



**KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA**

PRELIMINARY

KNKT.20.08.18.04

Aircraft Accident Investigation Report

PT. Jhonlin Air Transport

Airbus MBB BK117 D-2 Helicopter; PK-JBX

Bersujud Airport, Batulicin

Republic of Indonesia

6 August 2020

2020

This Preliminary Report was published by the *Komite Nasional Keselamatan Transportasi* (KNKT), Transportation Building, 3rd Floor, Jalan Medan Merdeka Timur No. 5 Jakarta 10110, Indonesia.

The report is based upon the initial investigation carried out by the KNKT 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. 62/2013).

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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Jakarta, 29 December 2020

**KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
VICE CHAIRMAN**


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ABBREVIATIONS AND DEFINITIONS

AFIS	:	Aerodrome Flight Information Services
AIP	:	Aeronautical Information Publication
AMM	:	Aircraft Maintenance Manual
AOC	:	Aircraft Operator Certificate
AP	:	Auto Pilot
ARFF	:	Airport Rescue and Fire Fighting
ATPL (H)	:	Airline Transport Pilot License (Helicopter)
ATS	:	Air Traffic Services
BMKG	:	<i>Badan Meteorologi Klimatologi Geofisika</i> (Meteorological Climatological and Geophysics Agency)
°C	:	Degree in Celsius
Cm	:	Centimeter(s)
C of A	:	Certificate of Airworthiness
C of R	:	Certificate of Registration
CPL (H)	:	Commercial Pilot License (Helicopter)
CVDR	:	Cockpit Voice and Data Recorder
DGCA	:	Directorate General of Civil Aviation
FDRI	:	Flight Data Recorder Information
FISO	:	Flight Information Services Officer
GB	:	Giga bytes
GPS	:	Global Position System
Hpa	:	Hectopascal
KM	:	Kilo Metre(s)
KNKT	:	<i>Komite Nasional Keselamatan Transportasi</i> (National Transportation Safety Committee)
LT	:	Local Time
m	:	Meter(s)
MEL	:	Minimum Equipment List
PP	:	<i>Peraturan Pemerintah</i> (Government Regulation)
PT	:	<i>Perseroan Terbatas</i> (Limited Company)
TT	:	Temperature
TD	:	Dewpoint Temperature
UTC	:	Universal Time Coordinated
WAAS	:	Wide Area Augmentation System

SYNOPSIS

On 6 August 2020, an Airbus MBB BK117 D-2 Helicopter, registration PK-JBX was being operated by PT. Jhonlin Air Transport (Jhonlin Air) as a type-rating flight training for Jhonlin Air pilot at Bersujud Airport (WAOC), Batulicin area.

The training session was planned to include exercises of autorotation from high altitude, autorotation (power on recovery) and tail rotor failure.

At 1326 LT (0526 UTC), the instructor started the engines to conduct the training session. The student pilot 1 occupied right pilot seat, the instructor occupied left pilot seat and the student pilot 2 seated on the passenger seat.

About 1432 LT, the instructor considered the training session for the student pilot 1 was sufficient and informed to Batulicin Flight Information Officer (FISO) that the pilot intended to return to runway 09 then proceed to apron for student change.

The Batulicin FISO acknowledged the pilot information and provided information of the wind condition was from 110° and the speed was 7 knots.

At 1434 LT, the student pilot 1 completed his training session and the instructor took over the helicopter control. The instructor applied right pedal with intention to turn right to heading runway 09, suddenly the helicopter spin clock-wise three times and the instructor engaged the autopilot system. The instructor immediately landed the helicopter on the runway and performed emergency shutdown procedure. The instructor and both student pilots evacuated the helicopter safely. No one injured in this occurrence. The helicopter

The investigation is continuing and will include details information of helicopter maintenance information, human factors issue and flight technique and related procedures.

Komite Nasional Keselamatan Transportasi (KNKT) not issue safety recommendation in this Preliminary Report.

1 FACTUAL INFORMATION

1.1 History of the Flight

On 6 August 2020, an Airbus MBB BK117 D-2 Helicopter, registration PK-JBX (the helicopter) was being operated by PT. Jhonlin Air Transport (Jhonlin Air) as a type-rating flight training for Jhonlin Air pilot at Bersujud Airport (WAOC), Batulicin area.

Jhonlin Air had type rating training program for four pilots. On the day of the occurrence, the helicopter was planned to conduct two training sessions while on each session, consisted of one instructor pilot and two student pilots.

The first training session was uneventful and the training was stopped before lunch break time.

The second training session was planned to include exercises of autorotation from high altitude, autorotation (power on recovery) and tail rotor failure simulation.

After lunch break, at 1326 LT (0526 UTC)¹, the instructor started the engines to conduct the second training session. The student pilot 1 occupied right pilot seat, the instructor occupied left pilot seat and the student pilot 2 seated on the passenger seat.

The instructor instructed the student pilot 1 to fly to an open area about two kilometres (km) north of Bersujud Airport for preparation of autorotation from high altitude and autorotation (power on recovery) exercises.

The student pilot 1 successfully conduct autorotation training, and the instructor instructed to return to Bersujud Airport.

While reaching on the beginning of runway 27, the instructor conducted tail rotor failure simulation, and the instructor de-activated the autopilot (AP) system for the purpose of training.

About 1432 LT, the instructor considered the training session for the student pilot 1 was sufficient and informed to Batulicin Flight Information Officer (Batulicin FISO) to return to runway 09 then proceed to apron for student change.

The Batulicin FISO acknowledged the pilot information and advised the pilot to return to runway 09 then proceed to apron. The Batulicin FISO provided information that the wind condition was from 110° and the speed was 7 knots.

At 1434 LT, the student pilot 1 completed his training session and the instructor took over the helicopter control. The instructor applied right pedal with intention to turn right to heading runway 09, suddenly the helicopter spin clock-wise three times and the instructor engaged the AP system. The instructor immediately landed the helicopter on the runway and performed emergency shutdown procedure. The instructor commanded both student pilots to check the outside condition. Both student pilots reported that there was no indication of fire. The instructor instructed both student pilots to evacuate the helicopter.

¹ The 24-hours clock in Universal Time Coordinated (UTC) is used in this report to describe the local time as specific events occurred. Local time is *Waktu Indionesia Bagian Tengah* or Central Indonesia Time is UTC+8 hours.



Figure 1: The helicopter after stopped on the runway

1.2 Injuries to Person

No one injured as result of this occurrence.

1.3 Damage to Aircraft

The helicopter substantially damaged. The damage mainly on the lower fuselage skin and the cross tube and the detail are as follow:

- Right forward lower fuselage skin dent with dimension about 12 inches wide and 24 inches long with approximately 4 inches deep,
- Right forward lower fuselage skin teared off approximately 11 inches at forward landing cross tube attachment,
- Right mid (between aft and forward) lower fuselage skin dent approximately 0.5 inches deep, 2 inches wide, and 2 inches long,
- Right landing cross tube to fuselage fairing teared off 11 inches long,
- Left forward lower fuselage skin dent approximately 1 inch deep, 7 inches wide, and 15 inches long,
- Left aft lower fuselage skin dent approximately 1 inch deep, 21 inches wide, and 7 inches long,
- Left and right landing cross tube bent,
- Lower center fuselage to landing cross tube attachment teared off approximately 2 inches long,

1.4 Other Damage

No other damage reported.

1.5 Personnel Information

1.5.1 Instructor

Gender	: Male
Age	: 46 years old
Nationality	: Indonesia
Marital status	: Married
License	: ATPL (H)
Date of issue	: 4 April 2019
Aircraft type rating	: Eurocopter EC 155 B1, EC 145 and MBB BK117 helicopter
Instructor Authorization	: Flight and Ground Instructor for BK 117/EC 145 valid until 30 September 2021
Instrument rating validity	: 31 December 2020
Medical certificate	: First Class
Last of medical	: 3 April 2020
Validity	: 3 October 2020
Medical limitation	: Holder shall use glasses correct for near vision
Last line check	: 10 June 2018
Last proficiency check	: 30 June 2019

Flying experience

Total hours	: 7,381 hours 38 minutes
Total on type	: 367 hours 17 minutes
Last 90 days	: 38 hours 40 minutes
Last 60 days	: 28 hours 40 minutes
Last 24 hours	: 5 hours
This flight	: 1 hour 10 minutes

The instructor was an employee of another aircraft operator and temporarily assigned as instructor for MBB BK117 D-2 helicopter for the type-rating flight training for Jhonlin Air pilots.

This assignment was approved by Indonesia Directorate General of Civil Aviation refer to DGCA Letter number KP.503/1/7/DKPPU-2020 date 23 July 2020.

1.5.2 Student Pilot 1

Gender : Male
Age : 39 years old
Nationality : Indonesia
Marital status : Married
Date of joining company : April 2015
License : CPL (H)
 Date of issue : 11 March 2003
 Aircraft type rating : Bell 407 helicopter
Instrument rating validity : -
Medical certificate : First Class
 Last of medical : 5 February 2020
 Validity : 26 August 2020
 Medical limitation : Holder shall use wear corrective lenses
Last line check : -
Last proficiency check : 30 November 2018

Flying experience

Total hours : 2,860 hours 55 minutes
Total on type : 7 hours 35 minutes
Last 90 days : 16 hours 35 minutes
Last 60 days : 16 hours 35 minutes
Last 24 hours : 1 hour 10 minutes
This flight : 1 hour 10 minutes

The student pilot 1 conducted initial type-rating flight training for MBB BK117 D-2 helicopter. The student pilot 1 completed the MBB BK117 D-2 helicopter in-house ground training which conducted from 25 June 2020 to 2 July 2020.

1.5.3 Student Pilot 2

Gender : Male
Age : 26 years old
Nationality : Indonesia
Marital status : Married
Date of joining company : April 2015
License : CPL (H)

Date of issue : 14 November 2008
 Aircraft type rating : Bell 407 helicopter
 Instrument rating validity : -
 Medical certificate : First Class
 Last of medical : 3 April 2020
 Validity : 3 October 2020
 Medical limitation : Holder shall possess glasses to correct for near vision
 Last line check : -
 Last proficiency check : 31 July 2019

Flying experience

Total hours : 2,250 hours 30 minutes
 Total on type : 5 hours 55 minutes
 Last 90 days : 6 hours 55 minutes
 Last 60 days : 6 hours 55 minutes
 Last 24 hours : 1 hours 10 minutes
 This flight : 1 hour 10 minutes

The student pilot 2 conducted initial type-rating flight training for MBB BK117 D-2 helicopter. The student pilot 2 completed the MBB BK117 D-2 helicopter in-house ground training which conducted from 25 June 2020 to 2 July 2020.

1.6 Aircraft Information

1.6.1 General

The aircraft manufactured by Airbus Helicopter in 2018 in Germany, with serial number 20229 and the type/model was MBB BK177 D-2 helicopter. The aircraft registered PK-JBX had Certificate of Airworthiness (C of A) valid until 28 May 2021 and Certificate of Registration (C of R) valid until 19 May 2023.

The total hour of the helicopter was 48 hours 56 minutes and 233 cycles. The helicopter had not been performed major inspection. The last minor check of helicopter was the “25 hours inspection” that was performed on 3 August 2020, while the aircraft had 41 hours 53 minutes flight hours.

The radio altimeter was unserviceable since 1 August 2020 and listed in the Minimum Equipment List (MEL) as category D².

² Minimum Equipment List (MEL) Category D allows for a component or system to be unserviceable within one hundred and twenty (120) consecutive calendar days, excluding the day the malfunction was recorded in the aircraft flight & maintenance log (refer to JAT MEL Page 2.1 – 4 issued date March 2020).

1.6.2 Engine

The engine installed in the aircraft was Arriel 2E, manufactured by Safran Helicopter Engine in France. The left engine serial number was 60465, and the right engine serial number was 60466. Both engines had total flight hour of 48 hours 56 minutes and total cycle was 233 cycles.

1.7 Meteorological Information

The weather report issued by Badan Meteorologi, Klimatologi dan Geofisika (BMKG – Bureau of Meteorology, Climatology and Geophysics of Indonesia) for Bersujud Airport (WAOC), Batulicin on 6 August 2020, were as follow:

	1300 LT	1330 LT
Wind	120° / 4 knots	110° / 7 knots
Weather	clear	clear
Temperature / Dew point (° C)	25 / 19	29 / 19
QNH ³ (Hpa)	1007	1007
Remark	no significant weather	no significant weather

1.8 Aids to Navigation

The ground-based navigation equipment on the Bersujud Airport (WAOC), Batulicin and navigation aids installed on the aircraft operated normally during the day of the accident.

1.9 Communications

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

The significant communication between ATS and the pilot will be included in the final report.

1.10 Aerodrome Information

Airport Name	: Bersujud Airport
Airport Address	: Batulicin, Tanah Bumbu City, South Kalimantan
Airport Identification	: WAOC
Airport Operator	: Airport Unit of Tanah Bumbu City Government
Airport Certificate Number	: 087/SBU - DBU/V/2019, valid until 8 April 2024
Coordinate	: 03° 24' 47" S; 118° 00' 02" E
Elevation	: 20 feet
Runway Direction	: 09 – 27
Runway Length	: 1,800 m
Runway Width	: 45 m
Surface	: Asphalt

³ QNH is a pressure setting dial into the altimeter to produce the height above sea level.

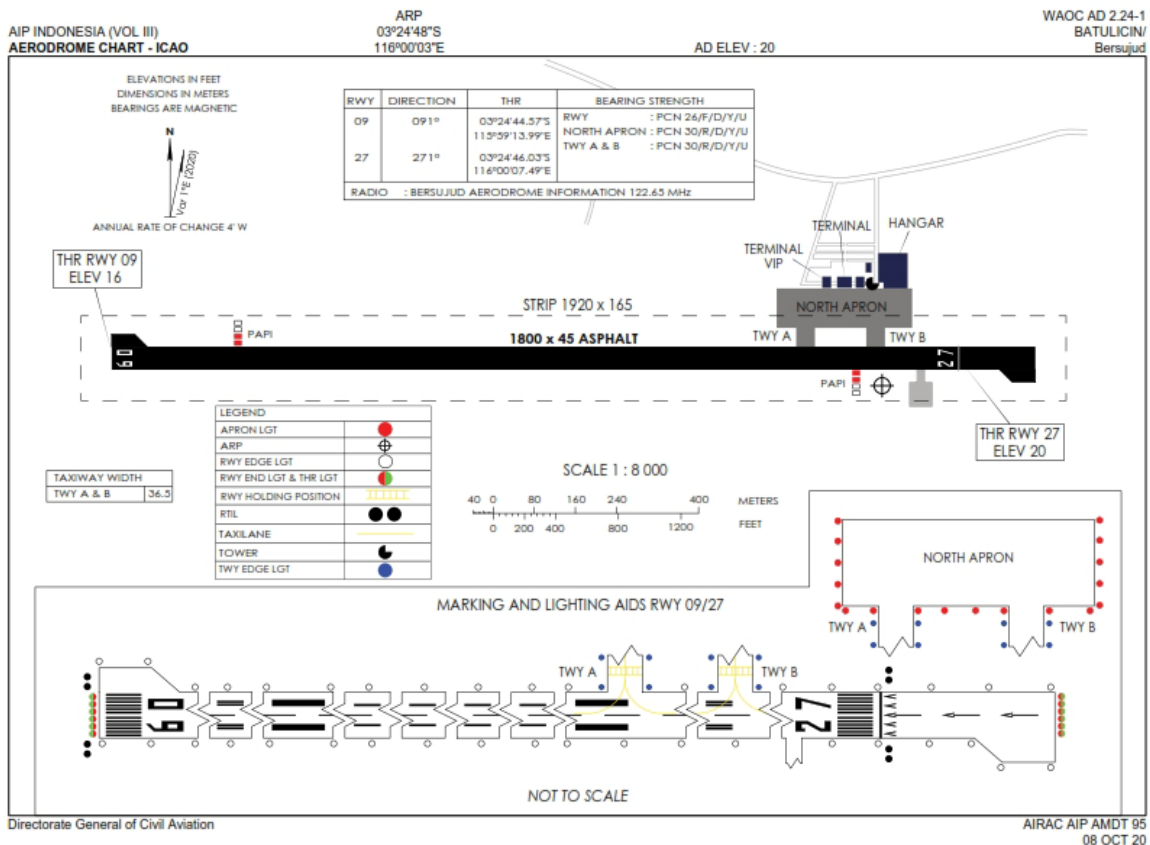


Figure 2: Bersujud Airport refer to Aeronautical Information Publication (AIP) Indonesia volume III amendment 95 issued 8 October 2020

1.11 Flight Recorder

1.11.1 Cockpit Voice and Data Recorder (CVDR)

The helicopter was equipped with a FA5000 Cockpit Voice and Data Recorder (CVDR) manufactured by L3 Aviation Product, with part number 501-6103-11 and serial number 001263333.

After the occurrence, the recorder was secured and transported to KNKT recorder facility for data download process and analysis.

The CVDR data had been successfully retrieved the data and found recorded of 1,631 parameters at approximately 198 hours 33 minutes of aircraft operation, which contained 178 flights including the accident flight.

The relevant parameter of the occurrence was as follows:

PK-JBX Airbus H-145 T2

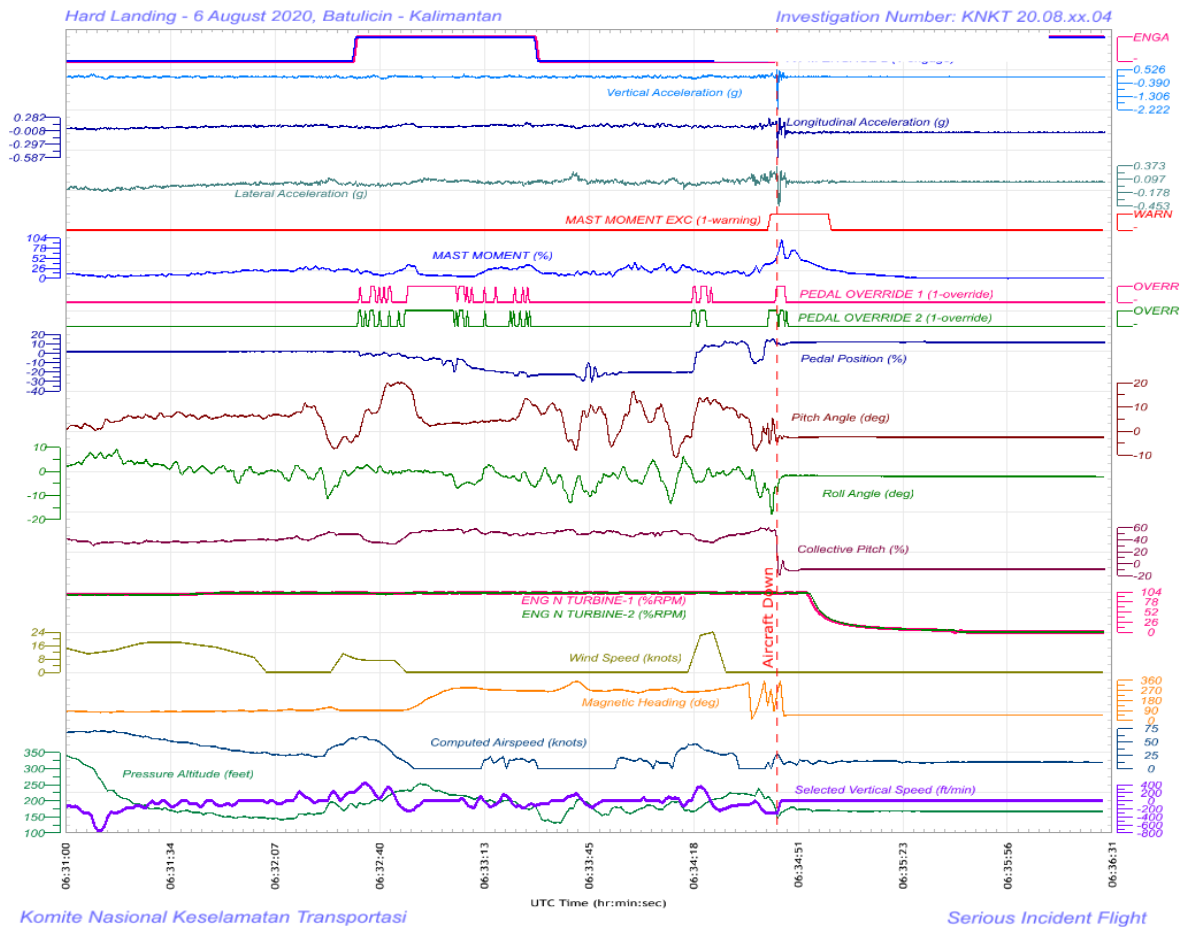


Figure 3: Significant parameter recorded by the CVDR

The significant parameters recorded by the CVDR indicated as follows:

1. At 14:34:20 LT wind direction was from 169 and speed 22 knot, at 14:34:28 LT wind direction was from 169 and speed 24 knot, then back to calm;
2. At 14:34:26 LT, helicopter magnetic heading started to change from 270° to 360°, 360° to 270°, 270° to 360°, 360° to 270° and the last heading was 048°;
3. At 14:34:45 LT, collective pitch relatively manipulated between 40% to 60 % than changed to -20%.

1.11.2 Airborne Image Recorder Information

The PK-JBX fitted with *Appareo* Vision 1000 Flight Data Recorder Information (FDRI) which capture information as such:

- Cockpit images;
- Intercom system audio for crew and air traffic control communications;
- Wide Area Augmentation System (WAAS) Global Position System (GPS);
- Attitude data;
- Acceleration data;
- Rates of rotation

The 16 GB memory card of *Appareo* Vision 1000 FDRI was secured and transport to KNKT recorder facility for download and further analysis.

KNKT successful download the 16 GB memory card and contain data approximately 4 hours of aircraft operation, including 1 hour 14 minutes of the accident flight. The 16 GB memory card contain video (movie) file and WAAS GPS data, no voice data was recorded.

The KNKT laboratory succeeded combine Vision 1000 FDRI data with voice data from Cockpit Voice & Data Recorder.



Figure 4: *Appareo* Vision 1000 FDRI screenshot

1.12 Wreckage and Impact Information

Circle scratch marks were found about 730 metres from the beginning of runway 09. The circle scratch mark had diameter of 5.8 metres and 1 cm depth. No fuel smell or evidence of fuel spillage found.



Figure 5: The helicopter position and the scratch marks



Figure 6: The scratch marks after the helicopter removed

1.13 Medical and Pathological Information

No medical or pathological were conducted as a result of this occurrence.

1.14 Fire

There was no evidence of pre- or post-impact fire.

1.15 Survival Aspect

After the helicopter stopped, the instructor performed emergency shutdown procedure and commanded to both students to check the outside condition around the helicopter. Both student pilots reported the condition around helicopter was clear, no fire or oil leak.

After the shutdown completed, the instructor commanded to both student pilots to evacuate the helicopter.

About one minute later, the Airport Rescue and Fire Fighter (ARFF) car arrived.

1.16 Test and research

Prior to the issuance of this report, there were no test and research had been conducted or planned to be conducted. Should any test and research perform during the investigation, the result will be included in the final report.

1.17 Organizational and Management Information

1.17.1 Helicopter Operator

Aircraft Owner : Dilston Capital Incorporation
Tortola Pier Park, Building 1,
Wickhams Cay I, Tortola, British Virgin Islands

Aircraft Operator : PT. Jhonlin Air Transport, Indonesia
Apartment Palazzo A29-31 Lt. 3
Jl. Benyamin Sueb Blok A5, Jakarta, Indonesia

AOC Number : AOC 135-043

PT. JAT currently operates two Beech King Air 300s, one Hawker 900XP, and five helicopters.

1.17.2 Airport operator

The Bersujud Airport (WAOC), Batulicin operator was local government of Tanah Bumbu City. Three aircraft operators, included Jhonlin Air, operated passenger flights from and to Bersujud Airport, Batulicin.

The air traffic services provided in Bersujud Airport, Batulicin was Aerodrome Flight Information Services (AFIS).

1.18 Additional Information

Investigation is continuing. Should any further relevant safety issues emerge during the course of the investigation, KNKT will immediately bring the issues to the attention of the relevant parties and publish as required.

1.19 Useful or Effective Investigation Techniques

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

2 FINDINGS⁴

According to factual information during the investigation, the *Komite Nasional Keselamatan Transportasi* identified initial findings as follows:

1. The helicopter had a valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R).
2. The helicopter was airworthy prior to flight, except for unserviceable radio altimeter.
3. The instructor pilot and all student pilots held valid licenses and medical certificates.
4. The flight operation was an initial type-rating flight training.
5. The instructor was a pilot of another company who temporarily assigned as instructor for MBB BK117 D-2 helicopter during the initial type-rating flight training for Jhonlin Air pilots.
6. The occurrence flight was the second training session of the day which begun at 1326 LT. The student pilot 1 occupied right pilot seat, the instructor occupied left pilot seat and the student pilot 2 occupied the passenger seat.
7. After conducted the autorotation training, the instructor started tail rotor failure simulation exercise and the instructor de-activated the autopilot system.
8. At 1434 LT, the flight training session for the student pilot 1 had finished and the flight control was handled by the instructor. The instructor planned to return to apron for student change process.
9. The instructor applied right pedal with intention to turn right to heading runway 09, suddenly the helicopter spin clock-wise three times and the instructor engaged the AP system. The instructor immediately landed the helicopter on the runway and performed emergency shutdown procedure.
10. The instructor commanded both student pilots to check the outside condition and replied that there was no indication of fire. The instructor instructed both student pilots to evacuate the helicopter.
11. No one injured as result of this occurrence, and the helicopter suffered substantially damage.
12. The helicopter CVDR recorded at 14:34:20 LT that wind direction was from 169° and speed 22 knots and at 14:34:28 LT wind direction was from 169° and speed 24 knots, then back to calm;
13. The helicopter CVDR recorded at 14:34:26 LT that helicopter magnetic heading changed from 270° to 360°, 360° to 270°, 270° to 360°, 360° to 270° and the last heading was 048°.

⁴ Findings are statements of all significant conditions, events or circumstances in the accident sequence. The findings are significant steps in the accident sequence, but they are not always causal, or indicate deficiencies. Some findings point out the conditions that pre-existed the accident sequence, but they are usually essential to the understanding of the occurrence, usually in chronological order.

3 SAFETY ACTION

At the time of issuing this preliminary report, the *Komite Nasional Keselamatan Transportasi* had not been informed any safety actions resulting from this accident.

4 SAFETY RECOMMENDATIONS

The Komite Nasional Keselamatan Transportasi is not issuing safety recommendation in this preliminary report. Should any further relevant safety issues emerge during the course of the investigation, KNKT will immediately bring the issues to the attention of the relevant parties and publish as required.

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