



Republic of the Philippines
DEPARTMENT OF TRANSPORTATION
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES
MIA Road, Pasay City 1300

AIRCRAFT ACCIDENT INVESTIGATION AND INQUIRY BOARD

FINAL REPORT

RP-C8825
CESSNA 402B

OPERATOR: NORTHSKY AIR INC.

TYPE OF OPERATION: NON-SCHEDULED COMMERCIAL

DATE OF OCCURRENCE: MARCH 25, 2022

***PLACE OF OCCURRENCE: ACME AIRSTRIP (MACONACON)
MACONACON, CAGAYAN VALLEY, ISABELA, PHILIPPINES***

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(Textron Aviation Cessna 402B, RP-C8825 Final Report)

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FOREWORD

This report was produced by the Aircraft Accident Investigation and Inquiry Board (AAIIB), Civil Aviation Authority of the Philippines, MIA Road, Pasay City, Philippines.

The report is based upon the investigation carried out by the AAIIB in accordance with Annex 13 to the Convention on International Civil Aviation, Republic Act 9497 Section 42, and Philippine Civil Aviation Regulation Part 13.

Readers are advised that the AAIIB investigates for the sole purpose of enhancing aviation safety. Consequently, AAIIB reports are confined to matters of safety significance and may be misleading if used for any other purpose. It should be noted that the information in AAIIB reports and recommendations is provided to promote aviation safety, and in no case is it intended to imply blame or liability.

Furthermore, no part of the AAIIB report or reports relating to any accident or investigation shall be admitted as evidence or used in any suit or action for damages arising out of any matter mentioned in such report or reports.



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MIA Road, Pasay City 1300
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FINAL REPORT

TITLE: Serious incident involving a Textron Aviation Cessna 402B type of aircraft with registry number RP-C8825 owned and operated by Northsky Air, Inc. that had a runway excursion at ACME airstrip (Maconacon), Maconacon, Cagayan Valley, Isabela, Philippines, on March 25, 2022 at about 1341H (local).

Notification of Occurrence to National Authority

The notification of serious incident to AAIB CAAP was relayed by the Operator of the aircraft at 1630H (local) on March 25, 2022.

Identification of the Investigation Authority

The Aircraft Accident Investigation and Inquiry Board (AAIB), the mandated accident investigation organization within the Civil Aviation Authority of the Philippines (CAAP) as the state of Occurrence/Registry/ Operator conducted the investigation.

Organization of the Investigation

In accordance with provisions of Philippine Civil Aviation Regulation (PCAR) Part 13, an Investigator-In-Charge and Deputy Investigator-In Charge were appointed.

Authority Releasing the Report

The Final investigation report was released by Aircraft Accident Investigation and Inquiry Board (AAIB) and published at the CAAP website on **22 March 2024**.

Synopsis:

On March 25, 2022 at about 1341H (local), a Textron Aviation Inc. Cessna 402B type of aircraft with registry number RP-C8825 operated by Northsky Air, Inc. had a runway excursion at ACME airstrip, Maconacon, Cagayan Valley, Isabela, Philippines. The two (2) flight crew and eight (8) passengers did not sustain any injuries, however the aircraft sustained minor damage as a result of the occurrence. Visual Meteorological Condition (VMC) prevailed at the time of the serious incident. The cause of the occurrence was attributed to the failure of the flight crew to maintain directional control of the aircraft following the collapse of the right-hand main landing gear.

LIST OF ACRONYMS AND ABBREVIATIONS

AAIIB	:	Aircraft Accident Investigation and Inquiry Board
AD	:	Airworthiness Directive
AMO	:	Approved Maintenance Organization
AANSOO	:	Aerodrome and Air Navigation Safety Oversight Office
ACME	:	Maconacon Airstrip
AOC	:	Air Operator Certificate
ATPL	:	Airline Transport Pilot License
AUW	:	All Up Weight
CAAP	:	Civil Aviation Authority of the Philippines
COA	:	Certificate of Airworthiness
COR	:	Certificate of Registration
CP	:	Co Pilot
CPCP	:	Corrosion Protection and Control Program
CPL	:	Commercial Pilot License
DME	:	Distance Measuring Equipment
FAA	:	Federal Aviation Agency
FOBS	:	Flight Operations Base Station
ICAO	:	International Civil Aviation Organization
PCAR	:	Philippine Civil Aviation Regulation
PIC	:	Pilot-In-Command
PTB	:	Passenger Terminal Building
PTO	:	Permit To Operate
RMLG	:	Right-hand Main Landing Gear
RWY	:	Runway
TIS	:	Time in Service
UTC	:	Universal Time Coordinated
VFR	:	Visual Flight Rules
VMC	:	Visual Meteorological Condition



Republic of the Philippines
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

1. FACTUAL INFORMATION

Aircraft Registration No. : RP- C8825

Aircraft Type/Model : Textron Aviation Cessna 402B

Operator : Northsky Air, Inc.

Address of Operator : Tuguegarao Airport, Tuguegarao City,
Cagayan Valley, Philippines

Place of Occurrence : ACME airstrip (Maconacon), Maconacon,
Cagayan Valley, Isabela, Philippines

Date/Time of Occurrence : March 25, 2022 at about 1341H/0541UTC

Type of Operation : Non-Scheduled Commercial

Phase of Flight : Landing

Type of Occurrence : Runway side excursion

1.1 History of Flight

On or about 1341H, March 25, 2022, a Textron Aviation Inc. Cessna 402B type of aircraft with Registry Number RP-C8825 sustained damage when its right-hand main landing gear collapsed during landing roll, resulting in a runway excursion on runway 02 at ACME airstrip, Maconacon, Cagayan Valley, Isabela, Philippines.

Northsky Air, Inc. is operating the aircraft in accordance with PCAR Part 8. All eight (8) passengers and two (2) flight crew members on board were not injured. Visual meteorological conditions (VMC) prevailed at the time of the occurrence, and a local flight plan had been filed. The flight originated at Tuguegarao Principal Airport (RPUT) for a non-scheduled flight.

The aircraft landed about 200 meters from the threshold of Rwy 02. After rolling for about 300 meters, the aircraft started to exhibit a right-low-wing attitude. Subsequently, the aircraft started to veer towards the right side of the runway centerline. It continued to roll and entered the grassy portion of the runway edge between markers #5 and #4. The aircraft came to a complete stop with the nose gear lodged in a soft, muddy ground. The aircraft's final resting point was located at coordinates 17°23'2.45" N, 122°14'54.72" E, and heading

approximately 090 degrees. Airstrip duty personnel who witnessed the event immediately rushed to the site to help the occupants alight the aircraft and secure the area; there was no reported post-crash fire.



Figure 1. The aircraft at its final resting point.

1.2 Injuries to Person (s)

Injuries	Crew	Passengers	Others	TOTAL
Missing/Fatal	0	0	0	0
Serious	0	0	0	0
Minor	0	0	0	0
None	2	8	0	10

1.3 Damage to Aircraft

The aircraft received substantial damage.

1.4 Other Damages

The runway had multiple scrapes caused by the aircraft sliding along its path, and the right-hand propeller came into contact with the runway surface (Figure 2).



Figure 2. Multiple right-hand propeller scrapes on the runway.

1.5 Personnel Information

1.5.1 Pilot-In-Command (PIC)

Gender	: Male
Date of Birth	: May 05, 1971
Nationality	: Filipino
License	: 105151 - ATPL
Valid up to	: July 31, 2022
Type rating	: Airplane: Single & Multi Engine Land-C207, C402B, BN2A-21
Medical Certificate Valid up to	: Expiry June 24, 2022
Time on Aircraft	: 5,000 + 00 Hours
Grand Total time	: 10,400 + 00 Hours

1.5.2 Co-Pilot (CP)

Gender	: Male
Date of Birth	: July 11, 1997
Nationality	: Filipino
License	: 133909 - CPL
Valid up to	: November 30, 2024
Type rating	: Airplane: Single Engine Land-Instrument-C152, C172, BN2A-21; Cessna - 402B(08-Feb-2022)
Medical Certificate Valid up to	: Expiry December 24, 2022
Time on Aircraft	: 400 Hours
Grand Total time	: 550 Hours

1.6 Aircraft Information

The Cessna 402 was developed by the manufacturer to be a non-pressurized twin engine piston aircraft. Cessna's goal was to be a workhorse, useful to cargo and small commuter airlines among other users. The Cessna 401 and 402 were developments of the Cessna 411. Cessna 402s is powered by 300 hp (224 kW) turbocharged Continental engines with three-bladed, constant speed, fully feathering propellers. On later model's cruise power was limited to 75% to reduce cabin noise. Some aircraft have a propeller synchro phaser to reduce cabin noise and vibration.

1.6.1 Aircraft Data

Registration Mark	: RP-C8825
Manufacturer	: Textron Aviation
Country of Manufacturer	: USA
Type/Model	: Fixed Wing/ Cessna 402B
Operator	: Northsky Air, Inc.
Serial No./Line No.	: C402B0628
Date of Manufacture/Type Certificate	: 1974/ A7CE
Certificate of Airworthiness	: Valid up to August 2, 2022
Certificate of Registration	: Valid up to February 11, 2024
Category	: Normal
Number of Aircrew	: 2
Airframe total time	: 15,626+30 Hours

1.6.2 Engine Data

Manufacturer	: Teledyne Continental Motors
Type	: Piston
Type/Model	: Injection (1) TSIO-520EB (2) TSIO-520EB
Engine Serial No.	: (1) 1000311 (2) 1003741
Engine Time Since New	: (1) 1,353+24 Hours (2) 303+30 Hours

1.6.3 Propeller Data

Manufacturer	: McCauley Propeller
Type	: Variable Pitch Constant Speed
Type/Model	: Metal (1) 3AF32C504-C (2) 3AF32C504-C
Propeller Serial No.	: (1) 980301 (2) 962283
Propeller Total Time	: (1) 223+31 Hours (2) 239+08 Hours

1.7 Meteorological Information

Visual Meteorological Conditions (VMC) prevailed at the time of the occurrence.

1.8 Aids to Navigation

The flight was carried out under Visual Flight Rules (VFR). The pilot must be able to operate the aircraft with visual references to the ground and visually avoiding obstructions and other aircraft.

1.9 Communications

The aircraft was equipped with standard aircraft radio, communications were carried out between the pilot and other aircraft within the traffic area.

1.10 Aerodrome Information

ACME Airstrip also known as Maconacon Airstrip, was the airport that used to serve general aviation flights for ACME Plywood & Veneer Co, Inc., during the late 70's at Maconacon, Cagayan Valley, Isabela. It is classified as a municipality aerodrome by the Civil Aviation Authority of the Philippines (CAAP) that is responsible for the oversight operation of airports in the Philippines.

1.10.1 General Information

Aerodrome Name	:	ACME Airstrip (Maconacon)
ARP coordinates and site at AD	:	17°23'00" N; 122°15'30" E
Aerodrome Operator address	:	Municipality of Maconacon, Cagayan Valley, Isabela, Philippines
Types of traffic permitted	:	VFR
Magnetic Bearing	:	N 18° E
AD category for fire fighting	:	Portable fire extinguisher.
Rescue Equipment		
Helicopter Take-off/Landing Area	:	On/Off Airstrip Area
ATS Communication Facilities	:	AD Terminal radio
Operational Frequencies	:	Maconacon Radio: 122.90Mhz
Visual Ground Aids	:	Standard runway day markers and wind direction indicator
Facilities	:	Air band two-way radio communications equipment, clinic, water and land transportation
Navigational Aid: DVOR/DME	:	None
Runway Caution	:	None
Runway Direction	:	02/20
Runway Length	:	1,150 Meters
Runway Width	:	20 Meters
Apron	:	50 x 30 Meters
	:	02/20 35% Asphalt from Rwy02 and 65% Macadam. 1% along Rwy 20
Surface		13,400Kgs. (AUW) 50 Meters RESA on both ends

1.11 Flight Recorders

The aircraft is not equipped with any flight recorders and existing CAAP regulation does not require it.

1.12 Wreckage and Impact Information

The aircraft touched down two hundred (200) meters away from the threshold of runway 02 and rolled for another 300 meters before it came to a complete stop. During the landing roll, the right-hand landing gear collapsed, resulting in damage to its right-wing tip tank, right wing engine, and propeller. Scrape marks were present on the runway from the time the RH main landing collapsed until it came to a halt. All the crew and passengers did not sustain injuries since the cockpit and cabin are still intact.



Figure 3. The RMLG did not break away from the aircraft upon landing.

1.13 Medical and Pathological Information

Both pilots possess up-to-date medical certificates that satisfy the CAAP and ICAO Annex 1 medical requirements in order to operate their licenses. The pilots did not have any medical conditions that could have potentially influenced this incident.

1.14 Fire

No fire was reported by Maconacon Airstrip duty personnel.

1.15 Search and Survival Aspects

Search and rescue efforts were not carried out since the incident took place inside the aerodrome. The event proved to be survivable due to the absence of substantial fuselage damage. Normal disembarkation of the crew and passengers occurred without any injuries prior to the arrival of the duty personnel.

1.16 Organizational and Management Information

1.16.1 The Organization

Northsky Air Inc., is located at NSAI Hangar Tuguegarao Airport, 3500 Tuguegarao City, Cagayan, Philippines. Its primary business is air charter flight for fixed and rotary aircraft, it also caters limited aircraft line maintenance. Having an Air Operator Certificate (AOC) Certificate number 2011042 issued by CAAP. The company has principal flight operations base station (FOBS) at Tuguegarao principal airport (RPUT). The aircraft RP-C8825, forms part on the company's list of aircrafts.

1.16.2 Maintenance

The maintenance functions of RP-C8825 are being undertaken by Northsky Air Inc., Repair Station with official address at 17B Bldg. Diversion Road, Pengue Ruyu, Tuguegarao National Airport, Tuguegarao City, Philippines with a current Approved Maintenance Organization (AMO) Certificate number 121-13-L with ratings on Airframe, Powerplant, Propeller and Specialized Services and also offers limited line and base maintenance.

2.0 ANALYSIS

2.1 General

On or about 1341H, March 25, 2022, a Textron Aviation Inc. Cessna 402B type of aircraft with Registry Number RP-C8825 operated by Northsky Air Inc. was on a non-scheduled flight. The flight originated at Tuguegarao principal airport (RPUT), bound for the ACME airstrip in Maconacon. It was the third (3rd) flight of the day.

The aircraft landed about two hundred (200) meters from the threshold of Rwy 02. During the landing roll, about three hundred (300) meters after the touchdown point, the aircraft's right-hand main landing gear suddenly collapsed. The aircraft veered towards the right side of the runway centerline, passing the passenger terminal building (PTB), and continued to roll for another two hundred (200) meters before it entered the grassy portion of the runway.

The aircraft came to a complete stop with the RMLG lodged in a soft, muddy ground. The aircraft's final resting point was located at coordinates 17°23'2.45" N, 122°14'54.72 E, and the final heading was approximately 090 degrees.

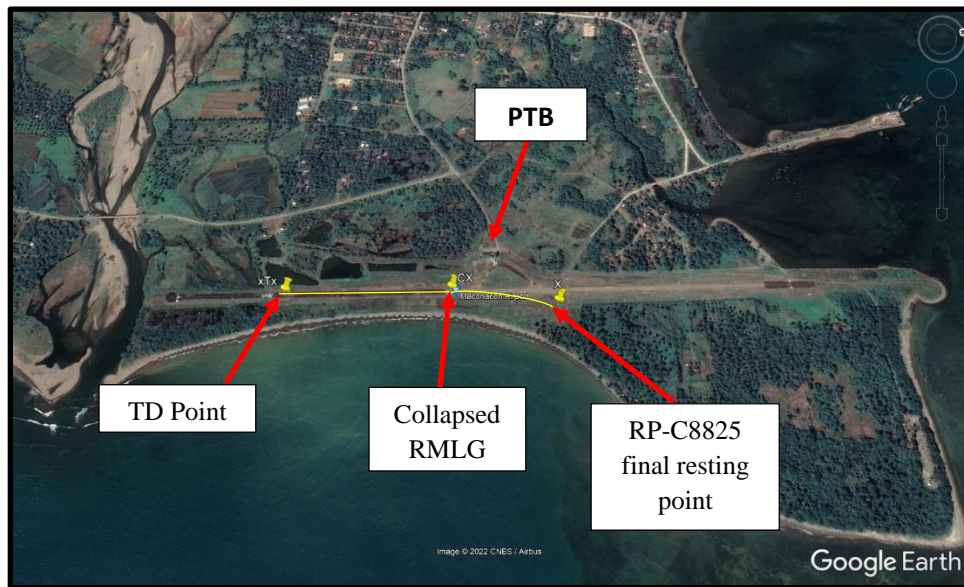


Figure 4. The yellow line is the aircraft track to its final resting point. (Not To Scale)

2.2 ACME Airstrip (Maconacon)

Maconacon Municipality is in charge of running the ACME airstrip, also known as Maconacon Airstrip. The airport used to serve general aviation flights for ACME Plywood & Veneer Co., Inc., in the area of Maconacon, Cagayan Valley, Isabela. One of the most remote and isolated communities in the province is Maconacon, which is located apart from the rest of the province by the Sierra Madre Mountains. It is classified as a municipality aerodrome by the Civil Aviation Authority of the Philippines (CAAP), which is responsible for overseeing the operation of airports in the Philippines. The Aerodrome and Air Navigation Safety Oversight Office (CAAP-AANSOO) carried out an initial assessment of the airstrip on December 15–16, 2015. The concerned operator needs to address any deficiencies found during the activity. However, in consideration of the efforts made by the aerodrome operator regarding the said findings, the airstrip was issued a probationary permit-to-operate (PTO). In a letter to the city mayor by CAAP dated November 27, 2017, it stated that it would implement the municipality action plan. This permit was extended until May 15, 2018. However, over time, the municipality was unable to comply with the Manual of Standards (MOS) for aerodromes, and no further action was reported to CAAP-AANSOO.



Figure 5. Finals at ACME airstrip runway 02.

2.3 Pilot Actions

An interview with the pilot stated that he did the preflight check on the aircraft. The flight was uneventful until landing at the ACME airstrip. The aircraft landed normally; however, during the landing roll, the pilot alleged that they encountered a tire burst before passing the passenger terminal building (PTB). The pilot observed that the aircraft was veering to the right. He applied the left rudder and differential wheel brakes to counter the movement but lost directional control during the process. The aircraft continued its track until it stopped at the grassy right-side portion of the runway.

The co-pilot stated that he was calling out airspeed during the landing roll. He observed that the right wing went low and the aircraft was veering towards the right. He was waiting for any instructions from the PIC, but he did not issue any. Following the crew's completion of the aircraft engine shut-down procedures, their ground support opened the cabin door, allowing all passengers to safely exit the aircraft. The aircraft was reported to have abruptly veered right into the grassy section of the runway, according to witnesses on the ground. The right-hand main landing gear collapsed sequentially, although it remained attached to the airplane.

2.4 Right-hand Main Landing Gear (RMLG)

When the damaged landing gear was inspected, it was found that the RMLG shaft pin was missing and had broken off (Figure 6). This pin is part of the linkage for the RMLG strut assembly extension/retraction component. The torque tube was still connected to the extension/retraction component linkage.



Figure 6. Missing RMLG Shaft Pin.

The shaft pin from the RMLG extension/retraction assembly linkage was missing, the right main landing gear's tube bolts were disconnected, and the landing gear was separated from its support frame (Figure 7). The RMLG strut extension/retraction assembly linkage, on the other hand, was discovered to have fully extended and to have remained in place. Furthermore, when it skidded on the runway, the RMLG assembly remained attached to the structure because the landing gear door covered it.

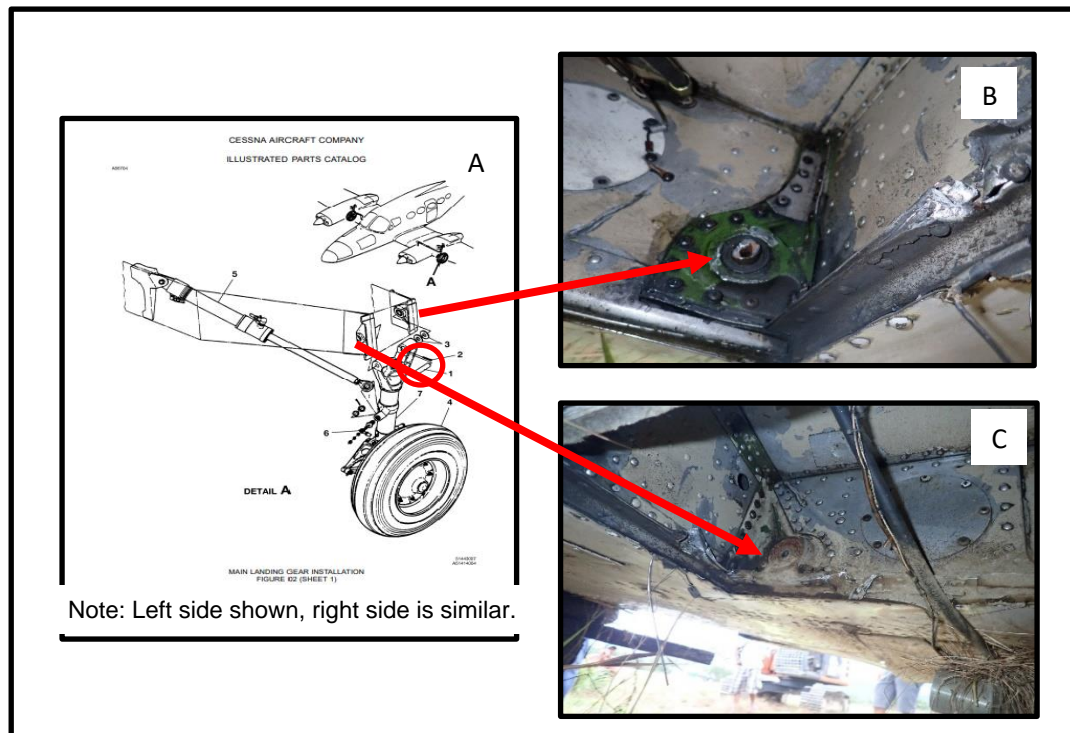


Figure 7. RMLG detached from its support.

2.5 Aircraft Maintenance

Based on the submitted documents of the operator, a record that reflects servicing of the aircraft was performed last July 23, 2018 and deemed satisfactory by the AMO. The manufacturer's supplemental inspection number: 32-10-05 (Appendix 1) and 32-20-06, which is part of the operators Corrosion Protection and Control Program (CPCP). This pertains to the Main/Nose Gear retraction system teardown and inspection. The operator shows it did comply with the inspection program and its next inspection is due July 25, 2022 four (4) months after the occurrence.

Following the investigation, it appears that the material fatigue on the RMLG shaft pin and main landing gear fork bolt assembly were not noticed. The crack continued to progress until the material l fails.

The FAA issued Airworthiness Directive (AD) Schedule Aeroplanes DCA/CESS402/5 Cessna 402, 402B and 402C Series dated 31 May 2018 (Appendix 2). This AD applies to all model of Cessna 402 Series and to all serial numbers under FAA Type Certificate No. A7CE. Whereas, it is to replace the main landing gear fork bolts at intervals not exceeding 2000 hours TIS, except that bolts having more than 1800 hours TIS shall be replaced within next 200 hours TIS.

This airworthiness directive was issued to the operators to address the fatigue issues. The operator carried out inspections to the landing gear system but was not aware of the said AD as such it was not implemented.

3.0 CONCLUSIONS

3.1 Findings

- a. The pilots were trained and qualified on the Textron Cessna 402B aircraft.
- b. The pilots possess valid airmen licenses and medical certificates issued by the CAAP.
- c. The pilots and passengers safely egressed the aircraft.
- d. Visual meteorological condition prevailed at the time of the occurrence.
- e. The aircraft was properly released for flight without any discrepancies noted on the day of the occurrence.
- f. The aircraft has a current Certificates of Airworthiness and Registration.
- g. There was no evidence of failure of structure, flight control systems and engines prior to the event.
- h. The operator is not aware of the Airworthiness Directives affecting their aircraft.

3.2 Probable Cause

3.2.1 Primary Cause Factor

- a. Failure of the flight crew to maintain directional control of the aircraft following the collapse of the right-hand main landing gear.

3.2.2 Contributory Cause Factor

- a. Non- adherence to FAA issued Airworthiness Directive (AD) Schedule Aeroplanes DCA/CESS402/5 Cessna 402, 402B and 402C Series dated 31 May 2018.
- b. The inadequate maintenance program.

4.0 SAFETY RECOMMENDATIONS

4.1 For CAAP-FSIS to ensure that the Operator (Northsky Air, Inc.):

- a. Strictly adhere to all Airworthiness Directives prior to the issuance of Certificate of Airworthiness.
- b. Has adequate maintenance program.

-----END-----

