COMANDO DA AERONÁUTICA

CENTRO DE INVESTIGAÇÃO E PREVENÇÃO DE ACIDENTES AERONÁUTICO

FINAL REPORT
A-043/CENIPA/2022

OCCURRENCE:	**ACCIDENT**
AIRCRAFT:	**PP-CRE**
MODEL:	**AT 402B**
DATE:	**06ABR2022**

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 considering 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 distinct factors, including the individual, psychosocial or organizational variables that conditioned the human performance and interacted to create a scenario favorable to the accident.

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

This Final Report has been made available to the ANAC and the DECEA so that the technical-scientific analyses of this investigation can be used as a source of data and information, aiming at identifying hazards and assessing risks, as set forth in the Brazilian Program for Civil Aviation Operational Safety (PSO-BR).

This Report does not resort to any proof production procedure for the determination of civil or criminal liability, and is in accordance with Appendix 2, Annex 13 to the 1944 Chicago Convention, which was incorporated in the Brazilian legal system by virtue of the Decree 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. Considering 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 Final Report pertains to the April 6, 2022, accident involving the AT 402B aircraft of registration marks PP-CRE. The occurrence was typified as "[LOC-G] Loss of Control on the Ground" and "[RE] Runway Excursion."

During the takeoff roll, the aircraft collided with nearby vegetation, exceeding the lateral limits of the landing area designated for aerial agricultural operations.

It was determined that there was a momentary loss of directional control during takeoff.

The aircraft sustained substantial damage.

The pilot was uninjured.

Being Canada the State of engine manufacture, the Canadian TSB (Transportation Safety Board) designated an Accredited Representative for participation in the investigation of the accident.

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GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS

ANAC	Brazil's National Civil Aviation Agency
CENIPA	Brazil's Center for the Investigation and Prevention of Aeronautical Accidents
CIV	Digital Pilot-Logbook
CMA	Aeronautical Medical Certificate
CVA	Certificate of Airworthiness (C of A)
MNTE	Single-Engine Landplane Rating
OM	Maintenance Organization
PAGA	Agricultural Pilot Rating - Airplane
PIC	Pilot in Command
PCM	Commercial Pilot License - Airplane
PPR	Private Pilot License - Airplane
RBAC	Brazilian Civil Aviation Regulation
SACI	Integrated Civil Aviation Information System
SSKY	ICAO location designator - *Fazenda Querência* Aerodrome, *Tangará da Serra*, State of *Mato Grosso*
TPP	Private Registration Category – Private Air Services
UTC	Coordinated Universal Time

1. FACTUAL INFORMATION.

Aircraft	**Model:** AT 402B **Registration:** PP-CRE **Manufacturer:** Air Tractor.	**Operator:** *Agropecuária Crestani Ltda.*
Occurrence	**Date/time**: 06ABR2022 - 10:15 (UTC) **Location:** *Fazenda Querência.* **Lat.** 14°29'02"S **Long.** 058°21'23"W **Municipality – State:** *Tangará da Serra – Mato Grosso*.	**Type(s):** [LOC-G] Loss of control - ground [RE] Runway excursion

1.1. History of the flight.

At approximately 10:15 UTC, the aircraft was preparing to take off from the aerial agricultural landing area of *Fazenda Querência*, located in *Tangará da Serra*, State of Mato Grosso, bound for SSKY (*Fazenda Querência* Aerodrome), located within the limits of the same farm, on a repositioning flight, with 01 POB (pilot).

During the takeoff roll, the aircraft collided with nearby vegetation, exceeding the lateral limits of the designated landing area.

The aircraft sustained substantial damage.

The pilot was uninjured.

1.2. Injuries to persons.

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

1.3. Damage to the aircraft.

The forward section of the fuselage remained relatively intact, while the tail cone sustained significant damage, exhibiting lateral twisting to the right and wrinkling.

1.4. Other damage.

NIL.

1.5. Personnel information.

1.5.1. Crew's flight experience.

Hours Flown	
	PIC
Total	7,356:36
Total in the last 30 days	34:54
Total in the last 24 hours	00:00
In this type of aircraft	993:30
In this type in the last 30 days	34:54
In this type in the last 24 hours	00:00

Note: flight-hour information obtained through declaration from the pilot. According to the CIV (digital Pilot-Logbook) of the ANAC's Integrated Civil Aviation Information System (SACI), the pilot had logged 4,263 hours and 35 minutes of flight time**.**

1.5.2. Personnel training.

The Pilot in Command (PIC) completed the PPR course (Private Pilot – Airplane) in 1995, at *Escola de Aviação - Itápolis*, State of *São Paulo*.

1.5.3. Category of licenses and validity of certificates.

The PIC held a PCM license (Commercial Pilot – Airplane), with valid ratings for MNTE (Single-Engine Landplane) and PAGA (Agricultural Pilot – Airplane).

1.5.4. Qualification and flight experience.

The PIC's digital CIV records indicated that he had been operating the AT 402B airplane, registration marks PP-CRE, since August 2019. In the 30 days prior to the occurrence, the pilot completed 12 flight segments, meeting the recent experience requirements set forth in section 61.21 "Recent Experience" of the Brazilian Civil Aviation Regulation nº 61 (RBAC-61), which governs "Licenses, Ratings, and Certificates for Pilots."

The PIC was qualified and experienced in this type of flight.

1.5.5. Validity of medical certificate.

The PIC held a valid CMA (Aeronautical Medical Certificate).

1.6. Aircraft information.

The SN 402B1419 airplane was manufactured by Air Tractor in 2019. It was registered under the Private Registration Category – Private Air Services (TPP).

The airplane's CVA (Certificate of Airworthiness) was valid.

The records of the airframe, engine, and propeller logbooks were up to date.

The latest inspection of the aircraft ("100/200-hour" check) took place on March 17, 2023, on the premises of *Airtechs Ltda.* Maintenance Organization (OM) in *Santo Antônio do Leverger*, State of *Mato Grosso*. The aircraft accumulated 2 hours and 54 minutes of flight time after the said inspection.

The latest overhaul of the airplane (a "300-hour" check) took place on September 8, 2021, also on the premises of *Airtechs Ltda.*, with 205 hours and 54 minutes of flight time logged after referred overhaul.

1.7. Meteorological information.

The weather conditions were above the minima required for the operation under the proposed flight rules, with clear skies and good visibility.

According to a report from the PIC, there were neither strong winds nor adverse conditions that could have affected the performance of the aircraft. However, there was presence of morning dew on the runway.

1.8. Aids to navigation.

NIL.

1.9. Communications.

NIL.

1.10. Aerodrome information.

The occurrence in question took place at an aerial agricultural landing area measuring 1,100 x 22 meters, owned by the same company that operated the aircraft. While the runway dimensions were compatible with the performance of the aircraft operating there, it exhibited certain peculiar characteristics.

On both sides of the runway, there was a dense cornfield, as it was the harvest season. Additionally, as is common in many agricultural landing areas, there were no visual references marking the runway centerline. The lateral limits of the area relied entirely on the pilot's spatial perception and their ability to control the aircraft.

The runway width was 22 meters, while the wingspan of the accident airplane was 15.54 meters, leaving a narrow margin for error during operations.

1.11. Flight recorders.

Not required and not installed.

1.12. Wreckage and impact information.

The position of the wreckage was adjacent to the aerial agricultural landing area of the farm.

According to physical evidence at the impact site, the airplane deviated from the takeoff axis, veering laterally to the right, where its wingtip made contact with the tall cornfield, which exhibited an advanced growth stage.

Subsequently, the aircraft lost control, exiting the runway completely, and entering the cornfield.

Figure 1 - Aerial view of the landing area and the aircraft's final position in the cornfield.

One observed that the tail cone of the airplane was significantly damaged, exhibiting lateral twisting to the right, a typical characteristic of damage in conventional landing gear aircraft (ground loop).

The tips of the propeller blades showed plastic deformation in the direction of rotation, which is indicative of low power at the time of contact with the crop.

The left and right wings remained attached to the aircraft and sustained minor damage.

1.13. Medical and pathological information.

1.13.1. Medical aspects.

There was no evidence that issues of physiological nature or incapacitation might have affected the pilot's performance.

1.13.2. Ergonomic information.

NIL.

1.13.3. Psychological aspects.

No evidence was found that issues of psychological nature could have affected the pilot's performance.

1.14. Fire.

There was no fire.

1.15. Survival aspects.

The pilot exited the aircraft by himself. Individuals who had witnessed the occurrence escorted him to the farm headquarters.

1.16. Tests and research.

NIL.

1.17. Organizational and management information.

The operator of the airplane was *Agropecuária Crestani Ltda.*, which also owned the farm where the accident occurred. The company's headquarters and operational base were located in the municipality of *Tangará da Serra*, State of *Mato Grosso*.

1.18. Operational information.

The pilot reported that he had traveled to *Fazenda Querência* the day before the occurrence, as the farm was located at a distance of 120 km from *Tangará da Serra*, and the takeoff was scheduled for early morning, around 06:00 (local time).

He informed that the pre-flight preparations were uneventful and that he proceeded to the aircraft to perform a short repositioning flight from the aerial agricultural landing area to SSKY, an airfield located on the same farm.

During takeoff, the pilot struggled to maintain the runway centerline due to torque effects, which caused lateral deviation to the right, leading to wingtip contact with the tall cornfield. Following this, he lost control of the aircraft, which completely exited the runway and entered the cornfield.

The collision with the cornfield occurred early in the takeoff roll. The total ground distance from the start of the takeoff run to the aircraft's full stop was 300 meters.

The width of the runway was 22 meters, and the airplane wingspan was 15.54 meters.

The aircraft was within weight and balance limits.

1.19. Additional information.

NIL.

1.20. Useful or effective investigation techniques.

NIL.

2. ANALYSIS.

According to information gathered during the investigation, it was the first flight of the day, intended as a short repositioning flight between the aerial agricultural landing area and SSKY, both located within the limits of the same farm.

The PIC had spent the night at the farm to facilitate an early morning departure. Pre-flight preparations proceeded normally, with no reported anomalies.

Logbook records confirmed that the pilot's flight hours over the past 30 days were within regulatory limits, without signs of excessive workload. Furthermore, the PIC had extensive experience, with 7,356 total flight hours, including 993 hours specifically on the AT 402B model. This flight history, along with his statements, indicated that he was

physically and mentally fit for the flight, with no signs of fatigue or stress that could have impaired his performance.

The airplane, an Air Tractor AT 402B (registration marks PP-CRE), had an airworthy condition, with up-to-date maintenance, documentation in order, and within weight and balance limits.

The accident occurred during the takeoff roll, when the airplane veered to the right, struck dense nearby vegetation, and subsequently lost control, resulting in a runway excursion and substantial structural damage.

The weather conditions were favorable for the conduction of the flight, with clear skies and good visibility. No strong winds or adverse conditions were present that could have affected the performance of the aircraft. However, it was possible to note the existence of morning dew on the runway, a fact that may have reduced tire traction, contributing to the difficulty in maintaining directional control during the takeoff roll.

This environmental factor requires appropriate mitigation measures from the pilot. It is possible that this condition was not adequately considered, indicating insufficient operational planning.

The landing area utilized, despite being suitable for the operation of the aircraft, had limited lateral clearance, leaving only 3.23 meters between each wingtip and the edge of the runway. Additionally, a tall cornfield lined both sides of the runway due to the crop's growth stage.

At the beginning of the takeoff roll, the aircraft veered right, likely due to inadequate rudder input while counteracting engine torque and to the reduced tire adhesion on the damp surface.

The limited lateral margin between the wingtips and the runway's edge increased the risk of contact with the tall cornfield. This contact resulted in loss of control, leading to the runway excursion.

Ultimately, the inadequate assessment of key operational parameters, including engine torque reaction and runway conditions, contributed to the occurrence.

3. CONCLUSIONS.

3.1. Findings.

a) the pilot held a valid CMA (Aeronautical Medical Certificate);

b) the pilot held valid ratings for MNTE (Single-Engine Land Airplane) and PAGA (Agricultural Pilot – Airplane);

c) the pilot was qualified and experienced in this type of flight;

d) the aircraft's CVA (Certificate of Airworthiness) was valid;

e) the aircraft was within weight and balance limits;

f) the records of the airframe, engine, and propeller logbooks were up to date;

g) the weather conditions were above the minima required for the flight;

h) there was morning dew on the landing area;

i) at the beginning of the takeoff roll, the pilot was unable to maintain control of the aircraft, which veered to the right;

j) the aircraft made contact with the cornfield on the side of the landing area;

k) a loss of control occurred, leading to runway excursion;

l) the aircraft sustained substantial damage; and

m) the pilot was uninjured.

3.2. Contributing factors.

- **Handling of aircraft flight controls – a contributor.**

The inadequate handling of flight controls, particularly in counteracting engine torque, resulted in lateral deviation and subsequent contact with the vegetation, leading to loss of control and runway excursion.

- **Piloting judgment – a contributor.**

The pilot's judgment, characterized by an inadequate assessment of the operational parameters, including the reaction to engine torque and the runway conditions, contributed to the occurrence.

- **Flight planning – undetermined.**

The lack of adequate planning to mitigate risks associated with morning dew on the runway and dense vegetation along the sides may have contributed to the occurrence.

4. SAFETY RECOMMENDATIONS

None.

5. CORRECTIVE OR PREVENTATIVE ACTION ALREADY TAKEN.

None.

On May 22th, 2025.