

**COMANDO DA AERONÁUTICA**  
**CENTRO DE INVESTIGAÇÃO E PREVENÇÃO DE**  
**ACIDENTES AERONÁUTICOS**



**FINAL REPORT**  
**A - 088/CENIPA/2015**

<b>OCCURRENCE:</b>	<b>ACCIDENT</b>
<b>AIRCRAFT:</b>	<b>PT-YDY</b>
<b>MODEL:</b>	<b>206B</b>
<b>DATE:</b>	<b>16JUN2015</b>



## 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 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 16JUN2015 accident with the 206B aircraft, registration PT-YDY. The accident was classified as “[CFIT] Controlled Flight into Terrain”.

During the en-route flight, in unfavorable weather conditions, the aircraft collided with Serra do Palmito, after approximately 1 hour and 30 minutes of flight.

The aircraft was destroyed and there were no survivors.

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

An Accredited Representative of the Transportation Safety Board (TSB) - Canada, (State where the aircraft was designed) was designated for participation in the investigation.



## CONTENTS

<b>GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS .....</b>	<b>5</b>
<b>1. FACTUAL INFORMATION.....</b>	<b>6</b>
1.1 History of the flight.....	6
1.2 Injuries to persons.....	6
1.3 Damage to the aircraft.....	6
1.4 Other damage.....	6
1.5 Personnel information.....	6
1.5.1 Crew's flight experience.....	6
1.5.2 Personnel training.....	6
1.5.3 Category of licenses and validity of certificates.....	7
1.5.4 Qualification and flight experience.....	7
1.5.5 Validity of medical certificate.....	7
1.6 Aircraft information.....	7
1.7 Meteorological information.....	7
1.8 Aids to navigation.....	8
1.9 Communications.....	8
1.10 Aerodrome information.....	8
1.11 Flight recorders.....	8
1.12 Wreckage and impact information.....	8
1.13 Medical and pathological information.....	10
1.13.1 Medical aspects.....	10
1.13.2 Ergonomic information.....	10
1.13.3 Psychological aspects.....	10
1.14 Fire.....	11
1.15 Survival aspects.....	11
1.16 Tests and research.....	11
1.17 Organizational and management information.....	11
1.18 Operational information.....	12
1.19 Additional information.....	12
1.20 Useful or effective investigation techniques.....	13
<b>2. ANALYSIS.....</b>	<b>13</b>
<b>3. CONCLUSIONS.....</b>	<b>14</b>
3.1 Facts.....	14
3.2 Contributing factors.....	15
<b>4. SAFETY RECOMMENDATION.....</b>	<b>16</b>
<b>5. CORRECTIVE OR PREVENTATIVE ACTION ALREADY TAKEN.....</b>	<b>16</b>

## GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS

ANAC	Brazil's National Civil Aviation Agency
BH06	Bell 206 aircraft Type Rating
CA	Airworthiness Certificate
CBA	Aeronautics Brazilian Code
CENIPA	Aeronautical Accident Investigation and Prevention Center
CFIT	Controlled Flight Into Terrain
CG	Center of Gravity
CIV	Pilot's Flight Logbook
CMA	Aeronautical Medical Certificate
FUMEC	Minas Gerais Foundation for Education and Culture
IFR	Instrument Flight Rules
IFRH	Helicopter Flight IFR Rating
METAR	Aviation Routine Weather Report
NTSB	National Transportation Safety Board (USA)
PCH	Commercial Pilot License – Helicopter
PLH	Airline Pilot License – Helicopter
PPH	Private Pilot License – Helicopter
RBAC	Brazilian Civil Aviation Regulation
RBHA	Brazilian Aeronautical Certification Regulation
SBBH	ICAO Location Designator – Pampulha Aerodrome, Belo Horizonte - MG
SBME	ICAO Location Designator – Macaé Aerodrome - RJ
SERIPA III	Third Regional Aeronautical Accident Investigation and Prevention Service
SIDP	ICAO Location Designator – Vale das Palmeiras Helipad, Macaé - RJ
SNJY	ICAO Location Designator – BH Helicenter, Nova Lima - MG
SGSO	Safety Management System
SIGWX	Significant Weather Chart
SPECI	Selected Special Aeronautical Weather Report
TCU	Towering Cumulus
TPP	Registration Category of Private Service - Aircraft
TSB	Transportation Safety Board
UTC	Universal Time Coordinated
VFR	Visual Flight Rules

## 1. FACTUAL INFORMATION.

Aircraft	<b>Model:</b> 206B	<b>Operator:</b> <i>Lotear Empreendimentos Imobiliários Ltd. and Others</i>
	<b>Registration:</b> PT-YDY	
	<b>Manufacturer:</b> Bell Helicopter	
Occurrence	<b>Date/time:</b> 16JUN2015 - 1910 UTC	<b>Type(s):</b> [CFIT] Controlled Flight into Terrain
	<b>Location:</b> Serra do Palmito	
	<b>Lat. 20°32'59"S Long. 043°29'31"W</b>	
	<b>Municipality – State:</b> Ouro Preto – MG	
		<b>Subtype(s):</b> NIL

### 1.1 History of the flight.

The aircraft took off from *Vale das Palmeiras* Helipad (SIDP), Macaé - RJ, to the BH Helicenter (SNJY), Nova Lima - MG, at about 1740 (UTC), to carry personnel with a pilot and two passengers on board.

At about 1910 (UTC), the aircraft collided against an elevation at Serra do Palmito, in Santa Rita do Ouro Preto District, Ouro Preto - MG.

The aircraft was destroyed.

The aircraft occupants suffered fatal injuries.

### 1.2 Injuries to persons.

Injuries	Crew	Passengers	Others
Fatal	1	2	-
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	1,038:43
Total in the last 30 days	09:36
Total in the last 24 hours	02:48
In this type of aircraft	345:24
In this type in the last 30 days	08:36
In this type in the last 24 hours	02:48

**N.B.:** The Data related to the flown hours were obtained through the Pilot's Flight Logbook records.

#### 1.5.2 Personnel training.

The pilot took the PPH course at the FUMEC's Engineering and Architecture College, Belo Horizonte - MG, in 2011.

### 1.5.3 Category of licenses and validity of certificates.

The pilot had the PCH License and had valid BH06 aircraft Type Rating (which included the 206B model). He didn't have the IFRH Rating.

### 1.5.4 Qualification and flight experience.

The pilot was qualified to fly under visual conditions and had experience in that type of flight.

### 1.5.5 Validity of medical certificate.

The pilot had valid CMA.

## 1.6 Aircraft information.

The aircraft, serial number 4477, was manufactured by Bell Helicopter, in 1998 and it was registered in the TPP category.

The aircraft had valid Airworthiness Certificate (CA).

The last inspection of the aircraft, the "100hours/12months" type, was carried out on 06APR2015 by the *Claro Aviação* maintenance organization, at the Carlos Prates Aerodrome, Belo Horizonte – MG, with the aircraft having flown 35 hours and 35 minutes after the inspection.

The largest aircraft inspection, the "300 hours/1200 hours" type, considering that the aircraft maintenance program did not include an Overhaul, was carried out on 06APR2015 by the *Claro Aviação* maintenance organization, at the Carlos Prates Aerodrome, in Belo Horizonte – MG with the aircraft having flown 35 hours and 35 minutes after the inspection.

## 1.7 Meteorological information.

The weather conditions at the take-off location were not favorable for the visual flight.

The Macaé Aerodrome (SBME) METAR, 5.8 nautical miles away from the aircraft take-off location, as well as the SPECI, with significant changes in current conditions following a METAR message provided the following information:

```
METAR SBME 161700Z 28003KT 5000 BR BKN015 OVC080 22/19 Q1020=  
SPECI SBME 161715Z 28002KT 1500 -RA BKN010 OVC080 21/20 Q1020=  
METAR SBME 161800Z 28002KT 1500 -RA BKN010 OVC070 21/20 Q1020=  
SPECI SBME 161836Z 21005KT 1000 -RA BKN005 OVC070 20/19 Q1020=
```

The weather conditions at the place of the occurrence were not favorable for the visual flight.

Nearby residents informed members of the investigation team that the region had low clouds and limited visibility at the time of the occurrence.

Arriving at the scene of the accident, the investigation team from the SERIPA III found that the weather conditions were still quite degraded.

The Belo Horizonte Aerodrome METAR (SBBH), 40 nautical miles away from the crash site, provided the following information:

```
METAR SBBH 161700Z 09011KT 9999 SCT045 BKN090 22/17 Q1020=  
METAR SBBH 161800Z 09009KT 9999 SCT045 BKN090 21/17 Q1020=  
METAR SBBH 161900Z 09010KT 9999 SCT045 BKN090 21/17 Q1020=  
METAR SBBH 162000Z 09009KT 9999 FEW045 BKN090 21/17 Q1020=
```

The SIGWX, valid until 1800 (UTC), illustrated the presence of few Towering Cumulus (TCU) clouds, based on 4,000ft and top on the FL220 (Figure 1).

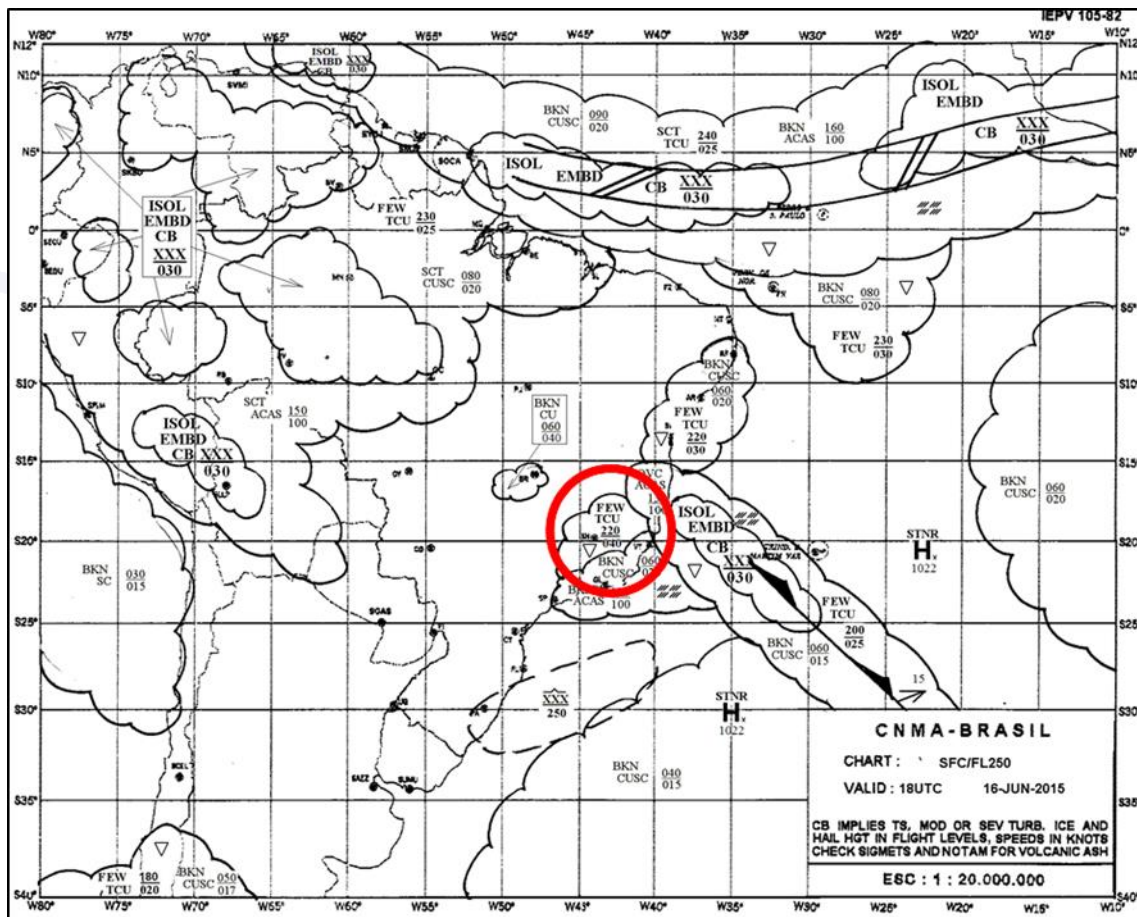


Figure 1 - SIGWX Weather Chart.

**1.8 Aids to navigation.**

Nil.

**1.9 Communications.**

Nil.

**1.10 Aerodrome information.**

The occurrence took place outside the Aerodrome.

**1.11 Flight recorders.**

Neither required nor installed.

**1.12 Wreckage and impact information.**

The crash site of the aircraft was difficult to reach, of dense forest, on steep terrain and high tree tops, at an altitude of approximately 4,092ft (1,229m).

The aircraft initially crashed into the vegetation and just after into the terrain. At the place of the occurrence, sectioned vegetation was identified, with cut-off points between two and three meters, showing the aircraft passage until the final stop (Figure 2).





Figure 2 – Cut-off point in the vegetation.

The trail left by the aircraft in the vegetation indicated a trajectory with a high impact angle against the ground, but in practically level flight, due to the extremely steep characteristic of the elevation.

The wreckage of the passengers' cabin and tail section was concentrated in one place, while the main rotor, rear rotor, and transmission hub parts were 10, 7, and 6 meters away from the passengers' cabin respectively.

The aircraft was found tipped to the left side of the fuselage with the bodies of three occupants still positioned inside, with belts fastened: the pilot and one passenger were in the front seats and another passenger in the right rear seat.

No evidence of fire was found.

The first people who accessed the crash site reported a strong smell of fuel.



Figure 3 - Air image of the occurrence place.



Figure 4 - Air image of the wreckage concentration.



Figure 5 - Core of the aircraft wreckage.

### **1.13 Medical and pathological information.**

#### **1.13.1 Medical aspects.**

Not investigated.

#### **1.13.2 Ergonomic information.**

Nil.

#### **1.13.3 Psychological aspects.**

The event involved the pilot and two passengers, who were the owner of the aircraft and his son. The crew was considered experienced, he knew the route, the region and had flight hours on other aircraft models, such as the Robinson 22 and 44.

The pilot had been familiar with the aviation context for years, as his stepfather was also a pilot and ran a service center and hangaring. This context influenced the pilot's

decision to be a professional pilot, even though he did not initially receive support from his family, concerned about the risks involved.

According to the interviewees, the pilot was always available to the bosses. His motivation was to acquire flight hours, financial independence and the ability to fly another aircraft, a Bell 505, which would be acquired by the owners of the aircraft in the future.

According to reports, the pilot behaved in accordance with the safety standard required by aviation.

According to the information obtained, in previous situations, the pilot had already experienced situations of takeoffs cancellation, as well as advance of landings, in order to avoid the approaching sunset time.

However, situations have been reported in which flights were performed despite these circumstances.

On the day of the accident weather, conditions were unfavorable for flying under visual conditions. According to people who had contact with the pilot before the take-off, he was aware of the weather information at the take-off location and the route to be flown.

#### **1.14 Fire.**

There was no fire.

#### **1.15 Survival aspects.**

There were no survivors.

#### **1.16 Tests and research.**

It was not possible to perform any tests or analyzes on the aircraft components, as the accident location was difficult to access, which did not allow the removal of items with the necessary personal safety to do so.

#### **1.17 Organizational and management information.**

The PT-YDY registration aircraft was operated by two executives, who took turns using this equipment and another aircraft they owned.

According to the information obtained, in the last six months before the occurrence, only one of them made use of the helicopter, this being the owner who was involved in the accident.

The pilot had been providing service for the owners for approximately two years and, according to the data obtained, showed dissatisfaction with the reduction in the number of flights, which resulted in a salary below the initially agreed value.

In addition, there were also reports of discontent regarding the lack of travel planning and pressure from the aircraft owners regarding flights under adverse circumstances.

According to the reports obtained, uncomfortable situations had already occurred, involving the pilot and the owner of the aircraft, generated from the owner's pressure for flying in adverse circumstances.

Situations of unexpected changes in flight planning such as cancellations after hours of waiting have been reported; requests for flights close to sunset time, as well as anticipations or postponements of return flights.

Although these situations are common in business aviation, according to reports, they have been occurring more frequently.

### 1.18 Operational information.

No evidence was found that the weight and balance limits specified by the manufacturer were exceeded, as well as any maintenance records that compromised the aircraft performance.

The aircraft was fueled on 14JUN2015 afternoon, 48 hours before the accident, with 151 liters of fuel, according to the refueling receipt. It was not possible to calculate the total amount of fuel in the aircraft tank at takeoff.

The passengers boarded at the Vale das Palmeiras Helipad (SIDP), located in Macaé - RJ, and the destination of the flight was the BH Helicenter (SNJY), in Nova Lima - MG. It is noteworthy that the accident site was not in the route normally used.

According to reports of a pilot who was at the Vale das Palmeiras Helipad, at the same day that the pilot of the PT-YDY aircraft was preparing for takeoff, in the brief conversation they had, the unfavorable weather for the type of flight intended was commented. The interviewee added that the PT-YDY commander, at about 1400 (UTC), accessed the internet by mobile phone, using the Wi-Fi network of the Barroco Lopes Aviation School, which was based there, when he found out about the unfavorable weather conditions on the route for the visual flight.

At this point, the pilot of the occurrence was advised by the interviewee to wait until a significant improvement in conditions or to delay takeoff until the next day, as visibility and ceiling were so restricted that neither the buildings around the helipad could be seen.

Soon after, the passengers arrived for boarding. There were three passengers: one of the owners of the aircraft, his wife and son. However, moments before boarding, the owner's wife decided not to proceed because she was afraid of flying with "that bad weather," in her own words.

After boarding the passengers, the aircraft took off for SNJY, but crashed into elevations of the Serra do Palmito during the en-route flight.

It was not possible to confirm any debate between the pilot and the passengers prior to the decision to proceed to the destination in weather conditions unfavorable for the visual flight.

There were no records of radio communication between the aircraft and the air traffic control, or reports of bilateral communication between the PT-YDY and other aircraft containing information of abnormal system operation or any emergency that the aircraft was experiencing.

### 1.19 Additional information.

The CBA, in its article 169, said:

AERONAUTICS BRAZILIAN CODE (1986)

Chapter III – OF THE AIRCRAFT COMMANDER

Art.169 - The commander, under his responsibility, may postpone or suspend the departure of the aircraft when deemed necessary for flight safety.

In addition, the RBHA 91 reinforced this responsibility by stating in subparagraph "a" of item 91.3:

BRAZILIAN AERONAUTICAL CERTIFICATION REGULATION Nº91

91.3 - RESPONSIBILITY AND AUTHORITY OF THE PILOT IN COMMAND

(a) the pilot in command of an aircraft is directly responsible for the operation of the aircraft and has final authority to do so.

## 1.20 Useful or effective investigation techniques.

Nil.

## 2. ANALYSIS.

It was a private flight to carry personnel, with one pilot and two passengers on board. The flight time to the destination was estimated at approximately 2 hours.

Passengers boarded at SIDP and the destination was SNJY.

Based on the information collected during the investigation, it was found that the weather conditions at the takeoff location and the intended route were unfavorable for the visual flight.

The pilot became aware of the weather conditions by consulting the internet while preparing for takeoff, and was advised by another pilot to delay takeoff or transfer the flight to the next day, as visibility and ceiling were so restricted that it was not even possible to see the buildings around the helipad where they were.

Shortly after the consultation and the advice received, the passengers arrived for boarding.

At this point, one of the passengers gave up boarding because of the fear of flying in adverse conditions. But even so, the aircraft took off as planned.

This mistaken decision may have been favored by external, or even self-imposed, pressure to comply with flight scheduling, as circumstances of this nature had previously occurred.

Although it was not possible to confirm if there was any debate between the pilot and the passengers when deciding whether to continue visual flight in unfavorable weather conditions, the pilot and the owner continued the flight.

In this context, it is worth highlighting the provisions of Article 169 of the CBA, which dealt with the responsibility of the Aircraft Commander in relation to flight safety, and may even take actions that delay or suspend the departure.

In addition, RBHA 91.3 reinforced such responsibility by stating that the pilot in command of an aircraft was directly responsible for its operation and had ultimate authority to do so.

Thus, once aware of his role in flight safety, the pilot's attitude proved complacent as it led to non-compliance with rules and procedures that reduced the safety margin of that flight.

It is noteworthy that this attitude of greater risk acceptance may have been fostered by the characteristics present in the field of business aviation, where there is a greater demand for pilots to adapt to the operators routine and to act with greater flexibility in relation to flight schedules.

This situation is aggravated when aircraft owners have little knowledge about the minimum requirements of air operation or, even when warned, exert any kind of pressure or expression of discontent regarding any change proposed by the pilot.

From this perspective, it is possible that the behavior of the pilot was influenced by the culture of the group in which he was inserted, marked by the lack of planning by some owners during the trips and by occasions when there was pressure from them regarding flights under adverse circumstances.

Generally speaking, as air activity in business aviation is not the end but a means to achieve the objectives of the organizations that use it, sometimes the principles that foster flight safety may not be seen as allied to their activities.

During the investigative work, no evidence was found that the weight and balance limits were exceeded or that any maintenance service compromised the aircraft's performance.

Similarly, no evidence of lack of fuel supply to the aircraft engine was found.

The absence of evidence of a fuel starvation is corroborated by two crucial points: reports of a strong fuel odor at the crash site and the fueling of the aircraft prior to takeoff, despite the impossibility of accurately specifying the total amount of fuel present in the tank.

In addition, there were no records of radio communication between the aircraft and the air traffic control, or reports of bilateral communication with other aircraft, containing information on the abnormal functioning of any system or emergency that the aircraft might be experiencing.

Therefore, the absence of data that could highlight any mechanical abnormalities, performance failures or emergencies, as well as the crash dynamics found at the crash site by the investigation team, evidenced the high probability that the aircraft was operating normally and was under the pilot's control during the en-route flight.

The impossibility of carrying out any tests or analyzes on aircraft components, due to the difficult access to the accident site, did not allow the hypothesis of mechanical failure could be confirmed or refuted.

However, it is possible that the pilot may have lost references for flying under visual conditions, due to deteriorating weather conditions on the route.

Under these circumstances, it is likely that the pilot (not IFR qualified) tried to stay out of the clouds for as long as possible, even if he was very close to the obstacles.

This scenario may have worsened and caused the collision, considering that the aircraft was in a mountainous region or that the pilot could have deviated from the route, due to the need of always follow the path that would allow him to remain in contact with ground references.

This hypothesis is corroborated by the fact that the accident site is not located in the route normally used by the aircraft in that leg.

It is possible that the pilot would have been flying out of the cloud for some time because he thought it would be possible to continue for a few moments, with the expectation that visibility and the ceiling would improve, and thereby, didn't realize that the weather conditions actually deteriorated faster and faster.

As a result, it is likely that he had postponed the decision to give up flying under those conditions until he was no longer able to return or make a precautionary landing outside the aerodrome, culminating in a flight entirely free of visual references in a mountainous region.

Considering the evidence found at the crash site, it was concluded that it is possible that the pilot completely lost track of the aircraft geographical location on the ground, culminating in a blind, controlled flight toward the elevations without realizing the imminent impact, thus configuring a typical CFIT scenario.

### **3. CONCLUSIONS.**

#### **3.1 Facts.**

- a) the pilot had valid Aeronautical Medical Certificate (CMA);
- b) the pilot had valid BH06 type rating (which included the 206B model);

- c) the pilot didn't have the IFRH rating;
- d) the pilot was qualified for visual flights and had experience in that kind of flight;
- e) the aircraft had valid Airworthiness Certificate (CA);
- f) no evidence was found that the weight and balance limits specified by the manufacturer were exceeded;
- g) the weather conditions were not favorable for the visual flight;
- h) the aircraft collided against an elevation at Serra do Palmito;
- i) no records of radio communication between the aircraft and the ATC were found, or reports of bilateral communication between the PT-YDY and other aircraft containing information of abnormal system operation or any emergency that the aircraft was experiencing;
- j) the aircraft crash site was difficult to access;
- k) the location of the accident did not allow the safe removal of aircraft items or components for analysis or testing;
- l) it was not possible to perform any tests or analyzes on the aircraft components;
- m) the aircraft was destroyed; and
- n) the occupants of the aircraft suffered fatal injuries.

### 3.2 Contributing factors.

#### - **Attitude – undetermined.**

Flight performance under conditions contrary to the prescribed rules and procedures indicated a compliant attitude on the part of the pilot, which may have been influenced by possible external or self-imposed pressure, due to the working environment and characteristics present in the context of business aviation, possibly leading the aircraft to collide against the ground in a controlled flight.

#### - **Tasks characteristics – undetermined.**

Business aviation requirements and recurring adaptations to flight schedules, with unexpected changes and the occurrence of external pressure situations, may have impacted the pilot's critical judgment, causing him to operate with reduced flight safety margins.

#### - **Work-group culture – undetermined.**

The lack of travel planning and pressure on flights under adverse circumstances of some owners may have led to inappropriate decisions regarding the management of air activity and fostered a complacent stance on safety of flights.

#### - **Adverse meteorological conditions – undetermined.**

Information collected at both the takeoff and the point of occurrence indicated to unfavorable weather conditions, which may have affected the pilot's visibility conditions, making it impossible to operate under visual weather conditions.

#### - **Piloting judgment – undetermined.**

The decision to continue flying in adverse weather conditions until it was no longer possible to return or make a precautionary landing outside the aerodrome culminating in a flight without visual references in a mountainous region, may have led the aircraft to collide against the ground in a controlled flight.

### **Perception – undetermined.**

Conditions on the flight route may have reduced the ability of the pilot to properly understand the position of the aircraft in relation to obstacles present in the external environment, contributing to the collision of the aircraft against the ground.

#### **- Decision-making process – undetermined.**

The takeoff from the Vale das Palmeiras Helipad, despite the unfavorable weather for the visual flight, as well as the continuation of the flight in adverse conditions, indicated an inadequate assessment of the existing risks in that operational context, which may have contributed to the accident in question.

## **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”.*

### **Recommendations issued at the publication of this report:**

#### **To the Brazil’s National Civil Aviation Agency (ANAC):**

##### **A-088/CENIPA/2015 - 01**

**Issued on 04/22/2020**

Intensify prevention actions with pilots and operators of the Brazilian business aviation, especially helicopters, in order to implement a change in the culture of work groups and organizational cultures, in order to raise the collective perception about the risks inherent to adverse weather operations and to align the set of beliefs and values shared by professional groups with faithful compliance of the rules established by the regulators of the Civil Aviation System.

##### **A-088/CENIPA/2015 - 02**

**Issued on 04/22/2020**

Disseminate the lessons learned in this investigation, in order to alert Brazilian civil aviation crew and operators about the risks arising from adverse weather operations when pilots and/or aircraft do not have rating/certification for flights under instrument weather conditions.

## **5. CORRECTIVE OR PREVENTATIVE ACTION ALREADY TAKEN.**

None.

On April 22<sup>th</sup>, 2020.



