

COMANDO DA AERONÁUTICA
CENTRO DE INVESTIGAÇÃO E PREVENÇÃO DE
ACIDENTES AERONÁUTICOS



FINAL REPORT
A-519/CENIPA/2016

OCCURRENCE:	ACCIDENT
AIRCRAFT:	PT-HLE
MODEL:	HB-350B
DATE:	15JAN2010



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 item 3.1, 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 15 January 2010 accident involving the HB350B aircraft, registration PT-HLE. The accident was classified as “OTHER”.

The aircraft took off from the locality of Tapauá, state of Amazonas, destined for Lábrea, in the same state, but never reached its destination.

The extent of the damage to the aircraft is not known

The pilot and the passenger were not found.

An accredited representative of the French *Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation Civile* (BEA) - France, state of design, was designated for participation in the investigation.



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GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS

ANAC	Brazil's National Civil Aviation Agency
CA	Airworthiness Certificate
CB	<i>Cumulonimbus</i> Clouds
CCF	Aeronautical Medical Certificate
CENIPA	Aeronautical Accident Investigation and Prevention Center
CG	Center of Gravity
CINDACTA	Integrated Air Defense and Air Traffic Control Center
FUNASA	National Health Foundation
GAMET	Area Forecast – from GND to FL100
IFR	Instrument Flight Rules
Lat	Latitude
Long	Longitude
METAR	Routine Aerodrome Weather Report
PLAH	Airline Transport Pilot – Helicopter category
PPH	Private Pilot – Helicopter category
RBHA	Brazilian Aeronautical Homologation Certificate
RS	Safety Recommendation
SALVAERO	Aeronautical Search and Rescue System
SBEG	ICAO location designator – Eduardo Gomes Airport
SBMN	ICAO location designator – Ponta Pelada Aerodrome
SBMY	ICAO location designator – Manicoré Airport
SBPV	ICAO location designator – Porto Velho Airport
SBTF	ICAO location designator – Tefé Airport
SERIPA	Regional Aeronautical Accident Investigation and Prevention Service
SIGMET	En route weather forecast and warnings
SIPAER	Aeronautical Accident Investigation and Prevention System
SWFN	ICAO location designator – Flores Aerodrome
SWLB	ICAO location designator – Lábrea Aerodrome
TAF	Aerodrome Weather Forecast
TPX	Non-Regular Public Air Transport Service
UTC	Universal Time Coordinated
VFR	Visual Flight Rules

1. FACTUAL INFORMATION.

Aircraft	Model: HB-350B	Operator: JVC Aerotáxi Ltda.
	Registration: PT-HLE	
	Manufacturer: HELIBRAS	
Occurrence	Date/time: 15JAN2010 / 21:22UTC	Type(s): Other.
	Location: Unknown	
	Lat. Unknown Long. Unknown	
	Municipality – State: unknown.	

1.1 History of the flight.

At about 19:30 UTC, the aircraft took off from the municipality of Tapauá, state of Amazonas, destined for SWBL, with the pilot and a passenger (a company aircraft mechanic) on board.

The last position signal detected by the satellite positioning system was received at 20:22 UTC, indicating the coordinates 06°36'54.6"S and 064°06'42"W, at a distance of approximately 16.5 NM from the locality of Canutama, state of Amazonas.

On the following day, the Aeronautical Search-and-Rescue System (SALVAERO) was informed on the event by the aircraft owner, and began searching for the aircraft.

Up to the moment of publication of this report there was no information on the location of the aircraft.

1.2 Injuries to persons.

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

1.3 Damage to the aircraft.

Unknown.

1.4 Other damage.

Unknown.

1.5 Personnel information.

1.5.1 Crew's flight experience.

Hours Flown	
	Pilot
Total	14,481:25
Total in the last 30 days	04:45
Total in the last 24 hours	00:00
In this type of aircraft	Unknown
In this type in the last 30 days	04:45
In this type in the last 24 hours	00:00

N.B.: Information obtained from the aircraft operator's records.

1.5.2 Professional formation.

The pilot did his Private Pilot course (helicopter category) in 1975.

1.5.3 Category of licenses and validity of certificates.

The pilot had an Airline transport pilot license (helicopter category), and a valid H350 type aircraft technical qualification certificate.

The pilot was IFR-rated, but the validity of his qualification had expired in August 2006.

1.5.4 Qualification and flight experience.

The pilot had qualification and experience in the type of flight.

1.5.5 Validity of medical certificate.

The pilot had a valid aeronautical medical certificate (CCF).

1.6 Aircraft information.

The SN HB-1012-1235 aircraft was manufactured by Helibrás in 1981, and was registered in the TPX (Non-regular public air transport service).

The airworthiness certificate was valid.

The aircraft was not homologated for IFR flights.

The airframe, engine, and rotor logbook records were up-to-date.

The last inspection of the aircraft ("7 days" type) was done by the operating company on 15 January 2010.

The last aircraft maintenance overhaul ("12 years" type) was done in March 2002 by a workshop certified by the National Civil Aviation Agency (ANAC).

The company fleet aircraft were equipped with a SPOT tracking device.

1.7 Meteorological information.

The localities of Tapauá and Lábrea were not contemplated with meteorological information. In order to develop a picture of the weather in these locations, the 4th Integrated Air Defense and Air Traffic Control Center (CINDACTA IV) conducted an analysis by means of routine aerodrome weather reports (METAR), aerodrome weather forecasts (TAF), area forecasts (GAMET) from the ground to FL100, en-route weather forecasts and warnings (SIGMET), and satellite images of nearby locations which had meteorological information available, and obtained the following data:

METAR analysis:

METAR reports of SBEG, SBMN, SBMY, SBTF, and SBPV were analyzed.

From the analysis, CINDACTA IV obtained the following weather estimates in relation to the localities involved:

Tapauá - AM

Significant wind: Calm to moderate

Minimum visibility: 8,000 meters

Significant present weather: isolated thunderstorm with light rain

Minimum ceiling: 1,500 ft.

Lábrea - AM

Significant wind: Calm to moderate

Minimum visibility: 5,000 meters

Significant present weather: Thunderstorm with moderate rain

Minimum ceiling: 1,000 ft.

GAMET objective analysis: (Area forecast – from the ground to FL100)

Significant wind: 090°/15kt at FL100;

Minimum visibility: 3,500 meters;

Significant present weather: Thunderstorm with moderate rain;

Minimum ceiling: 400 ft. to 1,000 ft;

Significant clouds: Isolated Cumulonimbus (CB);

Forecast thunderstorms: Isolated;

Moderate to severe icing: within CB cells.

SIGMET objective analysis: (en-route weather forecast and warnings)

Significant present weather: forecast embedded thunderstorm;

Time: from 19:00 UTC to 23:00 UTC;

Significant clouds: embedded CB;

Estimated cloud tops: FL400.

Objective analysis of satellite images:

Significant present weather: thunderstorms from isolated to embedded forecast for the beginning and completion of the navigation trajectory.

Time: more significant from 18:00 UTC to 21:00 UTC;

Significant clouds: embedded CB;

Estimated top of clouds: FL460;

Forecast motion: westward at 15 kt;

Change: Intensifying.



Figure 1 – Last SPOT signal received.

1.8 Aids to navigation.

Nil.

1.9 Communications.

Nil.

1.10 Aerodrome information.

Not applicable.

1.11 Flight recorders.

Neither required nor installed.

1.12 Wreckage and impact information.

Nil.

1.13 Medical and pathological information.**1.13.1 Medical aspects.**

Nil.

1.13.2 Ergonomic information.

Nil.

1.13.3 Psychological aspects.

According to interviews given by four members of the company who were colleagues of the captain, he used to display a professional conduct characterized by excessive confidence, on account of his vast experience of flights in the Amazon region.

They said that the captain would hardly check the meteorological conditions. He did not have the custom of filing a flight plan for the intended destination. Instead, he would file a flight notification to the nearest location in order to be able to take off earlier.

They described him as a communicative person, who, on the other side, had nagging attitudes, and was anxious and undisciplined. He was known for not complying with orders or accepting suggestions that went against his habitual way of doing things.

There were no reports of personal or family problems that he might be enduring and that might interfere in his flight performance.

In the company, the captain worked according to a flight schedule of 15 straight days in Manaus, followed by a rest period of 15 days, which he spent in Rio de Janeiro, where he lived. The accident happened on the 12th day of his working period in Manaus.

The company did not have a systematic way of monitoring the performance of the crews, and adopted a policy of conscious discipline.

1.14 Fire.

Nil.

1.15 Survival aspects.

Nil.

1.16 Tests and research.

Nil.

1.17 Organizational and management information.

The company was homologated by the regulating agency (DAC) in 2002, and had authorization for conducting non-regular public air transport as an air taxi company, limited to transporting passengers, sick people, cargo, and hazardous material.

Its headquarters was in Flores aerodrome and, at the time of the occurrence, had a fleet of nine aircraft (three HB350B helicopters, one AS355F2 helicopter, one BO105S helicopter, one U206F airplane, and three EMB-810C airplanes).

The helicopters of the fleet were only authorized to operate VFR during day-time.

According to the company policy, all helicopter pilots had to fly all the rotary-wing aircraft of the fleet.

The owner of the company was an airline transport pilot (helicopter category) and also flew the helicopters of his company.

All the pilots who flew the company's fixed-wing aircraft resided in Manaus, and were always at the disposal of the company.

By and large, the short duration flights departing from Manaus were flown by the company owner or by the director of operations, who resided in Manaus. The other helicopter pilots usually operated in other locations where the company had contracts. At the time of the occurrence, the company had few contracted flights.

After the occurrence, the SERIPA VII conducted a special flight-safety inspection of the company. This inspection revealed that the company had not complied with several recommendations issued by SERIPA I and SERIPA VII in the years 2008 and 2009, concerning accidents involving aircraft of the company's fleet.

The sector of operations had personnel working in the coordination of the flights that did flight dispatch without adequate technical knowledge to provide assistance in the planning of the flights. There was not supervision by a company's pilot, either. Such inadequate assistance was sometimes accepted by the pilot who would fly the aircraft, due to the little time available for the number of tasks that had to be done before the flight.

1.18 Operational information.

The request for the flight was made by the National Health Foundation (FUNASA), on the morning of the 15th, however, bureaucratic negotiations took time and at about lunch time the owner of the company ordered the execution of the flight, determining that He should leave at that day.

The pilot had spent the whole morning in the company and, upon returning from lunch, went to the sector of operations in order to receive information on the flight, the briefcase with the aircraft documents, the satellite aircraft tracking device (SPOT), and the GPS, besides doing the other tasks related to flight planning, such as consulting the NOTAM and verifying the en-route, destination, and alternate aerodrome weather.

The sector of operations offered the captain a GARMIN 96 GPS, but he refused and requested a GARMIN 296 GPS. However, this GPS had just the waypoints of Manaus, Tapauá, and Lábrea. It did not have the waypoints of the support localities along the route which could be used in case of emergency, such as *Canutama* in the state of Amazonas, for example.

After passing information on the flight and giving the captain the pieces of equipment, the sector assistant let him plan the flight, and went prepare the aircraft for the flight.

The flight notification filed by the captain had Manacapuru, state of Amazonas, as the destination (different from the intended one).

The captain remained in the sectors of operations for some time, but according to interviewees, the time spent in that place was not enough for doing the planning of the flight, mainly the meteorological analysis.

The aircraft was fully refueled in the Flores with 540 liters of fuel, which was not sufficient for a direct flight to Lábrea.

Since there were not refueling points along the route, the helicopter transported 200 liters of aviation kerosene in four 50-liter plastic reservoirs, so that the pilot and the mechanic could refuel the aircraft in Tapauá.

After the aircraft took off from Manaus, no two-way radio contact was established between the company and the aircraft, not even during the period the aircraft remained on the ground in Tapauá.

The company monitored the position of the aircraft by means of a satellite aircraft tracking system. The last position signal was received at 20:22 UTC, showing the aircraft in the coordinates 36°54'6"S/064°06'42"W, at a distance of approximately 16.5 NM from Canutama.

After taking off from Tapauá, the aircraft flew for about 52 minutes.

After calculations, the investigation commission concluded that from the moment the aircraft took off from Manaus until the time the tracking signal was lost, the aircraft was within the weight and balance parameters established by the manufacturer.

1.19 Additional information.

Approximately one year before (December 2008), the company director of operations flew along the same route, using the road (BR-319) linking Manaus, Humaitá, and Lábrea (all of the three in the state of Amazon) as a reference for navigation.

On that occasion, the navigation was planned in a way that, if an emergency occurred, the road could be used for a precautionary landing.

The investigation commission also found out that the Flight Safety Agent listed in the Operating Specifications had left the company a year ago.

On 21 December 2009, the company received an e-mail from the SERIPA VII, warning of the importance of stricter flight planning in relation to the analysis of the meteorological conditions, mainly in the months of December and January, since statistical data point toward a considerable increase in the precipitation of rain in the region.

Most of the occurrences in this period had meteorology as a contributing factor, together with inadequate pilots' judgment of the meteorological conditions.

1.20 Useful or effective investigation techniques.

Nil.

2. ANALYSIS.

The pilot had experience and qualification for the intended flight. His technical qualification and aeronautical medical certificates were valid, and he did not have any limitations that might interfere with his conduction of the flight. The validity of his IFR-rating had expired.

The aircraft was within the weight and balance parameters established by the manufacturer, and was compliant with the manufacturer's maintenance program. The maintenance and repair records did not indicate any technical discrepancies capable of affecting the airworthiness of the aircraft. The maintenance was considered periodical and adequate.

The planning of a flight in the Amazon region, differently from a local flight, required a special and detailed attention to the whole route, and involved technical knowledge of meteorology, air navigation, aeronautical communications, NOTAM, air traffic rules, and an unequivocal knowledge of the limitations of the aircraft being utilized.

The lack of a qualified person in the supervision of flight dispatch led the coordination workers to assume responsibilities for which they did not have adequate qualification, something that may have contributed to an inadequate planning of this operation which culminated in the loss of the aircraft.

The fact that the company did not have an effective flight safety agent for more than one year, and the fact that it did not work diligently to solve the latent unsafe conditions found out in investigation of accidents that occurred before this one, indicate that the culture of flight safety was not properly valued in the company.

In addition, the company believed in the pilots' conscious discipline in relation to the faithful compliance with the legislation, and failed to identify contingent deviations in the pilots' attitudes, denoting the existence of inadequate supervision.

Thus, the adopted culture favored inadequate attitudes on the part of the pilot, such as filing a flight plan with a destination that was different from the intended one, and failing to check the meteorological conditions.

The route to be flown was over a large area of jungle which did not have spots for an emergency landing, and was not a route commonly used by the company and its pilots.

Since the localities of intermediary landing and final destination lacked meteorological information, a detailed analysis of the en-route weather was necessary, but this analysis was not carried out, denoting poor planning and managerial supervision.

The prevailing meteorological conditions were extremely unfavorable for VFR flights since there were several build-ups along the route to be flown when the aircraft took off from Tapauá destined for Lábrea. At that moment, the best decision to be made would be stay on the ground in Tapauá, waiting for the weather to get better.

The meteorological analysis carried out during the investigation showed that the weather conditions became more and more degraded and intensified significantly by the end of the day. At the moment of the loss of the SPOT signal, the aircraft was in the middle of a heavy cloud formation, and was well closer to the destination than to the location from where it had departed. For this reason, it is possible to infer that the pilot may have decided to proceed with the flight even in unfavorable meteorological conditions.

The municipality of Camutama, located at approximately 16.5 NM from the place where the tracking signal was lost, could have been utilized for a precautionary landing, but it was not listed in the Garmin 296 GPS utilized by the captain as a primary means of navigation.

Since the aircraft was never found, and there were no eye-witnesses of the event, several hypotheses might be raised. However, the elements available in this investigation suggest the contribution of the meteorological conditions to the disappearance of the aircraft.

The pilot would have entered, either inadvertently or otherwise, an extensive layer of clouds covering the region, and would have begun to fly precariously in IMC.

Although the helicopter was not homologated for flying IFR, the fact that the pilot had a long experience of flights in the Amazon region, besides being IFR-rated (although with the validity more than three years ago) may have led him to a feeling of safety and, thus, influenced his decision to confront adverse meteorological conditions.

In such situation, it is possible that he entered an abnormal attitude, which resulted in loss of the aircraft control, and culminated in the accident.

The average height of the trees in the regions is approximately 45 meters, and the tree-tops normally merge. A small helicopter like the one of this accident would not cause significant damage to the tree-tops, and could have crashed into the ground and could easily get hidden by the vegetation, making it impossible for the aircraft to be located visually.

After twenty days, the search was discontinued, on account of the lack of indications concerning the location of the aircraft.

3. CONCLUSIONS.

3.1 Facts.

- a) The pilot had a valid aeronautical medical certificate (CCF);
- b) The pilot had a valid H350 rating;
- c) The pilot had qualification and experience in the type of flight;
- d) The validity of the pilot's IFR-rating had expired in August 2006;
- e) The aircraft had a valid airworthiness certificate;
- f) The aircraft was within the prescribed weight and balance limits;
- g) The airframe, engine, and rotor logbook records were up-to-date;
- h) The aircraft was certified for IFR flights;
- i) The aircraft was flying from Flores to Lábrea, with a planned intermediary stop in Tapauá;
- j) At 19:30 UTC, the aircraft took off from Tapauá, destined for Lábrea;
- k) The aircraft captain was making use of the GPS as a primary means of navigation;
- l) The GPS being utilized by the captain did not have the waypoints relative to support points along the route;
- m) The aircraft was making use of a satellite-based tracking device;
- n) The last signal was received by the company at 20:22 UTC showing the coordinates 06°36'54.6"S/064°06'42"W, at a distance of approximately 16.5 NM from the locality of Canutama, state of Amazonas;
- o) The weather along the route from Tapauá to Lábrea was extremely unfavorable for VFR flights;
- p) The aircraft did not reach the destination;
- q) The aircraft and its occupants were not found; and
- r) The search operation was discontinued after twenty day, and the aircraft was officially considered as missing.

3.2 Contributing factors.

- **Attitude – a contributor.**

The failure to conduct an adequate planning of the flight reflects a behavior of non-compliance with procedures usually adopted by the captain, and that may have contributed to the encounter of unfavorable conditions for a VFR flight.

Also, the attitude of excessive self-confidence presented by the captain may have led him to overestimate his own ability to operate in the adverse meteorological conditions encountered during the flight.

- **Adverse meteorological conditions – undetermined.**

Taking the hypothesis considered as the most likely, it is possible that the meteorological conditions contributed in a significant way in this event.

- **Organizational culture – undetermined.**

The culture of conscious discipline adopted by the company reduced the process of supervision of the operational activities, something that may have contributed to the captain's operational deviations since the phase of flight planning.

- **Motivation – undetermined.**

Since the last signal from the satellite aircraft tracking system was received when the aircraft was near the destination, it is possible that the pilot, in view of his operational experience, felt stimulated to continue with the flight, even with an unfavorable weather condition.

- **Support personnel – undetermined.**

The company's flight coordination sector did not have qualified professionals capable of assisting the captain with mission planning and analysis of the meteorological conditions.

- **Flight planning – undetermined.**

Considering the adverse weather conditions, probably, there was no adequate preparation of the flight, since such conditions were extremely unfavorable to the visual flight.

- **Managerial planning – undetermined.**

The company management did not correct the latent failures reported in earlier investigations, something that may have contributed to the captain's operational deviations since the phase of flight planning.

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

The filing of a flight notification containing a destination that was different from the intended one also reflects an inadequate evaluation of aspects relevant for the safe conduction of the flight. Such inadequate judgment may have degraded the quality of the resources available to the captain for the making of decisions more appropriate to the situation.

- **Managerial oversight – undetermined.**

The company showed supervision failures at different management levels, ranging from the lack of an effective Professional in the flight safety sector to the lack of qualified personnel in the flight coordination sector.

There was also inadequate supervision on the part of the company management staff, since the company allowed the pilot to file a flight notification with a destination that was not the real one.

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, criminal, or administrative liability.

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.

The company underwent a special flight-safety inspection.

The pertinent report containing the conditions observed was handed in to the manager in charge.

On the date this report was finished, the company had already ceased its activities.

On, 08th de February de 2017.