

**CANADIAN FORCES
FLIGHT SAFETY INVESTIGATION REPORT**

FINAL REPORT

FILE NUMBER: 1010-C-GMFB (DFS 2-6)
DATE OF REPORT: 28 January 2005

AIRCRAFT TYPE: Katana
DATE/TIME: 211100Z July 2004
LOCATION: Moncton Airport, New Brunswick
CATEGORY: "C" Category Accident

**This report was produced under authority of the Minister of National Defence (MND) pursuant to section 4.2 of the Aeronautics Act, and in accordance with
A-GA-135-001/AA-001, Flight Safety for the Canadian Forces.**

With the exception of Part 1 – Factual Information, the contents of this report shall be used for no other purpose than accident prevention. This report was released to the public under the authority of the Director of Flight Safety, National Defence Headquarters, pursuant to powers delegated to him by the MND as the Airworthiness Investigative Authority (AIA) of the Canadian Forces.

SYNOPSIS

The student pilot of the Katana aircraft was flying her second solo mission as part of the Private Pilot course in the Air Cadet Flying Scholarship program. This was her second flight of the day in which she was to practice normal takeoffs, circuits and landings. Approximately 35 minutes into the one-hour flight, the aircraft experienced a hard landing and noticeable vibrations were evident after power up and lift off on the touch-and-go. The pilot notified tower of the vibrations and completed the circuit to a successful full-stop landing. After shutdown, maintenance technicians noted that the propeller tips had been worn down. The pilot was the sole occupant of the aircraft and there were no injuries.

The aircraft suffered "C" category damage.

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1. FACTUAL INFORMATION

1.1 History of the Flight

The accident aircraft and pilot were participating in the Air Cadet Flying Scholarship Program located at the Moncton Airport in New Brunswick. The aircraft is owned by the Moncton Flying Club, which operates as the Moncton Flight College (MFC). MFC staff teaches the Air Cadet students and successful graduates receive a Private Pilot Licence.

The student flew a syllabus Post Solo Check flight with her instructor, following which, she was briefed and authorized to fly the first of two scheduled solo flights. This solo flight was syllabus trip #10 and involved circuit training, normal take-offs, circuits and landings. The weather was Visual Meteorological Conditions (VMC) and the winds were light.

The student taxied for and took off on Runway 24. The mission was flown as briefed and was uneventful until the accident, which occurred about 35 minutes into the flight. The final approach was flown according to standard procedures. However, the flare was not initiated and the aircraft was flown onto the runway in a nose down attitude. The propellers contacted the runway and following the hard landing the student applied power and commenced an overshoot. Once airborne, at full power, vibrations were evident. The pilot notified the tower (but did not declare an emergency) and successfully flew a circuit to a full stop landing. The pilot taxied to the ramp where servicing noticed the propeller tip strike and nose gear damage.

There was no emergency response and there were no injuries. Photos of the damaged aircraft were taken.

1.2 Injuries to Personnel

There were no injuries.

1.3 Damage to Aircraft

The aircraft received "C" category damage (Annex A). The aircraft propeller struck the ground resulting in damage to the outboard two-inch portion of both propellers' tips. The outer cover of the wood cored propeller split and the wooden core was abraded by contact with the ground. The nose gear pivoting axel and strut were bent and the nose shock was deformed. No further damage was discovered following inspection of the engine during the engine teardown according to the Director of Maintenance at the Moncton Flying Club. As a result

of this information, it can be confirmed that the aircraft received “C” category damage.

1.4 Collateral Damage

There was no collateral damage.

1.5 Personnel Information

The pilot was an Air Cadet enrolled in the Air Cadet Flying Scholarship program at the Moncton Flight College in the Private Pilot program.

Table 1: Personnel Information

	Pilot
Rank	Cadet
Currency/Category valid	Yes
Medical Category valid	Yes
Total Flying Time (Hrs)	19.2
Instructional (Hrs)	0
Flying hours on type	19.2
Flying hours last 30 days	19.2
Duty time last 24 hrs	10

1.6 Aircraft Information

The aircraft was serviceable prior to the accident. All maintenance and inspections were up to date. The weight and balance was within limits.

1.7 Meteorological Information

The accident occurred at 1740Z and the actual weather conditions for the Moncton airport around the time of the accident were as follows:

CYQM 211600Z 22005KT 15SM FEW025 SCT260 25.0/19.7 A2991 RMK
CU1CI1 SLP129 SKY24=

CYQM 211700Z 19002KT 15SM FEW 030 BKN260 26.1/19.8 A2990 RMK
CU2CI2 SLP127 SKY47=

CYQM 211800Z 12010KT 15SM FEW030 BKN260 26.7/20.5 A2990 RMK
CU2CI2 SLP125 57008 SKY46=

The forecast was:

AMD CYQM 211537Z 211524 22008KT P6SM SCT015 BKN240 TEMPO 1519
4SM –SHRA BR BKN015 PROB30 1622 2SM –TSRA BR BKN015CB
FM1900Z 24012KT P6SM SCT015 BKN030 TEMPO 1922 4SM –SHRA BR
BKN015

RMK NXT FCST BY 18Z=

CYQM 211739Z 211806 VRB03KT P6SM FEW030 BKN240 TEMPO 1822 5SM
-SHRA BR PROB30 1822 3SM -TSRA BR BKN030CB BECMG 0103
VRBL03KT

FM0500Z VRB03KT P6SM SCT004 BKN060 TEMPO 0506 BKN004
RMK NXT FCST BY 00Z=

The surface winds were light at the time of the accident.

1.8 Aid to Navigation

Not applicable.

1.9 Communications

The aircraft had two VHF radios. Both radios were functioning before and after the flight. During the flight the pilot made all appropriate and required radio transmissions.

1.10 Aerodrome Information

The Moncton Airport is located east of Moncton and is operated by the Greater Moncton International Airport Authority. The airport is utilized for both commercial and private operations. There are two runways in a "V" shape, 11/29 and 06/24. Runway-24 was in use at the time of the accident.

1.11 Flight Recorders

The aircraft was neither equipped nor required to be equipped with any type of flight recording device.

1.12 Wreckage and Impact Information

There was no wreckage or impact marks.

1.13 Medical

The pilot received no injuries. Toxicology was not performed.

1.14 Fire, Explosives Devices, and Munitions

Not applicable.

1.15 Survival Aspects

1.15.1 Life Support Equipment

The four-point harness used by the pilot was effective and prevented injury.

1.15.2 Emergency Transmitters

The aircraft is equipped with an Emergency Locator Transmitter (ELT). The forces of the hard landing were insufficient to activate this device.

1.16 Test and Research Activities

Not applicable.

1.17 Organisational and Management Information

All training, administrative and maintenance files were reviewed and found to be in order.

1.18 Additional Information

Nil.

1.19 Useful or Effective Investigation Techniques

Nil.

2. ANALYSIS

2.1 The Aircraft

The aircraft was fully serviceable prior to the accident. All inspections were up to date and all maintenance records were in order.

2.2 The Briefing

The pilot had just completed a dual mission and was briefed effectively by her instructor for the solo trip. The student had experienced problems with landings and had received additional briefings/flight time to achieve the standard for solo flight.

2.3 The Flight

The student pilot flew the first part of the trip uneventfully. A witness indicated that on the accident approach the student pilot failed to initiate a flare and flew the aircraft onto the runway. This caused the propeller to contact the runway and bend the nose gear. The pilot commenced an overshoot and discovered, once airborne with full power, that the aircraft was experiencing vibrations. The pilot verified her configuration and engine parameters without discovering the cause of the vibrations. The pilot notified the tower of the vibrations, successfully completed the circuit and landed without further incident.

The pilot notified servicing about the aircraft vibrations and subsequently, servicing discovered the propeller and nose gear damage.

2.4 The Instruction

The student pilot initially flew with a new, inexperienced, instructor. He identified the student's problems with the final approach and landing phases of flight. He correctly sought advice from his supervisor and subsequently, an instructor change to an experienced instructor was approved. Following two flights with the student a second instructor change occurred for administrative reasons. Two flights were flown with the third instructor prior to the accident flight. While the third instructor was also very experienced, his technique for correcting the students landing problems was different from that of the second instructor. Both instructors had effective methods for correcting the problems of the student, but the student was placed in the position of adapting to two new techniques over a relatively short period of time without gaining the maximum benefit from either technique. Continuity, with either of these instructors could have maximized the student's ability to learn to fly a consistent approach and landing.

3. CONCLUSIONS

3.1 Findings

3.1.1 The aircraft was serviceable prior to the accident.

3.1.2 The pilot was properly briefed and authorized to fly the mission.

3.1.3 The pilot had experienced difficulty and shown inconsistency on approaches and landings in previous lesson plans.

3.1.4 The double instructor change in two lesson plans made the student's ability to learn to fly a consistent approach and landing more difficult.

3.2 Causes and Contributing Factors

3.2.1 Causes

This accident was caused by the pilot's failure to initiate a flare.

3.2.2 Contributing Factors

The two instructor changes in the four lesson plans prior to the accident flight made the student's ability to correct her approach and landing problems more difficult.

4. SAFETY MEASURES

4.1 Safety Measures Taken

MFC has agreed to place a greater emphasis on instructor continuity.

4.2 Further Safety Measures Recommended

None required.

4.3 Other Safety Concerns

Nil.

4.4 DFS Remarks

Nil

Original Signed By

A.D. Hunter
Colonel
Director of Flight Safety

Annex A: PHOTOGRAPHS

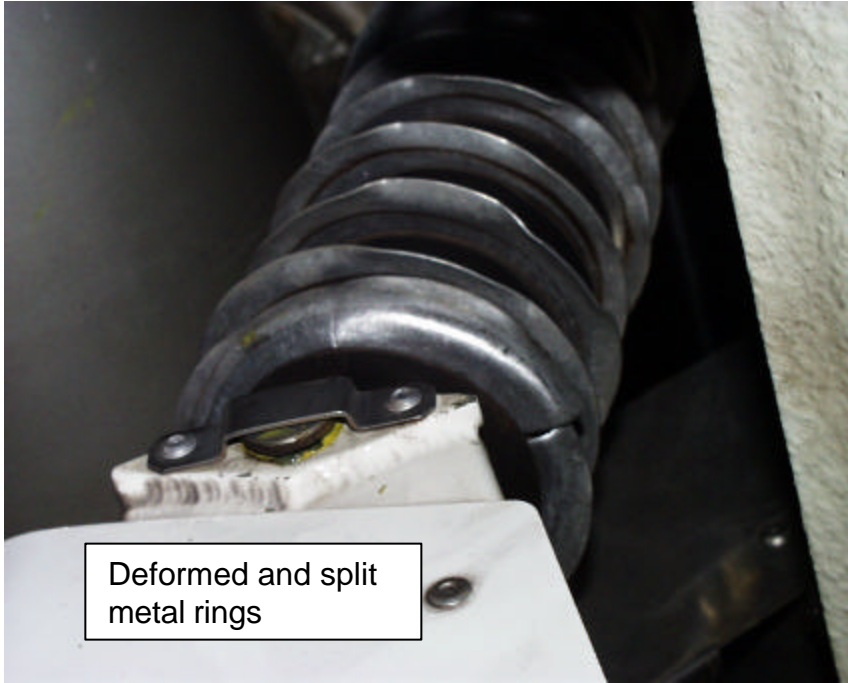
Photo 1: Damage to propeller



Photo 2: Damage to nose gear shock (overview)



Photo 3: Close-up view of damage to nose gear shock



Annex B: LIST OF ABBREVIATIONS

AIA: Airworthiness Investigative Authority

DFS: Director of Flight Safety

ELT: Emergency Locator Transmitter

MFC: Moncton Flying Club

MND: Minister of National Defence

VHF: Very High Frequency

VMC: Visual Meteorological Conditions