



**KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA**

PRELIMINARY

KNKT.20.05.08.04

Aircraft Accident Investigation Report

Mission Aviation Fellowship

Quest Kodiak 100; PK-MEC

Sentani Lake, Jayapura, Papua

Republic of Indonesia

12 May 2020

2020

This preliminary investigation report 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.

Readers are advised that the KNKT investigates for the sole purpose of enhancing aviation safety. Consequently, the KNKT reports are confined to matters of safety significance and may be misleading if used for any other purpose.

As the KNKT believes that safety information is of greatest value if it is passed on for the use of others, readers are encouraged to copy or reprint for further distribution, acknowledging the KNKT as the source.

When the KNKT makes recommendations as a result of its investigations or research, safety is its primary consideration.

However, the KNKT fully recognizes that the implementation of recommendations arising from its investigations will in some cases incur a cost to the industry.

Readers should note that the information in KNKT reports and recommendations is provided to promote aviation safety. In no case is it intended to imply blame or liability.

Jakarta, 12 June 2020
**KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
CHAIRMAN**


SOERJANTO TJAHJONO

TABLE OF CONTENTS

TABLE OF CONTENTS	i
TABLE OF FIGURES	ii
ABBREVIATIONS AND DEFINITIONS	iii
SYNOPSIS	iv
1 FACTUAL INFORMATION	1
1.1 History of the Flight.....	1
1.2 Injuries to Person	3
1.3 Damage to Aircraft	3
1.4 Other Damage.....	5
1.5 Personnel Information	5
1.6 Aircraft Information.....	6
1.7 Meteorological Information.....	6
1.8 Aids to Navigation.....	6
1.9 Communications	7
1.10 Aerodrome Information	7
1.11 Flight Recorder	7
1.12 Wreckage and Impact Information	7
1.13 Medical and Pathological Information	7
1.14 Fire.....	8
1.15 Survival Aspect.....	8
1.16 Test and research	8
1.17 Organizational and Management Information.....	8
1.17.1 Aircraft Operator	8
1.17.2 Air Navigation Provider	8
1.18 Additional Information	8
1.19 Useful or Effective Investigation Techniques	9
2 FINDINGS	10
3 SAFETY ACTION	11
4 SAFETY RECOMMENDATIONS	12

TABLE OF FIGURES

Figure 1: The PK-MEC aircraft wreckage location taken by the pilot of PK-RCE.....	2
Figure 2: The aircraft flight profile based on Garmin G1000 data and the location of the main wreckage	3
Figure 3: The aircraft after recovered from Sentani Lake (taken from right side).....	4
Figure 4: The propeller	4
Figure 5: The right wing.....	5

ABBREVIATIONS AND DEFINITIONS

ATS	: Air Traffic Services
BMKG	: <i>Badan Meteorologi, Klimatologi dan Geofisika</i> (Bureau of Meteorology, Climatology, and Geophysics)
C of A	: Certificate of Airworthiness
C of R	: Certificate of Registration
CPL	: Commercial Pilot License
CVR	: Cockpit Voice Recorder
DGCA	: Indonesia Directorate General of Civil Aviation
FAA	: USA Federal Aviation Administration
FDR	: Flight Data Recorder
GPS	: Global Positioning System
ICAO	: International Civil Aviation Organization
KM	: KiloMetres
Kgs	: Kilograms
KNKT	: <i>Komite Nasional Keselamatan Transportasi</i> (National Transportation Safety Committee)
Lbs	: Pounds
LT	: Local Time
Mb	: Milibars
MHz	: Mega Hertz
NTSB	: USA National Transportation Safety Board
OC	: Operator Certificate
SAR	: Search and Rescue
SD	: Secure Disc
TSB	: Transport Safety Bureau (TSB) of Canada
USA	: United States of America
UTC	: Universal Time Coordinated

SYNOPSIS

On 12 May 2020, a Quest Kodiak 100 aircraft, registration PK-MEC, was being operated by Mission Aviation Fellowship (MAF) as a cargo flight from Sentani Airport (WJJJ), Jayapura, Papua with intended destination of Mamit Airstrip (WAVS) Tolikara, Papua. The pilot was the only person on board for this flight and the aircraft carried 694 kgs of cargo goods.

At 0622 LT (2122 UTC), the pilot of PK-MEC aircraft requested clearance to the Sentani Tower controller to start aircraft engine and flying to Mamit at radial 241° with intended cruising altitude 10,000 feet. The Sentani Tower controller approved the request.

At 0627 LT, on daylight condition, the aircraft took off from runway 12 of Sentani Airport, thereafter, the Sentani Tower controller advised to the pilot of PK-MEC to contact Jayapura Radar controller.

At 0628LT, the pilot of PK-MEC declared “MAYDAY” on Jayapura Radar radio frequency. The Jayapura Radar controller tried to contact pilot of PK-MEC four times but no answer.

At 0630 LT, the Jayapura Radar Controller requested the pilot of PK-RCE that was just took off from Sentani to visually observe the position of PK-MEC aircraft. Few minutes later, the pilot of PK-RCE reported to Jayapura Radar controller that some debris were seen on Sentani Lake and some boats were moving toward the debris location. The pilot of PK-RCE assumed that PK-MEC aircraft had crashed to the lake.

The pilot fatally injured. The wreckages have been recovered including the Global Positioning System (GPS) data card.

The investigation involved the National Transportation Safety Board (NTSB) of the United States of America as State of design and State of manufacturer of the aircraft and the Transport Safety Bureau (TSB) of Canada as State of manufacturer of the engine, and have assigned accredited representatives according to ICAO Annex 13. The aircraft manufacturer and engine manufacturer have assigned advisers to participate in the investigation.

The investigation is continuing and will conduct examination to the engine and the aircraft wreckage. The result of the examination will be included in the final report.

1 FACTUAL INFORMATION

1.1 History of the Flight

On 12 May 2020, a Quest Kodiak 100 aircraft, registration PK-MEC, was being operated by Mission Aviation Fellowship (MAF) as a cargo flight from Sentani Airport (WAJJ)¹, Jayapura, Papua with intended destination of Mamit Airstrip (WAVS) Tolikara, Papua. The pilot was the only person on board for this flight and the aircraft carried 694 kgs of cargo goods.

At 0622 LT (2122 UTC²), the pilot of PK-MEC aircraft requested clearance to the Sentani Tower controller to start aircraft engine and flying to Mamit at radial 241° with intended cruising altitude 10,000 feet. The Sentani Tower controller approved the request.

At 0624 LT, the pilot of PK-MEC aircraft requested taxi clearance to the Sentani Tower Controller, and was instructed to taxi to runway 12 via BRAVO taxiway and provided the transponder code (squawk) of 7275.

At 0626LT, the pilot of PK-MEC aircraft contacted Sentani Tower Controller and informed ready for takeoff and the Sentani Tower controller issued clearance for take-off.

At 0627 LT, on daylight condition, the aircraft took off from runway 12 of Sentani Airport. The Sentani Tower controller provided the pilot of PK-MEC the airborne time and advised to contact Jayapura Radar on 119,1 MHz. The pilot of PK-MEC read back the instructions.

At 0628LT, the pilot of PK-MEC declared “MAYDAY” on Jayapura Radar radio frequency. The Jayapura Radar controller tried to contact pilot of PK-MEC four times but no answer.

The Jayapura Radar controller asked pilot of PK-RKB aircraft which departed Sentani prior to PK-MEC to contact the pilot of PK-MEC. The pilot of PK-RKB informs that the pilot of PK-MEC did not answer the call and would monitor the emergency frequency of 121.5 MHz.

At 0630 LT, the Jayapura Radar Controller requested the pilot of PK-RCE that was just took off from Sentani to observe visually the position of PK-MEC aircraft. The pilot of PK-RCE replied that the observation could not be performed because of the different flight track. The pilot of PK-RCE requested to turn right to the flight track of PK-MEC and make orbit.

The pilot of PK-RCE reported to Jayapura Radar controller that some debris could be seen on Sentani Lake and some boats were moving toward the debris location. The pilot of PK-RCE assumed that PK-MEC aircraft had crashed to the lake.

¹ Sentani Airport, Jayapura (WAJJ) will be named as Sentani for the purpose of this report.

² 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 UTC+9 hours.



Figure 1: The PK-MEC aircraft wreckage location taken by the pilot of PK-RCE

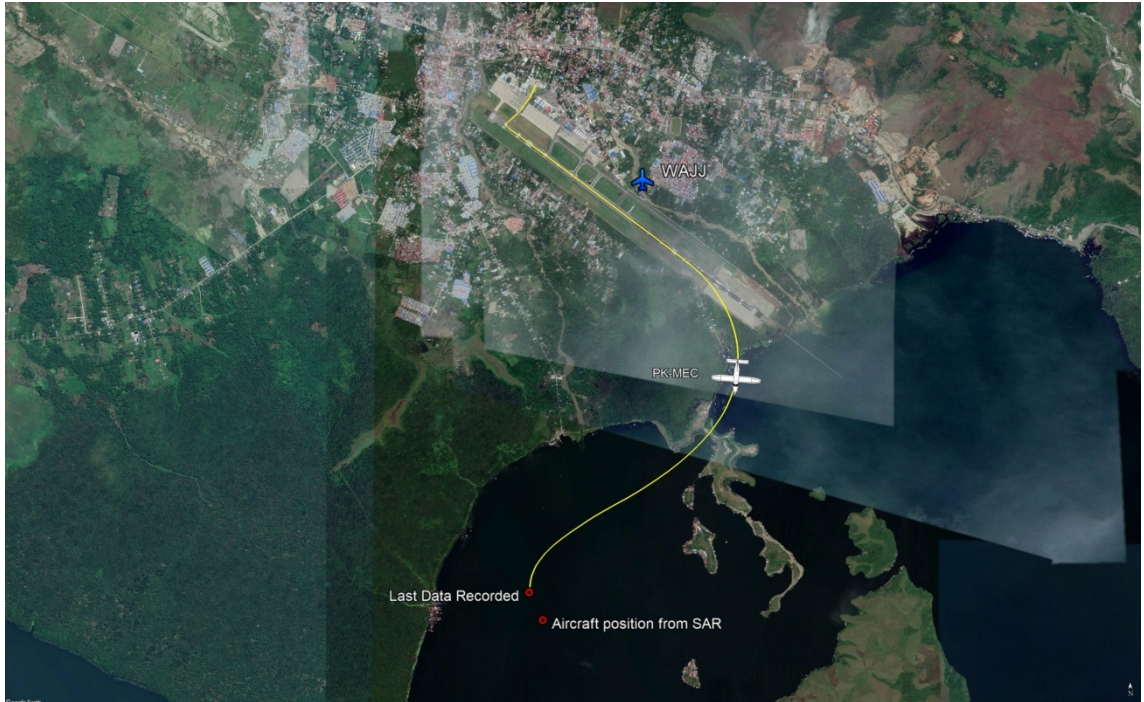


Figure 2: The aircraft flight profile based on Garmin G1000 data and the location of the main wreckage

1.2 Injuries to Person

The pilot was a United States of America (USA) citizen.

Injuries	Flight crew	Passengers	Total in aircraft	Others
Fatal	1	-	1	-
Serious	-	-	-	-
Minor	-	-	-	Not applicable
Nil	-	-	-	Not applicable
TOTAL	1	-	1	-

1.3 Damage to Aircraft

The aircraft was substantially damage.



Figure 3: The aircraft after recovered from Sentani Lake (taken from right side)



Figure 4: The propeller



Figure 5: The right wing

1.4 Other Damage

There was no other damage reported.

1.5 Personnel Information

The pilot was 40 years old female, citizen of the USA, joined the company since October 2014 and held valid Commercial Pilot License (CPL) issued by USA Federal Aviation Administration (FAA) and validated by Indonesia Directorate General of Civil Aviation (DGCA), with qualification as Single Engine Land aircraft pilot.

The pilot held second-class medical certificate issued by USA FAA and valid until 30 June 2021. The pilot also held first-class medical certificate issued by Indonesia DGCA which was valid until 3 September 2020. Both medical certificates stated limitation to wear corrective lenses.

The last line check and last proficiency check was performed on 12 March 2020.

The pilot flying experiences as follows:

Total hours	: 1,357 hours36 minutes
Total on type	: 185 hours 54 minutes
Last 90 days	: 90 hours30 minutes
Last 30 days	: 37 hours18 minutes
Last 7 days	: 8 hours30 minutes
Last 24 hours	: 4hours 24 minutes
This flight	: 6minutes

1.6 Aircraft Information

The aircraft manufactured by Quest Aircraft Company in 2009 in USA, with serial number 100-0026 and the type/model was Kodiak 100. The aircraft registered PK-MEC had Certificate of Airworthiness (C of A) valid until 11 February 2021 and Certificate of Registration (C of R) valid until 13 February 2021.

The aircraft had total hour of 4,707 hours 30 minutes and total cycle of 9,379 cycles. The last major inspection of “400-hour inspection” was performed on 10 February 2020, while the aircraft had 4,596 flight hours 36 minutes and 9,188 flight cycles. The last minor inspection of “100-hour inspection” was performed on 20 April 2020, while the aircraft had 4,694 flight hours 24 minutes and 9,365 flight cycles.

The engine installed in the aircraft was PT6A-34 manufactured by Pratt & Whitney Canada Corporation in Canada with serial number PCE-RB0441 with the total hour of 4,707 hours 30 minutes and 8,045 cycles since new.

The aircraft equipped with HC-E4N-3PY propellers model manufactured by Hartzell Propeller Incorporation in USA with serial number HH5113 and had the total hour of 4,393 hours 24 minutes since new.

According to the weight and balance document, the aircraft takeoff weight was 7,163 lbs, which include onboard fuel of 1,250 lbs.

The aircraft equipped with a Garmin G1000 Global Positioning System (GPS) which has capability of flight data logging. After the occurrence, the data of the Secure Disc (SD) card installed on the Garmin G1000 was successfully retrieved. The detail of the data retrieved from the GPS SD card will be included in the final report.

1.7 Meteorological Information

Weather information issued by BMKG or *Badan Meteorologi, Klimatologi dan Geofisika* (Bureau of Meteorology, Climatology, and Geophysics of Indonesia) Sentani Meteorological Station on 12 May 2020, are as follow:

Time	0600 LT	0630LT
Wind	Calm	170 / 2 KT
Visibility	9 KM	10 KM
Weather	-	-
Cloud ³	FEW 1,200 ft	FEW 1,200 ft
Temperature/ Dew point (°C)	25 / 24	26 / 24
QNH ⁴ (mb)	1009	1009
QFE ⁵ (mb)	1000	1000
Remarks	No significant	No significant

1.8 Aids to Navigation

The ground navigation aids at the Sentani Airport and the navigation equipment in the aircraft were reported operating normally during the day of the accident. Any significant

information will be included in the final report.

1.9 Communications

All communications between the 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 excerpt between ATS and the pilot will be included in the final report.

1.10 Aerodrome Information

Airport Name	:	Sentani International Airport
Airport Address	:	Jl. PLN Sentani, Jayapura, Papua
Airport Identification	:	WAJJ / DJJ
Airport Operator	:	PT. Angkasa Pura I
Coordinate	:	02°34' 37" S; 140°30' 58" E
Elevation	:	289 feet (88 metres)
Runway Direction	:	12 – 30
Runway Length	:	3,000 metres
Runway Width	:	45 metres
Surface	:	Asphalt

1.11 Flight Recorder

The aircraft was not equipped with a Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR). Neither recorder was required by current Indonesian civil aviation regulations for the type of the aircraft.

1.12 Wreckage and Impact Information

The aircraft wreckage was found in Sentani Lake, at coordinate 2°36'44.77" S; 140°30'46.84" E or approximately 3,300 metres from the end of runway 30 Sentani Airport.

The aircraft main wreckage recovered from the lake bed. The right wing from the root to the tip and the left outer wing were detached. The engine forward section from flange B up to the propeller detached.

1.13 Medical and Pathological Information

No medical or pathological examination conducted as result of this occurrence.

1.14 Fire

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

1.15 Survival Aspect

The controller reported the situation to his Operation Manager. The Manager Operation of AirNav Sentani Branch office coordinates with Jayapura SAR Office about the accident.

The SAR team found the aircraft at coordinate 2°36'44.77" S; 140°30'46.84" E.

The rescue divers found the pilot was strapped on the left seat secured by the seatbelt.

About 0831 LT, the SAR team evacuated the pilot from the water and transported to a hospital in Jayapura.

1.16 Test and research

The investigation will conduct the test to the aircraft engine in Pratt and Whitney Canada facility. The result of the test will be included in the final report.

Should any other test and research perform during the investigation, will be included in the final report.

1.17 Organizational and Management Information

1.17.1 Aircraft Operator

Aircraft Owner	:	Mission Aviation Fellowship, Indonesia
Aircraft Operator	:	Mission Aviation Fellowship, Indonesia
Address	:	Green Ville Tahap III, Blok Y2 Tanjung Duren Barat, Jakarta Barat, Indonesia
Operator Certificate	:	OC 91-004

Mission Aviation Fellowship (MAF) is a non-profit organization serves domestic routes for both passenger and cargo flight in Kalimantan and Papua area. The MAF operates several aircraft consisted of Cessna-208, Cessna-208B, and Quest Kodiak-100.

1.17.2 Air Navigation Provider

The air traffic services in Sentani are provided by AirNav Indonesia branch office Sentani. Relevant information related to the air navigation provider will be included in the final report.

1.18 Additional Information

The investigation involved the National Transportation Safety Board (NTSB) of the

United States of America as State of design and State of manufacturer of the aircraft and the Transport Safety Bureau (TSB) of Canada as State of manufacturer of the engine, and have assigned accredited representatives according to ICAO Annex 13. The aircraft manufacturer and engine manufacturer have assigned advisers to participate in the investigation.

Because of the travel limitation during the Corona virus (Covid-19) pandemic, the investigator travel to the accident site was limited and affected the data collection.

The investigation is continuing and will collect information include but not limited to the following:

- Relevant aircraft operator manuals and procedures,
- Crew training,
- Organization information,
- Result of test and research,
- GPS data.

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 FINDINGS⁶

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

1. The aircraft had a valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R).
2. The aircraft was airworthy prior to the occurrence and was operated within the weight and balance envelope.
3. The pilot held valid licenses and medical certificates.
4. The flight was a cargo flight from Sentani Airport, Jayapura with intended destination of Mamit Airstrip, Tolikara, Papua at radial 241 from Sentani.
5. The aircraft departed from Sentani Airport at 0627 LT, on daylight condition. One minute after takeoff, the Jayapura Radar controller heard the pilot of PK-MEC declared “MAYDAY”. The Jayapura Radar controller tried to contact pilot of PK-MEC but no answered.
6. The aircraft wreckage was found in Sentani Lake, approximates 3,300 meters from the end of runway 30 of Sentani Airport.
7. The aircraft main wreckage recovered from the lake bed. The right wing from the root to the tip and the left outer wing were detached. The engine forward section from flange B up to the propeller detached. Most of the aircraft component have been successfully recovered.

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 SAFETYACTION

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

4 SAFETY RECOMMENDATIONS

The *Komite Nasional Keselamatan Transportasi* has not issued 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.

KOMITE NASIONAL KESELAMATAN TRANSPORTASI REPUBLIK INDONESIA

Jl. Medan Merdeka Timur No.5 Jakarta 10110 INDONESIA

Phone : (021) 351 7606 / 384 7601 Fax : (021) 351 7606 Call Center : 0812 12 655 155

website 1 : <http://knkt.dephub.go.id/webknkt/> website 2 : <http://knkt.dephub.go.id/knkt/>

email : knkt@dephub.go.id