

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



**FINAL REPORT**  
**A-025/CENIPA/2022**

<b>OCCURRENCE:</b>	<b>ACCIDENT</b>
<b>AIRCRAFT:</b>	<b>PT-DKK</b>
<b>MODEL:</b>	<b>M20F</b>
<b>DATE:</b>	<b>23FEV2022</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 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 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. 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 is the Final Report of the 23<sup>rd</sup> February 2022 accident with the model M20F aircraft, registration marks PT-DKK. The accident was typified as “[SCF-PP] Engine failure or malfunction”.

Shortly after taking off from SNBS (Airport of *Balsas*, State of *Maranhão*), the aircraft lost power, and crashed onto the roofs of adjacent residences.

Investigation found that there was an obstruction in the servo injector of the fuel system, causing the engine to stop.

The aircraft sustained substantial damage.

Neither of the occupants of the aircraft (a pilot and a passenger) was injured.

Being the United States of America the State of design and manufacture of the aircraft, the USA’s National Transportation Safety Board (NTSB) appointed an Accredited Representative for participation in the investigation of the accident.



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## GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS

AEV	Special Flight-Authorization
ANAC	Brazil's National Civil Aviation Agency
AvGas	Aviation Gasoline
CENIPA	Brazil's Aeronautical Accident Investigation and Prevention Center
CIV	Pilot Logbook
CVA	Airworthiness-Verification Certificate
DCTA	Department of Science and Aerospace Technology
FAP	Pilot-Evaluation Form
IAM	Annual Maintenance Inspection
MLTE	Multi-Engine Land Class Airplane Rating
MNTE	Single-Engine Land Class Airplane Rating
OM	Maintenance Organization
PIC	Pilot in Command
PMD	Maximum Take-Off Weight
PPR	Private Pilot License (Airplane)
RBAC	Brazilian Civil Aviation Regulation
SBSL	ICAO location designator - <i>Marechal Cunha Machado Aerodrome, São Luís, State of Maranhão</i>
SERIPA I	First Service for the Investigation and Prevention of Aeronautical Accidents
SI	Service Instruction
SIPAER	Aeronautical Accident Investigation and Prevention System
SIPB	ICAO location designator - <i>Clube de Aviação Desportiva – CAVU Aerodrome, Raposa, State of Maranhão</i>
SN	Serial Number
SNBR	<i>Designativo de Localidade - Dom Ricardo Weberberger Aerodrome, Barreiras, State of Bahia</i>
SNBS	ICAO location designator – Airport of <i>Balsas, State of Maranhão</i>
SNOZ	ICAO location designator - <i>Coronel Alexandre Raposo Aerodrome, Paço do Lumiar, State of Maranhão</i>
SSOG	ICAO location designator - Aerodrome of <i>Arapongas, State of Paraná</i>
TPP	Private Air Services Registration Category
UTC	Coordinated Universal Time

## 1. FACTUAL INFORMATION.

Aircraft	<b>Model:</b> M20F	<b>Operator:</b> Private
	<b>Registration:</b> PT-DKK <b>Manufacturer:</b> Mooney Aircraft Company	
Occurrence	<b>Date/time:</b> 23FEV2022 – 15:00 (UTC)	<b>Type(s):</b> [SCF-PP] Powerplant failure or malfunction
	<b>Location:</b> Balsas <b>Lat.</b> 07°31'41"S <b>Long.</b> 046°02'48"W <b>Municipality – State:</b> Balsas - Maranhão	

### 1.1. History of the flight.

At 14:55 UTC, the aircraft took off from SNBS (Aerodrome of Balsas, State of Maranhão), bound for SNBR (Dom Ricardo Weberberger Aerodrome, Barreiras, State of Bahia), for a ferry flight with 02 POB (a pilot and a passenger).

After the takeoff, the aircraft lost power and collided with residences.

The aircraft sustained substantial damage.

The pilot and the passenger suffered no injuries.

### 1.2. Injuries to persons.

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

### 1.3. Damage to the aircraft.

The aircraft sustained substantial damage to its entire structure after colliding with residences.



Figure 1 – Picture taken of the aircraft at the crash-site.

### 1.4. Other damage.

There was damage to the residences with which the aircraft collided.

## 1.5. Personnel information.

### 1.5.1. Crew's flight experience.

FLIGHT EXPERIENCE	
	PIC
Total	277:56
Total in the last 30 days	03:40
Total in the last 24 hours	02:30
In this type of aircraft	02:30
In this type in the last 30 days	02:30
In this type in the last 24 hours	02:30

**RMK:** data on the pilot's flight experience (hours flown) obtained from the records of his CIV (Digital Pilot-Logbook)

### 1.5.2. Personnel training.

The PIC (Pilot in Command) did his PPR course (Private Pilot – Airplane) in 2008, at the *Aeroclub de Maranhão, São Luís, State of Maranhão*.

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

The PIC held a PPR license and valid ratings for MNTE (Single-Engine Land Aircraft Class) and MLTE (Multi-Engine Land Airplane Class).

### 1.5.4. Qualification and flight experience.

In the PIC's CIV (digital Pilot-Logbook), there were records of a total 02 hours and 30 minutes of flight time in the PT-DKK aircraft, which had been flown in the period of just 24 hours before the accident.

The PIC's operational background included the following aircraft models: Cessna 150, 152, 182, T-130, 210, Embraer 710, 720D, 721, 810 Seneca, Beechcraft Baron 58, and Mooney M20F.

In the 90 days preceding the occurrence, the PIC had flown a total of 13 hours, including 2 hours and 30 minutes in a single-engine land class aircraft, corresponding to a record of 01 cycle (a takeoff and a landing) in the referred class.

The Brazilian Civil Aviation Regulation nº 61 (RBAC-61), Amendment 13, in force at the time, section 61.21 (a)(1)(ii) contains the following (*paraphrased*):

A pilot can only fly an aircraft as the pilot in command if, within the latest 90 (ninety) days, he/she has performed (in the case of other aircraft) at least 3 (three) takeoffs and 3 (three) landings during day- or night-time, having effectively operated the controls of an aircraft of the same category and class/type.

Therefore, the PIC was not qualified for the type of flight.

### 1.5.5. Validity of medical certificate.

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

## 1.6. Aircraft information.

The airplane (serial number 700031) was a product manufactured by Mooney Aircraft Company in 1970, and registered in the TPP registration category (Private Air Services).

The aircraft was not in airworthy condition, when one considers that the latest inspection performed on 15 August 2018 was an Annual Maintenance Inspection (IAM), concomitantly with a "100-hour" Inspection. However, the aircraft had a Special Flight-Authorization (AEV) for a ferry flight from SBSL (*Marechal Cunha Machado Aerodrome, São*

*Luís*, State of *Maranhão*) to SSOG (Aerodrome of *Arapongas*, State of *Paraná*), in order to undergo an inspection for the issuance of the CVA (Airworthiness-Verification Certificate).

The validity of the aforementioned AEV was from 18 February to 15 March 2022 (transport of passengers and/or cargo not allowed).

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

As mentioned before, the latest logged inspection of the aircraft ("100 hour" type - IAM), took place on 15 August 2018, performed by a certified Maintenance Organization in *Teresina*, State of *Piauí*, when the aircraft had 2,293 hours and 30 minutes of flight.

However, the aircraft's most recent record in the logbook dated 29 January 2013, and showed the same flight-time information of 2,293 hours and 30 minutes.

The latest overhaul of the model IO-360-A1A Lycoming engine (SN L-19837-51A), took place on 18 February 2009, at the premises of a certified Maintenance Organization in the municipality of *Rio Largo*, State of *Alagoas*, when the referred engine had a total of 499 hours logged.

As per the engine logbook, the latest logged intervention on the engine dated from 15 August 2018 (concomitant with the aircraft's latest IAM), when it had 254 hours logged.

#### **1.7. Meteorological information.**

As reported by the pilot, the weather conditions were consistent with the flight. Such information was confirmed by footage recorded by third parties at the time of the occurrence.

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

NIL.

#### **1.9. Communications.**

NIL.

#### **1.10. Aerodrome information.**

The runway of SNBS used for the takeoff, was paved with asphalt, and had the thresholds 33/15, measuring 1,000 m x 23 m, at an elevation of 932 ft.

#### **1.11. Flight recorders.**

Neither required nor installed.

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

The wreckage was located at a distance of 600 m from the threshold 33 of SNBS, on the rooftops of contiguous residences. The area in the extended direction of takeoff had a large number of houses, as well as other buildings.





Figure 2 - Croquis showing the distance between threshold 33 and the wreckage.  
Source: adapted from Google Earth.

After the impact, the aircraft rolled and came to a stop at an upside-down position, in a direction of approximately  $140^\circ$ . The wreckage had a concentrated pattern.

The propeller blades sustained minor damage. One of blades had slightly twisted backwards.

The right-hand wing was partially broken, still connected to the fuselage by means of its own root, and bent towards the underside of the fuselage. The left wing had twisted backwards. Both wings had dents in their structure and control surfaces, mainly on their leading edges.

The landing gear legs were in a retracted and locked position, in a way consistent with the position of the pertinent control lever on the aircraft panel.

The wing flaps were in a fully extended position ( $33^\circ$ ) in landing configuration, corresponding to the position of the respective control inside the cabin.

The power, propeller, and fuel levers were in a forward position. The elevator trim was in the neutral position.

The speedometer did not have visible marks capable of indicating the speed of the aircraft upon impact.

### 1.13. Medical and pathological information.

#### 1.13.1. Medical aspects.

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

#### 1.13.2. Ergonomic information.

NIL.

#### 1.13.3. Psychological aspects.

According to information collected, the PIC began his aviation activities in 2008, having received the theoretical Private Pilot certification at the *Aeroclub de Maranhão* and his practice training in the region of the *Aeroclub de Pará de Minas*, State of Minas Gerais. He began the theoretical Commercial Pilot course in 2010, at the *EJ Escola de Aviação Civil*, in *Jundiaí*, State of *São Paulo*.

According to information gathered, the pilot accumulated professional experience on private flights, without formal employment bonds. In 2011, he began working as Pilot in Command in his operations.

In the times preceding the occurrence, the PIC used to operate as a freelancer for other aircraft owners. He established a good relationship with the operators for whom he provided his services.

According to accounts, the PIC was considered a calm, reserved person with good social skills. His colleagues reported that he was a committed and cautious pilot.

The PIC said that, in 2022, he was experiencing a good phase in his personal and professional life. In parallel with aviation, he maintained a business in the food sector.

From his perspective, he maintained a good physical activity and eating routine, and his nights' sleep was both peaceful and restful, with no complaints of any alterations capable of affecting his performance in the piloting activity.

According to reports, the pilot usually sought to keep updated with regulations and operating manuals, as well as to refine his qualifications.

According to information gathered, the PIC always worked the checklist in operations, performing pre- and post-flight inspections, in order to minimize the risks present and to ensure flight safety.

The night before the accident, the pilot had a good night's sleep, with approximately eight hours of rest.

The PIC said that he remained calm in the face of the engine failure, thinking of the possibility of returning to the aerodrome or landing in the river. However, after realizing that neither would not be possible, he tried to keep alert to perform his role in response to the emergency.

According to information provided by the passenger, the aircraft was to be purchased by his boss. He also commented that the flight to SNBS had been uneventful, and that the pilot demonstrated familiarity with both the aircraft and the region, and seemed to be knowledgeable of the procedures performed.

#### **1.14. Fire.**

There was no fire.

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

After the crash, the PIC and the passenger left the aircraft through the side doors. They received help from locals to climb down the roofs of the houses.

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

Given that the accident occurred due to engine failure, it was necessary to carry out analyses of the fuel, as well as of the IO-360-A1A Lycoming engine (SN L-19837-51A0 and its components).

It was not possible to collect samples of fuel from the aircraft's tanks, owing to the fact that they were emptied after the damage sustained by the wings. Furthermore, according to the firefighters who were at the site in response to the accident, an intense fuel leak was observed after the crash.

Thus, a decision was made of collecting fuel from the refueling station in SNBS, the latest refueling location, for testing. The collected sample was sent to the laboratory of the Department of Science and Aerospace Technology (DCTA), which detected no signs of contamination.

A Maintenance Organization certified by the ANAC analyzed the engine and its components with the monitoring of members of the Investigation Committee.

In the analysis, one found that the engine, as well as the ignition, induction, and lubrication systems showed no evidence of failures or alterations in their normal functioning.

Additionally, no external damage was found in the exhaust system, in the rear section, and in the accessory box, in the right- and left-hand sections, nor was there any damage to the propeller-flange shaft section of the engine.

With regard to the fuel system, the integrity of all the pipes and hoses was verified, with no evidence of rupture.

The mechanical fuel pump was removed and inspected. Despite the lack of functional tests for this component on the part of the manufacturer, one verified, during the disassembly and visual inspection, that the internal mechanism was preserved.

With respect to the four fuel injection nozzles, there was no external damage, such as breaks, cracks, or excessive wear. However, during bench tests, one found all four injection nozzles had a fuel flow rate below the nominal value established by the manufacturer, as shown in Figure 3.

Bico Injetor	Fluxo Previsto	Fluxo Medido
Nº 01	30,7-33,3 PPH	28,5 PPH
Nº 02	30,7-33,3 PPH	27,0 PPH
Nº 03	30,7-33,3 PPH	28,5 PPH
Nº 04	30,7-33,3 PPH	27,0 PPH

Figure 3 - Flow rate of the PT-DKK injection nozzles.

During the analysis of the fuel distributor, one verified that the nipple of the fuel-line outlet nipple for one of the cylinders had been installed incorrectly: instead of being installed in the cylinder feed line, it was attached to the fuel-pressure indication port.

With regard to this fact, it is important to note that the internal dimensions and calibrations of each fuel-distributor outlet orifice were different, resulting in distinct flow rates.

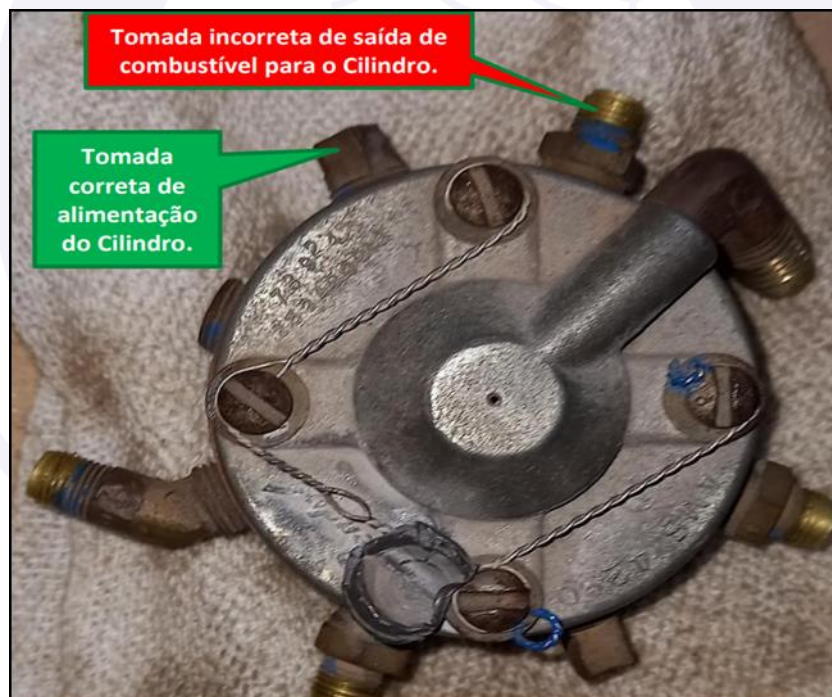


Figure 4 - Outlet nipple of the fuel flow to the cylinder incorrectly installed in the pressure indication line.

One should note that, for the port of pressure measurement, the distributor had a physical restriction that reduced the amount of fuel output. Therefore, one of the cylinders was receiving a fuel flow rate below the one expected.

In the analysis of the servo fuel injector, one found that its general condition along with the physical condition of the screen filter element were satisfactory, with no breaks, cracks, or excessive wear.

Subsequently, the servo fuel injector underwent a functional test as per the maintenance manual, with testing of the low-, medium-, and high-pressure fuel flows. For all the three pressure regimes, one observed insufficient fuel flow, indicating malfunction of the component.

The servo injector was disassembled for inspection of its internal parts. During the inspection, one observed contamination of the component with water and solidified residues in the internal chamber, showing obstruction of the calibrated orifices, which caused restriction of the fuel flow to the distributor and fuel injection nozzles.



Figure 5 - Contamination of the fuel servo injector.

### 1.17. Organizational and management information.

On 25 May 2009, the current owner had purchased the aircraft in a partnership fashion. He became the sole owner of the aircraft on 14 March 2019.

According to reports, the owner had no specific reason for the acquisition. He did not use the airplane on a regular basis. He just performed a few local flights, as well as occasional aircraft ground-running sessions related to maintenance.

In the years prior to the accident, the aircraft remained unused at SIPB (CAVU Aerodrome - *Clube de Aviação Desportiva*, municipality of *Raposa*, State of *Maranhão*).

According to information gathered, for approximately two years, the aircraft had remained covered with canvas and suspended on jacks. Sporadically, it underwent landing-gear functional tests.

The management of the aircraft by the owner/operator was not “on site”, as the location where he lived was distant from the PT-DKK’s place of storage.

The latest service logged in the aircraft logbook was the “100-hour” inspection (Annual Maintenance Inspection) on 15 August 2018, performed by a certified Maintenance Organization in *Teresina*, State of *Piauí*, when the aircraft had a total of 2,293 hours and 30 minutes of flight time.

Despite the existence of accounts that the aircraft had been ferried for the maintenance work mentioned above, one found no records of the referred ferry flight.

According to information gathered, the reason for the aircraft to remain with an expired IAM/CVA was the fact that the OM that carried out the previous inspection had received a

temporary suspension from the regulatory agency. Besides, there was no interest on the part of the owner in keeping the airworthiness of the aircraft.

One found that, at the beginning of 2022, there was interest on the part of third parties in purchasing the aircraft. For this reason, a maintenance service was planned for obtainment of a Special Flight-Authorization (AEV) in view of an eventual ferry flight of the aircraft to the Maintenance Organization located in *Arapongas*, State of *Paraná*.

Around the time of the accident, there was a Service Instruction (SI nº 1481B) issued by Lycoming, which provided guidance on engine-storage procedures.

According to information given by the Maintenance Organization that performed the service for the issuance of the AEV, the aircraft's engine underwent a storage reversal procedure. However, there were no records concerning a previous storage procedure in the pertinent engine logbook.

The PIC of the PT-DKK did not have employment bonds with the aircraft owner, and used to perform the flights in an informal fashion.

### **1.18. Operational information.**

For the accident flight, the PIC reported that he had received prior information of the aircraft, and that (in his judgment) he considered that the maintenance data presented to him was in accordance with the regulations.

He learned that it was a ferry flight, and coordinated the operation with due anticipation.

According to the planning, the intention was to take off from SNOZ (*Coronel Alexandre Raposo Aerodrome, Paço do Lumiar, State of Maranhão*) for a flight bound for SNBR, with an intermediate stop at SNBS for refueling.

In SNBR, the prospective owner would receive the aircraft. Then, the aircraft would proceed to SSOG, headquarters of the Maintenance Organization responsible for the inspection for the issuance of the CVA.

The PIC reported that, on the day of the occurrence, the takeoff from the aerodrome of origin was uneventful, and the general performance of the aircraft towards SNBS was adequate. In SNBS, the aircraft received 123 liters of Aviation Fuel (AvGas).

The weight of the aircraft at takeoff was 2,315 lbs, within the weight and balance limits specified by the manufacturer.

According to the PIC, he took off from the runway 15 of SNBS and, after passing over the departure end of the runway, he started a left turn. At an altitude of approximately 500 feet AGL, an engine failure occurred. He took actions to restart the engine, but without success. The aircraft glided along a heading of approximately 060°, and then collided with houses.

The PIC stated that the flaps were in a landing configuration, aimed at increasing the aircraft's lift. Images captured by third parties confirmed such condition.

After attempting to restart the engine, he initially thought of returning to the runway, but then decided to keep heading towards a football pitch located ahead.

The speed during takeoff varied between 90 and 100 MPH. However, after the engine failure, the speed oscillated, as reported, between 70 and 90 MPH, with a significant sinking rate.

On board the aircraft, the pilot had a checklist containing only normal procedures. The referred checklist did not include emergency procedures.

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

NIL.

## 1.20. Useful or effective investigation techniques.

NIL.

## 2. ANALYSIS.

It was a ferry flight with the purpose of taking the aircraft to a certified OM, where it would undergo maintenance work for being granted a CVA (certificate of airworthiness-verification).

During the ferry flight in question, there was a passenger on board, and such condition was in disagreement with the AEV (Special Flight-Authorization) received by the aircraft

The PIC of the flight demonstrated low adherence to regulations, in addition to the fact that he was not qualified for the flight due to the lack of recent experience.

It was not possible to collect fuel from the aircraft, as the damage caused to its wings culminated in the emptying of the fuel tanks. According to observers who were at the scene after the occurrence, they observed a post-impact fuel leak.

Furthermore, one verified that the aircraft had received 123 liters of AvGas in SNBS, a fact that ruled out the hypothesis of fuel exhaustion.

The analysis of the fuel collected at the aircraft's latest refueling site (SNBS) showed that the sample was in accordance with the prescribed specifications, showing no signs of contamination.

With regard to the analysis of the engine and its components, one observed non-conformities in the bench-tests of the fuel system, and found that the four injection nozzles had a fuel flow below the nominal value established in the technical literature.

In relation to the incorrect connections observed in the fuel distributor, it is worth noting that they generated a flow-rate that was lower than the amount recommended by the manufacturer for one of the cylinders, resulting in alterations of the engine's performance.

During the analysis of the servo fuel-injector, one found that there was insufficient flow for the low, intermediate, or high-pressure regimes, resulting in malfunction of the component due to internal obstruction.

Therefore, one inferred that the obstruction of the servo injector interrupted the flow of fuel to the distributor and, consequently, to the cylinders, causing the engine to shut down.

The observed condition of the propeller blades at the crash site corroborates the report that the aircraft was without power before the impact, and ratifies the condition found in the analysis of the components, which indicated absence of fuel flow for the engine.

With respect to the aircraft's maintenance management, one observed that the latest flight record in the aircraft logbook was of 29 January 2013, with the airframe reaching a total of 2,293 hours and 30 minutes of flight time. However, the latest inspection took place on 15 August 2018, in *Teresina*, State of *Piauí*, and, on the occasion, with the same flight time numbers being logged.

Therefore, one observed that there were no records of other services in Maintenance Organizations certified by the ANAC, culminating in the expiration of the aircraft's airworthiness condition on 15 August 2019.

Furthermore, there is no data confirming that the aircraft was stored, given the time it remained supposedly unused. In this regard, there are reports that the aircraft stayed covered by canvas and suspended on jacks for approximately two years.

Despite the lack of data concerning engine storage, one found a record concerning the execution of a storage reversal carried out by an ANAC-certified Maintenance Organization in the municipality of *Arapongas*, State of *Paraná*.

For this reason, a hypothesis was raised that the lack of adequate preservation of the aircraft and its engine may have contributed to the degradation of several components, especially the servo injector, contributing to the contamination of this item, and leading to its eventual obstruction.

As for the records of the aircraft logbook, one verified that the latest data logged dated from 29 January 2013. Nevertheless, one found that the aircraft flew to *Teresina*, State of Piauí, in order to undergo a “100-hour” inspection on 15 August 2018.

Thus, one observed a lack of adequate control the aircraft’s and its components’ flight hours, denoting a faulty supervision on the part of the owner/operator relatively to the subject.

As such, the failure to control the operation of the aircraft contributed to the degradation of the aircraft and its components, especially the servo injector, culminating in the obstruction of the referred item of the fuel system, which ultimately resulted in the engine failure.

### **3. CONCLUSIONS.**

#### **3.1. Findings.**

- a) the PIC had a valid CMA (Aeronautical Medical Certificate);
- b) he PIC had valid ratings for MNTE (Single-Engine Land Aircraft Class) and MLTE (Multi-Engine Land Aircraft Class);
- c) the PIC was not qualified for the type of flight;
- d) the validity of aircraft’s airworthiness had expired on 15 August 2019;
- e) the aircraft had a valid Special Flight-Authorization for a ferry flight to the maintenance organization premises;
- f) the aircraft was within the prescribed weight and balance limits;
- g) the records of the airframe, engine, and propeller logbooks were out of date;
- h) the meteorological conditions were consistent with the flight;
- i) the fuel servo injector presented obstruction, due to contamination by water and solid waste in its interior;
- j) after taking off from SNBS, the aircraft lost power, and collided with residences;
- k) the aircraft suffered substantial damage; and
- l) the PIC and the passenger suffered no injuries.

#### **3.2. Contributing factors.**

- **Aircraft maintenance – a contributor.**

Ineffective storage of the engine and its components resulted in the accumulation of residues in the servo injector. Furthermore, the incorrect installation of components and the inadequate flow of the injection nozzles denoted faulty maintenance procedures that contributed to the loss of engine performance.

**4. SAFETY RECOMMENDATIONS**

None.

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

None.

On June 3rd, 2024.

