# COMANDO DA AERONÁUTICA <u>CENTRO DE INVESTIGAÇÃO E PREVENÇÃO DE</u> <u>ACIDENTES AERONÁUTICOS</u>



# FINAL REPORT A-155/CENIPA/2020

OCCURRENCE: AIRCRAFT: MODEL: DATE:

ACCIDENT PR-HFT C525 22DEZ2020



## **NOTICE**

According to the Law  $n^{\circ}$  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 Final Report pertains to the accident involving the Cessna aircraft PR-HFT, model C525, which occurred on 22 December 2020. The occurrence was classified as "[SCF-NP] System/component failure or malfunction" and "[RE] Runway excursion".

During landing, the aircraft failed to decelerate and overran the limits of the opposite threshold.

It was determined that there was a failure in the *antiskid control box*, which may have prevented the brakes from functioning with the expected effectiveness.

The aircraft sustained substantial damage.

The pilot and passengers were unharmed.

An Accredited Representative from the NTSB (National Transportation Safety Board) of the United States of America (State of Manufacture of the aircraft) was designated for participation in the investigation of this accident.

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## **GLOSSARY OF TECHNICAL TERMS AND ABBREVIATIONS**

| ANAC   | Brazil's National Civil Aviation Agency                               |
|--------|---|
| CA     | Certificate of Airworthiness  |
| CAS    | Crew Alerting System  |
| CENIPA | Brazil's Aeronautical Accidents Investigation and Prevention Center   |
| CIV    | Pilot Logbook   |
| CMA    | Aeronautical Medical Certificate                                      |
| FAA    | Federal Aviation Administration                                       |
| IFR    | Instrument Flight Rules   |
| IFRA   | Instrument Flight Rating - Airplane                                   |
| MCA    | Command of Aeronautics' Manual  |
| METAR  | Routine Meteorological Aerodrome Report                               |
| OM     | Maintenance Organization  |
| PCB    | Printed Circuit Board   |
| PIC    | Pilot in Command  |
| PLA    | ATP License - Airplane  |
| PN     | Part Number   |
| PPR    | Private Pilot License - Airplane                                      |
| TPP    | Private Air Services Registration Category                            |
| SBSP   | ICAO location designator - Congonhas - Deputado Freitas Nobre -       |
| SBUL   | ICAO location designator - <i>Ten Cel Av César Bombonato</i> Airport, |
| SIPAER | Brazil's Aeronautical Accidents Investigation and Prevention System   |
| SL     | Service Letters   |
| UTC    | Universal Time Coordinated  |
| VFR    | Visual Flight Rules   |

## 1. FACTUAL INFORMATION.

|            | Model:   | C525                     | Operator:   |  |  |
|------------|--|--------------------------|---|--|--|
| Aircraft   | <b>Registration:</b>   | PR-HFT                   | La Barca Empreendimentos Ltda.                                    |  |  |
|            | Manufacturer:  | Cessna Aircraft          |   |  |  |
| Occurrence | Date/time: 22D   | EZ2020 - 21:21 (UTC)     | Type(s):  |  |  |
|            | <b>Location:</b> SBUL – <i>Ten Cel Av César</i><br><i>Bombonato</i> Airport. |                          | [SCF-NP] System/component failure of malfunction (non-powerplant) |  |  |
|            | Lat. 18°53'01"S  | <b>Long.</b> 048°13'31"W | [RE] Runway excursion   |  |  |
|            | Municipality – State: Uberlândia – Minas                                     |                          |   |  |  |
|            | Gerais   |                          |   |  |  |

## **1.1. History of the flight.**

The aircraft departed from SBSP (*Congonhas - Deputado Freitas Nobre –* Airport, *São Paulo*, *São Paulo* State) bound for SBUL (*Ten Cel Av César Bombonato* Airport, *Uberlândia*, *Minas Gerais* State), to perform a private flight with a pilot and four passengers on board.

During landing, the aircraft overran the runway limits, resulting in a runway excursion through the opposite threshold.

The airplane sustained substantial damage.

The pilot and passengers were unharmed.



Figure 1 - Final position of the aircraft

## 1.2. Injuries to persons.

| Injuries | Crew  | Passengers | Others |
|----------|-------|------------|--------|
| Fatal    | - / A |            |        |
| Serious  |       | -          | -      |
| Minor    |       | -          | -      |
| None     | 1     | 4          | -      |

## **1.3. Damage to the aircraft.**

The aircraft sustained substantial damage to the nose landing gear, radome, antennae of the VHF COM, DME, and Marker Beacon, as well as to several fairings on the lower fuselage.

## 1.4. Other damage.

NIL.

## 1.5. Personnel information.

## 1.5.1. Crew's flight experience.

| HOURS FLOWN                       |          |  |  |
|-----------------------------------|----------|--|--|
|                                   | PIC      |  |  |
| Total                             | 1.329:07 |  |  |
| Total in the last 30 days         | 28:00    |  |  |
| Total in the last 24 hours        | 02:24    |  |  |
| In this type of aircraft          | 663:40   |  |  |
| In this type in the last 30 days  | 14:00    |  |  |
| In this type in the last 24 hours | 02:24    |  |  |

**RMK:** data relating to hours flown obtained from records of pilot's CIV (Logbook).

## 1.5.2. Personnel training.

The Pilot in Command (PIC) completed the PPR course (Private Pilot - Airplane) at the Aeroclube de Rio Claro, São Paulo State in 1989.

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

The PIC held a PLA License (Airline Transport Pilot - Airplane) and valid ratings for C525 aircraft type and IFRA (Instrument Flight - Airplane).

## 1.5.4. Qualification and flight experience.

A proficiency check flight was conducted on the very aircraft involved in the accident, with an examiner accredited by the ANAC (National Civil Aviation Agency), shortly before the occurrence.

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 serial number 525-0925 airplane was a product manufactured by Cessna Aircraft in 2016. It was registered in the Private Air Service Registration Category (TPP).

The aircraft's CA (Certificate of Airworthiness) was valid.

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

The latest inspection of the aircraft ("600-hour" type) was performed on 9 October 2020 by *Flex Aero Jundiaí* Maintenance Organization (OM) in *Jundiaí*, *São Paulo* State. After the referred inspection, the aircraft logged 40 hours and 6 minutes of flight time.

This aircraft model featured an automatic system that continuously monitored the antiskid during flight. Any detected anomaly would trigger the message ANTISKID FAIL on the Crew Alerting System (CAS), as described in the aircraft manual, section XIV, page 16 (Figure 2).

## Antiskid In-Flight Test and System Monitoring

In flight, the antiskid control unit constantly monitors for shorts and opens in the transducer and servo-valve circuits. This is the self-test function. In flight, if an open or short occurs with the gear handle GEAR UP or GEAR DOWN, the **ANTI-SKID FAIL** CAS message displays.

Figure 2 - Automatic antiskid test.

According to the PIC, the CAS did not display de ANTISKID FAIL warning during the flight. The investigation committee, after conducting inspections on the aircraft, determined that this warning would only be triggered during the manual testing of the system.

## 1.7. Meteorological information.

The routine Meteorological Aerodrome Reports (METAR) for SBUL provided the following information:

METAR SBUL 221900Z 23014KT 6000 2000SWTSRA SCT040 FEW050CB BKN 100 22/20 Q1013=

METAR SBUL 222000Z 28005KT 9999 VCSH FEW040 SCT050TCU 23/20 Q1013=

METAR SBUL 222100Z 18002KT 9999 TS VCSH SCT040 FEW050CB SCT100 25/20 Q1013=

These messages indicated that it had rained and the aerodrome was operating under instrument flight conditions at 19:00 (UTC). However, after 20:00 UTC, it transitioned to visual flight conditions with light winds.

After 21:00 UTC, thunderstorms and rain were observed in the vicinity, but the conditions remained visual.

## 1.8. Aids to navigation.

NIL.

## 1.9. Communications.

NIL.

## 1.10. Aerodrome information.

The aerodrome was public, managed by INFRAERO, and operated under Visual Flight Rules (VFR) and Instrument Flight Rules (IFR), during daytime and nighttime periods.

The asphalt-sealed runway, with 04/22 designated thresholds, measured 2,100 x 45 m, at an elevation of 3,094 ft.

Threshold 04 was at an altitude of 3,092 ft. ASL, while the altitude of threshold 22 was 3,089 ft. ASL, resulting in a 3-foot difference between the thresholds, which did not constitute a significant longitudinal slope.

The runway was wet during the airplane's landing.

## 1.11. Flight recorders.

Neither required nor installed.

#### 1.12. Wreckage and impact information.

There were no marks on the runway consistent with wheel locking on the aircraft.

The tires were in good condition, with pressures within the limits specified by the manufacturer, and there were no evidence of hydroplaning on them.

#### **1.13. Medical and pathological information.**

#### 1.13.1. Medical aspects.

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

#### 1.13.2. Ergonomic information.

NIL.

#### 1.13.3. Psychological aspects.

The PIC had been a pilot since 1989 and had accumulated approximately 1,329 flight hours.

He had been flying for the aircraft owner since 2008 and was the sole pilot hired for this activity.

The day before the accident, the PIC spent the day at home with his family, resting.

Flights were typically planned in advance according to the owner's schedule, which often allowed the pilot to prepare ahead of time. However, for this particular flight, he was contacted approximately three hours before the scheduled departure. The pilot stated that he was well-rested and capable of fulfilling the request.

In addition to piloting duties, he managed the aircraft's maintenance. This responsibility included coordinating and overseeing the service being performed, preparing budgets for parts procurement, and sourcing service providers. According to his account, this role consumed most of his time, placing significant pressure on him due to the responsibility it entailed.

#### 1.14. Fire.

There was no fire.

#### 1.15. Survival aspects.

All passengers exited the aircraft through the door following instructions from the pilot.

## 1.16. Tests and research.

The PIC reported that the aircraft's brakes did not perform as expected during the landing roll, prompting the Investigation Committee to monitor braking system tests conducted by ANAC-certified technicians.

The Antiskid System Functional Test, as per the manufacture's Task 32-44-00-2, item 7, was carried out. This analysis revealed that the aircraft's normal brake system did not respond to the pilot's commands, and the cockpit panel did not display the ANTISKID FAIL warning message.

The test was followed by the *Anti-Brake System* - *Troubleshooting*, *Task* 32-44-00-1, which, which identified a failure in the *Control Box*, *Part Number* (PN) 9912305-6.

The Control Box, manufactured by Crane Aerospace & Electronics, was part of the C525 aircraft's braking system. It was responsible for managing the *antiskid* logic during brake operation. There were no dedicated maintenance tasks for to periodic verification of the Control Box.

The analysis of this equipment was conducted at the manufacturer's headquarters. The tests were monitored by members of the Investigation Committee and the Federal Aviation Administration (FAA).

The standardized Test Procedure TP42-707-1 was performed, allowing the item to be evaluated according to parameters certified by the FAA.

A visual inspection revealed that the *Control Box* showed no signs of impact, the connections were intact, and the manufacturer's seals were correctly affixed. However, during bench testing, the parameters for voltage, skid response, PBM valve, locked wheel crossover, and performance were found to be below the specified limits.

The technicians proceeded with disassembling the equipment to identify the factors contributing to the aforementioned failures.

The *Control Box*, internally, consisted of two electronic circuit boards housed within a casing with respective connections: the Main Wheel Printed Circuit Board (PCB) and the BITE Printed Circuit Board (PCB).

The technicians discovered that the BITE PCB was mounted in an unusual manner and required a force described by the manufacturer's technicians as "greater than normal" to be removed.

The analysis of the circuit boards did not identify any issues. The technicians reinstalled the boards in the housing and executed the Test Procedure TP42-707-1. This time, all parameters were within the manufacturer's specified limits.

When questioned by the Investigation Committee, the manufacturer reported that there were no records of a similar failure occurring with this type of equipment.

In light of the findings, the Investigation Committee determined that the *Control Box* failure was related to improper mounting of the Main Wheel PCB, which caused a deficiency in the 28 V input, thereby affecting the power regulation and functionality of the referred item.

The Investigation Committee conducted tests on the aircraft at an ANAC-certified facility and confirmed that the emergency braking system was fully functional.

#### 1.17. Organizational and management information.

The aircraft was used exclusively for private transportation at the owner's convenience.

The PIC was hired to manage all the activities related to the aircraft, from piloting to maintenance management, as well as administrative matters and other tasks pertinent to the aircraft operation.

#### 1.18. Operational information.

The purpose of the flight was to transport the company owner and three other passengers to *São Paulo* and then return with them to *Uberlândia*. This type of flight was frequent, and the PIC had previously landed at these locations numerous times.

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

According to the aircraft logbook, the PIC departed SBUL at 12:53 UTC for SBSP and returned to SBUL, landing at 21:21 UTC.

In an interview with the PIC, he stated that the entire route had weather conditions suitable for IFR flights. During the approach phase for landing, the PIC mentioned that he had managed to descend below the prevailing ceiling at the aerodrome and obtained visual conditions, although rain and thunderstorms were still observed in the vicinity.

Considering a temperature of 25°C, a weight of 7,500 pounds, and zero wind, the required landing distance would be 2,400 ft. (731.52 m).

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|      |          | WEIGH    | i T | 7500 001  | NIDO   |     |        |
|------|----------|----------|-----|-----------|--------|-----|--------|
|      |          | WEIGHT = |     | 7500 POL  | JNDS   |     |        |
|      | VREF =   | 95 KIAS  |     |           | VAPP = | 102 | KIAS   |
| TEMP |          |          |     |           |        |     |        |
| DEG  | TAILWIND | ZERO     |     | HEADWINDS |        |     |        |
| С    | 10 KTS   | WIND     |     | 10 KTS    | 20 K   | TS  | 30 KTS |
| -30  | 2570     | 2110     |     | 1980      | 185    | 0   | 1730   |
| -25  | 2590     | 2140     |     | 2010      | 188    | 0   | 1760   |
| -20  | 2620     | 2160     |     | 2030      | 190    | 0   | 1780   |
| -15  | 2650     | 2190     |     | 2060      | 193    | 0   | 1810   |
| -10  | 2670     | 2210     |     | 2080      | 195    | 0   | 1830   |
| -5   | 2700     | 2240     |     | 2110      | 198    | 0   | 1850   |
| 0    | 2730     | 2270     |     | 2130      | 200    | 0   | 1880   |
| 5    | 2760     | 2290     |     | 2160      | 203    | 0   | 1900   |
| 10   | 2780     | 2320     |     | 2180      | 205    | 0   | 1930   |
| 15   | 2810     | 2340     |     | 2210      | 208    | 0   | 1950   |
| 20   | 2840     | 2370     |     | 2240      | 211    | 0   | 1980   |
| 25   | 2870     | 2400     |     | 2270      | 214    | 0   | 2010   |
| 30   | 2900     | 2430     |     | 2290      | 216    | 0   | 2030   |
| 35   | 2930     | 2460     |     | 2320      | 219    | 0   | 2060   |
| 40   | 2970     | 2490     |     | 2350      | 222    | 0   | 2090   |
| 45   | 3000     | 2520     |     | 2380      | 224    | 0   | 2110   |
| 47   | 3010     | 2530     |     | 2390      | 226    | 0   | 2130   |

The PIC also reported that the aircraft's CAS did not indicate any failures at any point during the flight, nor did he notice any abnormalities until landing.

Cameras at the aerodrome recorded the entire trajectory of the aircraft up to its full stop.

Upon analyzing the camera footage, the Investigation Committee estimated that touchdown occurred approximately 300 meters from the threshold of runway 04, leaving a remaining distance of about 1,800 meters for the aircraft to come to a complete stop.



Figure 4 - Croquis of the accident. Source: adapted from Google Earth.

After touchdown, the aircraft traveled in a straight line along the entire remaining length of the runway without adequately decelerating, ultimately overrunning the opposite threshold and coming to a stop at a distance of approximately 50 meters beyond the departure end.

After the touchdown, the pilot noticed that the aircraft was not responding to braking inputs, despite applying maximum braking pressure. The pilot checked the CAS| for any alerts potentially related to a brake system failure. Since no messages were detected, he began to consider the possibility of hydroplaning.

Given that, the PIC decided to maintain maximum brake pressure to allow full functionality of the antiskid system, aiming to improve braking effectiveness.

The Command of Aeronautics' Manual (MCA) 3-6, Investigation and Prevention of Aeronautical Accidents (2017), specifically in item 9.6.10.8.3, states the following in relation to hydroplaning:

Every tire, regardless of its tread design, will hydroplane on water (or any other liquid) when the dynamic pressure of the water is sufficiently high to lift the tire off the runway. The tread design creates channels that divert water away from the tire

surface and is typically effective when the water layer on the runway has a certain depth (thickness), which can be referred to as partial hydroplaning. However, full hydroplaning will occur when the aircraft reaches a significant speed.

Tires subjected to this phenomenon typically exhibit an oval-shaped contact area, often with a curved surface or a bubbly appearance. These indications were not present on the tires of the accident aircraft.

The alerts related to the aircraft's braking system, as outlined in its manual, Section 14 – Landing Gear and Brakes, pages 14-16, were as follows:

- ANTISKID FAIL antiskid system failure;
- BRAKE PRESSURE LOW low hydraulic pressure in the brake system;
- PARK BRAKE HANDLE parking brake applied in flight; and

WOW MISCOMPARE – one of the three *Weight on Wheels* signals was lost or does not match the others.

The aircraft manual, in the "*Emergency/Abnormal Procedures*" Section, TAB L1, page 3-660-26, stated that, in the event of brake failure, the pilot should remove their feet from the aircraft pedals, activate the emergency brake lever, and finally maintain directional control by means of the *Nosewheel Steering* (Figure 5).

| 1              | Wheel Brake Failure  |
|----------------|--|
|                | CAUTION  |
| •              | Antiskid system is inoperative during emergency braking.<br>Excessive force application on the emergency brake handle<br>may cause wheel brakes to lock and tire blowout. After landing,<br>clear runway and stop. Do not attempt to taxi to ramp using<br>emergency brakes. |
| •              | Repeated application and release of the emergency brake<br>handle may cause premature loss of pneumatic pressure and<br>may result in complete loss of emergency brakes.   |
| •              | Landing distance will increase by a factor of 1.3.   |
| 1.<br>2.<br>3. | Brake Pedals   |
| PR             | DCEDURE COMPLETED  |

Figure 5 - Brake failure procedure.

In this regard, it is important to highlight that the manual did not exclusively link brake system failure to the alerts related to the braking system. In other words, if the pilot experienced a brake failure, they were instructed to use the emergency brake regardless of any warnings on the CAS.

### 1.19. Additional information.

NIL.

## 1.20. Useful or effective investigation techniques.

NIL.

#### 2. ANALYSIS.

It was a passenger transport flight between SBSP and SBUL, with 05 POB (a pilot and 04 passengers). This route was frequently requested by the aircraft owner, allowing the conclusion that the PIC had considerable experience with that type of flight.

It was noted that the pilot was notified three hours in advance of the flight and was feeling rested and in good condition to accommodate the request.

Based on the recorded departure and arrival times at SBUL, it can be concluded that the duration of flight itself was not a contributing factor to the occurrence in question.

During both legs of the flight, no mechanical failures were identified by the aircraft's CAS or noticed by the PIC.

Regarding the final landing in *Uberlândia*, the pilot reported that during the final approach, the aerodrome conditions transitioned from instrument flight to VMC, with calm winds, although thunderstorms and rain were occurring in the vicinity of the aerodrome, and the runway was wet. This information was confirmed by reviewing the METAR messages for SBUL at the time of landing.

Upon analyzing the aerodrome camera footage that recorded the landing, the Investigation Committee estimated that touchdown occurred approximately 300 meters from the threshold of runway 04. The aircraft traveled in a straight line along the remaining length of the runway without adequately decelerating, overrunning the opposite threshold and stopping about 50 meters beyond the departure end of the runway.

According to the pilot's report, the aircraft did not decelerate when the brakes were applied during the landing roll. As a result, the PIC checked the CAS for any alerts related to a possible brake system failure. Since no such messages were detected, he inferred that the lack of deceleration was likely due to possible tire hydroplaning.

In view of that, the pilot maintained the brake application intending to rely on the antiskid system to maximize brake performance.

The aircraft manual, Section III – "*Emergency/Abnormal Procedures*", TAM L1, included the *Wheel Brake Failure* procedure, which outlined the steps for using the emergency brake in the event of a failure of the main braking system. In this regard, it is important to note that the manual did not exclusively associate brake system failure with alerts related to the braking system. If the pilot experienced a brake failure, the emergency brake should be used regardless of any warnings displayed on the CAS.

The alerts displayed on the CAS are a valuable source of information; however, it is evident that a failure can occur regardless of the appearance of these alerts.

The analyses identified a failure in the *Control Box*. This piece of equipment was responsible for the antiskid logic, managing brake pressure when wheel lockup was detected. This system prevented wheel locking, thereby enhancing braking efficiency and reducing stopping distance.

The *Control Box* was tested by the manufacturer in accordance with the FAA-approved procedure, ATP-PN42-707-1. This test identified an abnormal connection between the electronic boards and their base, which may have affected power regulation and the functionality of the braking components.

The Investigation Committee, following the accident, confirmed that the aircraft's emergency braking system was operational.

The wet runway condition, combined with the low level of braking experienced, increased the stopping distance, contributing to the runway excursion.

#### 3. CONCLUSIONS.

## 3.1. Findings.

- a) the PIC held a valid CMA (Aeronautical Medical Certificate);
- b) the PIC held valid ratings for C525 type aircraft and IFRA (IFR Flights Airplane);
- c) the PIC was qualified and experienced in this type of flight;
- d) the aircraft had a valid CA (Certificate of Airworthiness);

- e) the aircraft was within weight and balance limits;
- f) the records of the airframe and engine logbooks were up-to-date.
- g) weather conditions were favorable for the flight;
- h) during landing at SBUL, the aircraft overran the runway limits, resulting in a runway excursion through the opposite threshold;
- i) the Control Box exhibited failure during the TP42-707-1 test procedure;
- j) the emergency braking procedure (*Wheel Brake Failure*) was not used during the landing;
- k) the aircraft sustained substantial damage; and
- I) the PIC and passengers were unharmed.

## 3.2. Contributing factors.

#### - Adverse meteorological conditions – a contributor.

The rain in the region, which led to the wet runway condition, combined with the low level of braking experienced, increased the stopping distance, contributing to the runway excursion.

## - Piloting judgment – a contributor.

There was inadequate assessment of the possibility of a failure in the normal braking system, and the emergency procedure established by the manufacturer was not executed.

#### - Perception – a contributor.

There was an impairment in the ability to recognize the braking system failure during landing, resulting in reduced situational awareness and a "tunnel vision" condition, where only weather conditions and the possibility of hydroplaning were considered

#### 4. SAFETY RECOMMENDATIONS

None.

## 5. CORRECTIVE OR PREVENTATIVE ACTION ALREADY TAKEN.

None.

On April 25th, 2025.