

PRELIMINARY
KNKT.13.06.19.04

NATIONAL TRANSPORTATION SAFETY COMMITTEE

Aircraft Accident Investigation Report

**Merpati Nusantara Airlines
Xi 'An Aircraft Industry MA60; PK-MZO
El Tari Airport, Kupang
Republic of Indonesia
10 June 2013**



**NATIONAL TRANSPORTATION SAFETY COMMITTEE
MINISTRY OF TRANSPORTATION
REPUBLIC OF INDONESIA
2013**

This Preliminary report was produced by the National

Transportation Safety Committee (NTSC), Ministry of Transportation Building 3rd Floor, Jalan Medan Merdeka Timur No. 5 Jakarta 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 Organization, the Indonesian Aviation Act (UU No. 1/2009) and Government Regulation (PP No. 3/2001).

The preliminary report consists of factual information collected until the preliminary report published. This report will not include analysis and conclusion.

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ABBREVIATIONS AND DEFINITIONS

| | | |
|-------------|---|--|
| AMM | : | Aircraft Maintenance Manual |
| AOC | : | Air Operator Certificate |
| ATPL | : | Air Transport Pilot License |
| BMKG | : | <i>Badan Meterologi Klimatologi dan Geofisika</i> (Metrological Climatologically and Geophysical Agency) |
| °C | : | Degrees Celsius |
| CAAC | : | Civil Aviation Authority of China |
| CAM | : | Cockpit Area Microphone |
| CPL | : | Commercial Pilot License |
| CSN | : | Cycles Since New |
| CVR | : | Cockpit Voice Recorder |
| DGCA | : | Directorate General of Civil Aviation |
| DME | : | Distance Measuring Equipment |
| EGPWS | : | Enhance Ground Proximity Warning System |
| FCOM | : | Flight Crew Operation Manual |
| FDR | : | Flight Data Recorder |
| FL | : | Flight Level |
| ft | : | Feet |
| G.I | : | Ground Idle |
| hPa | : | Hectopascals |
| Hrs | : | Hours |
| ICAO | : | International Civil Aviation Organizationn |
| IFR | : | Instrument Flight Rules |
| IIC | : | Investigator in Charge |
| In Hg | : | Inch Hydrargyrum |
| Kg | : | Kilogram(s) |
| Km | : | Kilometer(s) |
| kts | : | Knots (nm/hours) |
| L/H | : | Left hand |
| mbs | : | Millibars |
| mHz | : | Mega Hertz |
| Mm | : | Millimeter(s) |
| MMF | : | Merpati Maintenance Facility |
| MTOW | : | Maximum Take-off Weight |
| Nm | : | Nautical mile(s) |
| NOTAM | : | Notice to Airman |
| KNKT (NTSC) | : | <i>Komite Nasional Keselamatan Transportasi</i> (National Transportation Safety Committee) |

| | | |
|-------|---|--|
| P/A | : | Passenger Address |
| PF | : | Pilot Flying |
| PIC | : | Pilot in Command |
| PM | : | Pilot Monitoring |
| QFE | : | Height above airport elevation (or runway threshold elevation) based on local station pressure |
| QNH | : | Height above mean sea level based on local station pressure |
| S/N | : | Serial Number |
| T.O | : | Take off |
| TSN | : | Time since New |
| TT/TD | : | Ambient Temperature/Dew Point |
| UTC | : | Universal Time Coordinate |
| VMC | : | Visual Meteorological Condition |
| VOR | : | Very High Frequency Omnidirectional Range |

INTRODUCTION

SYNOPSIS

On 10 June 2013, a Xi 'An MA60 aircraft registered PK-MZO was being operated by PT. Merpati Nusantara Airlines on a scheduled passenger flight as MZ 6517.

The aircraft departed from Bajawa Airport (WATB) Nusa Tenggara Timur, at 0102 UTC to El Tari (WATT) Kupang, Nusa Tenggara Timur. On board this aircraft were 2 pilots, 2 flight attendants with 46 passengers consisted of 45 adults and 1 infant.

The flight cruised at 11,500 ft, and the Second in Command (SIC) acted as the Pilot Flying (PF) and the Pilot in Command (PIC) as the Pilot Monitoring (PM).

The flight from the departure until commencing for approach was un-eventful.

At 0138 UTC, the pilot reported the aircraft was passing 10,500 ft and stated that the flight was on Visual Meteorological Condition (VMC).

At 0150 UTC, the aircraft position was on left base runway 07 at 5 Nm from KPG VOR. The El Tari Tower had visual contact with the aircraft and issued a landing clearance with additional information that the wind condition was 120° 14 knots, QNH 1010 mbs.

At 0154 UTC, the aircraft touched down at about 58 meters and halted on the runway at about 261 meters from the beginning of runway 07. The vertical deceleration recorded on Flight Data Recorder (FDR) was 5.99 G and followed by – 2.78 G. The longitudinal deceleration after impact was calculated approximately 0.7 G.

After the aircraft stopped, the flight attendants assessed the situation and decided to evacuate the passengers through the rear main entrance door. One pilot and four passengers suffered injury passenger who seated on row number three, seven and eight.

The aircraft was substantially damaged.

The FDR data retrieved that the left power lever was in the range of BETA MODE at approximately 112 ft and continued until touchdown.

As safety actions the Director of Safety of PT. Merpati Nusantara Airlines has issued instructions to the MA60 instructor pilots.

Included in this preliminary report, the National Transportation Safety Committee (NTSC) has issued two immediate safety recommendations to the PT. Merpati Nusantara Airlines to address additional safety issues identified in this preliminary report.

The investigation involved the Civil Aviation Authority of China (CAAC) as accredited representative.

The investigation is continuing and will include but is not limited to analyse of the Cockpit Voice Recorder (CVR), FDR, company operational regulation and procedures, and any other relevant information.

1 FACTUAL INFORMATION

1.1 History of the Flight

On 10 June 2013, a Xi 'An MA60 aircraft registered PK-MZO was being operated by PT. Merpati Nusantara Airlines on a scheduled passenger flight as MZ 6517.

The aircraft departed from Bajawa Airport (WATB) Nusa Tenggara Timur, at 0102 UTC¹ to El Tari (WATT) Kupang², Nusa Tenggara Timur. On board this aircraft were 2 pilots, 2 flight attendants with 46 passengers consisted of 45 adults and 1 infant. The flight was the second sectors for the aircraft and the crew on that day. The first flight was from Kupang to Bajawa Airport.

During the flight the Second in Command (SIC) acted as the Pilot Flying (PF) and the Pilot in Command (PIC) as the Pilot Monitoring (PM).

The flight from the departure until commencing for approach was un-eventful.

At 0122 UTC, the pilot made first communication with El Tari Control Tower controller (El Tari Tower) and reported their position was on radial 298° 110 Nm from KPG VOR³ and maintaining 11,500 ft. The pilot received information that the runway in use was 07 and the weather information (wind 110° 11 knots, visibility 10 km, weather NIL, cloud few 2,000 ft, temperature 30° C, dew point 22° C, QNH 1010 mbs and QFE 998 mbs).

At 0133 UTC, the aircraft was on radial 297° 68 Nm from KPG VOR and the pilot ready to descend and approved by El Tari Tower to descend to 5,000 ft.

At 0138 UTC, the pilot reported the aircraft was passing 10,500 ft and stated that the flight was on Visual Meteorological Condition (VMC).

At 0150 UTC, the aircraft position was on left base runway 07 at 5 Nm from KPG VOR. The El Tari Tower had visual contact with the aircraft and issued a landing clearance with additional information that the wind condition was 120° 14 knots, QNH 1010 mbs.

At 0151 UTC, the pilot reported that their position was on final and the El Tari Tower re-issued the landing clearance.

At 0154 UTC, the aircraft touched down at about 58 meters and halted on the runway at about 261 meters from the beginning of runway 07. The vertical deceleration recorded on Flight Data Recorder (FDR) was 5.99 G and followed by - 2.78 G.

¹ The 24-hour clock used in this report to describe the time of day as specific events occurred is in Coordinated Universal Time (UTC). Local time for Kupang is Waktu Indonesia Tengah (WITA) is UTC + 8 hours.

² El Tari Airport (WATT), Nusa Tenggara Timur will be named Kupang for the purpose of this report.

³ KPG is the code of Very High Frequency Vary Omnidirectional Range (VOR) which used in Kupang Airport.

After the aircraft stopped, the flight attendants assessed the situation and decided to evacuate the passengers through the rear main entrance door. One pilot and four passengers suffered injury passenger who seated on row number three, seven and eight.

On 11 June 2013, the aircraft was moved to the Air Force hangar at 2100 UTC.

1.2 Injuries to Persons

| Injuries | Flight crew | Passengers | Total in Aircraft | Others |
|------------|-------------|------------|-------------------|----------------|
| Fatal | - | - | - | - |
| Serious | 1 | 4 | 5 | - |
| Minor/None | 3 | 42 | 45 | Not applicable |
| TOTAL | 4 | 46 | 50 | - |

The second in command was a Malaysian and one of the passengers was an American citizen.

1.3 Damage to Aircraft

The aircraft was substantially damaged.



Figure 1: The accident aircraft



Figure 2: Damage on the right side of the aircraft



Figure 3: The rear right view of the aircraft

1.4 Other Damage

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

1.5 Personnel Information

1.5.1 Pilot in Command

| | |
|-------------------------|---------------------------------------|
| Gender | : Male |
| Age | : 42 years old |
| Nationality | : Indonesian |
| Date of joining company | : 1 November 1994 |
| License | : ATPL |
| Date of issue | : 1 December 2004 |
| Aircraft type rating | : MA60 |
| Instrument rating | : 18 Mach 2013 |
| Medical certificate | : First Class |
| Last of medical | : 3 January 2013 |
| Validity | : 3 July 2013 |
| Medical limitation | : Holder shall wear corrective lenses |
| Last line check | : 18 May 2012 |
| Last proficiency check | : 18 March 2013 |

Flying experience

| | |
|---------------|---------------------------|
| Total hours | : 12,530 hours 33 minutes |
| Total on type | : 2,050 hours 43 minutes |
| Last 90 days | : 111 hours 52 minutes |
| Last 60 days | : 71 hours |
| Last 24 hours | : 2 hours 20 minutes |
| This flight | : 1 hours 10 minutes |

Note:

The PIC was qualified as route instructor and has been performed approximately 218 flight hours.

1.5.2 Second in Command

| | |
|-------------------------|--------------------|
| Gender | : Male |
| Age | : 25 years old |
| Nationality | : Malaysian |
| Date of joining company | : 13 February 2012 |
| License | : CPL |
| Date of issue | : 20 June 2012 |
| Aircraft type rating | : MA60 |

| | |
|------------------------|---------------------------------------|
| Instrument rating | : 24 October 2012 |
| Medical certificate | : First Class |
| Last of medical | : 1 March 2013 |
| Validity | : 1 September 2013 |
| Medical limitation | : Holder shall wear corrective lenses |
| Last line check | : - |
| Last proficiency check | : 24 October 2012 |

Flying experience

| | |
|---------------|------------------------|
| Total hours | : 311 hours 44 minutes |
| Total on type | : 141 hours 44 minutes |
| Last 90 days | : 89 hours 23 minutes |
| Last 60 days | : 58 hours 15 minutes |
| Last 24 hours | : 2 hours 20 minutes |
| This flight | : 1 hours 10 minutes |

Note:

The SIC was on line training program with approximately 117 flying hours.

1.6 Aircraft Information

1.6.1 General

| | |
|------------------------------|----------------------------|
| Registration Mark | : PK-MZO |
| Manufacturer | : Xi 'An Aircraft Industry |
| Country of Manufacturer | : China |
| Type/ Model | : MA60 |
| Serial Number | : 0608 |
| Year of manufacture | : 2007 |
| Certificate of Airworthiness | |
| Issued | : 9 December 2012 |
| Validity | : 8 December 2013 |
| Category | : Transport |
| Limitations | : None |
| Certificate of Registration | |
| Registration Number | : 2841 |
| Issued | : 9 December 2011 |
| Validity | : 8 December 2014 |

Time Since New : 4,486 hours
Cycles Since New : 4,133 cycles
Last Major Check : 1C check, 10 August 2012
Last Minor Check : 4A check, 6 May 2013

1.6.2 Engines

Manufacturer : Pratt & Whitney
Country of Manufacturer : Canada
Type/Model : Turbo Propeller/PW127J
Serial Number-1 engine : PCE-EA0074
 ▪ Time Since New : 1,954 hours
 ▪ Cycles Since New : 2,540 cycles
Serial Number-2 engine : PCE-EA0084
 ▪ Time Since New : 4,133 hours
 ▪ Cycles Since New : 4,486 cycles

1.6.3 Propellers

Manufacturer : Hamilton Standard
Country of manufacturer : United States of America
Type/Model : 247 F-3
Serial Number-1 propeller : 20080832
 ▪ Time Since New : 3,002 hours
Serial Number-2 propeller : 20070326
 ▪ Time Since New : 2,723 hours

On 29 May 2013, the L/H propeller was replaced due to vibration.

1.6.4 Weight and Balance

The aircraft departed from Bajawa with configuration as follows:

| | |
|------------------|-------------|
| Zero fuel weight | : 17,987 kg |
| Fuel on board | : 1,768 kg |
| Takeoff weight | : 19,755 kg |
| Landing weight | : 19,143 kg |
| MAC takeoff | : 19.9 % |
| MAC landing | : 21.8 % |

These configurations were within the operating limit.

1.6.5 Electric Magnetic Lock Systems

The description taken from the Flight Crew Operation Manual (FCOM) para 17.4.1 B Power Lever:

At takeoff, pilot pushes the power lever to T.O position from G.I position.

At the time of approach landing, pilot pulls the power lever to F.I position, at this time, the power lever cannot be pulled below F.I due to the action of electric magnetic stopping lock of the flight idle; after aircraft lands, the electric magnetic lock of flight idle is opened automatically and pilot can pull the power lever to any position below F.I.

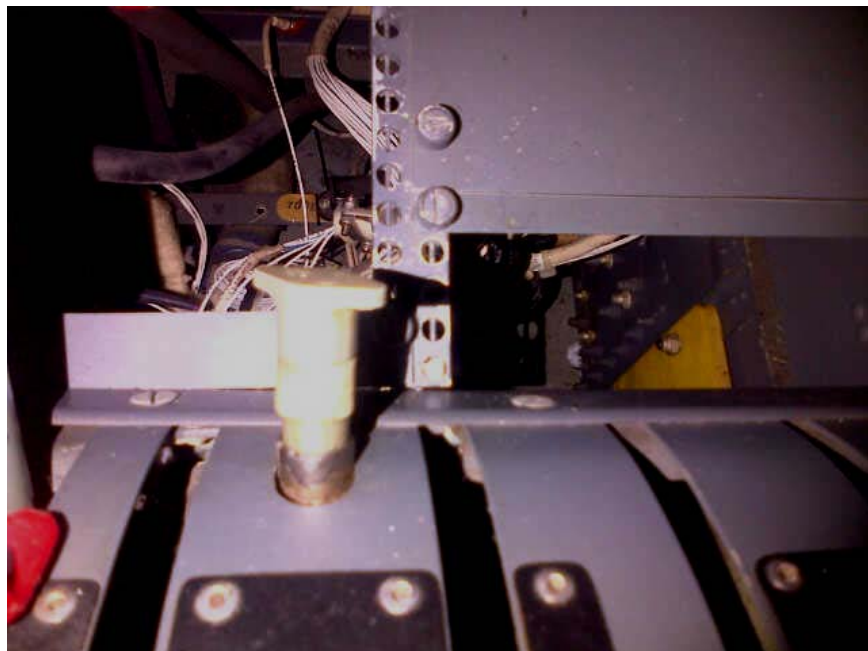


Figure 4: The electric magnetic stop found on “OPEN” position

The investigation could not find detail information of the ‘electric magnetic stopping lock’. Based on the statement in the FCOM it can be interpreted that the ‘electric magnetic stopping lock’ has function to prevent the propeller moves to BETA range (beyond Flight Idle) in flight.

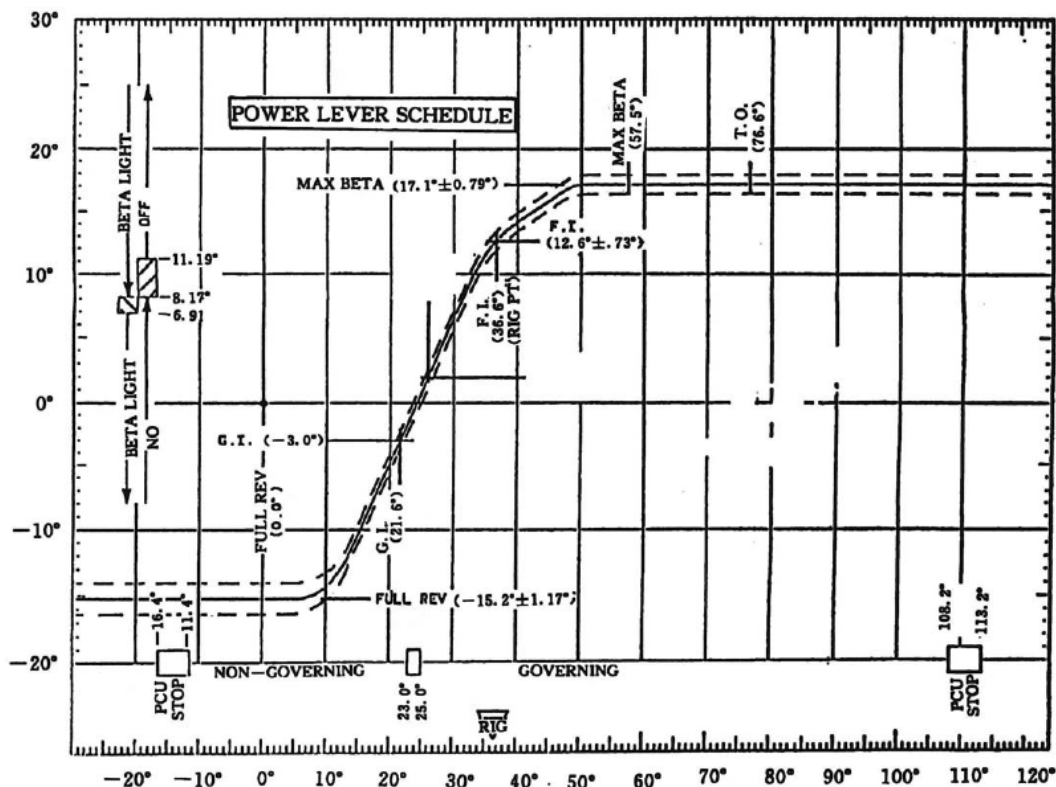


Figure 5: BETA operation curve of propeller

Refer to the graph (figure 5), the BETA range will set the propeller pitch angle below 8°. If the propellers pitch angle moves to BETA range will create significant drag.

On the accident aircraft, the electric magnetic stop was found in OPEN position. This situation was consistent to the company approach check list which stated “PL LOCK – OPEN”.

Observations on FCOM, Aircraft Maintenance Manual (AMM) and simulator did not find any caution light or aural warning whenever the electric magnetic stop selected to OPEN.

The approach check list taken from the FCOM:

| PF | PM |
|---|--------------------------------|
| Deicing/anti-icing device.....As required | Cabin crew report.....Acquired |
| Approach course.....Set | |
| Navigation frequency.....Set | |
| Transition altitude | |
| Altimeter.....Set QFE/ QNH | Altimeter.....Set QFE/ QNH |
| Left and right altimeter cross check. | |
| Order “Approach Checklist” | Complete “Approach Checklist”. |

The company approach check list revision 11 dated 15 April 2012 with additional item of “PL LOCK.....OPEN”. The PL LOCK OPEN was not found on the FCOM issued by the aircraft manufacturer.

| APPROACH | | |
|------------------------|-------------|----|
| FASTEN SEAT BELT | ON | PM |
| LDG TAXI LIGHTS | TAXI | PM |
| ALTIMETERS | SET | B |
| HYD QTY & PRESS | CHECKED | L |
| ERS | TO / GA | PM |
| PRESSURIZATION | CHECKED | PM |
| PL LOCK | OPEN | PM |
| C L | MAX | PM |
| LANDING FINAL | | |
| CABIN CALL | GIVEN | PM |
| IGN INFLIGHT | ON | PM |
| FUEL PUMPS | ON | PM |
| LDG TAXI LIGHTS | LAND | PM |
| ECS BLEEDS | OFF | PM |
| LANDING GEARS | DOWN & LOCK | PM |
| FLAPS | SET | PM |

1.7 Meteorological Information

1.7.1 Meteorological Report

The weather information reported by El Tari Meteorological Station on local routine (MET REPORT) were as follows:

| | 0130 UTC | 0200 UTC | 0230 UTC |
|------------|------------------------|------------------------|------------------------|
| Wind | 090° / 12-15 knots | 110° / 13 knots | 080° / 16 knots |
| Visibility | 10 km | 10 km | 10 km |
| Weather | NIL | NIL | NIL |
| Cloud | Few 2,000 ft | Few 2,000 ft | Few 2,000 ft |
| TT/DP | 29° C / 22° C | 30° C / 22° C | 30° C / 22° C |
| QNH | 1010 hPA / 29.84 in Hg | 1010 hPA / 29.83 in Hg | 1009 mbs / 29.82 in Hg |
| QFE | 997 hPA / 29.47 in Hg | 997 hPA / 29.46 in Hg | 997 mbs / 29.45 in Hg |
| Remarks | NIL | NIL | NIL |

1.7.2 Satellite Image

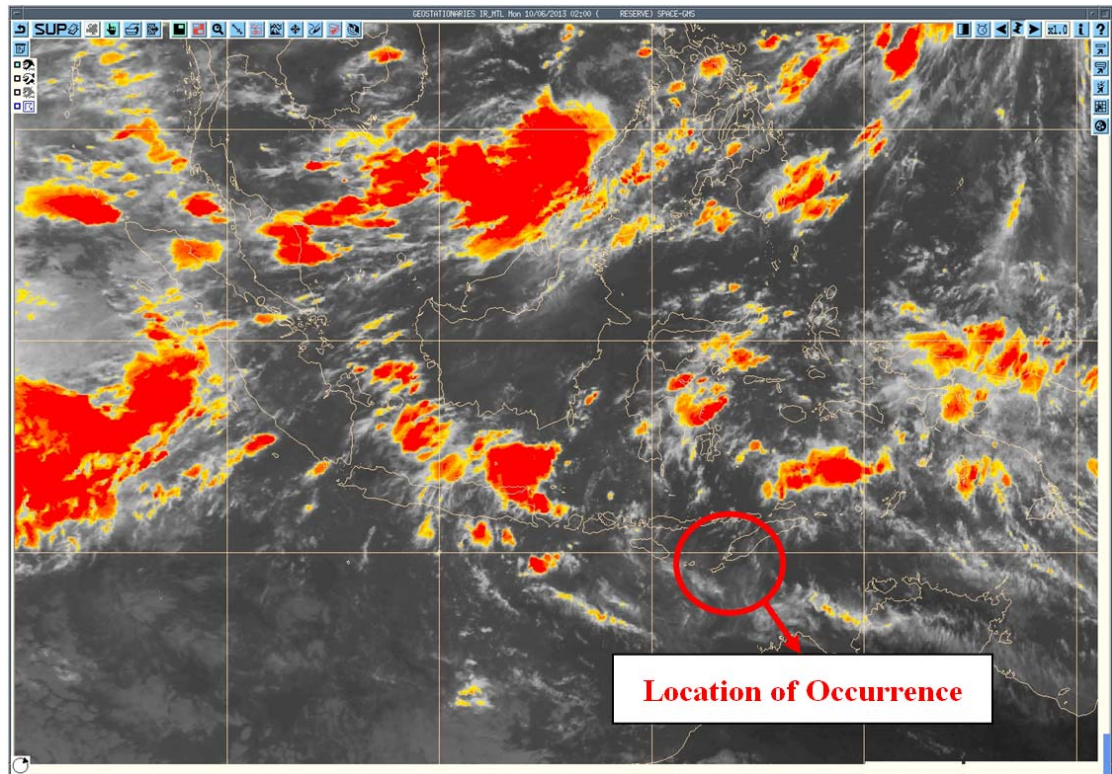


Figure 6: Satellite image at 0200 UTC provided by BMKG

1.8 Aids to Navigation

Runway 07 El Tari Airport was equipped with a Very High Frequency Vary Omnidirectional Range (VOR) and Distance Measuring Equipment (DME) on frequency 122.2 MHz. At the day of the accident, the VOR DME was functioning properly.

1.9 Communications

All communications between Air Traffic Services and the crew were recorded by ground based automatic voice recording equipment and the Cockpit Voice Recorder (CVR) for the duration of the flight. The quality of the aircraft's recorded transmissions was good.

1.10 Aerodrome Information

| | |
|------------------------|--------------------------------|
| Airport Name | : El Tari Airport |
| Airport Identification | : WATT |
| Airport Operator | : PT. Angkasa Pura I (Persero) |
| Airport Certificate | : 020/SBU-DBU/VII/2010 |
| Coordinate | : 10°10.7'S 123°39.8'E |
| Elevation | : 335 ft / 31° C |

Runway Direction : 07 – 25 / 073° – 253°
Runway Length : 2,500 meters
Runway Width : 45 meters
Surface : Asphalt

1.11 Flight Recorders

1.11.1 Flight Data Recorder

The aircraft was equipped with a solid state Flight Data Recorder (FDR) and the details of the FDR were:

Manufacturer : Shaanxi Qianshan Avionics Co. Ltd., China
Type/Model : FB-30C
Serial Number : 0710012

The FDR was downloaded on 13 June 2013 at Merpati Maintenance Facility (MMF) at Surabaya under the NTSC supervision. The recorder contained over 90 parameters of 47.2 hours in excellent quality data comprising the accident flight and 25 previous flights commencing from the 5 June 2013.

Further analysis of FDR data was performed at NTSC facility at Jakarta.

The data of the last 8 seconds of the flight corrupted and was successfully retrieved. The FDR data stopped 0.297 seconds after touchdown at recorded vertical acceleration of +5.99 G. The last recorded value was roll angle of 4 degrees left wing down.

The FDR recorded that the left power lever was in the range of BETA MODE at approximately 112 ft and continued until touchdown.

PK-MZO Xi'an Aircraft Company MA60

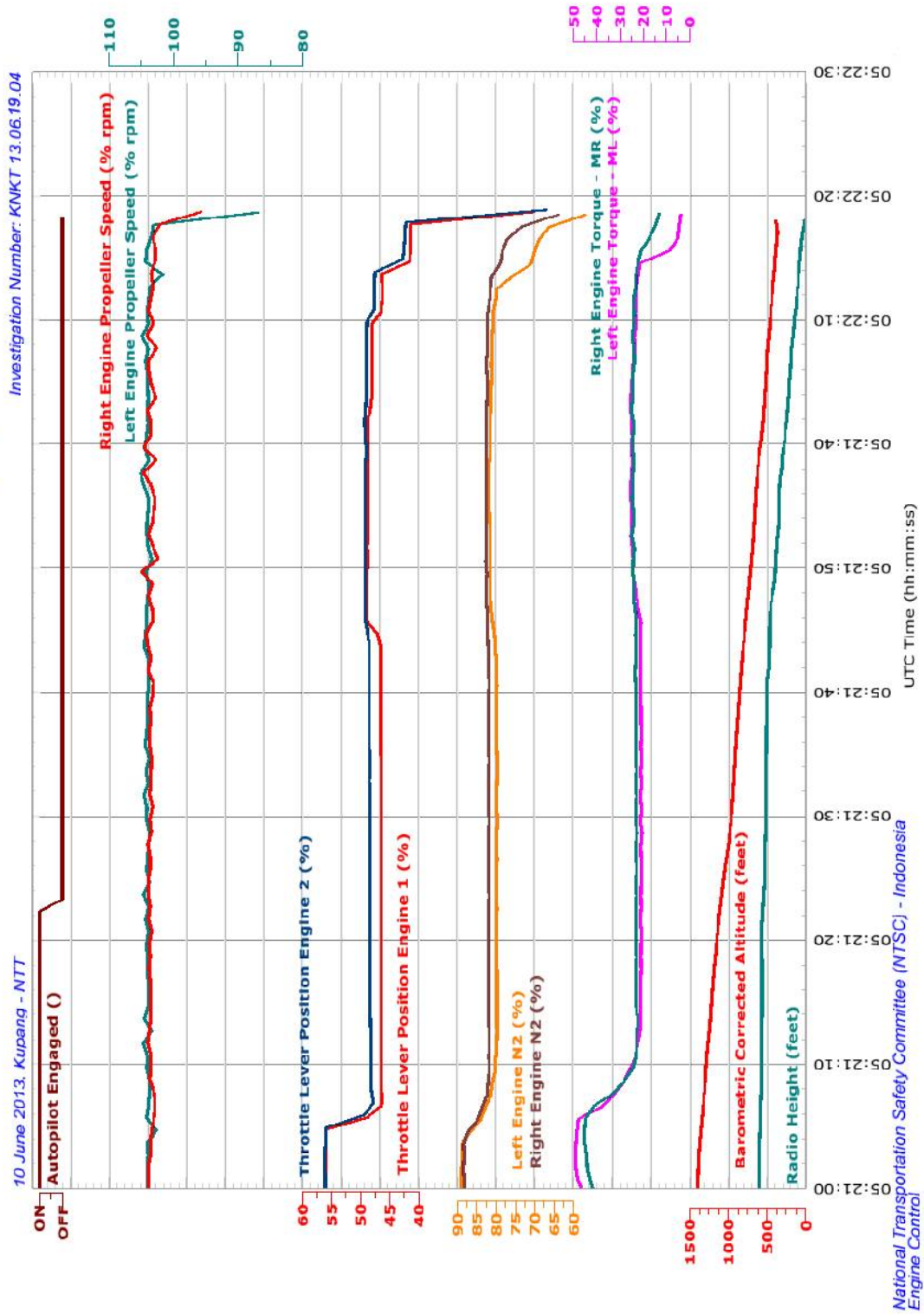


Figure 7: FDR plot of main engine parameters

PK-MZO Xi'an Aircraft Company MA60

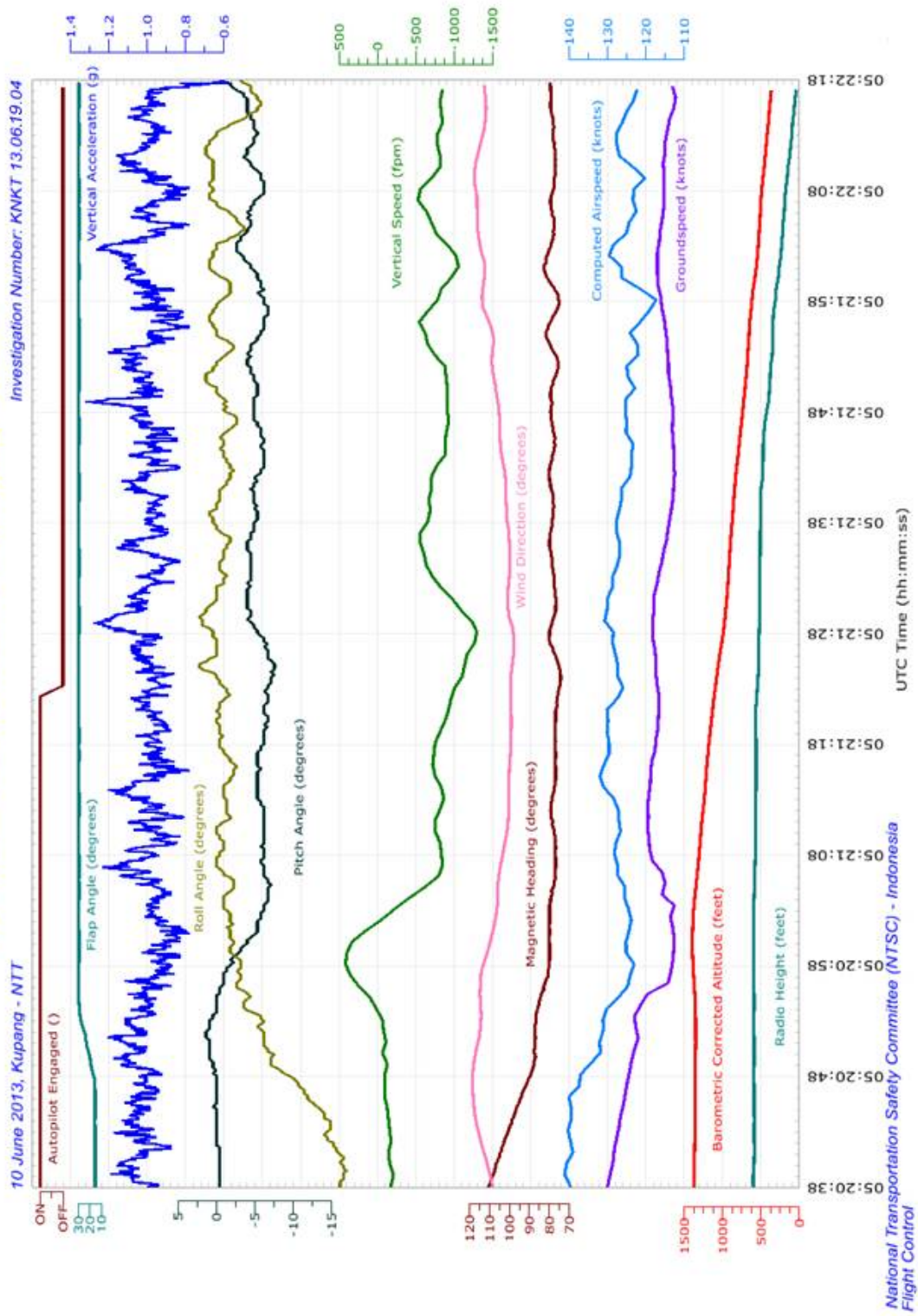


Figure 8: FDR plot of flight parameters excluding the last 8 seconds before impact

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Vertical Speed (fpm)

Angle (degrees)

Pitch Angle (degrees)

Vertical Acceleration (g)

Wind Direction (degrees)

Magnetic Heading (degrees)

Computed Airspeed (knots)

Groundspeed (knots)

Barometric Corrected Altitude (feet)

Radio Height (feet)

10 feet

UTC Time (hh:mm:ss)

05:22:11 05:22:12 05:22:13 05:22:14 05:22:15 05:22:16 05:22:17 05:22:18 05:22:19 05:22:20

ON OFF

+5.99 G

-2.78 G

National Transportation Safety Committee (NTSC) - Indonesia
Flight Control

22

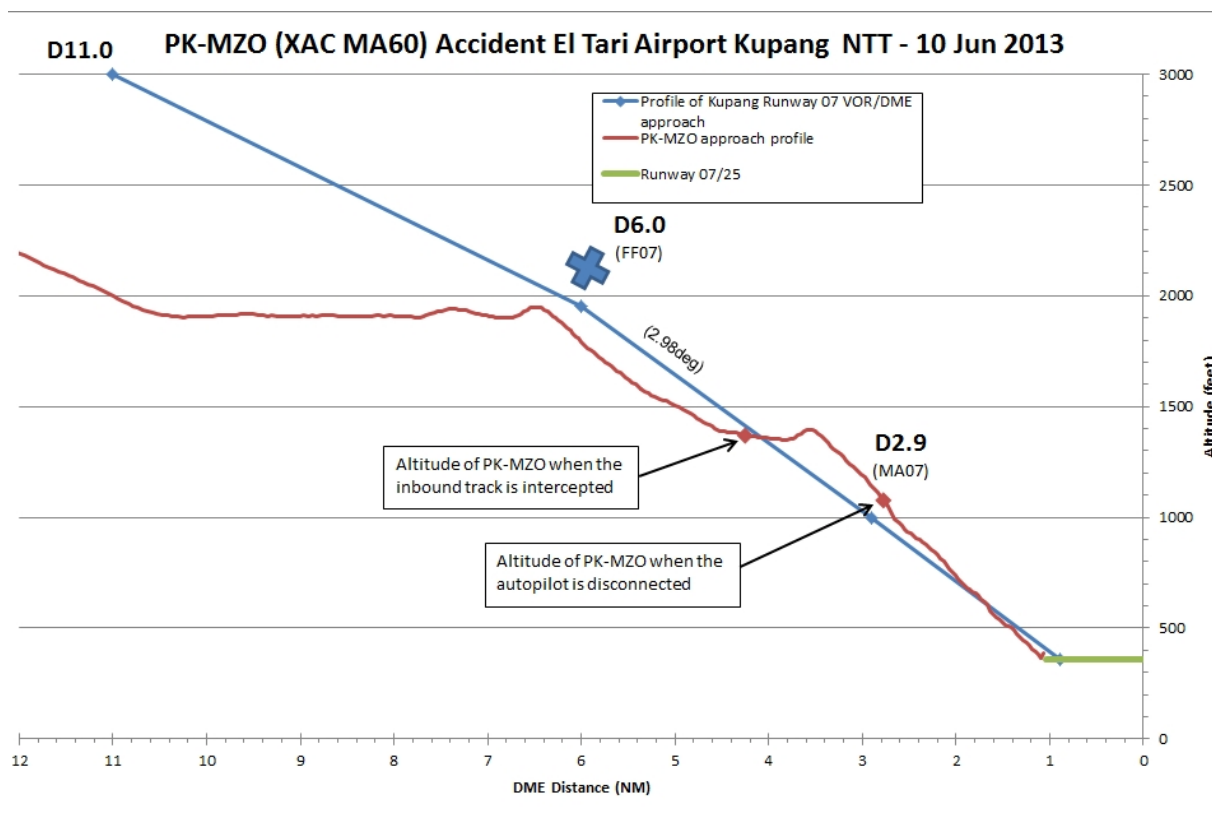


Figure 10: Comparison of published approach and actual profile

Figure 10 indicates that the approach was not on approach profile as published for runway 07.

1.11.2 Cockpit Voice Recorder

The aircraft was equipped with a solid state Cockpit Voice Recorder (CVR) designed to record 120 minutes of audio on four channels (P/A, Co-pilot, Pilot and Cockpit Area Microphone/CAM).

Details of the CVR were:

Manufacturer : Honeywell
 Type/Model : SSCVR
 Part Number : 980-6022-001
 Serial Number : CVR120-12528

The CVR was downloaded on 12 June 2013 and contained 120 minutes of good quality recording. The audio files were examined found to contain the accident flight.

The excerpt of the significant information from the CVR for the last four minutes of recording:

| | |
|----------|---|
| 01:50:55 | Flap 30 selected |
| 01:50:57 | Landing check list was performed |
| 01:51:02 | The pilot received clearance to land |
| 01:51:28 | The autopilot was disengaged |
| 01:51:35 | The Enhance Ground Proximity Warning System (EGPWS) aural message “MINIMUM” |
| 01:51:48 | The EGPWS aural message “FIVE HUNDRED” |
| 01:52:02 | The PF intended to reduce the power to correct the speed |
| 01:52:13 | The EGPWS aural message “TWO HUNDRED” |
| 01:52:20 | The EGPWS aural message “ONE HUNDRED” |
| 01:52:24 | The EGPWS aural message “FIFTY” |
| | Sounds similar to changing of engine and propeller |
| | The EGPWS aural message “FORTY” |
| 01:52:25 | PF self-exclaiming “Ups” |
| | The EGPWS aural message “THIRTY” |
| 01:52:26 | Sound of aircraft impact |
| 01:52:38 | Aircraft stopped |
| 01:54:37 | End of recording |

1.12 Wreckage and Impact Information

1.12.1 Landing trajectory

The main wheel touchdown marks found approximately 58 meters from the beginning runway 07.

The aircraft halted approximately 261 meters from the beginning runway 07.

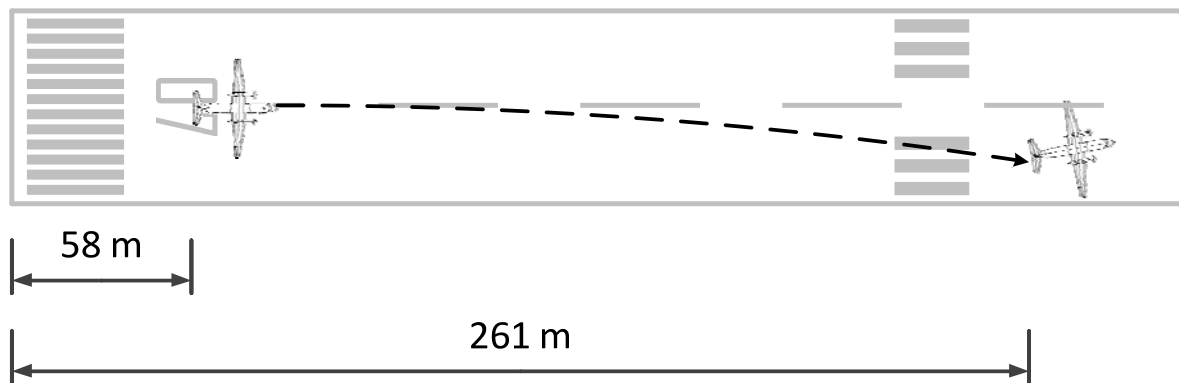


Figure 11: The illustration of the accident

1.12.2 Marks Found on the Runway

The marks on the initial touchdown showed that the lower fuselage impacted to the runway between the first marks of the main wheels and nose wheels (figure 13). The distance between the main wheels and the nose wheels marks was 7.5 meters while the normal distance was 9.5 meters.

The propeller scratch marks were found on left and right side 13 meters of the main wheels marks.

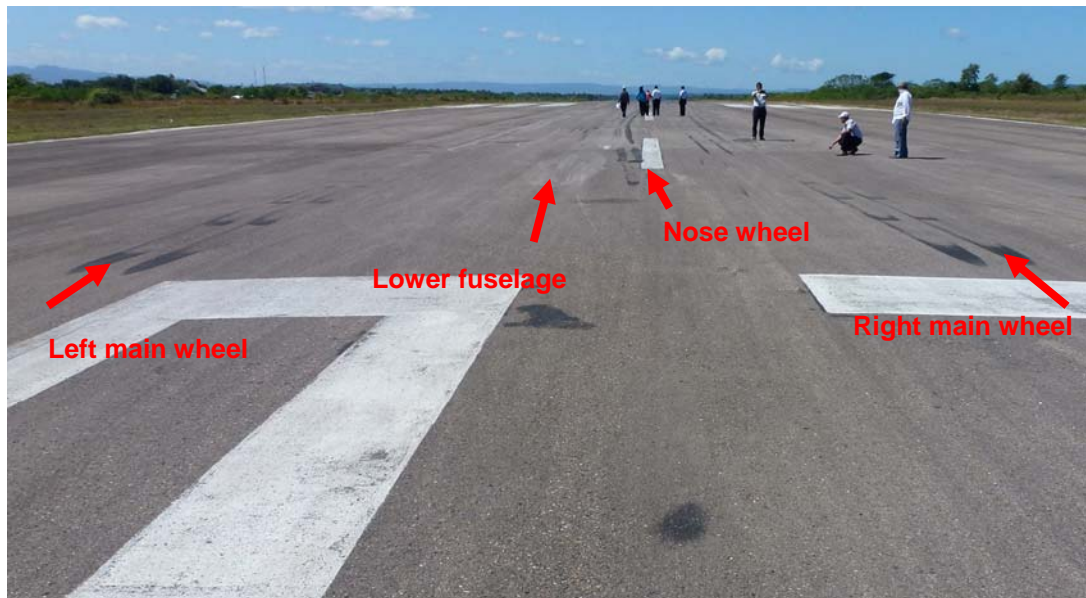


Figure 12: The marks of the initial touch down



Figure 13: The propeller scratch marks

1.12.3 Longitudinal Acceleration Calculation

The FDR was not provided with a longitudinal acceleration data, the longitudinal acceleration G was calculated based on available data.

- Distance from touchdown to stop was 203 meters (659.75 ft);
- Touchdown speed was 113 knots (190.772 ft/s).

The manual calculation result the longitudinal acceleration approximately - 0.7 G.

The MA60 landing run schedule with assumption 102 knots touchdown speed and distance of landing run of 760 meters will result the longitudinal acceleration of - 0.185 G.

1.13 Medical and Pathological Information

To be included in the final report.

1.14 Fire

There was no evidence of fire in-flight or after the aircraft impact.

1.15 Survival Aspects

The passengers seated on row number seven and eight suffered vertebra disk and fixation collar neck, consistent with the broken fuselage near the landing gear bay area.

| Seat Number | Injury |
|-----------------|---------------------------|
| 3D | Right hand wrist fracture |
| 7C | Fixation collar neck |
| 7D | Vertebra disk |
| 8A | Vertebra disk |
| Left hand pilot | Backbone trauma |

The flight attendant after assessed the situation and aircraft damage decided to evacuate the passengers via rear main entrance door.

1.16 Tests and Research

Test and research will be considered if additional factual data indicates the requirement.

1.17 Organizational and Management Information

Aircraft Owner and Operator : PT. Merpati Nusantara Airlines

Address : Jl. Angkasa Blok B-15 Kav 2-3
Kemayoran, Jakarta 10720

Operator Certificate Number : AOC 121/002

PT. Merpati Nusantara Airlines is a state own enterprise, provides domestic flight services throughout the region. The operator operates 5 types of aircraft consist of Boeing 737, Fokker F100, Xi 'An MA60, Casa C 212 and De Havilland DHC 6 Twin Otter.

The company operated 14 aircrafts Xi 'An MA60.

1.18 Additional Information

The investigation involved the Civil Aviation Authority of China (CAAC) as accredited representative.

The investigation is continuing and will include but is not limited to analyze of the CVR, FDR, operational regulations and procedures, and any other relevant information.

1.19 Useful or Effective Investigation Techniques

The investigation was 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 FINDINGS

Based on factual information collected until the time of issuing the preliminary report, the National Transportation Safety Committee found initial findings as follows:

- a. The aircraft was airworthy prior to departure and there was no any aircraft systems problem reported.
- b. All crew has valid licenses and medical certificates.
- c. The Second in Command (SIC) acted as Pilot Flying (PF).
- d. The flight recorders data were recovered and contained information of the flight.
- e. The aircraft departed within the weight and balance operating limit.
- f. The company approach check list contained item of “PL LOCK.....OPEN” which was not stated in the Flight Crew Operation Manual (FCOM) issued by the aircraft manufacturer. The power lever lock was found open.
- g. The approach was not on approach profile as published for runway 07.
- h. The FDR recorded that the left power lever was in the range of BETA MODE at approximately 112 ft and continued until touchdown.
- i. The aircraft touched down at 58m and halted at 261 meters from the beginning runway 07.
- j. The FDR recorded a vertical deceleration at impact was 5.99 G and followed by - 2.78 G.
1. The longitudinal deceleration after impact was calculated approximately 0.7 G.

3 SAFETY ACTION

At the time of issuing this preliminary investigation report, the National Transportation Safety Committee has been informed several safety actions following this occurrence.

On 19 June 2013, the Director of Safety of PT. Merpati Nusantara Airlines issued the following safety actions to the Director of Operation, as follows (refer to the appendix 5.1):

To all MA60 instructors:

- a. First officer training will be suspended until the internal investigation has been completed;
- b. To perform re-indoctrination:
 - To all instructors who currently conducting line training to perform “follow through methods”.
 - To be wise in relying to the paired pilot.
- c. Training on hard/bounce landing recovery should be re-emphasized.


4 SAFETY RECOMMENDATIONS

According to factual information and initial findings, the National Transportation Safety Committee issued immediate safety recommendations to PT. Merpati Nusantara Airlines to address safety issues identified in this report are as follows:

- a. To review the approach check list of the opening power lever lock system;
- b. To emphasize in performing stabilized approach.

5 APPENDICES

5.1 Safety Action of the PT. Merpati Nusantara Airlines

| | |
|--|--|
|  Merpati AVIATION SSQ FORM | Dok No: F-DS-07-01 PENERBITAN PRODUK SSQ |
|--|--|

Aviation SSQ RECOMMENDATION

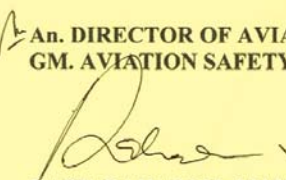
No : DS/VI/2013/R- 015A
Attn : OF
Date : 19 Juni 2013
CC : DZ, DO, DC, OR

Letter Status:

| Red | Yellow | Green |
|-----|--------|-------|
| | ✓ | |

Subject : **Rekomendasi Awal Paska Kejadian Accident PK – MZO di Kupang**

- Sehubungan dengan terjadinya accident pada tanggal 10 juni 2013, PK – MZO dengan route BJW – KOE yang terjadi di Kupang.
- Maka Safety and Quality Division mengeluarkan rekomendasi awal paska kejadian tersebut yaitu :
Kepada OF:
 - Training untuk copilot training dihentikan dahulu sampai hasil investigasi internal Merpati selesai.
 - Reindoktrinasi untuk :
 - Menerapkan follow through methode kepada semua pilot terutama instruktur pilot yang sedang membawa siswa.
 - Not over confident during flight terhadap pairing terbang.
 - Emphasize training on Hard landing/bounce landing recovery.
- Demikian disampaikan, atas perhatian dan kerjasamanya kami ucapkan terimakasih.


An. DIRECTOR OF AVIATION SSQ
GM. AVIATION SAFETY
CAPT. RAHADI M. MANTIKNO
SA/SCA

MOHON RECOMMENDATION INI DAPAT DI RESPON DALAM WAKTU 3 HARI
IF YOU RECEIVED THIS MESSAGE, PLEASE RESPONSE US IMMEDIATELY BY PHONE/FAX/EMAIL, THANK YOU

REVISI: 02

AVIATION SAFETY, SECURITY & QUALITY DIVISION

01/11/2012