

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



**FINAL REPORT**  
**A - 029/CENIPA/2018**

**OCCURRENCE:**

**ACCIDENT**

**AIRCRAFT:**

**PP-GBP**

**MODEL:**

**AB-115**

**DATE:**

**19FEB2018**



## NOTICE

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

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

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

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

*This Report does not resort to any proof production procedure for the determination of civil or criminal liability, and is in accordance with Appendix 2, Annex 13 to the 1944 Chicago Convention, which was incorporated in the Brazilian legal system by virtue of the Decree nº 21713, dated 27 August 1946.*

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

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

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

## SYNOPSIS

This is the Final Report of the 19FEB2018 accident with the AB-115 aircraft, registration PP-GBP. The accident was classified as “[LOC-G] Loss of Control on the Ground and [RE] Runway Excursion”.

During a Touch-and-Go Landing training, there was loss of directional control, with the aircraft overpassing the side limit of the runway (veer off). In the return attempt, the right wing touched the ground, the landing gear broke and the propeller collided against the ground.

The aircraft had substantial damage.

The pilots left unharmed.

An Accredited Representative of the *Junta de Investigación de Accidentes de Aviación Civil (JIAAC) - Argentina*, State of Manufacture, was designated for participation in the investigation.

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**GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS**

AL	Student
ANAC	Brazil's National Civil Aviation Agency
CA	Airworthiness Certificate
CENIPA	Aeronautical Accident Investigation and Prevention Center
CIV	Pilot's Flight Logbook
CMA	Aeronautical Medical Certificate
IFRA	Instrument Flight Rating - Airplane
IN	Instructor
INVA	Flight Instructor Rating - Airplane
NM	Nautical Miles
JIAAC	<i>Junta de Investigación de Accidentes de Aviación Civil - Argentina</i>
MNTE	Airplane Single Engine Land Rating
MPH	Miles Per Hour
PCM	Commercial Pilot License – Airplane
PPR	Private Pilot License – Airplane
PRI	Private Aircraft Registration Category - Instruction
ROTAER	Auxiliary Air Route Manual
RPR	Rotations Per Minute
SDIO	ICAO Location Designator – Itápolis Aerodrome Aeroclub - SP
SDNH	ICAO Location Designator - Novo Horizonte Aerodrome - SP
SIPAER	Aeronautical Accident Investigation and Prevention System
TGL	Touch-and-Go Landing
UTC	Universal Time Coordinated
VFR	Visual Flight Rules

## 1. FACTUAL INFORMATION.

<b>Aircraft</b>	<b>Model:</b> AB – 115	<b>Operator:</b> Itápolis Aeroclub
	<b>Registration:</b> PP-GBP	
<b>Occurrence</b>	<b>Manufacturer:</b> Aero Boero	<b>Type(s):</b> [LOC-G] Loss of Control on the Ground and [RE] Runway Excursion <b>Subtype(s):</b> NIL
	<b>Date/time:</b> 19FEB2018 -1010 UTC <b>Location:</b> Novo Horizonte Aerodrome (SDNH) <b>Lat.</b> 21°29'52"S <b>Long.</b> 049°14'04"W <b>Municipality – State:</b> Novo Horizonte – SP	

### 1.1 History of the flight.

The aircraft took off from the Itápolis Aerodrome (SDIO) - SP, to the Novo Horizonte Aerodrome (SDNH) - SP, at about 0930 (UTC), in order to perform a en-route visual instruction navigation with Touch-and-Go Landing (TGL) training at SDNH, with two pilots on board.

During the TGL training, there was loss of directional control, with the aircraft overpassing the lateral limit of the runway (veer off). In the return attempt, the right wing touched the ground, the landing gear broke and the propeller collided against the ground.



Figure 1 - Overview of the aircraft after the accident.

The aircraft had substantial damage. The pilots left unharmed.

### 1.2 Injuries to persons.

Injuries	Crew	Passengers	Others
Fatal	-	-	-
Serious	-	-	-
Minor	-	-	-
None	2	-	-

### 1.3 Damage to the aircraft.

The aircraft had substantial damage to the engine, propeller, landing gear and right wing (Figures 2 and 3).





Figure 2 - View of the damage to the propeller blades and landing gear.



Figure 3 - View of the right wing damage.

#### 1.4 Other damage.

None.

#### 1.5 Personnel information.

##### 1.5.1 Crew's flight experience.

Flight Hours		
	Instructor	Student
Total	370:30	156:30
Total in the last 30 days	15:00	41:30
Total in the last 24 hours	02:00	00:30
In this type of aircraft	Unknown	40:00
In this type in the last 30 days	15:00	41:30
In this type in the last 24 hours	02:00	00:30

**N.B.:** The data related to the flown hours were obtained through the Pilot's Flight Logbook (CIV) records. It was not possible to establish the Instructor's total flight hours in that aircraft model.

### **1.5.2 Personnel training.**

The Instructor (IN) took the PPR course at the Itápolis Aeroclub - SP, in 2015.

The student (AL) took the PPR course at the EJ Escola de Aviação Ltd., Jundiaí - SP, in 2016.

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

The IN had the PCM License and had valid MNTE and INVA Ratings.

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

### **1.5.4 Qualification and flight experience.**

The Instructor was qualified and began his flight instructor activity approximately three months before the occurrence.

The AL was taking the course to obtain the PCM License.

### **1.5.5 Validity of medical certificate.**

The pilots had valid CMAs.

### **1.6 Aircraft information.**

The aircraft, serial number 193-B, was manufactured by Aero Boero, in 1991 and it was registered in the PRI category.

The aircraft had valid Airworthiness Certificate (CA).

The airframe, engine and propeller logbooks records were updated.

The last inspection of the aircraft, the "100 hours" type, was carried out on 12FEB2018, by the Itápolis Aeroclub – SP, having flown 16 hours and 30 minutes after the inspection.

### **1.7 Meteorological information.**

The weather conditions were favorable for the visual flight.

It was verified that the conditions in the Aerodromes of the region, that possessed meteorological station, were favorable for the visual flight with visibility over 10km and few clouds at 4,000ft. The wind had intensity of up to 05kt.

### **1.8 Aids to navigation.**

Nil.

### **1.9 Communications.**

Nil.

### **1.10 Aerodrome information.**

The Novo Horizonte Aerodrome (SDNH) was public, ran by the Novo Horizonte City Hall - SP, and operated under Visual Flight Rules (VFR) in the daytime.

The runway was made of clay, the thresholds were 13/31, with dimensions of 1,000m x 30m and elevation of 1,526ft. In the ROTAER, the runway was listed as being made of grass.

### **1.11 Flight recorders.**

Neither required nor installed.

### **1.12 Wreckage and impact information.**

The first impact was by touching the tip of the aircraft right wing against the ground. This event caused a change in its trajectory. Then, the landing gear of the aircraft, in contact



with the ground and misaligned with the course of the runway, broke down. At the same time, the propeller touched the ground.

The wreckage distribution was of the concentrated type.

The aircraft traveled 272m from the first impact until the total stop (Figure 4).

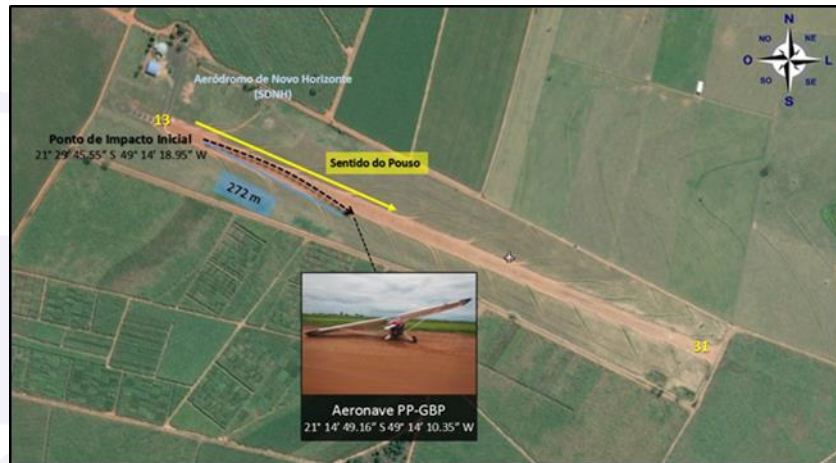


Figure 4 - Diagram of the accident.

### 1.13 Medical and pathological information.

#### 1.13.1 Medical aspects.

Not investigated.

#### 1.13.2 Ergonomic information.

Nil.

#### 1.13.3 Psychological aspects.

Nil.

### 1.14 Fire.

There was no fire.

### 1.15 Survival aspects.

Nil.

### 1.16 Tests and research.

Nil.

### 1.17 Organizational and management information.

Nil.

### 1.18 Operational information.

The aircraft was within the weight and balance limits specified by the manufacturer.

It was an instruction flight of the PCM training course.

The planning envisaged an en-route navigation and the performance of traffic with the TGL procedure in SDNH.

The aircraft took off from SDIO at about 0930 (UTC). The expected flight time until SDNH was 20 minutes.

Upon arriving at SDNH, the pilots chose to use threshold 31, after making a pass to visualize the windsock.

The first two landings were of the three-point type, they occurred normally, having been performed by the AL, and accompanied by the IN. The third touch was the "wheel landing" type, which also occurred within the normal range.

The fourth landing, which culminated in the crash, was a "wheel landing" type. During the procedure, carried out by the AL, the aircraft touched the runway and went up. The AL tried to correct it, however, the aircraft touched the ground and gained height again. At that moment, the IN verbally commanded the go-around procedure, without there being any reaction from the AL.

In this way, the fact happened again and the aircraft left the runway on the left side (veer off).

The IN intervened, acting on the commands to return the aircraft to the runway. On this route, the tip of the right wing touched the ground, resulting in the breaking of the landing gear and the collision of the propeller against the ground. There was no attempt of a go-around procedure by the IN.

The instruction sheets of previous flights revealed that the AL was easy to perform most of the exercises in the mission, since his performance was considered "Good".

The degree of learning indicated that the AL was at the "Execution" level, in which the student performs the exercises according to acceptable standards, taking into account the greater or less difficulty offered by the equipment used.

#### **1.19 Additional information.**

Wheel landing consists of touching the aircraft on the ground with the attitude of cruising, basically in the position of a straight and leveled flight. In order to do so, the pilot must level the aircraft close to the runway, avoiding it to lower the tail.

After the touch, the power must be reduced, keeping the stick slightly ahead.

The three-point landing consists of touching the three wheels at the same time, at the lowest possible speed. For this, during landing, the engine is reduced, while the aircraft is gradually taken to the taxi attitude. As the aircraft slows down, it tends to sink, and it is up to the pilot to keep the *palier* until the touch on the runway.

The techniques for accomplishing these landings were obtained in an empirical way, not being contemplated by the aircraft flight manual.

According to pilots, for this model of aircraft, the approach should be made with 60 MPH of speed and regime of 1,500 RPM in the engine.

#### **1.20 Useful or effective investigation techniques.**

Nil.

## **2. ANALYSIS.**

It was an instruction flight of the PCM training course.

The planning envisaged an en-route navigation and the performance of traffic with TGL procedure in SDNH. The steps involved in the flight planning were duly met.

Weather conditions were favorable for the visual flight and the aircraft was within the weight and balance limits stipulated by the manufacturer.

In the SDNH runway, two traffic for landing of the "three point" type and one traffic for landing of the "wheel" type were performed, previous to the event.

The fourth landing, which culminated in the crash, was a "wheel landing" type. During the procedure performed by the AL, the aircraft touched the runway and went up. The AL tried to correct it, however, the aircraft touched the ground and gained height again.

Upon noticing such situation, the IN reported having requested the go-around procedure to be made. However, the AL did not do so, forcing the IN to take command of the aircraft, after it had left the runway by the side (veer off).

In the attempt to return, with the control of the aircraft already compromised, the tip of the right wing touched the ground, the landing gear broke and the propeller collided against the ground.

Due to the late control of the aircraft, it was not possible to interrupt the chain of events that culminated in the accident. In this way, the late decision-making, by the IN, made it impossible to correct the error made by the AL.

This attitude was also evidenced by the fact that, despite having requested the go-around procedure, at no time did the IN consider that himself could perform the go-around procedure with the aircraft.

It should be noted that the instruction sheets of previous flights revealed that the AL had an easiness in the execution of most of the exercises included in the mission, since his performance was considered "Good".

In addition, the degree of learning indicated that the AL was at the "Execution" level. This level presupposed that AL corrected his errors, without IN interference.

Thus, the history of good performance of the AL in all previous phases of PCM instruction may have favored a more complacent IN position during the flight, making him less assertive about corrective actions to be taken.

This lack of assertiveness could also be related to the IN's lack of experience in the flight instruction activity, since his training had been completed a few months before this occurrence.

### **3. CONCLUSIONS.**

#### **3.1 Facts.**

- a) the pilots had valid Aeronautical Medical Certificates (CMA);
- b) the IN had valid MNTE and INVA Ratings;
- c) the AL had valid MNTE Rating;
- d) the Instructor was qualified and began his flight instructor activity approximately three months before the occurrence.
- e) the aircraft had valid Airworthiness Certificate (CA);
- f) the aircraft was within the limits of weight and balance;
- g) the airframe, engine and propeller logbooks records were updated;
- h) the weather conditions were favorable for the visual flight;
- i) the planning envisaged an en-route navigation and the performance of TGL procedure in SDNH;
- j) during the fourth TGL procedure, the aircraft left the runway (veer off);
- k) in the attempt to return to the runway, the tip of the right wing touched the ground, the landing gear broke and the propeller collided against the ground;
- l) the aircraft had substantial damage; and

m) the crewmembers left unharmed.

### 3.2 Contributing factors.

- **Control skills – a contributor.**

During the landing, there was an inadequate application of the aircraft commands by the AL. Even after the IN took over the controls, his correction was not able to prevent the accident. Attempting to bring the aircraft back onto the runway caused the aircraft right wing to touch the ground, triggering the events described in the scene of the accident.

- **Attitude – undetermined.**

The unassertive stance adopted by the IN during the instruction may have favored the errors made by the AL and made difficult the adequate management of the presented critical situation.

- **Crew Resource Management – a contributor.**

There was a lack of communication between the crew, since the go-around procedure commanded by the IN was not executed by the AL. This revealed inadequacy in flight management during a critical phase of the operation.

- **Piloting judgment – a contributor.**

There was an inappropriate evaluation by the IN regarding the procedures to be adopted to correct the AL fault. The IN believed that the AL, in view of his previous performance, could make the necessary corrections.

Likewise, there was a delay in taking over commands, and when he did, his corrections proved to be inappropriate. The fact that he did not consider the possibility of carrying out a go-around procedure, also contributed to the occurrence.

- **Insufficient pilot's experience – undetermined.**

The IN's limited experience in the flight instruction activity may have contributed to allowing a common piloting error to become an accident.

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

The instructor's reactions to the event were characterized by an inaccurate evaluation of the available alternatives, which resulted in late decision making, to the point of preventing the adoption of corrective measures in a timely manner to avoid the occurrence.

### 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-029/CENIPA/2018 - 01****Issued on 12/18/2019**

Act together with the Itápolis Aeroclub, in order that the operator improves the instructional techniques used and guide the instructors to be more proactive and conservative, in order to avoid that the errors of the students approach the point of irreversibility of an accident.

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Act together with the Itápolis Aeroclub, in order that the operator, during the training offered to his crew, emphasizes the techniques of go-around procedures and the factors that lead to the execution of this procedure, especially when it is verified by the crew that the aircraft is in a non-stabilized approach.

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

None.

On December 18<sup>th</sup>, 2019.