NO. 93-023

CESSNA A185F

ZK-EHM

QUINTIN AIRSTRIP

FIORDLAND NATIONAL PARK

23 DECEMBER 1993

ABSTRACT

After touchdown at the conclusion of an evening scenic flight the aircraft veered off the private strip. The pilot was unable to regain directional control and the aircraft ground-looped, coming to rest in an adjacent ditch. The cause was not established. Unexpected deflation of the right main wheel tyre, or the effect of an isolated wind gust, were the most likely possibilities.

TRANSPORT ACCIDENT INVESTIGATION COMMISSION

AIRCRAFT ACCIDENT REPORT NO 93-023

Aircraft Type, Serial Number and Registration:	Cessna A185F, 185-03427 ZK-EHM
Number and Type of Engines:	Teledyne Continental IO-520-D
Year of Manufacture:	1977
Date and Time:	23 December 1993, 2010 hours*
Location:	Quintin Airstrip Fiordland National Park Latitude: 44° 48' S Longitude: 167° 46' E
Type of Flight:	Air Transport—Scenic Flight
Persons on Board:	Crew: 1 Passengers: 4
Injuries:	Crew: Nil Passengers: Nil
Nature of Damage:	Substantial
Pilot in Command's Licence:	Commercial Pilot Licence (Aeroplane)
Pilot in Command's Age:	55
Pilot in Command's Total Flying Experience:	16112 hours 5010 hours on type
Information Sources:	Pilot Report Engineering Investigation
Investigator in Charge:	Mr D G Graham

*All times in this report are NZDT (UTC + 13 hours)

1. NARRATIVE

1.1 On 23 December 1993 the pilot was carrying out short evening scenic flights from Quintin Airstrip. He had been operating for about an hour and had completed two uneventful flights.

1.2 At the conclusion of a further flight the pilot made a normal approach for a landing toward the south-east. The aircraft touched down about 80 m in from the threshold. After travelling some 30 m it began to veer to the right. The pilot was unable to regain directional control and the aircraft groundlooped through 180°, striking the stopbank at the side of the airstrip and coming to rest in an adjacent drainage ditch which paralleled the airstrip at that point.

1.3 Quintin was a private airstrip located on a grassy river flat close to the Quintin Huts on the Milford Track, at an elevation of 800 feet a.m.s.l. It was a level "one way" airstrip oriented 160°M/340°M. Published dimensions were 548 m x 40 m. (Details are no longer published by the Airways Corporation of New Zealand Limited in regard to this airstrip.) All landings were made on 16 and take- offs on 34. The airstrip was available for use by the Operator's authorised pilots only.

1.4 A gravelled strip about 8 m wide provided an "all weather" surface for aircraft operations. In the area where the groundloop occurred the drainage ditch was approximately 4 m from the western edge of the gravelled section.

1.5 Initially the pilot suspected an isolated crosswind gust as the explanation for the sudden and unexpected loss of directional control. However, local conditions were essentially calm, and no difficulty had been experienced during the previous flights due to the effects of crosswind or gusts.

1.6 An aftercast of the weather showed that a strong easterly airflow covered most of South Island at the time. In the late afternoon Queenstown had reported a 20 knot north-easterly, and Milford Sound a 15 knot south-easterly with gusts up to 25 knots. Quintin was located at the head of the Arthur Valley some 20 km south-west of Milford Sound. The airstrip was on the valley floor, surrounded by high mountains and deep converging valleys. Its position would have resulted in a considerably modified local windflow. The aftercast, which indicated clear weather in the area and generally light winds from an easterly quarter, was consistent with the reported conditions. It did, however, suggest that some isolated gusts could be expected at times.

1.7 The undercarriage legs on ZK-EHM had been fitted by the operator about 350 flying hours prior to the mishap. 8.00 x 6 B.F. Goodrich Aviator 6 ply rating tyres were installed on Cleveland hubs. The aircraft had been placed on jacks, the undercarriage inspected, and the leg securing wedges check-tightened during scheduled maintenance about 50 hours before the occurrence of the groundloop.

1.8 Both undercarriage legs were dislodged in the accident. Structural damage and the failure modes of the leg attachment bolts were consistent with loads induced by the groundloop and subsequent slide into the ditch. There was no indication of any pre-existing undercarriage defect.

1.9 The pilot noted after the accident that the right tyre was flat. It was also evident where the aircraft had diverged from the strip that the imprint of the tyre on the gravel surface was wider than normal. Examination of the right main wheel disclosed an angled cut, approximately 15 mm long, in the outer sidewall of the tyre, about 50 mm above the point of lowest ground contact. The inner tube had been punctured in a corresponding position, with a 5 mm cut. No evidence was found to determine conclusively what had damaged the tyre and tube, but the cleanness of the cut, and its relatively fine dimensions, suggested a sharp sliver of metal, flinty stone, or some similarly sharp-edged object.

1.10 The rim of the inner half of the wheel hub assembly had been deformed, and one edge of the hub cover plate had been folded over as the right undercarriage collapsed during the groundloop sequence. While the tyre may have received sidewall damage at this stage, the possibility could not be excluded that the cut and ensuing puncture occurred on the airstrip during the last turn-around or take-off roll, or after touchdown on landing. The gravel surface contained some sharp stones. In addition, at the manoeuvring end of the strip, small items of debris,

including nails, from earlier hut construction work occasionally came to the surface. Whether or not a sharp stone or some metallic fragment contributed to the tyre damage was not established.

1.11 The aircraft's tail-wheel design rendered it susceptible to a groundloop, if a swing developed on take-off or touchdown which could not be rapidly corrected by the pilot.

1.12 The possibility existed that deflation of the right tyre on landing, or touchdown with the tyre already deflated and unbeknown to the pilot, caused the aircraft to veer unexpectedly to the right. Once the right wheel encountered the rough surface alongside the gravelled strip the additional retardation would have compounded the pilot's difficulties in regaining directional control. The proximity of the stopbank and drainage ditch contributed to the substantial damage sustained by the aircraft during the occurrence.

2. FINDINGS

2.1 The pilot in command was appropriately qualified and authorised to conduct the flight.

2.2 The pilot in command had substantial experience on the aircraft type, and in operating from the Quintin Airstrip.

2.3 Earlier take-offs and landings had been carried out without difficulty.

2.4 There was little wind at the airstrip but the possibility of an isolated gust could not be excluded.

2.5 There was no pre-existing defect in the aircraft's control systems or the undercarriage leg assemblies, which might have contributed to the accident.

2.6 The right main wheel tyre was cut and the inner tube punctured and deflated at an unknown stage.

2.7 The reason for the loss of directional control was not established. Unexpected deflation of the right main wheel tyre before the final landing, or shortly after touchdown, or the effect of a sudden localised wind gust, were considered the most likely possibilities.

24 August 1994

M F Dunphy
Chief Commissioner

ABBREVIATIONS COMMONLY USED IN TAIC REPORTS

AD	Airworthiness Directive
ADF	Automatic direction-finding equipment
agl	Above ground level
AI	Attitude indicator
AIC	Aeronautical Information Circular
AIP	Aeronatical Information Publication
amsl	Above mean sea level
ASI	Airspeed indicator
ATA	Actual time of arrival
ATC	Air Traffic Control
ATD	Actual time of departure
ATPL (A or H)	Airline Transport Pilot Licence (Aeroplane or Helicopter)
AUW	All-up weight
C	Celsius
CAA	Civil Aviation Authority
CASO	Civil Aviation Safety Order
CFI	Chief Flying Instructor
CPL (A or H)	Commercial Pilot Licence (Aeroplane or Helicopter)
DME	Distance measuring equipment
E	East
ELT	Emergency location transmitter
ERC	En route chart
ETA	Estimated time of arrival
ETD	Estimated time of departure
F	Fahrenheit
FAA	Federal Aviation Administration (United States)
FL	Flight level
g	Acceleration due to gravity
GPS	Global Positioning System
HF	High frequency
hPa	Hectopascals
IAS	Indicated airspeed
IGE	In ground effect
IFR	Instrument Flight Rules
ILS	Instrument landing system
IMC	Instrument meteorological conditions
ins Hg	Inches of mercury
kHz	Kilohertz
KIAS	Knots indicated airspeed
kt	Knot(s)
LF	Low frequency
LLZ	Localiser
M	Mach number (e.g. M1.2)
M	Magnetic

MAANZ	Microlight Aircraft Association of New Zealand
MAP	Manifold absolute pressure (measured in inches of mercury)
MAUW	Maximum all-up weight
METAR	Aviation routine weather report (in aeronautical meteorological code)
MF	Medium frequency
MHz	Megahertz
mph	Miles per hour
N	North
NDB	Non-directional radio beacon
NOTAM	Notice to Airmen
nm	Nautical mile
NZAACA	New Zealand Amateur Aircraft Constructors Association
NZGA	New Zealand Gliding Association
NZHGPA	New Zealand Hang Gliding and Paragliding Association
NZMS	New Zealand Mapping Service map series number
NZDT	New Zealand daylight time (UTC + 13 hours)
NZST	New Zealand standard time (UTC + 12 hours)
NTSB	National Transportation Safety Board (United States)
OGE	Out of ground effect
PAR	Precision approach radar
PIC	Pilot in command
PPL (A or H)	Private Pilot Licence (Aeroplane or Helicopter)
psi	Pounds per square inch
QFE	An altimeter subscale setting to obtain height above aerodrome
QNH	An altimeter subscale setting to obtain elevation above mean sea level
RNZAC	Royal New Zealand Aero Club
RNZAF	Royal New Zealand Air Force
rpm	Revolutions per minute
RTF	Radio telephone or radio telephony
S	South
SAR	Search and Rescue
SSR	Secondary surveillance radar
T	True
TACAN	Tactical Air Navigation aid
TAF	Terminal aerodrome forecast
TAS	True airspeed
UHF	Ultra high frequency
UTC	Coordinated Universal Time
VASIS	Visual approach slope indicator system
VFG	Visual Flight Guide
VFR	Visual flight rules
VHF	Very high frequency
VMC	Visual meteorological conditions
VOR	VHF omnidirectional radio range
VORTAC	VOR and TACAN combined
VTC	Visual terminal chart
W	West