The forecast of rain for the departure Aerodrome in the afternoon, the condition of high humidity in the region, the existence of clouds at low and medium levels on the intended route, and, especially, the existence of TCU clouds, required greater care for the flight under visual conditions.

Although none of these phenomena represent an impediment to flight, the available information indicated that the visibility and cloud distance could be lower than those foreseen in the ICA 100-12/2016, for flying under VFR, in some parts of the route. Therefore, the pilot, who was only qualified for VFR, had to take measures to meet the minimum safety requirements.

During the flight, already stabilized on the route to the destination, the pilot came across meteorological phenomena, especially a TCU cell with precipitation activity, west of the city of Brasilândia - MS. At that time, compliance with air rules, for the type of flight, required the pilot to keep away from such formations, even if this represented a return to the departure Aerodrome or a diversion to an alternative.

The overlay of satellite images, meteorological RADAR, and the last known positions of the aircraft, associated with reports from ground observers, indicated the entry into a rainy region.

According to the RADAR revisualization, the pilot started a series of turns, characterized by successive changes in direction. This situation may have led to spatial disorientation and the consequent loss of control of the aircraft, which may have entered a spin condition, in which it remained until the impact with the ground.

Once the sequence of events was known, until the impact, it became necessary to analyze the pilot's decision to proceed to the flight that day, under such conditions.

The flight, under those conditions, revealed an attitude of complacency towards the need to fulfill the scheduled appointments. During the interviews, there were reports that, although the pilot did not have a license for instrument flying, "he was not intimidated by bad weather". This may be an indication of overconfidence in the ability to carry out the flight, despite the weather conditions.

It was also inferred that the pilot suffered self-imposed pressure, due to the anxiety of reaching his destination at any cost, as, despite having observed a curtain of rain in the direction he was going to fly, he decided to continue. The self-imposed pressure may have resulted in changes in their cognitive states, compromising their judgment and decision-making processes. This emotional state was corroborated by the character of the pilot's personality, described by people who knew him as someone who "didn't leave anything for later".

All of these factors (attitude, self-imposed pressure, motivation, and low situational awareness) affected his decision-making process. The decision to perform the flight, with great chances of encountering IMC conditions, for which he was not qualified, reflected an inadequate judgment in relation to the risks involved in that operation.

Thus, a complacent attitude, a high motivation to perform the flight, and a self-imposed pressure contributed to a poor perception (low situational awareness) of the risks involved in the VFR operation, on the intended route, with the present weather conditions, inducing an inadequate decision making.

3. CONCLUSIONS.

3.1 Facts.

- a) the pilot had valid CMA;
- b) the pilot had valid MNTE Rating;
- c) the pilot was qualified, but did not have IFR Rating;
- d) the aircraft had valid CA;
- e) the aircraft was within the weight and balance limits;

- f) the airframe, engine and propeller logbook records were updated;
- g) the aircraft took off from SBDN to SSCI;
- h) the pilot had postponed the flight for two days, due to weather conditions;
- i) on the third day, the meteorological conditions presented restrictions to flight under visual flight rules;
- j) the pilot was alerted to the existence of rain on his route;
- k) conditions of self-imposed pressure, motivation and low situational awareness that may have affected the pilot's decision-making process were identified;
- l) the aircraft took off and cleared the Terminal Control Area without abnormality;
- m) the aircraft entered a rainy region West of the city of Brasilândia -MS;
- n) there was a loss of control and the aircraft crashed on the ground with a flat spin sinking;
- o) the aircraft was destroyed; and
- p) the pilot suffered fatal injuries.

3.2 Contributing factors.

- **Attitude – a contributor.**

The decision to proceed under conditions unfavorable for the visual flight revealed an attitude of complacency regarding safety procedures, in view of the fulfillment of scheduled appointments.

- **Disorientation – undetermined.**

The pilot performed a series of turns in a rainy region. This situation may have led to spatial disorientation and the consequent loss of control of the aircraft.

- **Emotional state – undetermined.**

It is possible that the pilot suffered anxiety about reaching his destination, as, despite having observed a curtain of rain at the airport, he decided to make the flight.

- **Motivation – a contributor.**

High motivation for carrying out the flight was evidenced in order to fulfill the commitments made by the pilot.

- **Perception – a contributor.**

A complacent attitude, high motivation to perform the flight, and self-imposed pressure contributed to a deficient perception (low situational awareness) in the intended route, about the risks involved in the VFR operation.

- **Decision-making process – a contributor.**

The decision to perform the flight under adverse weather conditions, with the probability of entering IMC, for which the pilot was not qualified, reflected an inadequate judgment in relation to the risks involved in that operation.

4. SAFETY RECOMMENDATION.

A proposal of an accident investigation authority based on information derived from an investigation, made with the intention of preventing accidents or incidents and which in no case has the purpose of creating a presumption of blame or liability for an accident or incident. In addition to safety recommendations arising from accident and incident investigations, safety recommendations may result from diverse sources, including safety studies.

In consonance with the Law n°7565/1986, recommendations are made solely for the benefit of the air activity operational safety, and shall be treated as established in the NSCA 3-13 “Protocols for the Investigation of Civil Aviation Aeronautical Occurrences conducted by the Brazilian State”.

Nil.

5. CORRECTIVE OR PREVENTATIVE ACTION ALREADY TAKEN.

None.

On February,09th, 2022.

