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**NATIONAL
TRANSPORTATION
SAFETY
COMMITTEE**

Aircraft Accident Investigation Report

PT. Merpati Nusantara Airlines

Casa 212-200; PK-NCN

Rar Gwarma Airport, Dobo, Aru Archipelago

Republic of Indonesia

02 September 2007



**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), Ministry of Transportation Building 3rd Floor, Jalan Merdeka Timur No. 5 Jakarta 10110, Indonesia.

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TABLE OF CONTENTS

TABLE OF CONTENTS	i
TABLE OF FIGURES	iii
GLOSSARY OF ABBREVIATIONS	iv
INTRODUCTION	1
1 FACTUAL INFORMATION	3
1.1 History of the Flight	3
1.2 Injuries to Persons	4
1.3 Damage to Aircraft	4
1.4 Other Damage	5
1.5 Personnel information	5
1.5.1 Pilot in command	5
1.5.2 Co-Pilot	5
1.6 Aircraft information	6
1.6.1 Aircraft Data	6
1.6.2 Engines	6
1.6.3 Propellers	7
1.6.4 Weight and Balance (W&B)	7
1.7 Meteorological Information	7
1.8 Aids to Navigation	7
1.9 Communications	7
1.10 Aerodrome Information	7
1.11 Flight Recorders	8
1.12 Wreckage and Impact information	9
1.13 Medical and Pathological Information	9
1.14 Fire	9
1.15 Survival Aspects	9
1.16 Test and Research	9
1.17 Organizational and Management Information	9
1.18 Additional Information	10
1.19 Useful or Effective Investigation Technique	10

2	ANALYSIS	11
2.1	Flight Opreation	11
3	CONCLUSIONS	13
3.1	Findings.....	13
3.2	Cause	13
4	RECOMMENDATIONS.....	15
4.1	Recommendation to PT. Merpati Nusantara Airlines	15
4.2	Recommendation to Directorate General of Civil Aviation	15

TABLE OF FIGURES

Figure 1: Landing strut shifted backward.....	4
Figure 2: Frame number 8 bent to backward.....	4
Figure 3: Sketch of accident (not for scale).....	9

GLOSSARY OF ABBREVIATIONS

AFIS	:	Aerodrome Flight Information Service
ALAR	:	Approach-and-Landing Accident Reduction
AOC	:	Air Operator Certificate
ATPL	:	Air Transport Pilot License
°C	:	Degrees Celsius
CASR	:	Civil Aviation Safety Regulation
CSN	:	Cycles Since New
CVR	:	Cockpit Voice Recorder
DGCA	:	Directorate General Civil Aviation
FDR	:	Flight Data Recorder
Hrs	:	Hours
ICAO	:	International Civil Aviation Organization
Km	:	Kilometer(s)
Kt	:	Knots (nm/hours)
KNKT/NTSC	:	Komite Nasional Keselamatan Transportasi / National Transportation Safety Committee
PIC	:	Pilot in Command
R/W	:	Runway
ROV	:	Remotely Operated Vehicle
S/N	:	Serial Number
TSN	:	Time since New
UTC	:	Universal Time Coordinate
VFR	:	Visual Flight Rules
VMC	:	Visual Meteorological Conditions

INTRODUCTION

SYNOPSIS

On 2 September 2007, a Casa 212-200 aircraft, registered PK-NCN, operated by PT. Merpati Nusantara Airlines as a flight number MZ 7976, departed from Ambon, Langgur than to Dobo the aircraft was airworthy prior departure.

In flight from Langgur to Dobo, the Co-pilot acted as flying pilot.

During the final approach at Dobo, while aircraft speed approximately 90 knots, the aircraft had a sudden bump, the co-pilot tried to correct the situation by pushed the control column and simultaneously reduced the power lever. At about 100 feet of altitude, the PIC called out “EH – EH – EH, I HAVE CONTROL”. The PIC decided to go around and open power.

During the go around the aircraft touch the ground on the grass covered area, about 38 meters before the beginning of runway 05 and rolled about 8 meters. The area was covered by grass up to 60 centimeters tall. During this ground roll, the left main landing gear impacted to the mound about 25 centimeters high.

The aircraft successfully go around and landed using runway 23, touched down about 130 meters from beginning of runway, on centre line and veered to the left of centerline. The PIC managed to correct and the aircraft returned to centerline.

The aircraft stopped on the runway at 665 meters from beginning of runway 23, about 25 meters from taxi way. All passengers and crew disembarked normally on the runway. No one was injured in this accident.

1 FACTUAL INFORMATION

1.1 HISTORY OF THE FLIGHT

On 2 September 2007, a Casa 212-200 aircraft, registered PK-NCN, operated by PT. Merpati Nusantara Airlines as a scheduled passenger flight with flight number MZ 7976, departed from Pattimura Airport, Ambon to Rar Gwarma Airport, Dobo¹ with stopover at Langgur airport.

The aircraft departed Ambon in airworthy condition and no significant event to be reported until the aircraft landed in Langgur.

In flight from Langgur to Dobo the co-pilot acted as pilot flying. During the final approach at Dobo, while aircraft speed approximately 90 knots, the aircraft had a sudden bump, the co-pilot tried to correct the situation by pushed the control column and simultaneously reduced the power lever. At about 100 feet of altitude, the PIC call out “EH – EH – EH, I HAVE CONTROL”. The PIC decided to go around and open power.

During the go around the aircraft touch the ground on the grass covered area, about 38 meters before the beginning of runway 05 and rolled about 8 meters. The area was covered by grass up to 60 centimeters tall. During this ground roll, the left main landing gear impacted to the mound about 25 centimeters high.

The aircraft successfully go around and landed use runway 23. The aircraft touched down about 130 meters from beginning of runway on centre line. Just after touched down, the aircraft veered to the left of centerline. The PIC managed to correct and the aircraft returned to centerline.

The aircraft stopped on the runway at 665 meters from beginning of runway 23, about 25 meters from taxi way. All passengers and crew disembarked normally on the runway. No one was injured in this accident. The aircraft then towed to apron by a truck.

The attachment structure of the left main landing gear was broken and the landing gear moved rearward.

¹ Rar Gwarma Airport, Dobo will be mentioned as Dobo for the purpose of this report.

1.2 INJURIES TO PERSONS

Injuries	Flight crew	Passengers	Total in Aircraft
Fatal	-	-	-
Serious	-	-	-
Minor/None	3	19	22
TOTAL	3	19	22

1.3 DAMAGE TO AIRCRAFT

The aircraft had substantially damage. Details of the damages are as follow:

1. Mounting structure of the left landing gear broken.
2. Skin around of handle structure of the left landing gear wrinkled.
3. Frame number 8 bent to backward.
4. Frame number 9 bent backward.
5. Lower skin part in around frame 8 wrinkled and some rivets were detached.



Figure 1: Landing strut shifted backward



Figure 2: Frame number 8 bent to backward

1.4 OTHER DAMAGE

There was no other damage to property or the environment reported.

1.5 PERSONNEL INFORMATION

1.5.1 Pilot in command

Gender : Male
Date of birth : 03 April 1972
Nationality : Indonesia
License Type : ATPL
Date of issue : 10 January 2002
Valid to : 31 January 2008
Aircraft type rating : CASA 212-200
Medical certificate : Class 1
Date of medical : 18 July 2007
Last line check : 30 July 2007
Last proficiency check : 18 August 2007

Flying Experience

Total hours : 5,024 hours 35 minutes
Total on this type : 4,850 hours
Last 90 days : 127 hours
Last 30 days : 53 hours 56 minutes
Last 3 days : 2 hours 45 minutes
This flight : 45 minutes

1.5.2 Co-Pilot

Gender : Male
Date of birth : 06 July 1971
Nationality : Indonesia
License Type : ATPL
Date of issue : 15 December 2004
Valid to : 30 November 2007
Aircraft type rating : Casa 212-200

Medical certificate : Class 1
Date of medical : 30 May 2007
Last proficiency check : 26 April 2007

Flying Experience

Total hours : 4,000 hours
Total on this type : 3,000 hours
Last 90 days : 150 hours
Last 30 days : 14 hours 40 minutes
Last 3 days : 2 hours 45 minutes
This flight : 45 minutes

1.6 AIRCRAFT INFORMATION

1.6.1 Aircraft Data

Aircraft manufacturer : IPTN-PT.DI
Aircraft model/type : Casa 212-200
Serial number : 36N/191
Year of manufacture : 1998
Aircraft registration : PK-NCN/No. 1115
Certificate of Registration valid to : 07 September 2007
Certificate of Airworthiness valid to : 18 February 2008

1.6.2 Engines

Engine type : Turboprop
Manufacturer : Garret
Model : TPE 331
Serial Number #1 : P37433C
TSN : 10,040 hours
CSN : 12,039 hours
TSO : 3,887 hours
TBO : 6,000 hours
Serial Number #2 : P37441
TSN : 8,937 hours
CSN : 9,685 hours

TSO : 3,092 hours
TBO : 6,000 hours

1.6.3 Propellers

Propeller type : Variable Pitch Prop
Manufacturer : Hartzel Propeller
Type/Model : HC B4MN -5AL
Serial Number #1 : EAA 1824
TSN : 4,827 hours
TSO : 1,803 hours
Serial Number #2 : EAA 1977
TSN : 5,909 hours
TSO : 2,949 hours

1.6.4 Weight and Balance (W&B)

The Center of Gravity operation limit was within acceptable range and not related to the occurrence.

1.7 METEOROLOGICAL INFORMATION

Surface wind : 120/10-15 Knots
Visibility : 10 Km
Present weather : NIL

1.8 AIDS TO NAVIGATION

The navigation was not relevant to the occurrence.

1.9 COMMUNICATIONS

Communications between AFIS and the crew were normal and not recorded.

1.10 AERODROME INFORMATION

Airport Name : Rar Gwarma
Airport Address : Maluku
Airport Authority : DGCA
Airport Classification : AFIS/Visual
Runway
Runway Length : 850 meters

Runway Width : 18 meters
Azimuth : 05 – 23
Surface : Asphalt
Strength : 12,500 lbs

1.11 FLIGHT RECORDERS

The aircraft was equipped with a Cockpit Voice Recorder (CVR), but it was not fitted with Flight Data Recorder (FDR). According to CASR 135.329 Flight Data Recorder was not required for this type of aircraft.

CVR Manufacturer : Fairchild Aviation Recorders
Model : A100A
Serial Number : 53141
Part Number : 93-A100-80

The CVR was downloaded at the Merpati Maintenance Facility, Surabaya for the purposes of the investigation under supervision of the NTSC investigator.

The result of the download:

The Pilot Flying request flap approach, few minute later requests flaps full down and the Pilot Monitor select the flap full down and call out Flap full down.

The non standard call out “EH – EH – EH” at about 100 feet of altitude, following by call out “I HAVE CONTROL”. The sound of the engine acceleration was heard.

During climbing, the PIC informed to the copilot that he should not close the power lever on final approach.

1.12 WRECKAGE AND IMPACT INFORMATION

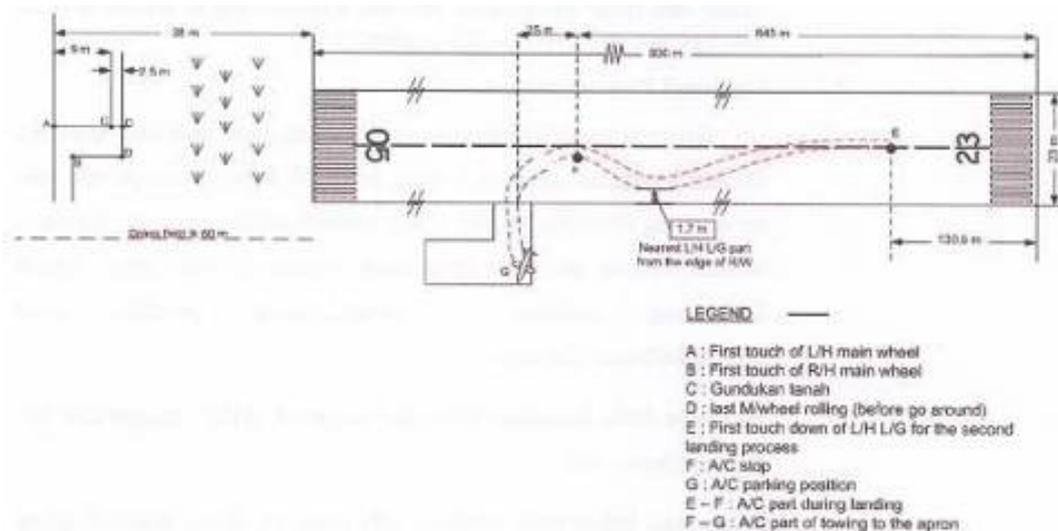


Figure 3: Sketch of accident (not for scale)

1.13 MEDICAL AND PATHOLOGICAL INFORMATION

No medical or pathological investigations were conducted as a result of this occurrence, nor were they required.

1.14 FIRE

There was no pre or post impact fire.

1.15 SURVIVAL ASPECTS

After the aircraft stopped, all passengers disembark normally on the runway.

1.16 TEST AND RESEARCH

Not relevant to this accident.

1.17 ORGANIZATIONAL AND MANAGEMENT INFORMATION

Aircraft Owner : PT. Merpati Nusantara Airlines
Aircraft Operator : PT. Merpati Nusantara Airlines
Jalan Angkasa Blok B 15, Kavling 2-3
Jakarta 17210, Republic Indonesia

Air Operator Certificate Number: AOC/121-002

1.18 ADDITIONAL INFORMATION

There was no other factual information that was relevant to the circumstances leading up to the accident.

1.19 USEFUL OR EFFECTIVE INVESTIGATION TECHNIQUE

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

2 ANALYSIS

2.1 FLIGHT OPERATION

Based on CVR data, during approach there was a conversation between the pilots, mentioned that there was a strong cross wind.

The Pilot Flying requested for flap 'approach', few minute later requested for flaps 'full down' and the Pilot Monitor selected the flap full to down position and called "Flap full down".

During the final approach at aircraft speed approximately 90 knots, the aircraft had a sudden bump, the co-pilot tried to correct the situation by pushed the control column and simultaneously reduced the power lever. The action to reduce the power might have caused the aircraft lost its speed and sinking.

At about 100 feet of altitude, the PIC took over control of the aircraft and decided to go around and advanced the power levers. CVR recorded sounds of engine accelerating.

The investigation found 8 meters marks of main landing gear started from 38 meters before beginning of runway 05. There was a mark of left main landing gear hit a mound with 25 centimeters high 2.5 meters long. The mark of the main landing gear was end at the mound. These marks showed that the aircraft has become airborne (aborted landing).

The impact of the left main landing gear to the mound has result the left main landing gear shifted backward and out of centre. This condition has result the aircraft veered of to the left during landing on runway 23.

During climbing, the PIC informed to the copilot that he should not close the power lever on final approach.

The rubber marks found on the runway 23, showed the mark of the left main wheel was wider than normal, this showed that the left main landing gear has been shifted backward and out of centre.

Wheel marks of the main landing gears on the runway, from the touchdown until end of the marks showed that during the landing roll the aircraft veered off the centerline to the left after touchdown and returned to the centerline and stop.

3 CONCLUSIONS

3.1 FINDINGS

Base on of CVR data that during approach the cross wind was strong.

The Pilot Flying request flap approach, few minute later requests flaps full down and the Pilot Monitor select the flap full down and call out Flap full down.

During the final approach at aircraft speed approximately 90 knots, the aircraft had a sudden bump, the co-pilot tried to correct the situation by pushed the control column and simultaneously reduced the power lever. The action to reduce the power might have caused the aircraft lost its speed and sinking.

The non standard call out “EH – EH – EH” following by call out “I HAVE CONTROL” and heard of engine sound of open power and the aircraft was go around.

The PIC took over control the aircraft and during climbing informed to the co-pilot not to close the Power Lever when on final approached.

The impact of the left main landing gear to the mound has result the left main landing gear shifted backward and out of centre.

3.2 CAUSE

On final approach the aircraft had a sudden bump and sank as the result of power has been reduced to counter the situation.

The impact of the left main landing gear to the mound has result the left main landing gear shifted backward and out of centre.

4 RECOMMENDATIONS

As a result of this accident investigation, the National Transport Safety Committee made the following recommendation.

4.1 RECOMMENDATION TO PT. MERPATI NUSANTARA AIRLINES

The National Transport Safety Committee recommends that PT. Merpati Nusantara Airlines to improve the quality of training, including:

- ALAR (Approach Landing Accident Reduction);
- System of the proficiency check.

4.2 RECOMMENDATION TO DIRECTORATE GENERAL OF CIVIL AVIATION

The National Transport Safety Committee recommends that Directorate General of Civil Aviation to improve standard of the pilot training, including ALAR.