



Republic of the Philippines
CIVIL AVIATION AUTHORITY OF THE PHILIPPINES

AIRCRAFT ACCIDENT INVESTIGATION AND INQUIRY BOARD

FINAL REPORT

RP-C2078
CESSNA 207A

OPERATOR: CYCLONE AIRWAYS, INC.

TYPE OF OPERATION: NON-SCHEDULED COMMERCIAL

DATE OF OCCURRENCE: MAY 17, 2022

***PLACE OF OCCURRENCE: CAUAYAN PRINCIPAL AIRPORT (RPUY), CAUAYAN, ISABELA,
PHILIPPINES***

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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.



FINAL REPORT

TITLE: Incident involving a Textron Aviation Inc., Cessna 207A type of aircraft with Registry Number RP-C2078 operated by Cyclone Airways, Inc. that collapsed its nose landing gear during landing roll at Cauayan Airport, San Fermin, Cauayan, Isabela, Philippines on May 17, 2022 at about 1215H/0415 UTC.

Notification of Occurrence to National Authority

The Notification of incident to AAIB CAAP was relayed by the Operator of the aircraft at 1430H (LOCAL) on May 17, 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 was appointed.

Authority Releasing the Report

The Final investigation report was released by Aircraft Accident Investigation and Inquiry Board (AAIB) and published on the CAAP website on **02 April 2025.**

Synopsis:

On May 17, 2022 at about 1215H, a Textron Aviation Inc., Cessna 207A with registry number RP-C2078 owned and operated by Cyclone Airways, Inc. sustained minor damage following a collapse on its nose landing gear during landing roll at Cauayan Airport, San Fermin, Cauayan, Isabela, Philippines. The pilot, with 6 other occupants, did not sustain any injuries. Visual Meteorological Conditions (VMC) prevailed at the time of the incident. The cause of the incident was attributed to the failure of the upper torque link assembly resulted in the collapse of the nose landing gear.

LIST OF ACRONYMS AND ABBREVIATIONS

AAIIB	:	Aircraft Accident Investigation and Inquiry Board
AIP	:	Aeronautical Information Publication
AIS	:	Aeronautical Information Service
AOC	:	Air Operator Certificate
AMO	:	Approved Maintenance Organization
ARFF	:	Aircraft Rescue Fire Fighting
ASDA	:	Accelerate-Stop Distance Available
ATC	:	Air Traffic Controller
CAAP	:	Civil Aviation Authority of the Philippines
CFR	:	Crash Fire Rescue
CoA	:	Certificate of Airworthiness
CPCP	:	Corrosion Prevention and Control Program
CPL	:	Commercial Pilot License
FAA	:	Federal Aviation Administration
ICAO	:	International Civil Aviation Organization
LDA	:	Landing Distance Available
NDT	:	Non-Destructive Testing
NLG	:	Nose Landing Gear
OFSAM	:	Office of the Flight Surgeon and Aviation Medicine
PCN	:	Pavement Classification Number
PMA	:	Parts Manufacturer Approval
RPUY	:	Cauayan Principal Airport
RWY	:	Runway
TODA	:	Takeoff Distance Available
TORA	:	Takeoff Run Available
UTC	:	Universal Time Coordinated
VFR	:	Visual Flight Rules
VMC	:	Visual Meteorological Condition



1. FACTUAL INFORMATION

Aircraft Registration No. : RP-C2078

Aircraft Type/Model : Textron Aviation Inc., Cessna 207A

Operator : Cyclone Airways, Inc.

Address of Operator : Cauayan Airport, San Fermin, Cauayan, Isabela, Philippines

Place of Occurrence : Cauayan Principal Airport (RPUY), Cauayan, Isabela, Philippines

Date/Time of Occurrence : May 17, 2022 at about 1215H/0415 UTC.

Type of Operation : Non-Scheduled Commercial

Phase of Flight : Landing

Type of Occurrence : Collapsed Nose Landing Gear

1.1 History of Flight

On or about 1141H, May 17, 2022, a Textron Aviation Inc. Cessna 207A type of aircraft with Registry Number RP-C2078 sustained damage after its nose landing gear collapsed during landing roll at runway 12 at Cauayan Principal Airport, Cauayan, Isabela, Philippines.

Cyclone Airways, Inc. operates the aircraft under PCAR Part 8. All six passengers and the pilot 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 aircraft originated from Maconacon Airstrip (ACME) on a non-scheduled flight.

Upon arrival at Cauayan airport, the pilot received information from their base operation regarding an issue with the RP-C2078 nose landing gear. With this news, the pilot requested a low pass from the duty air traffic controller (ATC) to verify the status of its NLG. The ATC confirmed that the aircraft's NLG was notably eccentric. The pilot requested landing in a left-base pattern, which was acknowledged by the tower. The ATC dispatched

Cauayan Aircraft Rescue Fire Fighting (ARFF) units to receive the flight. The pilot prepared the aircraft and passengers for an emergency landing on the runway. During the landing roll, the NLG collapsed, causing the propeller to strike the ground. The pilot maintained the runway's centerline and continued to roll for another eighty (80) meters. The aircraft came to a complete stop in a nose-low position, with the final resting point located at coordinates 16°55' 41.50" N, 121°45' 20.61" E, and a heading of approximately 100 degrees.

Airport duty personnel immediately rushed to the site to help the occupants egress from the aircraft and secure the area. There was no reported post-crash fire. Cauayan runway was closed for traffic at about 1146H and resumed normal operations at about 1305H local time.



Figure 1 - RP-C2078 at its final resting point.

1.2 Injuries to Person (s)

Injuries	Crew	Passengers	Others	TOTAL
Fatal	0	0	0	0
Serious	0	0	0	0
Minor	0	0	0	0
None	1	6	0	7

1.3 Damage to Aircraft

The aircraft sustained substantial damage.

1.4 Other Damages

There were no other damage reported except the aircraft concerned.

1.5 Personnel Information

1.5.1 Pilot (P)

Gender	: Male
Date of Birth	: November 18, 1988
Nationality	: India
License Type	: 121849-CPL
Date Issued	: October 31, 2024
Type Rating	: Single Engine Land-Instrument C152, C172, C207 (12-10-2019)
Medical Certificate Validity	: Expiry October 22, 2022
Total Flying Time	: 300 Hours as per Pilot logbook
Total Flying Time on type	: 1,650 Hours as per Pilot logbook

1.6 Aircraft Information

The Textron Aviation Inc. Cessna 207A is a single-engine aircraft configured as a cantilever high-wing aircraft with a conventional tail and steerable nose wheel. It features tricycle, fixed gear and a constant-speed propeller. It seats up to 7 passengers and a pilot. The seven seats' aircraft, powered by a turbocharged Continental 310 hp engine, with a gross weight of 3,800 lbs. (1,724 kg) landplane and certified on 12 July 1976. Certified for eight seats on 11 September 1979.

1.6.1 Aircraft Data

Registration Number	: RP-C2078
Manufacturer	: Textron Aviation Inc.
Country of Manufacturer	: USA
Type/Model	: Single-Engine/ Cessna 207A
Owner/Operator	: Cyclone Airways Inc.
Serial Number/Type Certificate	: 20700679/ A16CE
Date of Manufacture	: 1980
Certificate of Airworthiness Valid up to	: August 1, 2022
Certificate of Registration Valid up to	: April 19, 2024
Category	: Utility
Number of Crew	: 1
Passenger Seats	: 7
Time Since New	: 13,202+23 Hours as of last C of A

1.6.2 Engine Data

The Continental O-520 is a six-cylinder, horizontally opposed aircraft engine produced by Teledyne Continental Motors. First run in 1963 as a development of the IO-346, it has been produced in versions incorporating fuel injection (IO-520), turbo-charging (TSIO-520), and gearing (GTSIO-520).

Manufacturer	: Teledyne Continental Motors
Type	: Piston (Injection)
Model	: IO-520-F
Serial Number	: 158561
Time Since New	: 9,277+25 Hours as of last CoA
Time Since Overhaul	: 901+21 Hours as of last CoA

1.6.3 Propeller Data

The aircraft is equipped with a three (3) bladed McCauley constant speed propeller. The 80 inch diameter 3-bladed aluminum propeller is designed for piston-powered aircraft which brings an entirely new level of safety, maneuverability, and control, of both land and sea planes.

Manufacturer	: McCauley
Type/Model	: Variable Pitch (Aluminum Alloy)/D2A34C58-0
Propeller Serial Number	: 768571
Date last Installed	: September 13, 2021
Propeller total time	: 1,499+30 Hours since last C of A

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). Using VFR, the pilot must be able to operate the aircraft with visual references to the ground and visually avoid obstructions and other aircraft.

1.9 Communications

The aircraft has a standard radio communication equipment and was in contact with Cauayan Tower radio frequency at 122.70 Mhz (Operational).

1.10 Aerodrome Information

The Cauayan Principal Airport (RPUY) is an airport serving the general area of Cauayan City in the Province of Isabela. It is one of three (3) commercial airports in the province. Cauayan Airport is listed in the Philippine Aeronautical Information Publication (AIP) which is published by the Aeronautical Information Service (AIS) and CAAP approved aerodrome facility data.

1.10.1 General Information

Aerodrome name	: Cauayan Principal Airport (RPUY)
Coordinates	: 16.5547 N 121.4512 E
Aerodrome Operator/Address	: Civil Aviation Authority of the Philippines Cauayan Airport, Cauayan 3306 Isabela Phone: (0758)652-2314
Runway	: 12/30 2098M x 36M PCN 47 R/A/W/T CONC
Slope of Runway	: 0.306% uphill toward THR 30.
Type of traffic permitted	: VFR
ATS Communication	: Cauayan Radio 122.70Mhz
Facility (FSS)	
Elevation	: 61M (200FT) AMSL
Airport Operation	: 0000-0900Z
Navigational Aids: DVOR/DME	: 116.50Mhz
Apron Surface and Strength	: Surface: Concrete/PCN 47 R/A/W/T
RWY & TWY Markings	: Rwy: Designation Center line, SWY Distance to go marker
Security	: H24 : RWY 12 TORA/TODA: 2098M/2098M ASDA/LDA : 2098M/2098M
Declared Distances	RWY 30 TORA/TODA: 2098M/2518M ASDA/LDA : 2154M/1739M Threshold displayed by 359M
Airspace Classification	: G
AD Category for Firefighting	: CAT VI
Rescue Equipment	: One (1) Fire Truck, Oshkosh (6000 liters) : RWY 30 TWR Antenna 52M – Approximately 435M perpendicular distance from extended RWY centerline and 935M from displace threshold of RWY 30.
Aerodrome Obstacles	
Met Office	: None



1.11 Flight Recorders

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

1.12 Wreckage And Impact Information

The pilot touched down at about five hundred (500) meters from the threshold of runway 12. During the landing roll, about seven hundred fifty (750) meters from the touchdown point, the aircraft nose landing gear separated from its assembly and underwent a subsequent propeller strike. The aircraft continued to roll for another eighty (80) meters. The aircraft made a normal landing at the centerline, and no fire was visible until it came to a full stop on the right side of the runway. The Cauayan airport Crash Fire Rescue (CFR) services arrived on scene to assist and secure the aircraft. The pilot and passengers safely got out of the disabled aircraft.

1.13 Medical and Pathological Information

The pilot underwent a post-accident medical examination at CAAP-OFSAM, and there was no medical impediment to his ability to fly. The pilot's medical results confirmed that he met the CAAP and ICAO Annex 1 Medical Standards to exercise the privileges of the license he currently held.

1.14 Fire

There was no evidence of post impact fire.

1.15 Search and Survival Aspects

The incident was survivable due to the limited damage to the aircraft nose, landing gear, and propeller. Since the incident at Cauayan airport, no search operation has taken place.

1.16 Organizational and Management Information

1.16.1 Operator

Cyclone Airways Inc. is located at Cauayan Airport, San Fermin, Cauayan, Isabela, Philippines, as its Primary Place of Business. The company has Principal Base Operations at Cauayan Airport. Cyclone Airways Inc. is authorized to perform

commercial air operations as defined in their Operations Specifications with a valid AOC# 2010034 issued by CAAP. The company offers non-scheduled flights and air charter. The aircraft RP-C2078, is included on their AOC Operations specification equipment list

1.16.2 Maintenance

The maintenance function of RP-C2078 is being undertaken by Cyclone Airways Inc. Repair Station with official address at Cauayan Airport, San Fermin, Cauayan, Isabela, Philippines with a current Approved Maintenance Organization (AMO).

2. ANALYSIS

2.1 General

The pilot stated that he did not notice anything unusual during the take-off at Maconacon Airstrip. Upon arrival at Cauayan airport, He (P) received information that the ground staff at Maconacon noticed something strange with the NLG position, which seemed to be perpendicular to the aircraft fuselage. The ground staff, who noticed the problem, immediately informed the Cyclone Airways dispatch station at Cauayan principal airport and relayed the information to the pilot. With this development, the pilot requested a low pass on the tower for the duty air traffic controller (ATC) and verified the status of RP-C2078 NLG. The ATC confirmed that the aircraft's NLG was notably eccentric. The ATC dispatched Cauayan Aircraft Rescue Fire Fighting (ARFF) units to receive the flight. The pilot briefed the passengers about the situation and prepared the aircraft for an emergency landing. About 750 meters from the touchdown point, during the landing roll, the aircraft nose landing gear collapsed and separated from its assembly. The aircraft came to a complete stop in a nose-low position, with the final resting point located at coordinates 16°55' 41.50" N, 121°45' 20.61" E and a heading of approximately 100 degrees. Airport duty personnel immediately rushed to the site to help the occupants egress from the aircraft and secure the area. There was no reported post-crash fire. Cauayan runway was closed for traffic at about 1216H and resumed normal operations at about 1305H local time.

2.2 Aircraft Weight and Balance

The pilot assessed that the aircraft's weight and center of gravity were approximately four hundred (400) pounds at the time of the incident. The pilot also stated that during the last three (3) days of flight, the aircraft loading was about the same weight as previously mentioned. The manufacturer loading graph indicates that the aircraft falls within the allowable loading limits and the tolerable landing weight.

2.3 Aircraft Damage

During the landing roll, about seven hundred fifty (750) meters from the touchdown point, the aircraft nose landing gear separated from its assembly, and a subsequent propeller strike happened (Figure 2).



Figure 2 - Propeller damage.

The aircraft's nose landing gear detached from its assembly, proceeded forward along the fuselage, and collided with the lower nose engine cowling, causing damage to the structure (Figure 3). Eyewitnesses' accounts stated that the aircraft landed normally at the runway centerline, going to the right. The NLG was located approximately fifteen (15) meters to the left of the grassy section of the runway from the aircraft's final position.



Figure 3 - Lower nose engine cowling damage.

During the landing roll, the aircraft nose landing gear separated from its assembly, resulting in a subsequent propeller strike (Figure 4A). The aircraft NLG upper torque link assembly was broken (Figure 4B). The NLG upper torque link assembly was supposed to support the shock strut and nose wheel steering but was damaged (Figure 4C). The stress from the landing roll caused the NLG wheel to separate from its assembly (Figure 4D).

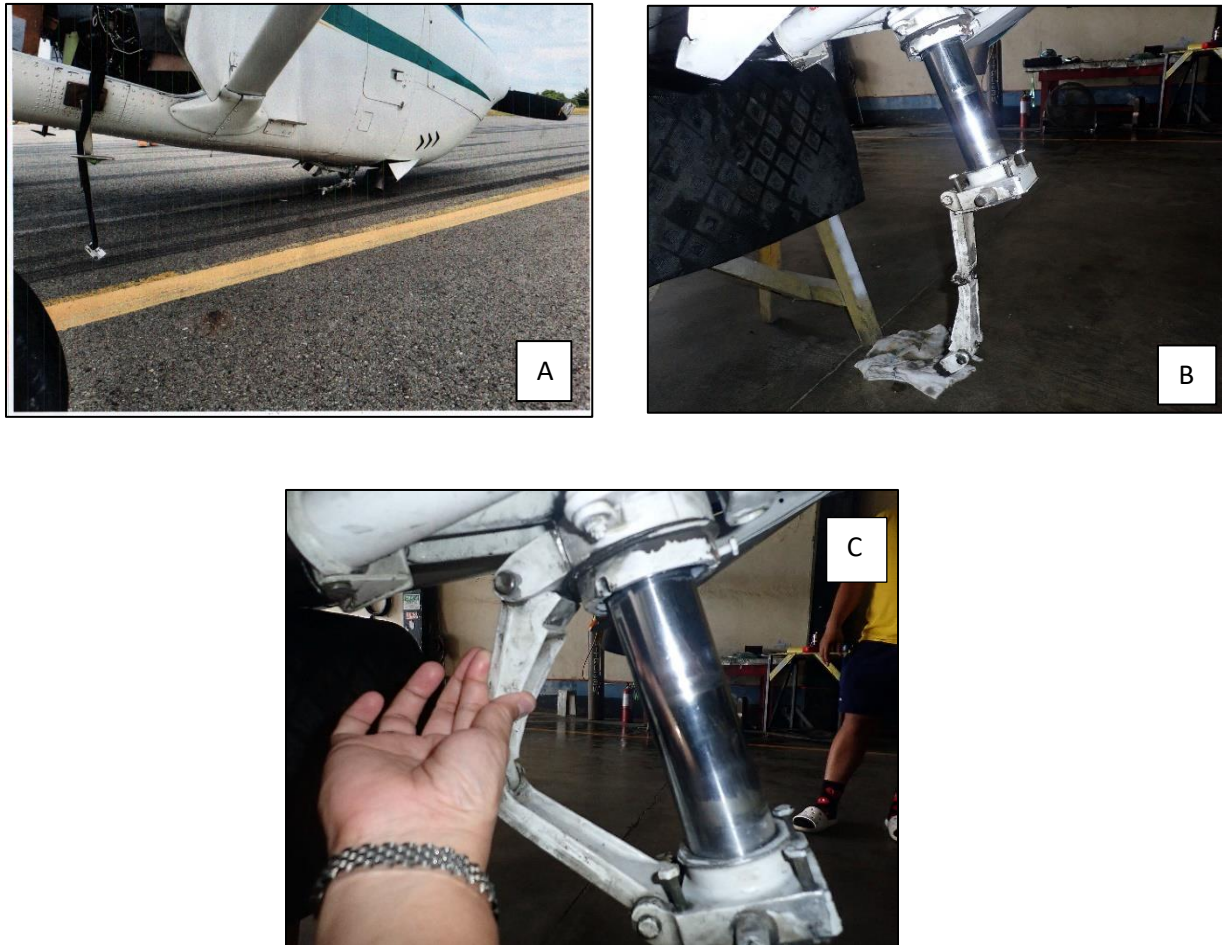


Figure 4 (A-D) Nose landing gear damage.

2.4 Aircraft Nose Landing Gear Upper Torque Link Assembly

Due to repeated hammering with every takeoff and landing of the NLG shock strut, the nose gear incurs so much stress and strain that it just doesn't have a chance to last as expected. Excessive wear can cause the strut to overextend. It also often wears unevenly, resulting in inconsistent alignment of the nose wheel in flight, which then causes extra drag and yaw. The extra yaw of the NLG can require increased rudder trim, which causes even more drag. A runway sweep was conducted by the Cauayan CFR unit after the occurrence, and they stated that no part or component of the aircraft nose landing gear upper torque link assembly was found. The ground staff at Maconacon Airstrip also searched for the missing part or component of the aircraft nose landing gear upper torque link assembly, but they were unable to find it.



Figure 5 - Nose landing gear upper torque link assembly damage.

2.5 Aircraft Maintenance

The aircraft had its airworthiness certification approved on September 29, 2021. During the inspection, it underwent a corrosion prevention and control program (CPCP). Mactan Aviation Technology Innovators, Inc., with current AMO # 91-10, was contracted by the operator to perform the said program on June 10, 2021. With reference to Textron Aviation 207/T207 Series 1969–1986 Cessna service manuals No. D2060-1TR7 and D2060-1TR10 under Inspection Operation No. 4/CPCP (Section 2A-30-00) forms, the affected nose landing gear and all its parts and components were inspected and found to be in satisfactory condition and free of corrosion. Non-Destructive Testing (NDT) visual inspection was also performed and noted no detectable crack. No further action is needed until the next inspection on June 10, 2024. The document shows that no pre-existing fatigue crack was present at the time of the non-destructive testing (NDT) inspection, prior to the NLG upper torque link assembly failure.

Cyclone Airways Inc.'s maintenance personnel examined the aircraft nose landing gear upper torque link assembly as part of the investigation on May 20, 2022. According to the operator maintenance records and the Cessna 207A fifty (50) hour inspection worksheet dated April 25, 2022; the aircraft received servicing in accordance with company policy. The propeller, engine compartment, fuel system, control system, and airframe are all part of this periodic inspection, but the landing gears are not. No remarks were noted by the operator's mechanics.

Another maintenance record showing Cyclone Airways Inc., Cessna 207A 100/200 hours inspection, Annual relicensing as per Cessna 200 service manual dated May 5, 2022. This is composed of the fifty (50) hours inspection including the following:

Landing gear:

1. Brake fluid, lines and hoses, linings, disk and clips, brake assy., and master cylinder.
2. Main gear wheels, wheel bearing, step and spring strut and tires.
3. MLG and NLG wheel bearing lubrication.
4. Torque link lubrication
5. Nose gear strut servicing and shimmy damper servicing
6. Nose gear wheels, wheel bearings, strut, steering system, shimmy dampener, tire, fairing and torque link.
7. Parking brake system.

This is followed by another maintenance schedule of Cessna 207A 50 Hours inspection worksheet dated May 13, 2022. It is the same as the fifty (50) hours inspections as stated above and the last periodic inspection before the occurrence.

The investigation revealed that during the 100/200-hour inspections, the NLG was serviced. The submitted documents lack supplemental maintenance records detailing the removed or replaced parts. Although the company's pre-flight checklist includes a visual check on the nose landing gear before operations, nobody observed the pre-existing crack before the flight.

2.6 Aircraft Parts Manufacturer Approval (PMA)

The Federal Aviation Administration (FAA) issues Parts Manufacturer Approval (PMA) Certificates. Every company that manufactures aircraft parts not integrated into the aircraft at the time of "Type Certification" must obtain their own PMA from the FAA. The FAA has been granting PMA since the late 1960's.

The manufacturer did not issue a mandatory service bulletin for the subject part, but instead issued a Manufacturer Tech Note No. 001, Revision 004, dated April 15, 2010. This includes all Cessna aircraft models 150 through 210 series. This non-mandatory fix is a product of consumer safety and the Cessna aircraft operator organization. It addresses the nose landing gear tire oscillating from pointing left and then pointing right many times per second while the aircraft is going straight and reinforcing/replacing the NLG torque link. The heavy-duty landing gear support complete with FAA-PMA kits includes all commonly replaced torque link parts, but it does not change the manufacturer's inspection period to 200 hours.

The investigation revealed that the operator uses three (3) aircraft, with the RP-C2078 serving as the primary workhorse for the company. The aircraft nose landing gear component mainly received overstress, forming an undetected fatigue crack while operating in the rugged airstrip of Maconacon, Isabela. The maintenance inspection criteria required an inspection/examination every 200 flying hours; however, there remains a persistent risk of not discovering fatigue cracks in a timely manner. That type

of crack may appear before the next scheduled inspection period, which is on June 10, 2024, whichever comes first.

3. CONCLUSION

3.1 Findings

- a. The pilot was trained and qualified on the Textron Cessna 207A aircraft and Cyclone Airways Inc. procedures.
- b. The pilot possesses valid airmen license and medical certificate issued by the CAAP.
- c. The pilot and passengers alighted the aircraft safely.
- 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.

3.2 Probable Cause Factor

3.2.1 Primary Cause Factor

- a. The failure of the upper torque link assembly resulted in the collapse of the nose landing gear.

3.2.2 Contributory Cause Factors:

- a. The operator's inadequate maintenance program failed to detect the progressive fatigue crack on the aircraft's NLG torque link component.
- b. Non- adherence to Manufacturer Tech Note No. 001, Revision 004, dated April 15, 2010, on the affected aircraft.

4. SAFETY RECOMMENDATIONS

As a result of the safety investigation, the Aircraft Accident Investigation and Inquiry Board hereby proposes the following safety recommendations.

4.1 For CAAP FSIS:

- a. To ensure that the operator comply with the Manufacturer Tech Note No. 001, Revision 004, issued on April 15, 2010, concerning the affected aircraft.
- b. To ensure that the operator pilots and maintenance personnel fulfill their pre-flight and post-flight inspection responsibilities on every scheduled flight.

-----END-----

TECH NOTE

No. 001

Original Date: 12/05/93

Revision No.: 004

Rev. Date: 04/15/2010

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Nose Wheel Shimmy

One of the questions most asked of the CPA is how to correct nose wheel shake or shimmy. The Cessna factory also receives numerous inquiries on this subject and has issued SE84-21 Service Information Letter to provide some guidelines for troubleshooting shimmy problems in the field. The following is a compilation of what CPA and Cessna suggest are the usual causes of, and solutions for, nose wheel shimmy.

Nose Wheel Tire & Wheel Assembly Balance

Balancing the nose wheel/tire assembly is the most important point to check in trying to solve a shimmy problem. Aircraft tire and tube manufacturers paint a red dot on the tire for the "light" spot. A yellow stripe on the tube, or the valve stem should be aligned with the red dot for coarse balance during tire buildup. Then the tire/wheel assembly is balanced with a static type (bubble) balancer and generally does an acceptable job.

However, the preferred method, and sometimes the only method that can solve persistent shimmy problems, is dynamic balancing. (Dynamic balancing is when the wheel/tire/bearing assembly is spun and the proper weights and locations determined electronically). Very few light aircraft maintenance shops have the capability to do spin balancing, so CPA suggests that local motorcycle shops be contacted until one with a spin balancer is found. Usually these shops have the necessary mandrels to mount an aircraft tire/wheel assembly. Balance is achieved by affixing lead weights to the wheels.

CPA has received new tires that cannot be balanced successfully no matter how the tire is mounted, or the wheel indexed. Replacement with a new tire is the only option in these cases. If the tire won't balance fairly quickly with a static balancer, and the wheels and wheel bearings are in good shape, phone your tire supplier for a replacement and return the faulty tire for warranty adjustment.

CPA NOTE: Whenever changing tires and tubes, or experiencing a vibration upon lift-off in tubular landing gear legged Cessnas, the main tire/wheel assemblies can be balanced in the same way.

Nose Wheel Tire Condition

In some cases a nose wheel assembly may balance but still cause a shake due to an out-of-round tire, or tire damage such as a broken belt or separating ply. Gross

damage can be seen while spinning the tire and looking from the side and end-on. All new tires should be checked for out of round as soon as they are installed.

Torque Links (Scissors)

The torque links are the connection between the nose tire/wheel assembly and fork, and the steering collar and shimmy dampener. Therefore, any wear, stop or looseness in the torque link bolts, spacers or bushings will allow shimmy to continue, undamped by the shimmy dampener. Cessna proposes that a test for torque link condition would consist of removing the three castle nuts on the torque link bolts, and replacing them with self-locking nuts that are tightened tighter than the castle nut ordinarily is. Then conduct a high speed taxi. If the shimmy reoccurs, then remove the torque links and re-bush them. Be sure to reinstall the castle nut and cotter pin before flight. The self-locking nuts are used only for the taxi test and are not approved for use in service in this type of application. CPA experience is that all bushings, spacers and bolts should be replaced at the same time. Parts cost for complete rebuild of the torque links in mid 1996 approximately \$75.

CPA NOTE: It is critical to install the correct high strength bolt in the center joint of the scissors. The head of this 3/16" bolt must have a triangle on it, or an NAS part number such as NAS 464, NAS 1103, NAS 6203 etc.

Steering Arm Assembly (Collar) Shims

This is an area that is often missed when trying to correct nose wheel shimmy problems. The upper end of the torque links attaches to the steering collar, so shimmy is transmitted from the wheel to the torque links, then to the collar. It's vital that the collar only move in a rotational motion around the strut; any up and down, or cocking movement of the collar will allow shimmy to continue since the shimmy dampener isn't designed to combat the cocking movement of the collar. If cocking is detected, or shimmying continues after all other solutions have been attempted, removal of the complete nose landing gear will be necessary for re-shimming of the collar.

There are three shims of varying thickness that are designed to tighten up the collar and eliminate any up and down movement. The test for tightness would be

