



**KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA**

PRELIMINARY

KNKT.17.05.18.04

Aircraft Accident Investigation Report

Balai Besar Kalibrasi Fasilitas Penerbangan

Super King Air 350i; PK-CAQ

Pattimura International Airport, Ambon

Republic of Indonesia

31 May 2017



2017

This preliminary investigation report was produced 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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ABBREVIATIONS AND DEFINITIONS

AIP	:	Aeronautical Information Publication
AOC	:	Aircraft Operator Certificate
ATPL	:	Airline Transport Pilot Licence
ATS	:	Air Traffic Services
CPL	:	Commercial Pilot Licence
CVDR	:	Cockpit Voice and Data Recorder
ILS	:	Instrument Landing System
KNKT	:	Komite Nasional Keselamatan Transportasi
Nm	:	Nautical Miles
PIC	:	Pilot in Command
SIC	:	Second in Command
SSCVR	:	Solid Stated Cockpit Voice Recorder
UTC	:	Universal Time Coordinate
VRef	:	Landing Reference Speed

SYNOPSIS

On 31 May 2017, an Super King Air 350i aircraft, registered PK-CAQ was being operated by Balai Besar Kalibrasi Fasilitas Penerbangan as a non-schedule positioning flight from Sultan Hasanuddin International Airport (WAAA/UPG) Makassar of South Sulawesi to Pattimura International Airport, Ambon (WAPP/AMQ) with intended destination to Biak (WABB/BIK).

During the flight preparation at Sultan Hasanudin International Airport, the pilot received weather information from local Badan Meterologi Klimatologi dan Geofisika informing that the present weather at Ambon was raining.

The aircraft departed from Makassar at 0127 UTC and it was daylight condition. On board of this flight were 7 persons consist of two pilots, five passengers, The Pilot in Command (PIC) acted as Pilot Flying (PF) and the Second in Command (SIC) acted as Pilot Monitoring (PM) and cruised at FL 270.

At 0315 UTC, while descending from FL 270, the pilot established communication with Ambon Approach controller, and the pilot received clearance to descend to 15,000 feet and to proceed to point AUDRI and holding for separation with an aircraft that will departure on runway 22.

When the aircraft left point AUDRI, the approach controller informed that the weather was deteriorating and the visibility was about 1,000 up to 1,500 meters. The pilot reported established ILS and the approach controller instructed to report when runway insight.

When approach and at approximately altitude of 1,000 feet the pilot reported runway in sight and the pilot received landing clearance, thereafter the pilot selected the flap to full down, wiper ON and decided to continue landing. While on final phase, the pilot requested the maximum runway light intensity and the tower controller reported that it was on maximum intensity.

Prior to touch the runway, pilot reduced the power lever gradually and the pilot felt the aircraft touched and bounced. Afterward the nose landing gear collapsed and the aircraft continue travelled and veered off to the right of the runway.

The aircraft stopped near taxiway B at approximately 1,650 meters from the beginning of runway 04, the crew and passengers evacuated the aircraft safely with no injured.

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

According to factual information and initial findings gathered, the Komite Nasional Keselamatan Transportasi has not issued the initial safety recommendation. 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.

The investigation is continuing and will include details information related to flight recorders, relevant procedures, human factors issue and flight technique.

1 FACTUAL INFORMATION

1.1 History of the Flight

On 31 May 2017, an Super King Air 350i aircraft, registered PK-CAQ was being operated by Balai Besar Kalibrasi Fasilitas Penerbangan as a non-schedule positioning flight from Sultan Hasanuddin International Airport (WAAA/UPG)¹ Makassar of South Sulawesi to Pattimura International Airport, Ambon (WAPP/AMQ)² with intended destination to Biak (WABB/BIK).

During the flight preparation at Sultan Hasanudin International Airport, the Second in Command received weather information from local *Badan Meterologi Klimatologi dan Geofisika* informing that the present weather at Ambon was raining.

The aircraft departed from Makassar at 0127 UTC³ and it was daylight condition. On board of this flight were 7 persons consist of two pilots, five passengers who were also the personnel of Balai Besar Kalibrasi Fasilitas Penerbangan.

The Pilot in Command (PIC) acted as Pilot Flying (PF) and the Second in Command (SIC) acted as Pilot Monitoring (PM) and cruised at Flight Level (FL) 270.

When cruising at FL 270, the pilot noticed an abnormality on cabin pressurization system which was the cabin rate of climb indicator fluctuated between 500 feet up and down every 10 minutes and the condition did not reoccur when descending and approach to Pattimura International Airport.

At 0315 UTC, while descending from FL 270, the pilot established communication with Ambon Approach controller, and the pilot received clearance to descend to 15,000 feet and to proceed to point AUDRI, which was a point of 15 Nm at about south west of the Pattimura Airport.

When the aircraft reached altitude 15,000 feet, the Tower Controller instructed the pilot to descend to 13,000 feet and proceed to a point at 25 Nm of final runway 04 due to another aircraft on departure and maintained altitude 12,000 feet.

After passed the traffic, the Ambon approach controller instructed the pilot to descend to 7,000 feet and fly toward 25 Nm of final runway 04. The pilot requested for holding at point AUDRI at the altitude of 7,000 feet with reason that the departure aircraft was on lining up on runway 22 and was approved.

After the second holding and the departure traffic took off and reached altitude 6,000 feet, the Ambon approach controller issued the approach clearance to pilot to perform Instrument Landing System (ILS) approach runway 04, then the PIC command the SIC to select ILS frequency after leaving point AUDRI.

When the aircraft left point AUDRI, the approach controller informed that the weather was deteriorating and the visibility was about 1,000 up to 1,500 meters. The pilot reported established ILS and the approach controller instructed to report when runway insight.

1 Sultan Hasanuddin International Airport will be named as Makassar for the purpose of this report

2 Pattimura International Airport will be named as Ambon for the purpose of this report

3 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 in Ambon is UTC+9 hours.

During approach the PIC briefed the SIC to delay flap full down selection and added the aircraft approach speed to anticipate possibility of wind shear.

At approximately altitude of 1,000 feet the pilot reported runway insight and the pilot received landing clearance, thereafter the pilot selected the flap to full down, wiper ON and decided to continue landing. While on final phase, the pilot requested the maximum runway light intensity and the tower controller reported that it was on maximum intensity.

Prior to touch the runway, pilot reduced the power lever gradually and the pilot felt the aircraft touched and bounced. Afterward the nose landing gear collapsed and the aircraft continue travelled and veered off to the right of the runway.

The aircraft stopped near taxiway B at approximately 1,650 meters from the beginning of runway 04, the crew and passengers evacuated the aircraft safely with no injured.

1.2 Damage to Aircraft

The aircraft was substantial damage, the detail of the damage were as follows:

- Nose landing gear collapsed
- Nose wheel tire burst and the wheel hub scratched
- The propeller blades of both engines bent
- Skin wrinkle in the area of nose dome.





Figure 1: Detail damage to aircraft

1.3 Personnel Information

1.3.1 Pilot in Command

Gender	: Male
Age	: 40 years old
Nationality	: Indonesia
Marital status	: Married
Date of joining company	: 2010
License	: ATPL
Date of issue	: 06 March 2008
Aircraft type rating	: CASA-212, ATR-42, Super King Air-B200GT, Super King Air 350i, HS 125.
Instrument rating validity	: 31 May 2018
Medical certificate	: First Class
Last of medical	: 30 January 2017
Validity	: Valid until 31 July 2017
Medical limitation	: Holder shall wear corrective lenses.
Last line check	: 05 May 2017
Last proficiency check	: 05 May 2017

Flying experience

Total hours : 9,763 Hours
Total on type : 160 Hours
Last 90 days : 100 Hours
Last 60 days : 34 Hours.
Last 24 hours : 5 Hours
This flight : 2 Hours

1.3.2 Second in Command

Gender : Male
Age : 25 years old
Nationality : Indonesia
Marital status : Married
Date of joining company : 2014
License : CPL
 Date of issue : 22 October 2013
 Aircraft type rating : King Air B-200, Super King Air B200GT, Super King Air 350i.
Instrument rating validity : 30 November 2017
Medical certificate : First Class
 Last of medical : 19 May 2017
 Validity : 30 November 2017
 Medical limitation : None
Last line check : 9 November 2016
Last proficiency check : 9 November 2016

Flying experience

Total hours : 410 Hours
Total on type : 44 Hours
Last 90 days : 18 Hours
Last 60 days : 18 Hours
Last 24 hours : None
This flight : 2 Hours

1.4 Aircraft Information

1.4.1 General

Registration Mark	: PK-CAQ
Manufacturer	: Hawker Beechcraft
Country of Manufacturer	: United States of America
Type/Model	: Super King Air 350
Serial Number	: FL-953
Year of Manufacture	: 2014
Certificate of Airworthiness	
Issued	: 06 October 2016
Validity	: Valid until ; 05 October 2017
Category	: Commuter
Limitations	: None
Certificate of Registration	
Number	: 3615
Issued	: 6 October 2016
Validity	: Valid until 5 October 2019
Time Since New	: 543.20 Hours
Cycles Since New	: 258 Cycles
Last Major Check	: -
Last Minor Check	: 7 April 2017 (Inspection Phase 1)

1.4.2 Engines

Manufacturer	: Pratt & Whitney Canada
Type/Model	: PT6A – 60A
Serial Number-1 engine	: PCE-PK 1882
▪ Time Since New	: 543.25
▪ Cycles Since New	: 258
Serial Number-2 engine	: PCE-PK 1884
▪ Time Since New	: 543.25 Hours
▪ Cycles Since New	: 258 Cycles

1.4.3 Propellers

Manufacturer	:	Hartzel Propeller Inc.
Type/Model	:	HC-B4MP-3C
Serial Number-1 propeller	:	FWA-5666
▪ Time Since New	:	543.25 Hours
▪ Cycles Since New	:	258 Cycles
Serial Number-2 propeller	:	FWA-5656
▪ Time Since New	:	543.25 Hours
▪ Cycles Since New	:	258 Cycles

1.4.4 Weight and Balance

The weigh and balance was calculated based on the following data;

Estimated take-off weight	:	14,700 lbs
Fuel loading	:	3,000 lbs
Flight Planned Fuel burn	:	1,400 lbs
Estimated Landing Weight	:	13,300 lbs (Maximum 16,600 lbs)

According to the flight document, the aircraft was departed from Makassar to Ambon within the proper weight and balance envelope, and the VRef⁴ for the landing weight 13,300 lbs with full flap selected was 104 knots.

1.5 Meteorological Information

The weather report for Ambon was provided by *Badan Meteorologi Klimatologi Geofisika – BMKG* (Meteorological Climatological and Geophysics Agency) station. On 31 May 2017, the weather report between 0330 UTC until 0400 UTC were as follows:

	0330 UTC	0340 UTC	0400 UTC
Wind	150 / 04 knots	160 / 04 Knots	170 / 06 knots
Visibility	10 Km	4 Km	1 Km
Weather	Nil	RA	RA
Cloud ⁵	BKN 017	BKN 015	BKN 015
TT/TD (°C)	30 / 25	28 / 25	26 / 25
QNH (mb)	1,010	1,010	1,010

4 VRef (reference speed) is the reference speed for landing based on the landing configuration and landing weight, that required to be achieved while the aircraft cross the runway threshold. The approach speed on final is to be maintained at Vref+5.

5 Cloud amount is assessed in total which is the estimated total apparent area of the sky covered with cloud. The international unit for reporting cloud amount for Broken (BKN) is when the clouds cover 5/8 up to 7/8 area of the sky.

1.6 Communications

All communications between Air Traffic Services (ATS) and the crew were well recorded with good quality by ground based automatic voice recording equipment for the duration of the flight.

1.7 Aerodrome Information

Airport name	: Pattimura International Airport
Airport identification	: WAPP / AMQ
Airport operator	: PT. Angkasa Pura I (Persero)
Coordinate	: 03°42'27" S; 128°05'22" E
Elevation	: 33 feet
Runway direction	: 04 – 22
Runway slope	: 0.88%
Runway length	: 2,050 meters
Runway width	: 45 meters

The aerodrome layout as published in the Aeronautical Information Publication (AIP) Volume II Amendment 48 date 3 March 2016, is as follows:

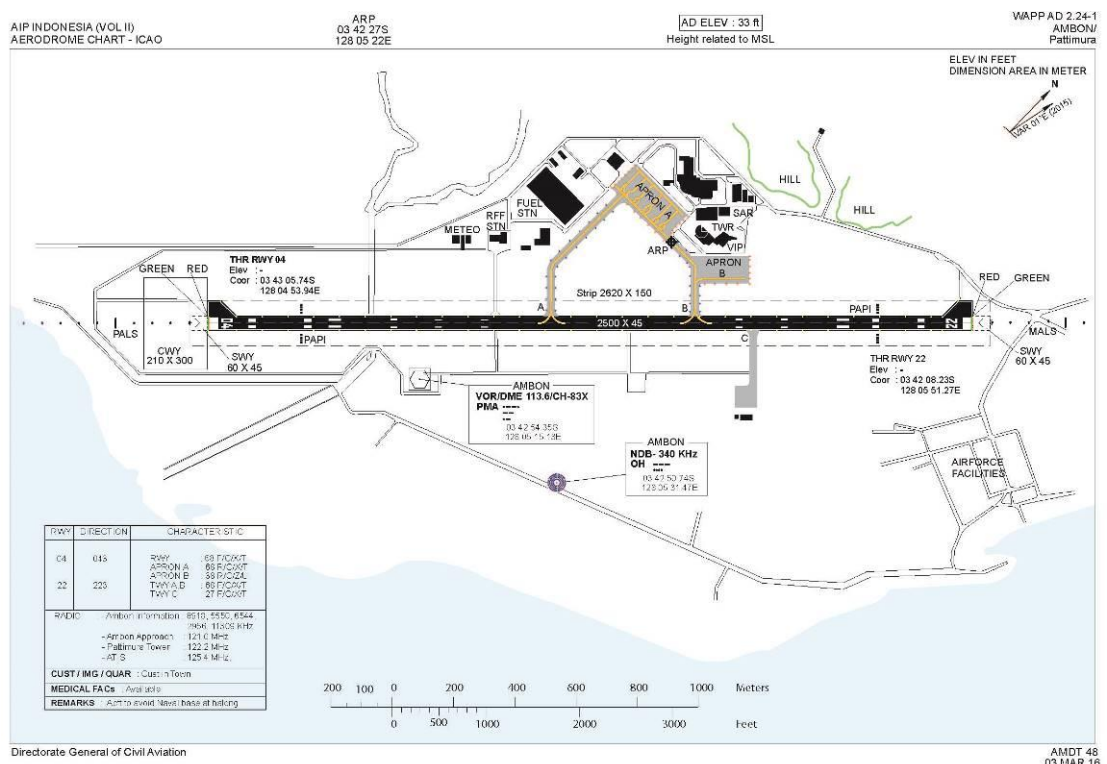


Figure 2: The Pattimura International Airport Layout

1.8 Flight Recorders

1.8.1 Flight Data Recorder

The aircraft was fitted with L3-Communication Madras CVDR FA-2300 model with part number 2306-1800-00 and serial number 000929529. The recorder was transported to Komite Nasional Keselamatan Transportasi (KNKT) recorder facility for data downloading process.

The relevant data of the FDR will be included in the final report.

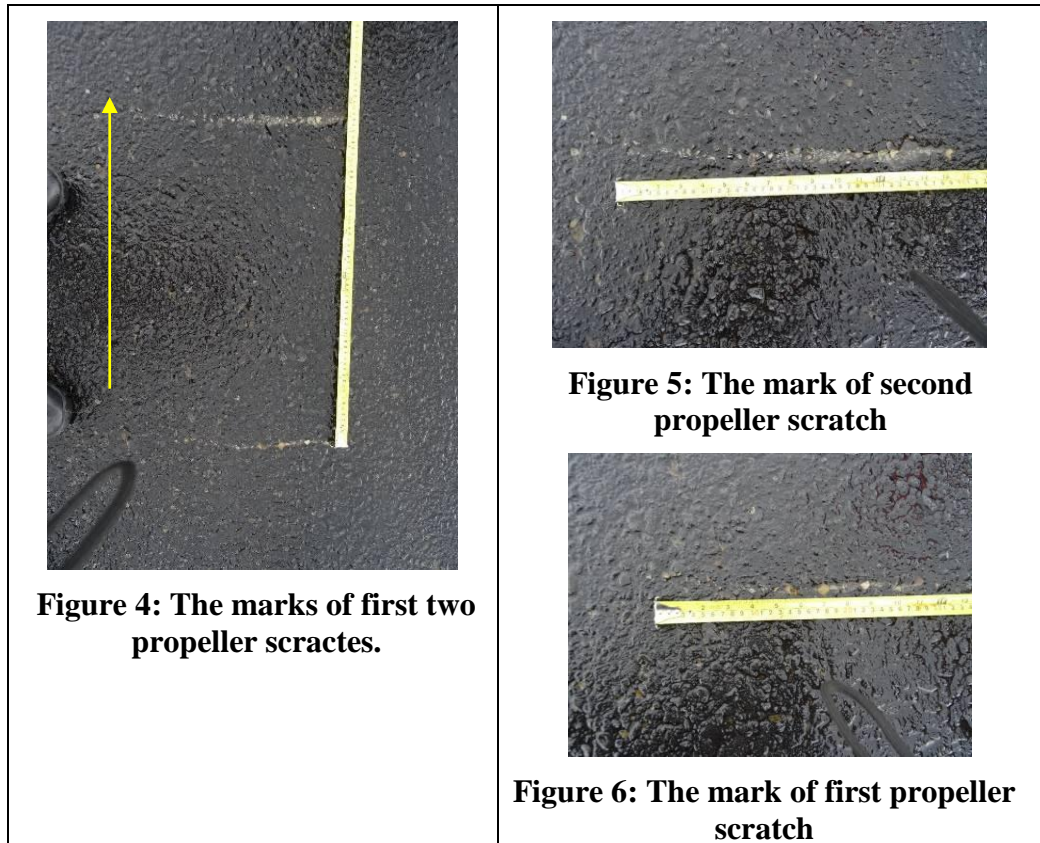
1.8.2 Cockpit Voice Recorder

The aircraft was fitted with L3-Communication Solid Stated Cockpit Voice Recorder (SSCVR) FA2100 model with part number 2100-1020-00 and serial number 001053914. The recorder was transported to KNKT recorder facility for data downloading process. The CVR was successfully downloaded and contained two hours and four minutes of good quality recording data. The significant excerpts from the CVR will be included in the final report.

1.9 Wreckage and Impact Information



Figure 3: The aircraft condition after stop



1.10 Organizational and Management Information

Aircraft Owner : Balai Besar Kalibrasi Fasilitas Penerbangan
 Address : Hangar VII Bandar Udara Budiarto, Jl. Raya
 PLP - Legok Tangerang
 Aircraft Operator : Balai Besar Kalibrasi Fasilitas Penerbangan

The aircraft operator had a valid Aircraft Operator Certificate (AOC) number 135-031. The operator was operating 10 aircraft consist of 2 rotary wing aircraft and 8 fixed wing aircraft including two Super King Air 350i, three King Air B200, two Learjet 31A and one Hawker 900XP aircraft.

The detail of flight operation organization mission and flight crew training program of the Balai Besar Kalibrasi Fasilitas Penerbangan will be explained in the final report.

1.11 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 FINDINGS⁶

According to factual information gathered during the investigation, the Komite Nasional Keselamatan Transportasi identified the following of initial findings:

- The aircraft was airworthy prior to departure and was within the weight and balance envelope.
- The pilots were appropriately licensed and held valid medical certificates.
- The Pilot in Command (PIC) acted as the Pilot Flying (PF) and the Second in Command (SIC) acted as the Pilot Monitoring (PM).
- During cruising at 27,000 feet, the pilot noticed that the cabin rate of climb indicator fluctuated about 500 feet up and down every 10 minutes, and the problem no longer appeared afterward.
- When the aircraft left point AUDRI, the approach controller informed to the pilot that the weather was deteriorating and the visibility was about 1 up to 1.5 km.
- During approach the PIC briefed the SIC to delay flap full down selection and added the aircraft approach speed to anticipate possibility of wind shear.
- At approximately altitude of 1,000 feet the pilot reported runway was in sight and the pilot received landing clearance, thereafter the pilot selected the flap to full down, wiper ON and decided to continue landing.
- While on final phase, the pilot requested the maximum runway light intensity and the tower controller reported that it was on maximum intensity.
- The VRef for the landing weight 13,300 lbs with full flap selected was 104 knots.
- While on final phase, the pilot requested the maximum runway light intensity and the tower controller reported that it was on maximum intensity.
- Prior to touch the runway, pilot reduced the power lever gradually and the pilot felt the aircraft touched and bounced. Afterward the nose landing gear collapsed and the aircraft continue travelled and veered off to the right of the runway.
- The aircraft stopped near taxiway B at approximately 1,650 meters from the beginning of runway 04.
- The crew and passengers evacuated the aircraft safely with no injured.

⁶ 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 of any safety actions resulting from this occurrence.

4 SAFETY RECOMMENDATIONS

According to factual information and initial findings gathered, the Komite Nasional Keselamatan Transportasi has not issued the initial safety recommendation. 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.

5 APPENDICES

The appendices will be included in final report when necessary.

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