

PRELIMINARY
KNKT.13.04.09.04

**NATIONAL
TRANSPORTATION
SAFETY
COMMITTEE**

Aircraft Accident Investigation Report

**PT. Lion Mentari Airlines (Lion Air)
Boeing 737 - 800; PK-LKS
Ngurah Rai International Airport, Bali
Republic of Indonesia
13 April 2013**



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

This Preliminary report was produced by the National Transportation Safety Committee (NTSC), 3rd Floor Ministry of Transportation, 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).

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TABLE OF CONTENTS

TABLE OF CONTENTS	i
TABLE OF FIGURES	iii
ABBREVIATIONS AND DEFINITIONS	iv
INTRODUCTION	vi
1 Factual Information	7
1.1 History of the Flight	7
1.2 Injuries to Persons	8
1.3 Damage to Aircraft	8
1.4 Other Damage.....	9
1.5 Personnel Information	9
1.5.1 Pilot in Command.....	9
1.5.2 Second in Command	10
1.5.3 Flight Attendant 1.....	11
1.5.4 Flight Attendant 2.....	11
1.5.5 Flight Attendant 3.....	12
1.5.6 Flight Attendant 4.....	12
1.5.7 Flight Attendant 5.....	13
1.6 Aircraft Information	13
1.6.1 General	13
1.6.2 Engines	14
1.6.3 Enhanced Ground Proximity Warning System (EGPWS).....	14
1.7 Meteorological Information.....	15
1.7.1 Automatic Terminal Information System (ATIS).....	15
1.7.2 Satellite Image.....	16
1.7.3 Additional Weather Information	17
1.8 Aids to Navigation.....	18
1.9 Communications.....	20
1.10 Aerodrome Information.....	20
1.11 Flight Recorders	20
1.11.1 Flight Data Recorder	20
1.11.2 Cockpit Voice Recorder	22
1.12 Wreckage and Impact Information	22

1.13	Medical and Pathological Information	23
1.14	Fire.....	23
1.15	Survival Aspects	23
1.16	Tests and Research	24
1.17	Organisational and Management Information	24
1.18	Additional Information	24
1.19	Useful or Effective Investigation Techniques	25
2	FINDINGS.....	26
3	SAFETY ACTION	27
4	SAFETY RECOMMENDATIONS	28
4.1	PT. Lion Mentari Airlines	28

TABLE OF FIGURES

Figure 1: The aircraft after the accident	9
Figure 2: Aircraft flight path with respect to EGPWS envelope.....	15
Figure 3: Satellite image at 0700 UTC provided by BMKG.....	16
Figure 4: Satellite image at 0800 UTC provided by BMKG.....	17
Figure 5: The weather 4 minutes prior to the accident	18
Figure 6: The weather few seconds prior to the accident	18
Figure 7: VOR Instrument Approach Procedure for runway 09	19
Figure 8: FDR information related to the flight path of the accident flight	21
Figure 9: Aircraft flight path superimposed to Google Earth.....	22
Figure 10: The evacuation process	23

ABBREVIATIONS AND DEFINITIONS

ABP	:	Able Bodied Passenger
AGL	:	Above Ground Level
AOC	:	Air Operator Certificate
ARFF	:	Airport Rescue and Fire Fighting
ATC	:	Air Traffic Control
ATIS	:	Aerodrome Terminal Information Services
ATPL	:	Air Transport Pilot License
ATS	:	Air Traffic Service
BMKG	:	<i>Badan Meteorologi Klimatologi dan Geofisika</i> (Metrological Climatologically and Geophysical Agency)
°C	:	Degrees Celsius
CAM	:	Cockpit Area Microphone
CASR	:	Civil Aviation Safety Regulation
CB	:	Cumulonimbus
CCTV	:	Closed Circuit Television
CPL	:	Commercial Pilot License
CSN	:	Cycles Since New
CVR	:	Cockpit Voice Recorder
DGCA	:	Directorate General of Civil Aviation
DH	:	Decision Height
DME	:	Distance Measuring Equipment
DMI	:	Deferred Maintenance Item
EGPWS	:	Enhance Ground Proximity Warning System
FAC	:	Flight Attendant Certificate
FDR	:	Flight Data Recorder
FL	:	Flight Level
FMC	:	Flight Management Computer
ft	:	Feet
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)
mbs	:	Millibars

MDA	:	Minimum Descend Altitude
mHz	:	Mega Hertz
Mm	:	Millimeter(s)
MTOW	:	Maximum Take-off Weight
NDB	:	Non Directional Beacon
Nm	:	Nautical mile(s)
NOTAM	:	Notice to Airman
NTSB	:	National Transport Safety Board
KNKT (NTSC)	:	<i>Komite Nasional Keselamatan Transportasi</i> (National Transportation Safety Committee)
P/A	:	Passenger Address
PAPI	:	Precision Approach Path Indicator
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
SAR	:	Search and Rescue
S/N	:	Serial Number
SSCVR	:	Solid State Cockpit Voice Recorder
TAC	:	Temporary Airmen Certificate
TCAS	:	Traffic Collision Avoidance System
TSN	:	Time since New
TT/TD	:	Ambient Temperature/Dew Point
UTC	:	Universal Time Coordinate
VOR	:	Very High Frequency Omnidirectional Range

INTRODUCTION

SYNOPSIS

On 13 April 2013, a Boeing 737-800 aircraft registered PK-LKS was being operated by PT. Lion Mentari Airlines (Lion Air) on a scheduled passenger flight as LNI 904. The aircraft departed from Husein Sastranegara International Airport (WICC) Bandung at 0545 UTC to Ngurah Rai International Airport (WADD), Bali, Indonesia. There were two pilots and 5 flight attendants with 101 passengers on board consisted of 95 adults, 5 children and 1 infant.

The Second in Command (SIC) was the Pilot Flying (PF) and the Pilot in Command (PIC) was the Pilot Monitoring (PM). The flight from the departure until the start of approach was uneventful.

The aircraft followed the VOR DME runway 09 instrument approach procedure. The weather while the aircraft was on final was raining. During the approach the SIC mentioned that the runway was not in sight twice.

At 0708 UTC, when the aircraft was at approximately 1,300 ft, the Ngurah Tower controller saw the aircraft on final and gave a landing clearance with additional information that the wind condition was 120° / 05 kts.

At 0710 UTC, the aircraft impacted to the water.

The aircraft came to a stop facing north about 20 meters from the shore or approximately 300 meters south west of the runway 09 threshold.

A pilot of an aircraft which was awaiting take-off and held short on runway 09 informed the Ngurah Tower controller that the Lion Air aircraft had crashed into the sea near the beginning of runway 09. The Ngurah Tower controller looked at the position as informed and saw the Lion Air aircraft tail section outside the airport fence.

At 0711 UTC, the Ngurah Tower controller pressed the crash bell and then communicated to the Airport Rescue and Fire Fighting (ARFF) via direct line about the accident. At 0713 UTC the rescue team departed from the ARFF station.

At 0715 UTC, the ARFF arrived on the accident site and conducted rescue operations.

At 0755 UTC, all occupants were completely evacuated, the injured passengers were taken to the nearest hospitals and uninjured occupants to the airport crisis centre. Four passengers suffered serious injury and the others were minor or no injury.

The aircraft was substantially damaged and submerged into shallow water.

Included in this preliminary report, the NTSC has issued several immediate safety recommendations to the PT. Lion Mentari Airlines to address the safety issues identified in this preliminary report.

The investigation involved the U.S. National Transport Safety Board (NTSB) as accredited representative.

The investigation is continuing and will include but is not limited to an analysis of the CVR, FDR, company operational regulation and procedures, and any other relevant information.

1 FACTUAL INFORMATION

1.1 History of the Flight

On 13 April 2013, a Boeing 737-800 aircraft registered PK-LKS was being operated by PT. Lion Mentari Airlines (Lion Air) on a scheduled passenger flight as LNI 904.

The aircraft departed from Husein Sastranegara International Airport (WICC) Bandung¹ at 0545 UTC² to Ngurah Rai International Airport (WADD), Bali³, Indonesia. The flight was the last sector of four legs scheduled for the crew on that day which were Palu (WAML) – Balikpapan (WALL) – Banjarmasin (WAOO) – Bandung (WICC) – Bali (WADD).

The aircraft flew at FL 390, while the Second in Command (SIC) was the Pilot Flying (PF) and the Pilot in Command (PIC) was the Pilot Monitoring (PM).

There were two pilots and 5 flight attendants with 101 passengers on board consisted of 95 adults, 5 children and 1 infant.

The flight from the departure until start of approach was uneventful.

At 0648 UTC, the pilot made first communications with Bali Approach controller (Bali Director) when the aircraft position was 80 Nm from BLI⁴ VOR. The pilot received clearance direct to TALOT waypoint and descent to 17,000 ft.

At 0652 UTC, the Bali Director issued a further clearance for the pilot direct to KUTA waypoint and descent to 8,000 ft.

At 0659 UTC, the aircraft was vectored for VOR DME approach for runway 09 and descent to 3,000 ft.

At 0703 UTC, while the aircraft over KUTA waypoint, the Bali Director transferred the aircraft to Bali Control Tower (Ngurah Tower).

At 0704 UTC, the pilot contacted Ngurah Tower controller and informed that the aircraft position was leaving KUTA waypoint. The Ngurah Tower controller instructed the pilot to continue approach and to reduce the aircraft speed to provide sufficient separation distance with another aircraft.

At 0707 UTC, the Ngurah Tower issued take off clearance for departure aircraft on runway 09.

At 0708 UTC, with the aircraft at approximately 1,600 ft AGL, the Ngurah Tower controller saw the aircraft on final and gave a landing clearance with additional information that the wind condition was 120° / 05 kts.

1 Hussein Sastranegara International Airport, Bandung will be named Bandung for the purpose of this report.

2 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 Bali is Waktu Indonesia Tengah (WITA) is UTC + 8 hours.

3 Ngurah Rai International Airport, Bali will be named Bali for the purpose of this report.

4 BLI is the code of VOR which used in Ngurah Rai International Airport.

The excerpts of the CVR and FDR data on the final approach are as follows:

At 0708:56 UTC, while the aircraft altitude was approximately 900 ft AGL the SIC stated that the runway was not in sight.

At 0709:33 UTC, after Enhance Ground Proximity Warning System (EGPWS) called out “MINIMUM” at aircraft altitude approximately 550 ft AGL, the pilot disengaged the autopilot and the auto throttle then continued to descend.

At 0709:53 UTC, while the aircraft altitude approximately 150 ft AGL the PIC took over the control. The SIC handed the control to the PIC and stated that he could not see the runway.

At 0710:01 UTC, after the EGPWS warning “TWENTY”, the PIC commanded a go around.

At 0710:02 UTC, the aircraft impacted the water.

The aircraft stopped facing to the north at about 20 meters from the shore or approximately 300 meters south west of the beginning runway 09.

At 0711 UTC, there were two aircrafts on holding point runway 09. One pilot of these aircraft informed the Ngurah Tower controller that the Lion Air aircraft had crashed into the sea.

The Ngurah Tower controller could see the aircraft tail section of the Lion aircraft on the outside airport fence and subsequently pressed the crash bell⁵ and then communicated to the Airport Rescue and Fire Fighting (ARFF) via direct line.

At 0715 UTC, the ARFF arrived on the accident site and conducted rescue operations.

At 0755 UTC, all occupants were evacuated, the injured passengers were taken to the nearest hospitals and uninjured occupants to the airport crisis centre.

1.2 Injuries to Persons

Injuries	Flight crew	Passengers	Total in Aircraft	Others
Fatal	-	-	-	-
Serious	-	4	4	-
Minor/None	7	97	104	Not applicable
TOTAL	7	101	108	-

1.3 Damage to Aircraft

The aircraft was substantially damaged and submerged in shallow water.

⁵ Crash bell is a button in the tower to activate alarm on the Airport Rescue and Fire Fighting station.



Figure 1: The aircraft after the accident

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	: 48 years old
Nationality	: Indonesian
Date of joining company	: 3 February 2003
License	: ATPL
Date of issue	: 26 August 1994
Validity	: 11 October 2013
Aircraft type rating	: B737-NG
Last Instrument rating	: 31 December 2013
Medical certificate	: First Class
Last of medical	: 19 October 2012
Validity	: 19 April 2013
Medical limitation	: The holder shall possess glasses that correct for near vision.
Last line check	: 9 February 2013
Last proficiency check	: 31 October 2012

Flying experience

Total hours : 15,000 hours
Total on type : 7,000 hours
Last 90 days : 279 hours 8 minutes
Last 60 days : 20 hours 51 minutes
Last 24 hours : 5 hours 11 minutes
This flight : 1 hour 50 minutes

1.5.2 Second in Command

Gender : Male
Age : 24 years old
Nationality : Indian
Date of joining company : 25 April 2011
License : CPL
Date of issue : 20 February 2010
Validity : 19 February 2015
Aircraft type rating : B737-NG
Last Instrument rating : July 2012
Medical certificate : First Class
Last of medical : 2 April 2013
Validity : 2 October 2013
Medical limitation : NIL
Last line check : 15 May 2012
Last proficiency check : 15 December 2012

Flying experience

Total hours : 1,200 hours
Total on type : 923 hours
Last 90 days : 172 hours 11 minutes
Last 60 days : 14 hours 36 minutes
Last 24 hours : 5 hours 11 minutes
This flight : 1 hour 50 minutes

1.5.5 Flight Attendant 3

Gender : Female
Age : 20 years old
Nationality : Indonesian
Date of joining company : 26 March 2013
License : Temporary Airman
Certificate (TAC)
Date of issue : 26 March 2013
Validity : 25 April 2013
Aircraft type rating : B737
Medical certificate : Second Class
Last of medical : 14 November 2012
Validity : 14 November 2013
Medical limitation : The holder shall wear
corrective lenses

1.5.6 Flight Attendant 4

Gender : Female
Age : 20 years old
Nationality : Indonesian
Date of joining company : 17 August 2012
License : FAC
Date of issue : 2 October 2012
Validity : 25 April 2013
Aircraft type rating : B737 NG
Medical certificate : Second Class
Last of medical : 23 May 2012
Validity : 23 May 2013
Medical limitation : The holder shall wear
corrective lenses

1.5.7 Flight Attendant 5

Gender	:	Female
Age	:	20 years old
Nationality	:	Indonesian
Date of joining company	:	28 March 2013
License	:	Temporary Airman Certificate (TAC)
Date of issue	:	26 March 2013
Validity	:	25 April 2013
Aircraft type rating	:	B737
Medical certificate	:	Second Class
Last of medical	:	30 November 2012
Validity	:	30 November 2013
Medical limitation	:	The holder shall wear corrective lenses

1.6 Aircraft Information

1.6.1 General

Registration Mark	:	PK-LKS
Manufacturer	:	Boeing Aircraft Company
Country of Manufacturer	:	United States of America
Type/ Model	:	B7373-800 NG
Serial Number	:	38728
Date of manufacture	:	19 February 2013
Certificate of Airworthiness		
Issued	:	21 March 2013
Validity	:	20 March 2014
Category	:	Transport
Limitations	:	None
Certificate of Registration		
Registration Number	:	3276
Issued	:	21 March 2013
Validity	:	20 March 2014
Time Since New	:	142 hours 37 minutes

Cycles Since New : 104 cycles
Last Major Check : NIL
Last Minor Check : NIL

1.6.2 Engines

Manufacturer : CFM International
Type/Model : Turbo Fan / CFM56-7B24E
Serial Number-1 engine : 962584
 Time Since New : 142 hours 37 cycles
 Cycles Since New : 104 cycles
Serial Number-2 engine : 962593
 Time Since New : 142 hours 37 cycles
 Cycles Since New : 104 cycles

On 13 April 2013, after landing at Banjarmasin from Balikpapan the right engine “OIL FILTER BY PASS” caution light illuminated. The engineer performed a FMC #2 test and found the message “Oil filter signal disagree”. The engineer performed a magnetic chip detector check with no anomalies found and then repositioned the connector plug. The engine was run in idle power for 2 minutes and the caution light did not illuminate.

Prior to the leg from Banjarmasin to Bandung, during taxi out, the “OIL FILTER BY PASS” caution light illuminated and the pilot decided to return to apron. The engineer performed a FMC engine #2 check and found message “oil filter by pass signal disagree” and replaced the engine oil filter. The engine was run for 2 minutes in idle power and the caution light did not illuminate.

After landing at Bandung, the pilot reported that the problem related to the ENGINE OIL FILTER BY PASS reoccurred. The engineer suspected that the problem was due to the Differential Pressure switch and transferred to Deferred Maintenance Item (DMI) category C (valid for 10 days).

1.6.3 Enhanced Ground Proximity Warning System (EGPWS)

The aircraft was equipped with an Enhanced Ground Proximity Warning System (EGPWS) serial number: EMKS - 34870 and part number 965-1690-055.

Examination of the FDR and CVR information indicated that no EGPWS warnings occurred during the accident. Further examination of FDR data indicated that the aircraft did not enter the EGPWS alert/ warning envelope during the approach (Figure 2).

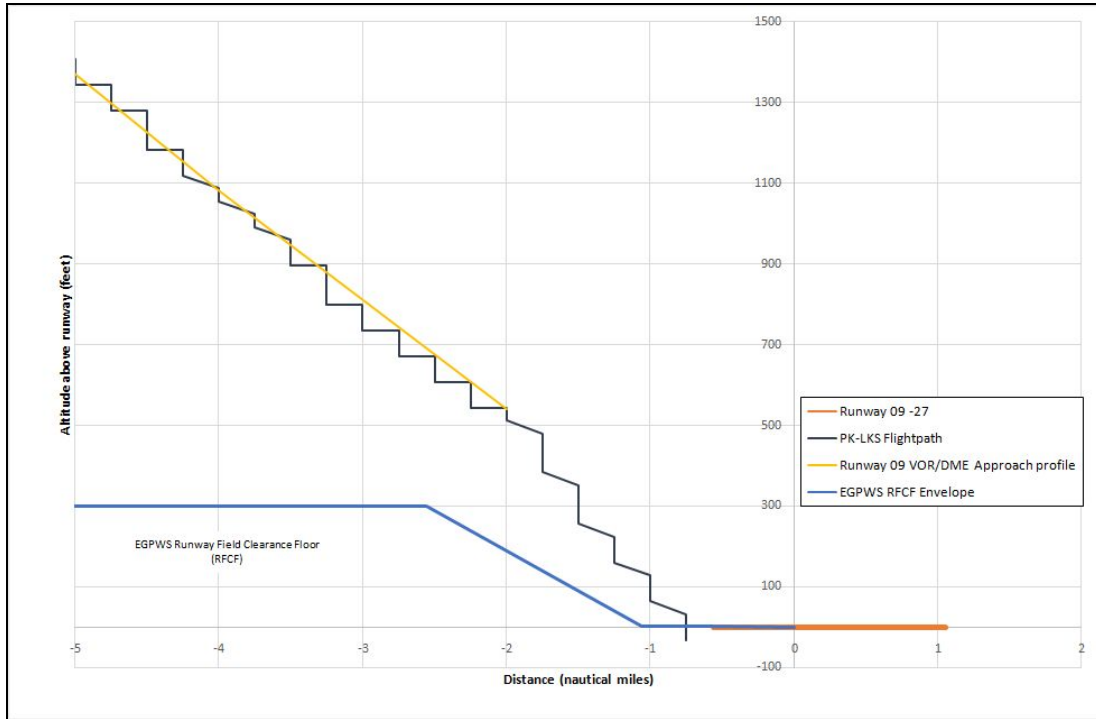


Figure 2: Aircraft flight path with respect to EGPWS envelope

1.7 Meteorological Information

1.7.1 Automatic Terminal Information System (ATIS)

The weather reported by Ngurah Rai International Airport Aerodrome Terminal Information Services (ATIS) on 13 April 2013 was as follows:

	0630 UTC	0700 UTC	0730 UTC
Wind	120° / 3 knots	090° / 7 knots	130° / 7 knots
Visibility	10 km	10 km	10 km
Weather	NIL	NIL	NIL
Cloud	Broken 1,700 ft	Broken 1,700 ft	Few CB Scatter 1,700 ft
TT/TD	30° C / 25° C	30° C / 26° C	30° C / 25° C
QNH	1007 mbs / 29.83 in Hg	1007 mbs / 29.74 in Hg	1007 mbs / 29.74 in Hg
QFE	1007 mbs / 29.73 in Hg	1006 mbs / 29.73 in Hg	1006 mbs / 29.73 in Hg
Remarks	No Significant	No Significant	No Significant

1.7.2 Satellite Image

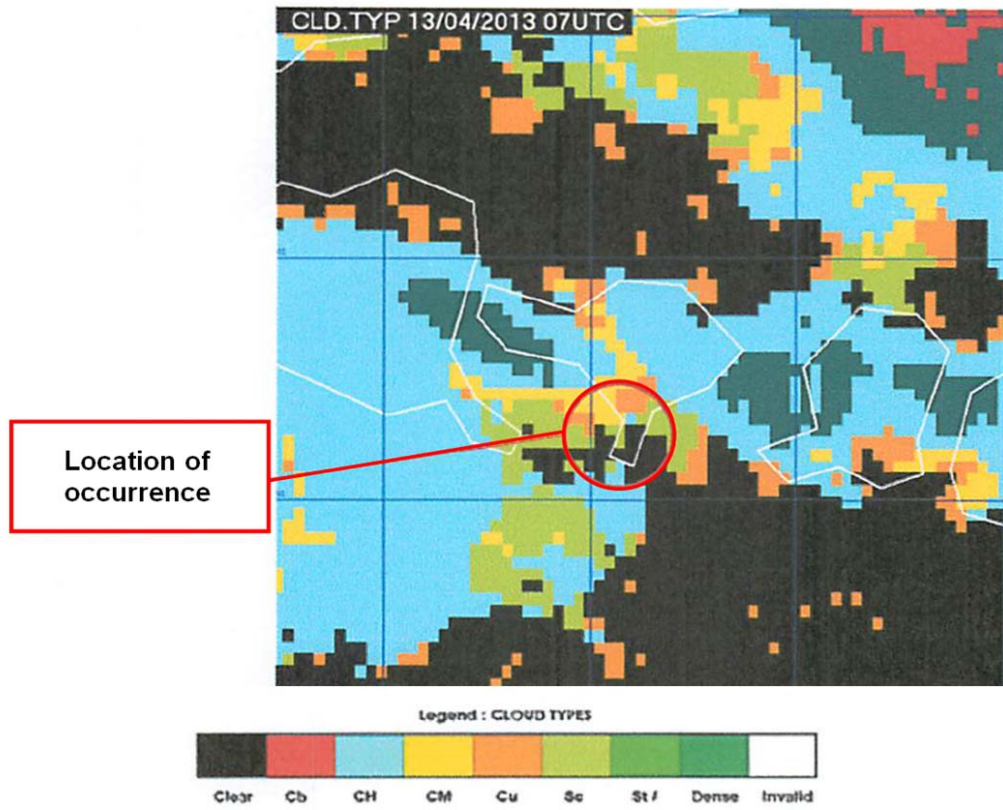


Figure 3: Satellite image at 0700 UTC provided by BMKG

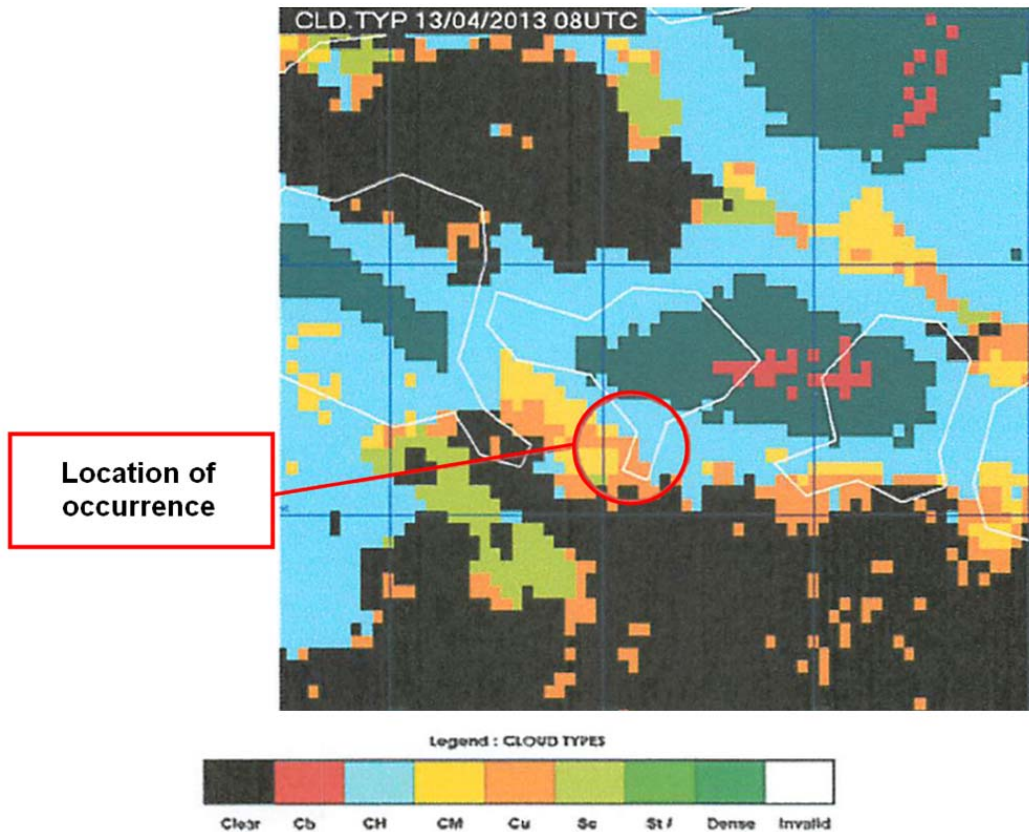


Figure 4: Satellite image at 0800 UTC provided by BMKG

1.7.3 Additional Weather Information

The CVR data revealed that during the aircraft approach on short final, the SIC stated that he could not see the runway.

A report from the pilot of an aircraft that made an approach 5 Nm behind the accident aircraft stated that they could not see the runway at the published minima and decided to go around. During the second approach, the pilots could see the runway before the minima.

Another report from a pilot of an aircraft that was held on short runway 09 stated that while the Lion aircraft made an approach, the weather on final area until threshold area was raining and the visibility was approximately 1-2 km. While the aircraft position was on 3 nm as indicated on the Traffic Collision Avoidance System (TCAS), he could not see the aircraft.

The airport Closed Circuit Television (CCTV) located on the south side of the runway recorded the weather changing. The rain showed as grey area on the left corner. The weather 4 minutes before the accident (Figure 5) showed the final area was clear.



Figure 5: The weather 4 minutes prior to the accident

The weather few seconds prior to the accident on figure 6 showed the final area was raining.



Figure 6: The weather few seconds prior to the accident

1.8 Aids to Navigation

Runway 09 Ngurah Rai International Airport was equipped with a Very High Frequency Vary Omnidirectional Range (VOR) and Distance Measuring Equipment (DME) on frequency 116.2 MHz. The last periodic calibration was performed at 24 and 25 May 2012, and classified as restricted due to terrain condition. The next periodic calibration will be performed on 25 May 2013.

At the day of the accident, the VOR DME was functioning properly.

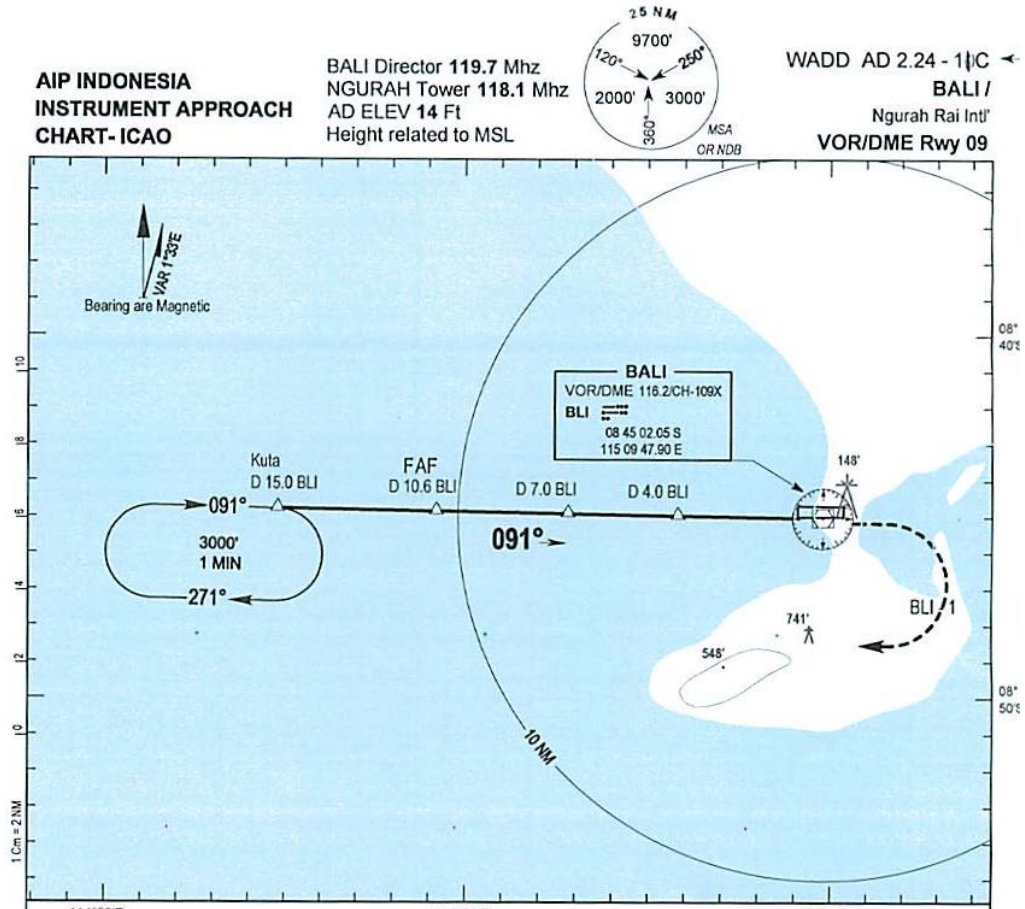
Approach guidance facilities such as Precision Approach Path Indicator (PAPI) lights, runway light were working properly.

The instrument approach guidance for runway 09 was VOR DME and NDB approach.

**AIP INDONESIA
INSTRUMENT APPROACH
CHART- ICAO**

BALI Director 119.7 Mhz
NGURAH Tower 118.1 Mhz
AD ELEV 14 Ft
Height related to MSL

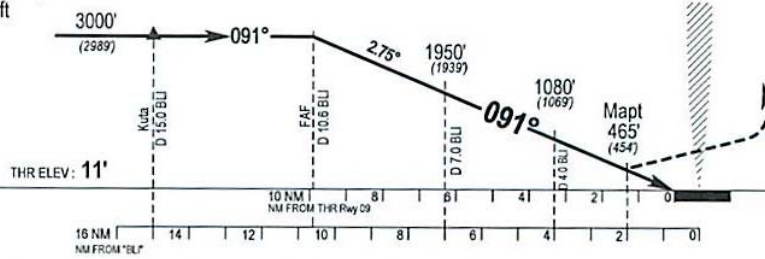
WADD AD 2.24 - 11C
**BALI /
Ngurah Rai Int'
VOR/DME Rwy 09**



MISSED APPROACH PROCEDURE :

At MAPt Maintain heading
091° climb to 3000 ft
then turn right
and proceed to KUTA
or contact ATC
for further instruction.

TRANSITION LEVEL : FL 130
TRANSITION AL T : 11 000 FT



THR ELEV: 11'

OCA (H)					Distance	10.6 DME	7 DME	4 DME
Cat of ACFT	A	B	C	D	Altitudes (H)	3000	1950	1080
Straight In					Speed	KT 120	130	140
Circling					Rate of descend	Ft/min 585	630	680
						730	780	

Directorate General of Civil Aviation

AMDT 21
07 SEP 09

Figure 7: VOR Instrument Approach Procedure for runway 09

1.9 Communications

All communications between ATS and the crew were recorded by ground based automatic voice recording equipment and 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	: Ngurah Rai International Airport
Airport Identification	: WADD / DPS
Airport Operator	: PT. Angkasa Pura I (Persero)
Airport Certificate	: 015/SBU-DBU/VII/2010
Coordinate	: 08°44'51"S 115°10'09"E
Elevation	: 14 ft
Runway Direction	: 09 - 27 / 088° - 268°
Runway Length	: 3,000 meters
Runway Width	: 45 meters
Surface	: Asphalt

1.11 Flight Recorders

1.11.1 Flight Data Recorder

The aircraft was equipped with a Honeywell solid state flight data recorder. The recorder was subject to seawater immersion during the accident so was rinsed and immersed in freshwater for transport to the NTSC recorder facilities in Jakarta. The FDR was received at the NTSC recorder laboratory still immersed in freshwater on 14 April 2013. The details of the FDR were:

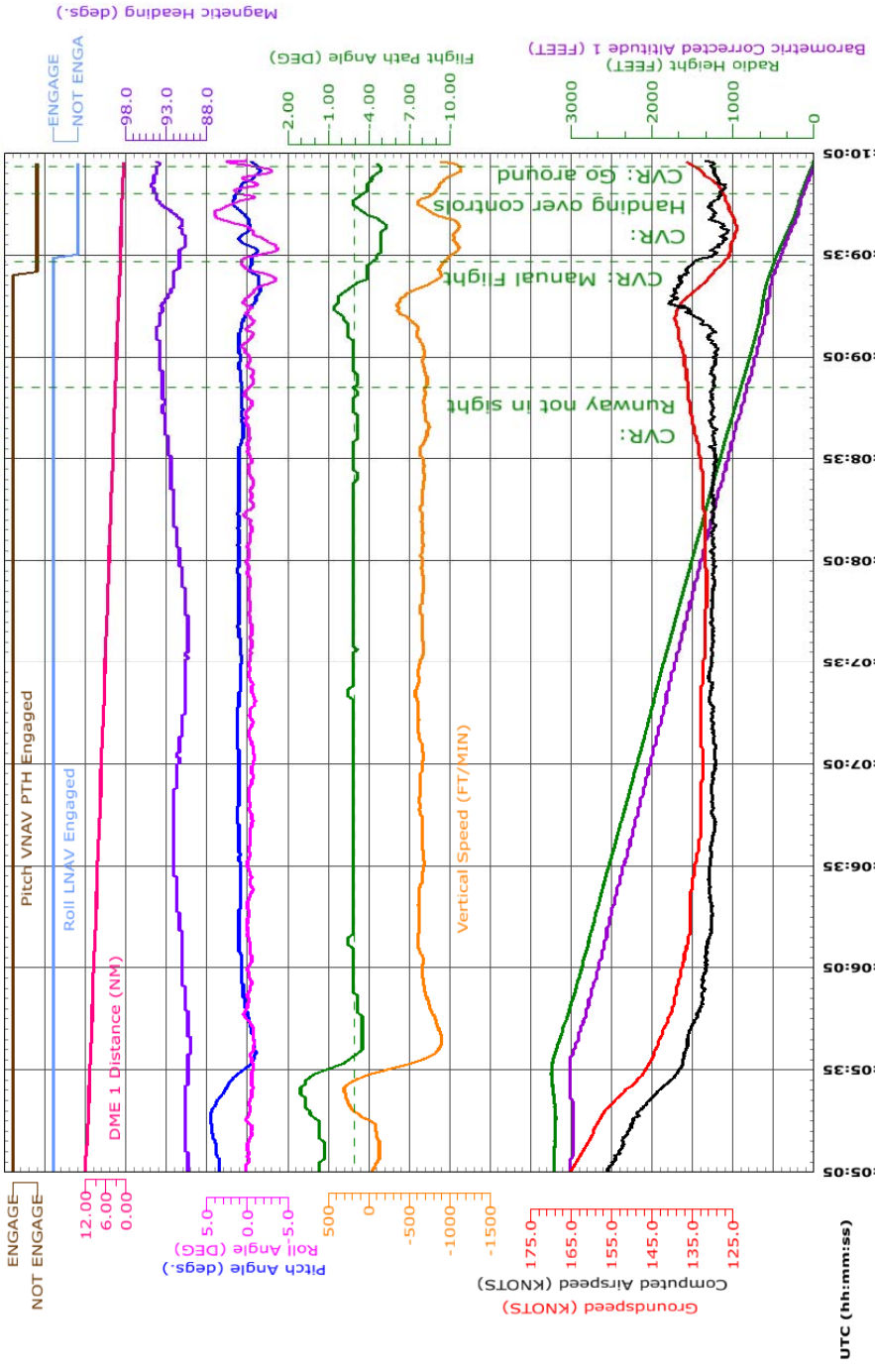
Manufacturer	: Honeywell
Type/Model	: HFR5-D
Part Number	: 980-4750-009
Serial Number	: FDR-02070

The FDR was downloaded on 16 April 2013 at the NTSC facility in Jakarta, the recorder contained over 1,000 parameters of 53.5 hours in excellent quality data comprising the accident flight and 39 previous flights commencing from the 8 April 2013. This data also included three Bandung to Bali flights with one landing on Bali runway 09 on 12 April 2013.

PK-LKS Boeing 737-8GP

Ngurah Rai International Airport - Denpasar, Bali, Republic of Indonesia
Undershoot - 13 April 2013

Investigation Number: KNKT 13.04.09.04



UTC (hh:mm:ss) Preliminary Recorders Report
National Transportation Safety Committee (NTSB) - Indonesia
File: Flight Path - Approach v2

Figure 8: FDR information related to the flight path of the accident flight

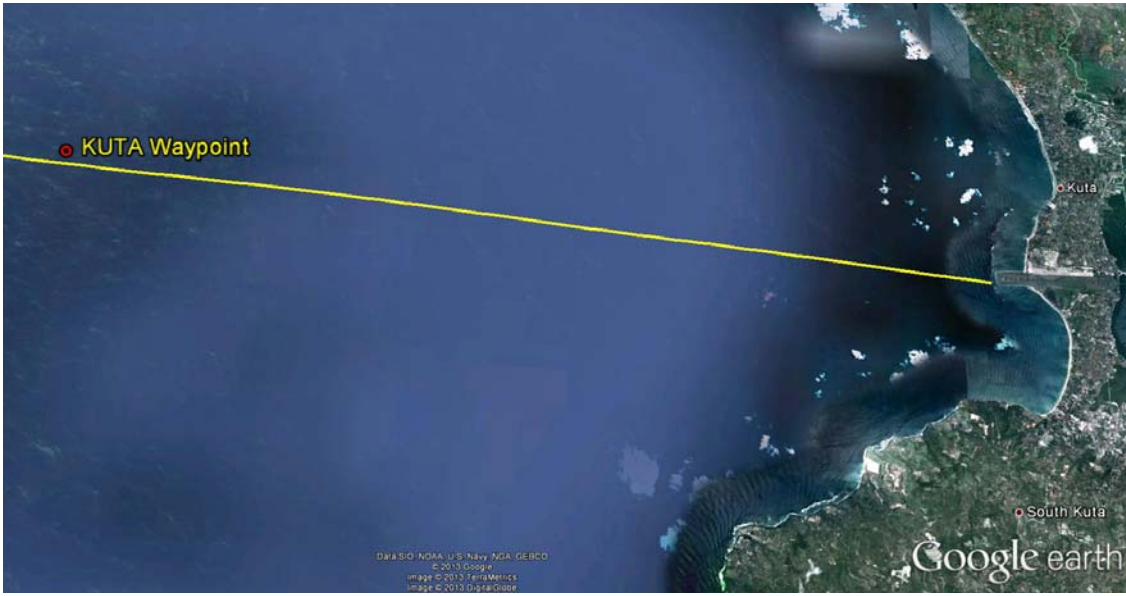


Figure 9: Aircraft flight path superimposed to Google Earth

1.11.2 Cockpit Voice Recorder

The aircraft was equipped with a Honeywell Solid State Cockpit Voice Recorder (SSCVR) designed to record 30 minutes of audio on four channels (P/A, Co-pilot, Pilot, Cockpit Area Microphone/CAM) and 120 minutes of audio on 2 channels (combined crew audio & CAM).

Details of the SSCVR were:

Manufacturer : Honeywell
Type/Model : SSCVR
Part Number : 980-6022-001
Serial Number : CVR120-15597

The CVR was downloaded and decompressed on 18 April 2013. The CVR contained four channels of 30 minutes and two channels of 120 minutes of good quality recording. The audio files were examined found to contain the accident flight.

1.12 Wreckage and Impact Information

The last coordinate recorded on the FDR was 08°45'00.96"S 115°09'01.01"E which most likely was the impact point.

The aircraft came to a stop facing north about 20 meters from the shore or approximately 300 meters south west of the runway 09 threshold.

The wreckage was submerged in shallow water between 2 to 5 meters.

The initial photographs revealed that the vertical stabilizer, right stabilizer, wings and control surfaces were in good condition with minimal damage. The right engine and both main landing gear had detached from the main wreckage.

The main cabin doors and escape hatches were all present and in the open position.



Figure 10: The evacuation process

All of the observed damage was consistent with post-accident contact with the sea floor, coral reef and sea wall.

In the period while the NTSC investigators travelled to the accident site approximately 6 hours after the accident, the degree of damage to the aircraft had worsened due to the environment.

The examination of the flight deck found the flap handle in the flaps 15 position. However the number 1, 2, 3 and 4 kruger flaps were found attached with all hinges intact and with the actuators at full extension. The kruger flaps were not free to move. This indicated that the flaps were in flap 40 position.

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

A pilot of an aircraft which was held on short runway 09, informed Ngurah Tower controller that the Lion Air aircraft had crashed into the sea near the beginning of runway 09. The Ngurah Tower controller looked at the position as informed and saw the Lion Air aircraft tail section outside the airport fence.

At 0711 UTC, the Ngurah Tower controller pressed the crash bell and then communicated to the Airport Rescue and Fire Fighting (ARFF) via direct line about the accident. At 0713 UTC, the rescue team departed from the ARFF station and

arrived at 0715 UTC.

After the aircraft stopped, the water entered the aircraft cabin from the aft side and moved forward, the blowout panels on the flight deck door were broken.

The FA1, assisted by an able-bodied passenger (ABP)⁶ opened the forward left passenger door (1L), then pulled the manual inflation handle to inflate the evacuation slide.

Most of the passengers evacuated the aircraft through the right over wing exits and right forward door. These were the nearest exits to the land (shore). Some of the passenger jumped into the water then swam to the shore and others were assisted by rescue boat.

At 0717 UTC, the local armed forces, local police, SAR agency and local people supported the evacuation operation.

At 0755 UTC, all occupants were completely evacuated. Injured passengers were taken to the nearest hospitals and uninjured occupants to the airport crisis centre.

1.16 Tests and Research

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

1.17 Organisational and Management Information

Aircraft Owner	:	Avolon Aerospace AOE 50 Limited
Address	:	PO BOX 309 Ugland House, Grand Cayman KY1-1104 Cayman Island
Aircraft Operator	:	PT. Lion Mentari Airlines
Address	:	Jalan Gajah Mada No. 7 Jakarta Pusat, Republic of Indonesia
Operator Certificate Number	:	AOC/121-010

1.18 Additional Information

The investigation involved the National Transport Safety Board (NTSB) as accredited representative.

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

⁶ Able Body Passenger (ABP) is a passenger which selected by crewmember to assist in managing emergency situations if and as required.

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

The National Transportation Safety Committee initial findings on the accident flight are as follows:

- a. The aircraft was airworthy prior to impact and has an item on the DMI (deferred maintenance item) category C (right engine oil filter).
- b. All crew has valid licenses and medical certificates.
- c. The Second in Command (SIC) acted as Pilot Flying (PF).
- d. The flight performed a VOR DME approach runway 09, and the published Minimum Descent Altitude (MDA) was 465 ft AGL.
- e. The approach configuration used was flap 40.
- f. At 900 ft AGL the PF did not have the runway in sight.
- g. Upon reaching the MDA the flight profile indicated a constant path.
- h. The PIC took over control of the aircraft at about 150 ft radio altitude.
- i. The SIC handed over control to the PIC at about 150 ft and stated that he could not see the runway.
- j. The final approach phase of the flight profile was outside the envelope of the EGPWS warning, therefore no EGPWS warning was recorded on the CVR.

3 SAFETY ACTION

At the time of issuing this preliminary report, the National Transportation Safety Committee had not been informed of any safety actions following this accident.

4 SAFETY RECOMMENDATIONS

As a result of the factual information and initial findings, the National Transportation Safety Committee issued immediate safety recommendations to address safety issues identified in this report.

4.1 PT. Lion Mentari Airlines

- a. To emphasise to pilots the importance of complying with the descent minima of the published instrument approach procedure when the visual reference cannot be obtained at the minimum altitude.
- b. To review the policy and procedures regarding the risk associated with changeover of control at critical altitudes or critical time.
- c. To ensure the pilots are properly trained during the initial and recurrent training program with regard to changeover of control at critical altitudes and or critical time.