FINAL

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NATIONAL TRANSPORTATION SAFETY COMMITTEE

Aircraft Accident Investigation Report

PT. Aviastar Mandiri
PK – BRP
De Havilland DHC-6-300 Twin Otter
Sogapa Aerodrome, Papua
Republic of Indonesia

30 January 2008

NATIONAL TRANSPORTATION SAFETY COMMITTEE
MINISTRY OF TRANSPORTATION
REPUBLIC OF INDONESIA
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This Final Report was produced by the National Transportation Safety Committee (NTSC), Karya Building 7th Floor Ministry of Transportation, Jalan Medan Merdeka Barat No. 8 JKT 10110, Indonesia.

The report is based upon the investigation carried out by the NTSC in accordance with Annex 13 to the Convention on International Civil Aviation, Aviation Act (UU No.1/2009), and Government Regulation (PP No. 3/2001).

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TABLE OF CONTENT

TABLE OF FIGURES

GLOSSARY OF ABBREVIATIONS

AD	Airworthiness Directive
AFM	Airplane Flight Manual
AGL	Above Ground Level
ALAR	Approach-and-landing Accident Reduction
AMSL	Above Mean Sea Level
AOC	Air Operator Certificate
ATC	Air Traffic Control
ATPL	Air Transport Pilot License
ATS	Air Traffic Service
ATSB	Australian Transport Safety Bureau
Avsec	Aviation Security
BMG	Badan Meterologi dan Geofisika
BOM	Basic Operation Manual
°C	Degrees Celsius
CAMP	Continuous Airworthiness Maintenance Program
CASO	Civil Aviation Safety Officer
CASR	Civil Aviation Safety Regulation
CPL	Commercial Pilot License
COM	Company Operation Manual
CRM	Cockpit Recourses Management
CSN	Cycles Since New
CVR	Cockpit Voice Recorder
DFDAU	Digital Flight Data Acquisition Unit
DGCA	Directorate General of Civil Aviation
DME	Distance Measuring Equipment
EEPROM	Electrically Erasable Programmable Read Only Memory
EFIS	Electronic Flight Instrument System
EGT	Exhaust Gas Temperature
EIS	Engine Indicating System
FL	Flight Level
F/O	First officer or Copilot
FDR	Flight Data Recorder
FOQA	Flight Operation Quality Assurance
GPWS	Ground Proximity Warning System
hPa	Hectopascals
ICAO	International Civil Aviation Organization

IFR	Instrument Flight Rules
IIC	Investigator in Charge
ILS	Instrument Landing System
Kg	Kilogram(s)
Km	Kilometer(s)
Kt	Knots (NM/hour)
Mm	Millimeter(s)
MTOW	Maximum Take-off Weight
NM	Nautical mile(s)
KNKT / NTSC	Komite Nasional Keselamatan Transportasi / National Transportation Safety Committee
PIC	Pilot in Command
QFE	Height above aerodrome elevation (or runway threshold elevation) based on local station pressure
QNH	Altitude above mean sea level based on local station pressure
RESA	Runway End Safety Area
RPM	Revolution Per Minute
SCT	Scattered
S/N	Serial Number
SSCVR	Solid State Cockpit Voice Recorder
SSFDR	Solid State Flight Data Recorder
TS/RA	Thunderstorm and rain
TAF	Terminal Aerodrome Forecast
TSN	Time Since New
TT/TD	Ambient Temperature/Dew Point
TTIS	Total Time in Service
UTC	Coordinated Universal Time
VFR	Visual Flight Rules
VMC	Visual Meteorological Conditions

SYNOPSIS

On the morning of 30 January 2008, a de Havilland DHC-6-300 Twin Otter aircraft, registered PK-BRP, was being operated by PT. Aviastar Mandiri Airlines on a charter flight carrying passengers and cargo from Nabire to Sugapa, via Enarotali, Papua. There were 18 persons on board; two pilots, one engineer, and 15 passengers. The pilot in command (PIC) was the handling pilot, and the co-pilot was the monitoring/support pilot.

Sugapa weather was clear, with the surface wind calm. The PIC made the approach to runway 27 at Sugapa.

Shortly after touchdown, the aircraft veered to the left and the PIC was unable to maintain directional control to keep the aircraft on the runway. The aircraft left the runway and struck and fatally injured a man standing close to the edge of the runway.

The right main wheel sank into soft ground and the aircraft swung abruptly to the right through 270 degrees, tearing the nose landing gear from the aircraft. It stopped with the nose embedded in an embankment 5 meters from the side of the runway.

The aircraft was substantially damaged, but the occupants were not injured and vacated the aircraft unaided.

The pilot in command indicated that the aircraft had a history of a tendency to veer to left during ground roll. However, investigation found no pre-landing defects with the aircraft that could have contributed to the accident. There was also no record of such a defect being entered in the aircraft maintenance log.

The investigation found that the nose landing gear fork cracked and was deformed as a result of being subjected to a high impact force during the touchdown.

The National Transportation Safety Committee made recommendations to PT. Aviastar Mandiri Airlines and the Directorate General of Civil Aviation with respect to procedures for flight crew to document aircraft and system defects in the aircraft maintenance log.

1 FACTUAL DATA

1.1 HISTORY OF THE FLIGHT

On the morning of 30 January 2008, a de Havilland DHC-6-300 Twin Otter aircraft, registered PK-BRP, was being operated by PT. Aviastar Mandiri Airlines on a charter flight carrying passengers and cargo from Nabire to Sugapa, via Enarotali, Papua. There were18 persons on board; two pilots, one engineer, and 15 passengers.

The pilot in command (PIC) was the handling pilot, and the co-pilot was the monitoring/support pilot.

Sugapa weather was clear, with the surface wind calm. The PIC made the approach to runway 27 at Sugapa.

During the landing roll, the aircraft veered to the left and the PIC was unable to maintain directional control to keep the aircraft on the runway. The aircraft left the runway and struck and fatally injured a man standing close to the edge of the runway.

The right main wheel sank into soft ground and the aircraft swung abruptly to the right through 270 degrees, tearing the nose landing gear from the aircraft. It stopped with the nose embedded in an embankment 5 meters from the side of the runway. The aircraft was substantially damaged, but the occupants were not injured and vacated the aircraft unaided.

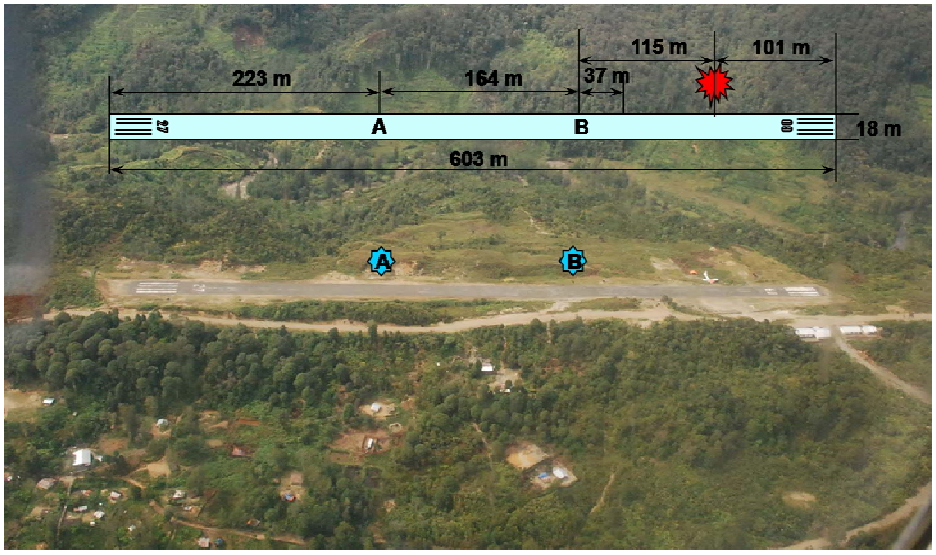

Figure 1: "A" is the touch down point, "B" is the location of fatally injured person beside the runway

Figure 2: Aircraft after impact with the embankment

Figure 3: Nose wheel and left wheel marks of skidding to the left, starting from touch down point

Figure 4: Skidding marks (to left) on the right tire

1.2 INJURIES TO PERSONS

Table 1: Injuries to persons

Injuries	Flight crew	Passengers	Total in Aircraft	Others
Fatal	-	-	-	1
Serious	-	-	-	-
Minor	-	-	-	-
Nil Injuries	3	15	18	-
TOTAL	3	15	18	1

All the aircraft occupants were Indonesian citizens.

1.3 DAMAGE TO AIRCRAFT

The aircraft was substantially damaged. The nose landing gear was torn from the aircraft causing structural damage to the forward fuselage. The left wing tip was substantially damaged and the cabin roof was distorted.

1.4 OTHER DAMAGE

There was no other damage to property and/or the environment.

1.5 PERSONEL INFORMATION

1.5.1 Pilot in Command

Age	: 57 years
Gender	: Male
Type of licence	: Airline Transport Pilot License
Valid to	: 30 April 2008
Rating	: DHC-6/300
Total flying time	: 26,051 hours 0 minutes
Total on this type	: 13,823 hours 53 minutes
Total last 90 days	: 49 hours 07 minutes
Total on type last 90 days	: 15 hours 27 minutes
Total on type last 7 days	: 13 hours 27 minutes
Total on the type last 24 hours	: 3 hours 19 minutes
Last proficiency check	: 10 January 2008
Medical class	: Class one
Last medical examination	: 8 October 2007
Valid to	: 30 April 2008
Medical limitation	: No limitation

1.5.2 Copilot

Age	: 49 years
Gender	: Male
Type of licence	: Commercial Pilot License
Valid to	: 28 February 2008
Rating	: DHC-6/300
Total flying time	: 1,416 hours 31 minutes
Total on this type	: 1,186 hours 31 minutes
Total last 90 days	: 205 hours 24 minutes
Total on type last 90 days	: 205 hours 24 minutes
Total on type last 7 days	: 15 hours 27 minutes
Total on the type last 24 hours	: 3 hours 19 minutes
Last proficiency check	: 2 January 2008
Medical class	: Class one
Last medical examination	: 5 March 2008
Valid to	: 5 September 2008
Medical limitation	: No limitation

1.6 AIRCRAFT INFORMATION

1.6.1 General

Aircraft manufacturer	: de Havilland Canada
Model	: DHC-6/300
Serial number	: 356
Year of manufacture	: 1973
Nationality and registration mark	: Indonesia, PK-BRP
Name of the owner	: PT. Aviastar Mandiri
Name of the operator	: PT. Aviastar Mandiri
Certificate of AirworthinessIssued	: 22 December 2007
Valid to	: 6 March 2008
Certificate of Registration Issued	: 7 December 2007
Valid to	: 6 March 2008
Total flying hours since manufacture	: 34,732 hours 5 minutes
Total flying hours since last inspection	: 56 hours 51 minutes

1.6.2 Data Engine

Engine Type: Turbo Propeller	
Manufacturer	: Pratt & Whitney Canada
Type	: PT6A-27
Engine Number One (Left)	
Serial Number	: PG 0177
Total Time Since New	: 5,820 hours 6 minutes
Total Time Since Overhaul	: 3,371 hours 7 minutes
Engine Number Two (Right)	
Serial Number Engine	: PG 0171
Total Time Since New	: 6,151 hours 2 minutes
Time Since Overhaul	: 2,388 hours 11 minutes

1.6.3 Weight and Balance

The aircraft was loaded within weight and balance limitations.

1.7 METEOROLOGICAL INFORMATION

The pilot reported that the weather at Sugapa during the approach at 2325 was clear and the wind calm.

1.8 AIDS TO NAVIGATION

Not relevant to this accident.

1.9 COMMUNICATIONS

Sugapa did not have a radio transceiver for communication with arriving and departing aircraft.

1.10 AERODROME INFORMATION

Airport Name	:	Sugapa
Airport Identification	:	UGU
Elevation	:	7,203 feet
Airport Operator	:	Directorate General of Civil Aviation
Runway Direction	:	09/27
Runway Length	:	603 meters
Runway Width	:	18 meters
Surface	:	Asphalt

1.11 FLIGHT RECORDER

1.11.1 Cockpit Voice Recorder (CVR)

Manufacturer	: Universal Avionics
Type/Model	: CVR 30B
Part Number	: 1603-02-03
Serial Number	: UNK

There was no cockpit communication between the pilots during the approach from 500 feet. Engine sound appeared to be normal. The stall warning sounded at touchdown, followed by the sound of thrust reversing, and unintelligible comments from the pilots.

1.12 WRECKAGE AND IMPACT INFORMATION

The impact site was approximately 5 meters to the left of runway 27, 101 meters from the departure end of the runway. It impacted an embankment about 5 meters from the side of the runway. The aircraft came to a stop on a heading of 360˚.

Figure 5: View showing aircraft nose damage

Figure 6: Nose and nose landing gear damage

Figure 7: Left wing tip damage

1.13 MEDICAL AND PATHOLOGICAL INFORMATION

No medical examination was conducted on the fatally injured bystander (paragraph 1.15).

1.14 FIRE

There was no pre- or post-impact fire.

1.15 SURVIVAL ASPECTS

The aircraft occupants were not injured and vacated the aircraft unaided. One bystander at the side of the runway was struck by the passing aircraft and sustained fatal injuries.

1.16 TESTS AND RESEARCH

None required.

1.17 ORGANIZATIONAL AND MANAGEMENT INFORMATION

1.17.1 P.T Aviastar Mandiri Airlines

Aircraft Owner : PT. Aviastar Mandiri Airlines

Aircraft Operator : P.T Aviastar Mandiri Airlines

Puri Sentra Niaga Blok B no.29, Kalimalang,
Jakarta 13620, Indonesia

Aircraft Operator Certificate number: AOC/135-029

1.18 ADDITIONAL INFORMATION

The Sugapa villagers were celebrating the arrival of a government officer at Sugapa and they were standing beside of runway.

Witnesses who had knowledge of aircraft operations at Sugapa, informed the investigators that the aircraft was slightly higher than normal when it was on final approach, and it made a steep approach. It touched down heavily approximately 250 meters from the landing threshold end of the runway. The nose wheel contacted the runway heavily before the left main wheel. Shortly after touchdown, the aircraft veered to the left.

There was strong evidence on the asphalt runway of tire rubber from the nose and left main wheel tires for 164 meters, as well as side load scuff marks on all tires.

The left arm of the nose landing gear fork was cracked and deformed.

The PIC informed the investigation that this aircraft had a tendency to veer to the left after touchdown and during the landing roll. Others pilots who operated this aircraft said that they had experienced the same problem. However, they did not enter the problem as a defect in the aircraft's maintenance log. There was also no documented record of this aircraft having a tendency to veer to the left during ground roll.

The PIC also informed the investigation that he had not flown for 8 years prior to November 2007. He renewed his Airline Transport Pilot License in October 2007, and shortly after he was recruited by PT. Aviastar Mandiri as a PIC on Twin Otter aircraft.

1.19 USEFUL OR EFFECTIVE INVESTIGATION TECHNIQUES

The investigation was conducted in accordance with NTSC approved policies and procedures, and in accordance with the standards and recommended practices of Annex 13 to the Chicago Convention.

2 ANALYSIS

Shortly after touchdown the aircraft veered to the left, and the pilot in command was unable to regain directional control and prevent it from leaving the sealed runway.

The following evidence was consistent with a heavy (hard) landing on the nose landing gear first, followed by the left main landing gear: the left arm of the nose landing gear fork was cracked and deformed; tire rubber tracks from the nose and left main wheel tires for 164 meters; and side load scuff marks on all tires.

The nose-wheel tire mark on the runway indicated that the nose wheel was not centered (cocked left) at touchdown, and was subjected to a high impact force. The investigation determined that the nose landing gear fork crack and deformation were consistent with it having been subjected to a high impact force. The nose landing gear subsequently failed and separated from the aircraft.

The investigation was unable to determine why the nose wheel was not centered. No defects were found that could have contributed to the accident.

3 CONCLUSIONS

3.1 FINDINGS

1. Both pilots were licensed and qualified for the flight in accordance with existing Indonesian regulations.
2. The aircraft was certified as being airworthy when dispatched for the flight.
3. Shortly after touchdown, the aircraft veered to the left and the pilot in command lost control of the aircraft.
4. The maintenance records indicated that the aircraft was equipped and maintained in accordance with existing regulations and approved procedures.
5. The mass and the centre of gravity of the aircraft were within the prescribed limits.
6. No useful information was obtained from the cockpit voice recorder.
7. There was no documented record of this aircraft having a tendency to veer to the left during ground roll.
8. There was evidence on the nose landing gear of a hard landing (high impact force), and side load scuff marks on all tires.
9. There was no evidence of any pre-landing defect or malfunction in the aircraft that could have contributed to the accident.

3.2 CAUSES

The nose landing gear fork cracked and was deformed as a result of being subjected to a high impact force during the touchdown. The pilot in command was unable to maintain directional control during the landing roll.

4 SAFETY RECOMMENDATIONS

4.1 SAFETY ACTIONS

The National Transportation Safety Committee was not informed of any safety action taken following this accident.

4.2 RECOMMENDATIONS

As a result of the investigation into this accident, the National Transportation Safety Committee made the following recommendations.

4.2.1 PT. Aviastar Mandiri

The National Transportation Safety Committee recommends that PT. Aviastar Mandiri should ensure that its flight crews document aircraft and system defects on the aircraft maintenance log.

4.2.2 Directorate General of Civil Aviation

The National Transportation Safety Committee recommends that the Directorate General of Civil Aviation, during routine surveillance of Indonesian airlines, should ensure those flight crews are documenting aircraft and system defects in the aircraft maintenance logs.