

**COMMAND OF AERONAUTICS**  
**AERONAUTICAL ACCIDENT INVESTIGATION AND**  
**PREVENTION CENTER**



**FINAL REPORT**  
**A - 162/CENIPA/2013**

<b><u>OCCURRENCE:</u></b>	<b>ACCIDENT</b>
<b><u>AIRCRAFT:</u></b>	<b>PT-HNL</b>
<b><u>MODEL:</u></b>	<b>HB-350B</b>
<b><u>DATE:</u></b>	<b>01 July 2008</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 item 3.1, Annex 13 of 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.

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## SINOPSYS

This is the Final Report of the 01 July 2008 accident involving the HB350B aircraft, registration PT-HNL. The accident was classified as inflight engine failure.

During the takeoff procedure, when the aircraft was at a height of approximately 15 meters, an inflight engine failure occurred, making the aircraft return to the ground.

The pilot suffered minor injuries.

The aircraft sustained serious damage.

An accredited representative of the BEA (French *Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation*) was appointed for participation in the investigation of the accident.

**GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS**

ABRAPHE	Brazilian Helicopter Pilots Association
ANAC	(Brazil's) National Civil Aviation Agency
ATS	Air Traffic Services
CA	Airworthiness Certificate
CCF	Medical Certificate
CENIPA	Aeronautical Accident Investigation and Prevention Center
CG	Center of Gravity
CHT	Technical Qualification Certificate
FCU	Fuel Control Unit
Lat	Latitude
Long	Longitude
PCH	Commercial Pilot (Helicopter category)
PPH	Private Pilot (Helicopter category)
RSV	Flight Safety Recommendation
SERIPA	Regional Aeronautical Accident Investigation and Prevention Service
SIBH	ICAO location designator – Helicidade Helipad, São Paulo
SIPAER	Aeronautical Accident Investigation and Prevention System
SJGM	ICAO location designator –Quadra Hungria Helipad, São Paulo
TPP	Aircraft Employment Category – Private Air Services
VFR	Visual Flight Rules

<b>AIRCRAFT</b>	<b>Model:</b> HB-350B <b>Registration:</b> PT-HNL <b>Manufacturer:</b> EUROCOPTER	<b>Operator:</b> <i>HAP Participações Ltda.</i>
<b>OCCURRENCE</b>	<b>Date/time:</b> 01 July 2008 / 21:45 local time <b>Location:</b> Heliponto Helicidade (SIBH) <b>Lat.</b> 23°32'48"S – <b>Long.</b> 046°44'13"W <b>Municipality – State:</b> São Paulo – SP	<b>Type:</b> Inflight engine failure

## 1 FACTUAL INFORMATION

### 1.1 History of the occurrence

The aircraft was taking off from the SIBH spot number 8 at 21:45 local time on a VFR flight plan, destined for SJGM, when there was a sudden drop of engine power.

At the time, the aircraft was reaching a height of approximately 15 meters, and ended up returning to the ground on a level attitude.

### 1.2 Injuries to persons

Injuries	Crew	Passengers	Third parties
Fatal	-	-	-
Serious	-	-	-
Minor	01	-	-
Unhurt	-	-	-

### 1.3 Damage to the aircraft

There was serious damage to the aircraft skis, passengers' cabin, tail boom, and tail rotor.

### 1.4 Other damage

None.

### 1.5 Personnel information

#### 1.5.1 Information on the crew

HOURS FLOWN	
	PILOT
Total	1,016:05
In the last 30 days	100:00
In the last 24 hours	01:30
In this type of aircraft	500:00
In this type in the last 30 days	50:00
In this type in the last 24 hours	01:30

NB.: Data provided by the pilot.

#### 1.5.1.1 Professional formation

The pilot did his Private Pilot course (Helicopter category) at the *Power Helicópteros Escola de Pilotagem* (a helicopter flying school) in 2004.

### **1.5.1.2 Validity and category of licenses and certificates**

The pilot had a Commercial Pilot license (Helicopter category) and a valid H350 type aircraft technical qualification certificate.

### **1.5.1.3 Qualification and flight experience**

The pilot was qualified and had enough experience for the type of flight.

### **1.5.1.4 Validity of medical certificate**

The pilot had a valid (CCF) medical certificate.

## **1.6 Aircraft information**

The serial number HB1140/2239 aircraft was manufactured by Eurocopter in 1990.

The aircraft's airworthiness certificate was valid.

The airframe and engine logbooks were up-to-date. The latest records dated from January 2008.

The last inspection of the aircraft (type "100 hours") was carried out on 12 June 2008 by *Tucson Aviação Ltda* workshop in São Paulo, State of São Paulo. The aircraft flew 23 hours and 10 minutes after the inspection.

The last overhaul of the aircraft (type "200 hours/06 years") was carried out on 08 April 2008 by *Tucson Aviação Ltda* workshop in São Paulo, State of São Paulo. The aircraft flew 37 hours and 40 minutes after the overhaul.

## **1.7 Meteorological information**

The prevailing weather conditions were VMC.

## **1.8 Navigational aids**

Nil.

## **1.9 Communications**

Upon starting up the engine, the pilot informed the supporting radio station of his intentions relative to the flight.

During this two-way radio contact, it was possible to hear an explicit request by the aircraft operator as to the need to expedite departure, since the passengers were waiting for the aircraft to arrive.

In the first contact between the PT-HNL and the supporting helipad radio station, the pilot mentions another aircraft registration.

## **1.10 Aerodrome information**

The Helipad is private and homologated, operating VFR during day- and night- time.

It is concrete-paved, measuring 24m x 24m, at an elevation of 2,418ft.

## **1.11 Flight recorders**

Neither required nor installed.

## **1.12 Wreckage and impact information**

The aircraft collided with the ground on a level attitude, sustaining serious damage to the skis, passengers' cabin, tail boom, and tail rotor.

## **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.

#### **1.13.3.1 Individual information**

Nil.

#### **1.13.3.2 Psychosocial information**

Nil.

#### **1.13.3.3 Organizational information**

Nil.

## **1.14 Fire**

There was no fire.

## **1.15 Survival aspects**

Although the aircraft sustained engine failure at a height of approximately 15 meters, the pilot managed to perform the main rotor rotation procedure to ease the fall. The belt / harness systems and the seat minimized the injuries substantially.

There was a partial dismantling of the cabin, something that made it difficult to remove the pilot.

## **1.16 Tests and research**

A sample of the residual fuel of the main tank was sent for analysis. Nothing abnormal was found relatively to the presence of impurities or water.

Various aircraft got refueled in the same site of the accident without any problems.

By means of the images recorded by the security cameras installed in the helipad, it was possible to observe the presence of white smoke in the region of the aircraft engine exhaust, concomitant with the moment of engine drop of power.

The tests of the engine and of the Fuel Control Unit did not show any abnormalities that could justify the presence of white smoke.

According to engine specialists, white smoke getting out of the engine exhaust reveals the presence of fuel hydrocarbons.



Checks of the anticipation control system and fuel flow control were also carried out.

According to a technical report issued by Helibrás, the systems and their components had been installed correctly, and had freedom of movement, in accordance with the prescriptions of the manufacturer.

### 1.17 Organizational and management information

The pilot did not have an employment relationship with the aircraft operator. He would stay in the premises of the Helicidade company waiting for opportunity flights.

### 1.18 Operational information

The pilot had just landed an aircraft, and quickly went aboard the PT-HNL for a new flight.

According to the pilot, he was informed by an agent of the aircraft owner that he had another flight and was already late, since the passengers were waiting for him in another helipad.

The time elapsed between this landing and the takeoff of the other aircraft was approximately fifteen minutes. During this time, the aircraft was refueled and prepared for takeoff.

It was a ferry flight from SIBH to SJGM, at a distance of approximately 1.5 nautical miles.

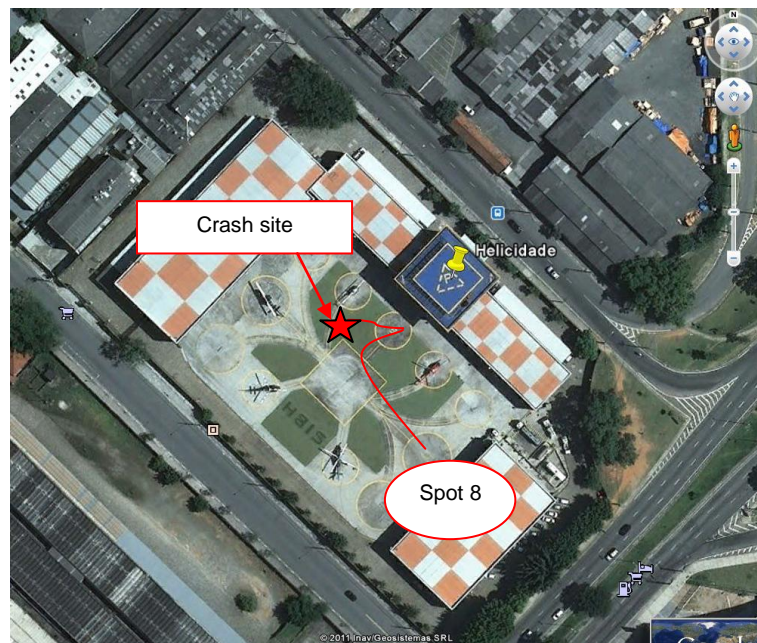


Figure 1 – Aerial photograph of the Helicidade helipad.

The operational procedure adopted by Helicidade helipad was: takeoff from spot number 8, taxi toward the central spot, and climb to the helipad located at a height of approximately 15 meters AGL.

From the images generated by the helipad security cameras, it was possible to see that the aircraft, after lifting off, started an accentuated vertical climb, and flew over the central spot on a turn to the right.

When the aircraft reached a height of approximately 15 meters, at a lateral distance of 2 meters from the elevated helipad, there was a sudden yaw to the right concomitant with a big abnormal quantity of white smoke getting out of the engine exhaust.

The pilot said later that the aircraft had a sudden drop of power, which he noticed on account of the yaw to the right and the decreased noise made by the engine, which remained operating, in a degraded fashion, though.

Upon becoming aware of the possible failure of the engine, the pilot immediately moved the power lever to the “maximum – emergency” position.

The weight of the aircraft was about 1,098Kg, considering that it had approximately 40% of fuel, equivalent to 167Kg, and that the pilot’s weight was around 55Kg.

The approved maximum takeoff weight was 1,950Kg, according to the aircraft registration certificate.

The aircraft was within the weight and center of gravity limits specified by the manufacturer.

The aircraft ended up colliding with the ground on a level attitude.

### **1.19 Additional information**

According to the transcript of the recorded communication between the aircraft and the helipad radio, one may infer that the aircraft was being utilized for transporting passengers for the *Global TÁxi-Aéreo* company, although being registered in the Private Air Services category.

### **1.20 Utilization of other Investigation techniques**

Nil.

## **2 ANALYSIS**

The pilot, instead of taxiing the aircraft from the spot number 8 to the central spot, and then start the climb, commenced the climb from the spot number 8, in an attempt to abbreviate the time necessary for the takeoff, since he was late.

The time spent between the aircraft preparation for takeoff and the takeoff itself was only fifteen minutes.

Due to his own anxiety and the pressure he felt to take off the soonest possible, a likely hypothesis is that the pilot did not move correctly the fuel flow lever to the flight position, making the engine cease to function appropriately.

Since the pilot did not perform the taxi procedure, and started to climb from the spot number 8, the problem appeared as soon as the helicopter reached the height of the helipad.

Had the pilot performed the prescribed procedure, it is possible that the pilot would have noticed the lack of power during the taxi of the aircraft.

The pilot, upon noticing the engine failure, moved the power lever to the “maximum–emergency” position, increasing the flow of fuel into the engine.

It is rather likely that the presence of white smoke in the engine exhaust occurred on account of injection of fuel into the combustion chamber, after the pilot moved the power lever to the “maximum – emergency” position.

According to technicians of the *Turbomeca do Brasil* company, the aircraft engine did not show evidence of failure during the post-accident tests.

Another indication that the pilot was eager to take off could be noticed when he mistakenly mentioned the registration of the other aircraft while in contact with the support radio station of the helipad.

### **3 CONCLUSIONS**

#### **3.1 Facts**

- a) The pilot had a valid medical certificate;
- b) The pilot had a valid technical qualification certificate;
- c) The pilot was qualified and had enough experience for the type of flight;
- d) The aircraft had a valid airworthiness certificate;
- e) The aircraft was within the limits of weight and balance;
- f) The pilot had just landed another aircraft, and then went aboard the PT-HNL for another flight;
- g) The time elapsed between the landing and the other takeoff was approximately fifteen minutes;
- h) It was a ferry flight from SIBH to SJGM, at a distance of about 1.5 nautical miles;
- i) The procedure adopted at the Helicidade helipad was: takeoff from spot number 8, taxi toward the central spot, and climb to the helipad;
- j) The aircraft, upon lifting off, started an accentuated vertical climb, and flew over the central spot at a height of approximately 10 meters on a turn to the right;
- k) When the aircraft reached a height of about 15 meters, there was a sudden yaw to the right, with a big and abnormal quantity of white smoke getting out of the engine exhaust;
- l) The pilot, upon noticing the engine failure, moved the power lever to the “maximum – emergency” position;
- m) The aircraft collided with the ground on a level attitude;
- n) The aircraft sustained serious damage; and
- o) The pilot suffered minor injuries.

#### **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) Pilot's forgetfulness – undetermined

It is probable that, on account of his haste to take off, the pilot forgot to perform some of the prescribed procedures, including the one of moving the power lever to the flight position after the engine startup.

#### b) Piloting judgment – a contributor

To buy time, the pilot evaluated that it would be possible for him to takeoff directly from the spot number 8 towards the helipad, and failed to follow the procedures prescribed for the Helicidade helipad, something that possibly made him unaware of the lack of power during the taxi.

#### c) Flight planning – a contributor

Considering the exiguity of time between the latest landing and the next takeoff, there was an inadequate planning on the part of the pilot when he accepted to go for a new flight at the end of the previous one, since it may have hindered a full execution of the prescribed procedures.

### 3.2.2.2 Concerning the ATS units

Not a contributor.

## 3.2.3 Material Factor

### 3.2.3.1 Concerning the aircraft

Not a contributor.

### 3.2.3.2 Concerning ATS technology and equipment

Not a contributor.

## 4 SAFETY RECOMMENDATION (RSV)

*It is the establishment of an action that the Aviation Authority or the SIPAER-Link issues within its area of responsibility, aiming at eliminating or mitigating the risk of a latent condition or the consequence of an active failure.*

*From the SIPAER perspective, a safety recommendation is essential to flight safety, refers to a specific hazard, and has to be fulfilled by a certain deadline.*

### Flight Safety Recommendations made by SERIPA IV during the Investigation:

To **HAP Participações Ltda:**

**RSV (A) 138 / 2009 – SERIPA IV**

**Issued on 27/November/2009**

Create effective mechanisms so as not to allow untrained/not-hired crews to operate company aircraft.

**Flight Safety Recommendations made by the CENIPA:****To the National Civil Aviation Agency (ANAC):****A-162/CENIPA/2013 – RSV 001****issued on 30/12/2013**

Publicize the contents of this report at seminars, lectures and like activities targeted at helicopter owners, operators and explorers.

**5 CORRECTIVE/PREVENTATIVE ACTION ALREADY TAKEN**

Nil.

**6 DISSEMINATION**

- (Brazil's) National Civil Aviation Agency – ANAC
- Brazilian Helicopter Pilots Association – ABRAPHE
- French *Bureau d'Enquêtes et d'Analyses pour la Sécurité de l'Aviation* – BEA
- SERIPA IV

**7 APPENDICES**

Nil.

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On 30 December 2013