



**KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA**

PRELIMINARY

KNKT.23.05.06.04

Aircraft Accident Investigation Report

PT Nasional Global Aviasi

Cessna 208B; PK-NGA

Fenteheik Airstrip, Papua

Republic of Indonesia

11 May 2023

2023

This Preliminary Report is 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 investigation carried out by the KNKT in accordance with Annex 13 to the Convention on International Civil Aviation, 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, 5 September 2023

**KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
CHAIRMAN**



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ABBREVIATIONS AND DEFINITIONS

AOC	:	Air Operator Certificate
C of A	:	Certificate of Airworthiness
C of R	:	Certificate of Registration
CASR	:	Civil Aviation Safety Regulation
CPL	:	Commercial Pilot License
CVR	:	Cockpit Voice Recorder
DGCA	:	Directorate General of Civil Aviation
FDR	:	Flight Data Recorder
fpm	:	feet per minute
GPS	:	Global Positioning System
IAS	:	Indicated Airspeed
KNKT	:	<i>Komite Nasional Keselamatan Transportasi</i>
LT	:	Local Time
OM	:	Operations Manual
PF	:	Pilot Flying
PIC	:	Pilot in Command
PM	:	Pilot Monitoring
POH	:	Pilot's Operating Handbook
SD	:	Secure Digital
SIC	:	Second in Command
SSB	:	Single-sideband
TIBA	:	Traffic Information Broadcast by Aircraft
VHF	:	Very High Frequency

SYNOPSIS

On 11 May 2023, a Cessna 208B aircraft, registered PK-NGA was operated by PT. Nasional Global Aviassi (NGA) for commercial non-scheduled passenger and cargo flight at Papua area.

At 1039 LT, on daylight condition, the aircraft departed from Dekai to Fenteheik following a flight plan route stored in the aircraft Global Positioning System (GPS). The aircraft flew at a cruising altitude of 11,700 feet. On board the aircraft were two pilots and 805 kilograms of cargo. The Pilot in Command (PIC) acted as Pilot Flying (PF) and the Second in Command (SIC) acted as Pilot Monitoring (PM).

The aircraft entered Key Point of Fenteheik on landing configuration with the flaps fully extended and IAS of 80 knots. The aircraft passed Key Point at altitude of 6,400 feet. The visibility was good and the wind was calm.

Both of pilots were aware that the aircraft was still too high as the route guidance published by the company requires pilots to pass the Key Point at an altitude of 6,100 feet. The PIC considered that it was not possible to abort the landing approach after passed the Key Point due to the high terrain surrounding the airstrip.

At 11:04:22 LT, the aircraft touched down Runway 17. During the touchdown, rate of descent recorded about 1,200 fpm, the IAS was 85 knots, and the aircraft pitch was 0.57°. The aircraft bounced two times and during the third touchdown the nose gear was collapsed. The aircraft stopped at approximately 352 meters from the beginning of Runway 17. Both pilots evacuated by themselves from the aircraft.

At the time of issuing this investigation report, the KNKT had been informed of safety actions resulting from this occurrence taken by the aircraft operator. The KNKT acknowledged the safety actions taken by the aircraft operator and considered that the corrective safety actions were relevant to improve safety. Therefore, the KNKT did not issue safety recommendations.

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

1 FACTUAL INFORMATION

1.1 History of the Flight

On 11 May 2023, a Cessna 208B aircraft, registered PK-NGA was operated by PT. Nasional Global Aviasi (NGA) for commercial non-scheduled passenger and cargo flight at Papua area. The aircraft was operated by two pilots, and the flight planned for the aircraft and the pilots for the day were to conduct 12 flight sectors and the occurrence flight was on 11th sector.

At 2005 UTC (0505 LT¹), the pilots arrived at the airport in Dekai to start their flight duties and the aircraft departed from Dekai for the first flight sector at 0616 LT. The first 10 sectors of the flights were uneventful.

At 1026 LT, the aircraft landed at Dekai to continue the 11th flight sector to Fenteheik. Prior to the departure, both pilots received information conducted preflight briefing. During the briefing, the pilots were advised that the weather at Fenteheik was good according to local personnel at Fenteheik and the other pilots who previously flew to Fenteheik.

At 1039 LT, on daylight condition, the aircraft departed from Dekai to Fenteheik following a flight plan route stored in the aircraft Global Positioning System (GPS)². The stored flight plan route to Fenteheik following the GPS waypoints of Dekai – SGAP – HOL – NIN – ANGPZ – Fenteheik (see figure 1).

On board the aircraft were two pilots and 805 kilograms of cargo. The Pilot in Command (PIC) acted as Pilot Flying (PF) and the Second in Command (SIC) acted as Pilot Monitoring (PM).

When the aircraft flew over GPS Waypoint ANGPZ, which was about 5 Nm from Fenteheik, the aircraft started to descend from the cruising altitude. The aircraft then flew towards left downwind of Runway 17.

According to the flight data logging recorded in the aircraft GPS, at 1103 LT, the aircraft turned to the base leg of Runway 17 and passed an altitude of 6,700 feet (about 1,100 feet above the airstrip elevation). At this time, the Indicated Airspeed (IAS) of the aircraft recorded 116 knots and the value continued reducing. The SIC advised the PIC that the aircraft altitude was too high and was acknowledged.

About 30 seconds later, the aircraft turned to the final Runway 17 and passed altitude of 6,500 feet (about 900 feet above the airstrip elevation). At this time the IAS reduced to 87 knots. The SIC readvised the PIC that the aircraft altitude was too high and was acknowledged. The rate of descend of the aircraft then recorded an increased value.. The pilots recalled that when the aircraft on final, the visibility was good and the wind was calm.

¹ The 24-hours clock in Local Time (LT) is used in this report to describe the local time as specific events occurred. Local time is Universal Time Coordinated (UTC) +9 hours.

² The aircraft was equipped with GPS which has capability to create, edit and store of a waypoint that can be used for point-to-point navigation.

The aircraft entered Key Point of Fenteheik³ on landing configuration with the flaps fully extended and IAS of 80 knots. The aircraft passed Key Point at altitude of 6,400 feet.

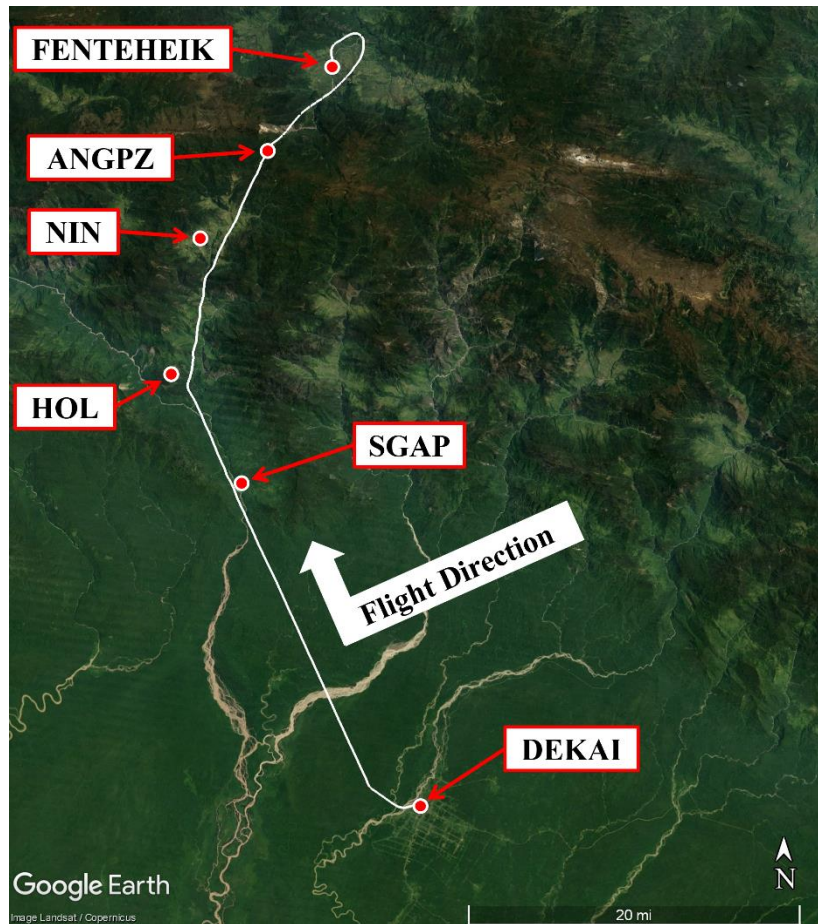


Figure 1: The occurrence flight track (white line) based on the GPS flight data logging

Both pilots were aware that the aircraft was still too high as the route guidance published by the company requires pilots to pass the Key Point at an altitude of 6,100 feet. The PIC considered that it was not possible to abort the landing approach after passed the Key Point due to the high terrain surrounding the airstrip.

At 11:04:06 LT, about 0.5 Nm from the airstrip, the aircraft passed altitude of 5,900 feet (about 300 feet above the airstrip elevation) with the IAS of 85 knots and rate of descent was about 1,600 fpm. This recorded rate of descend was the highest value prior to the touchdown.

At 11:04:22 LT, the aircraft touched down Runway 17. During the touchdown, rate of descend recorded about 1,200 fpm, the IAS was recorded 85 knots, and the aircraft pitch was 0.57° . The aircraft bounced two times and during the third touchdown the nose gear was collapsed.

³ Key Point of Fenteheik is located on final Runway 17 about 1 Nm from Fenteheik.

The aircraft stopped on the runway approximately 350 meters from the beginning of Runway 17. Both pilots evacuated by themselves from the aircraft.

1.2 Damage to Aircraft

The aircraft was substantially damaged.

1.3 Personnel Information

1.3.1 Pilot in Command

The PIC was 42 years old Indonesian who held valid Commercial Pilot License (CPL) and qualified as a Cessna 208B pilot. The PIC also held a valid First-Class medical certificate with medical limitations to possess glasses that correct for near vision and multi-pilot operations.

The PIC joined the company in 2021 and currently assigned as the chief pilot at the company.

On 27 August 2021, the PIC passed a route qualification check for Fenteheik with remarks of to be able to land with maximum wind of 10 knots. In total, the PIC had flown to Fenteheik as PF approximately 70 times.

The last proficiency check for the PIC was conducted on 20 March 2023 and the result was satisfactory.

The PIC had total flying hours of 6,045 hours, including 4,009 hours on Cessna 208B aircraft. At the day of the occurrence, the PIC had flown for 2.5 hours, excluding the occurrence flight.

1.3.2 Second in Command

The SIC was 33 years old Indonesian who held valid Commercial Pilot License (CPL) and qualified as a Cessna 208B pilot. The SIC also held valid First-Class medical certificate with medical limitations to wear corrective lenses.

The last proficiency check for the SIC was conducted on 23 July 2022, the result was satisfactory.

The SIC had total flying hours of 1,680 hours, including 1,430 hours on Cessna 208B aircraft. At the day of the occurrence, the PIC had flown for 2.5 hours, excluding the occurrence flight.

1.4 Aircraft Information

The Cessna 208B aircraft with serial number of 208B2338 was manufactured in 2012 by Cessna Aircraft Company, in United States of America. The aircraft was registered as PK-NGA and had valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R).

The aircraft had total hours since new of 6,241.7 hours and the total cycles since new of 10,585 cycles. The engine installed on the aircraft was PT6A-114A, manufactured by Pratt & Whitney. The total time of the engine since new was 6,241.7 hours.

Prior to the occurrence flight, there was no record or report of aircraft system malfunction.

1.5 Weight and Balance

According to the weight and balance sheet of the occurrence flight, the estimated takeoff weight of the aircraft was 7,999 lbs. (maximum of 8,750 lbs.) and the landing weight was estimated at 7,801 lbs. (maximum of 8,500 lbs.). The aircraft was operated within the weight and balance envelope.

1.6 Meteorological Information

The meteorological information provider was not available at Fenteheik, and pilots relied on their visual observation or other pilot observation report. Pilots may also obtain visual observation report from the local resident by using telecommunication device prior to the flight.

1.7 Aids to Navigation

No ground-based navigation aid was provided at Fenteheik.

The aircraft was equipped with a GPS (Global Positioning System) which has the capability to provide navigation data. The GPS allows pilots to create, edit and store several flight plans with waypoints. The GPS can use direct point-to-point navigation to provide guidance from a certain point or position to another point on the flight plan.

The aircraft operator developed Operation Manual Part C (OM-C) which contained route and airport information for internal use. The document included a route guidance to fly to Fenteheik as follow:

1.7. DEKAI-FENTEHEIK

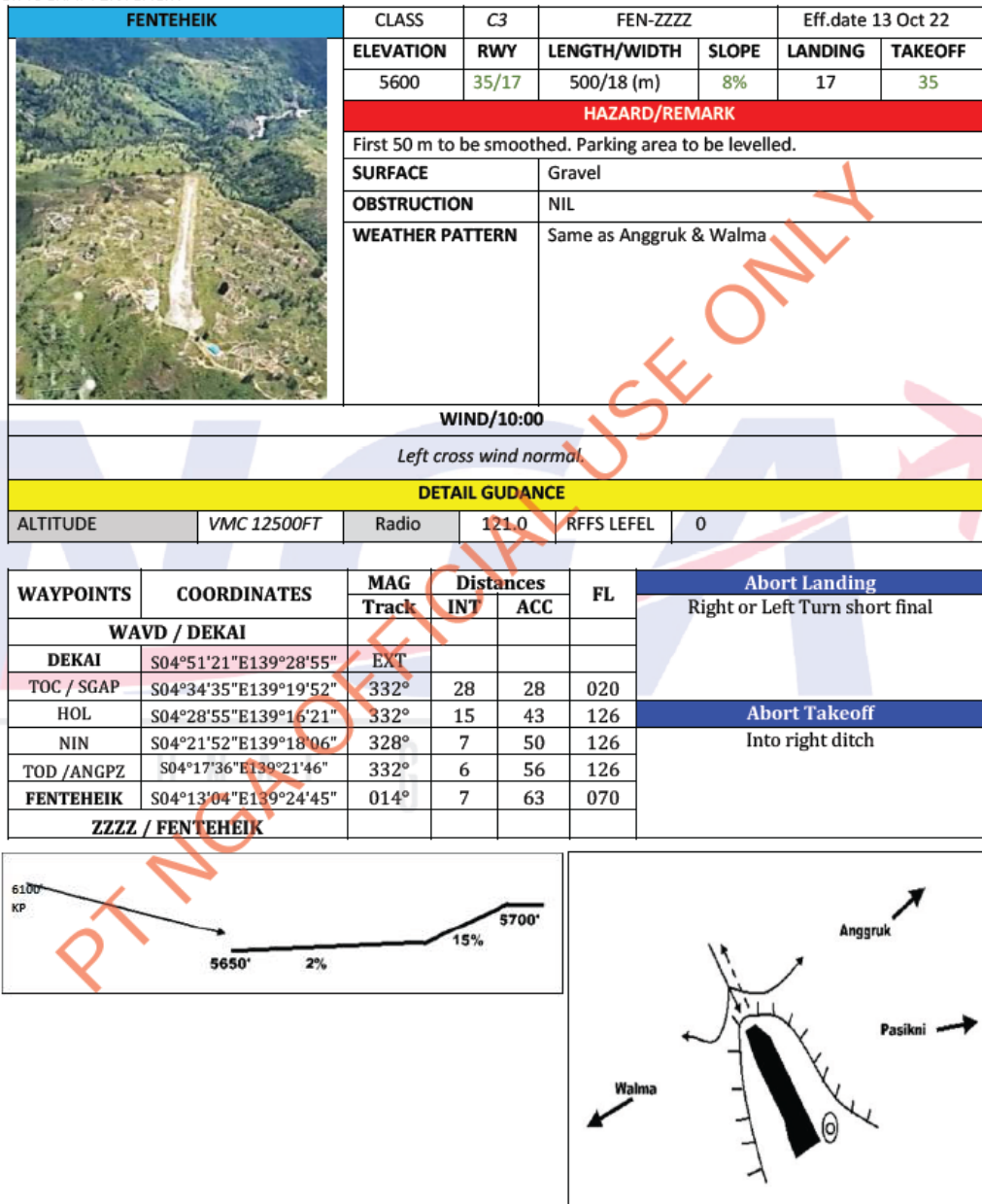


Figure 2: Route guidance document for Fenteheik

1.8 Communications

The aircraft was equipped with Single-sideband (SSB) radio used for Very High Frequency (VHF) aircraft communication.

The pilot used the VHF radios for routine communication with air traffic control and when broadcasting message in the Traffic Information Broadcast by Aircraft (TIBA) frequency. On the day of the accident, the VHF radios were serviceable.

1.9 Aerodrome Information

The Fenteheik airstrip was located on a mountainous area on coordinate 04°13.07'S 139°24.75'E with elevation of 5,600 feet. The airstrip has a gravel-surfaced runway with 8% upslope with designation number of 17-35. The dimensions of the runway were 500 meters in length and 18 meters width.

1.10 Flight Recorders

The aircraft was not fitted with a Flight Data Recorder (FDR) or Cockpit Voice Recorder (CVR). Neither recorder was required by applicable Indonesian aviation regulation.

The aircraft was equipped with Garmin G1000 GPS, which has the capability of flight data logging. The GPS recorded several parameters including time, coordinate, GPS altitude, indicated airspeed, vertical speed, ground speed, pitch attitude angle and roll attitude angle. All these recorded parameters are stored on a Secure Digital (SD) data card which inserts into the top card slot of the Multi-Function Display (MFD).

The SD card of the aircraft was transported to *Komite Nasional Keselamatan Transportasi* (KNKT) recorder facility for data download processing. The SD card data was successfully retrieved and found recorded several aircraft flights including the occurrence flight.

1.11 Wreckage and Impact Information

Several touchdown marks were found on the runway. The first touchdown mark was found about 90 meters from beginning of Runway 17. The second touchdown mark was found about 165 meters ahead of the first touchdown mark, followed by the third touchdown mark that found about 40 meters ahead of the second touchdown mark. The final position of the aircraft was about 55 meters from the last touchdown mark or approximately 350 meters from the beginning of Runway 17.

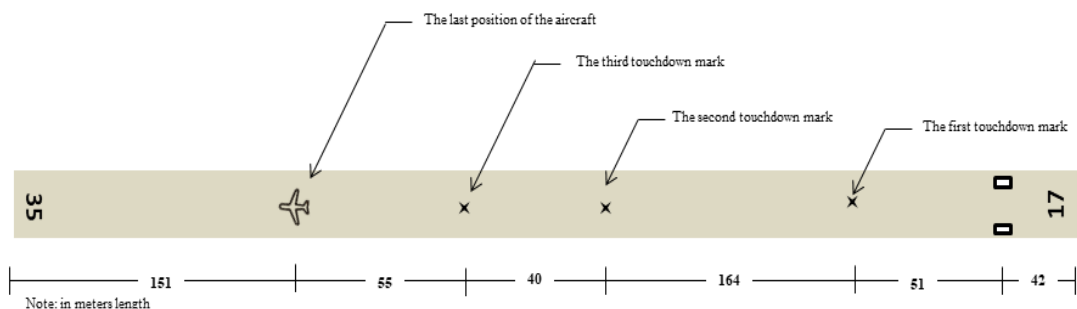


Figure 3: The illustration of the touchdown marks on the runway

Based on the visual examination of the aircraft, the damage on the aircraft were as follows:

- The propeller hub was cracked.
- Three propeller blades bent and displaced from the hub.

- The nose landing gear was collapsed, nose gear drag link spring was broken.
- The cargo pods were torn and broken.



Figure 4: The aircraft condition after stopped

1.12 Medical and Pathological Information

Medical and pathological information were not available at the time of the issuance of this report. Should any medical and/or pathological information be obtained during this investigation that is relevant to this investigation, it will be included in the final report.

1.13 Fire

There was no evidence of in-flight or post-impact fire.

1.14 Tests and Research

Test and research information were not available at the time of the issuance of this report. Should any test and research information be obtained during this investigation that is relevant to this investigation, it will be included in the final report.

1.15 Organizational and Management Information

1.15.1 Aircraft Operator

The aircraft was operated by PT. Nasional Global Aviasi (NGA) which had valid Air Operator Certificate (AOC) number 135-070. PT. Nasional Global Aviasi is authorized to conduct on demand airplanes operations, on carriage of passenger and/ or cargo, aerial survey and others, within Republic of Indonesia under Civil Aviation Safety Regulation (CASR) Part 135.

1.15.1.1 Stabilized Approach Procedure

The aircraft operator Operation Manual Part A (OM-A) subchapter 10.8.1 described stabilized approach criteria as follow:

1. *The aircraft is on the correct flight path;*
2. *Only small changes in heading/ pitch are required to maintain the correct flight path;*
3. *The aircraft speed is not more than VREF+20 knots indicated airspeed and not less than VREF;*
4. *The aircraft is in the correct landing configuration;*
5. *Sink rate is no greater than 1,000 feet per minute; if an approach requires a sink rate greater than 1,000 feet per minute, a special briefing should be conducted;*
6. *Power setting is appropriate for the aircraft configuration and is not below the minimum*
7. *power for approach as defined by the aircraft operating manual;*
8. *All briefing and checklists have been conducted;*
9. *Specific types of approaches are stabilized if they also full fill the following:*
 - a. *instrument landing system (ILS) approaches must be flown within one dot of the glide slope and localizer; during a circling approach, wings should be level on final when the aircraft reaches 300 feet above airport elevation;*
 - b. *Unique approach procedures or abnormal conditions requiring a deviation from the above elements of a stabilized approach require a special briefing.*
 - c. *An approach that becomes un-stabilized below 500 feet above airport elevation in VMC requires an IMMEDIATE GO-AROUND.*

Note:

DO NOT ATTEMPT TO LAND FROM AN UNSTABLE APPROACH AN APPROACH THAT BECOMES UNSTABILIZED BELOW 1,000 FEET AFE IN IMC OR BELOW 500 FEET AFE IN VMC REQUIRES AN IMMEDIATE GOAROUND

1.16 Additional Information

The 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.

1.17 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 FINDINGS

The 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.

In this occurrence, the KNKT identified several findings as follows:

1. The aircraft had a valid Certificate of Airworthiness (C of A) and a valid Certificate of Registration (C of R). Prior to the occurrence flight, there was no record or report of aircraft system malfunction.
2. During the occurrence flight, the aircraft was operated within the weight and balance envelope.
3. Both pilots held valid Commercial Pilot Licenses (CPL) and qualified as Cessna 208B pilots.
4. The Pilot in Command (PIC) held a valid First-Class medical certificate with medical limitation to possess glasses that correct for near vision and multi-pilot operations. The Second in Command (SIC) held valid First-Class medical certificate with medical limitation to wear corrective lenses.
5. The PIC joined the company in 2021 and currently assigned as the chief pilot at the company.
6. The PIC passed the route qualification check for Fenteheik in 2021 and had flown to Fenteheik as Pilot Flying (PF) approximately 70 times.
7. At the day of the occurrence, prior to the occurrence flight, both pilots had flown for 2.5 hours and 10 landings.
8. During the occurrence flight, the PIC acted as Pilot Flying (PF) and the SIC acted as Pilot Monitoring (PM).
9. The meteorological information provider was not available at Fenteheik, and pilot relied on their visual observation or other pilot observation report. Pilots may also obtain visual observation report from the local resident by using telecommunication device prior to the flight.
10. The pilots recalled that when the aircraft on final, the visibility was good, and the wind was calm.
11. No ground-based navigation aid was provided at Fenteheik.
12. During the landing approach, the SIC advised the PIC that the aircraft was too high and was acknowledged by the PIC.
13. The aircraft operator Operation Manual Part C (OM-C) determined a Key Point for the landing approach at Fenteheik which required pilot to pass the Key Point at altitude of 6,100 feet. The Key Point was located on final Runway 17 about 1 Nm from Fenteheik.

14. When the aircraft passed altitude of 5,900 feet (about 300 feet above airstrip elevation), the rate of descent recorded 1,600 feet per minute (fpm).
15. The aircraft entered the Key Point at altitude of 6,400 feet on landing configuration with the flaps fully extended and Indicated Air Speed (IAS) of 80 knots.
16. Both of pilots were aware that the aircraft was still too high as the route guidance published by the company requires pilots to pass the Key Point at an altitude of 6,100 feet. The PIC considered that it was not possible to abort the landing approach after passed the Key Point due to the high terrain surrounding the airstrip.
17. The aircraft touched down Runway 17 with rate of descent about 1,200 fpm, IAS recorded 85 knots and the aircraft pitch was 0.57° . The aircraft then bounced two times and during the third touchdown, the nose gear was collapsed.
18. The route guidance for Fenteheik developed by the aircraft operator described that pilot might abort the landing approach on short final by performing right or left maneuver.
19. The aircraft operator Operation Manual Part A (OM-A) described a sink rate (rate of descent) greater than 1,000 feet per minute without a special briefing as an unstabilized approach. The stabilized approach procedure required pilot to cancel the landing approach and make immediate go around if experiences unstabilized approach during visual meteorological condition at altitude below 500 feet.

3 SAFETY ACTION

At the time of issuing this Preliminary Report, the KNKT had been informed of safety actions resulting from this occurrence taken by the related parties.

3.1 PT Nasional Global Aviasi (NGA)

NGA conducted several safety actions as follows:

On 16 May 2023, amended the Operations Manual Part C (OM-C) which contained route guidance for Fenteheik. The amended guidance included the revision of abort landing maneuver. Pilot must perform the abort landing maneuver before the Key Point. The amended procedure then had been shared to all pilot within the company.

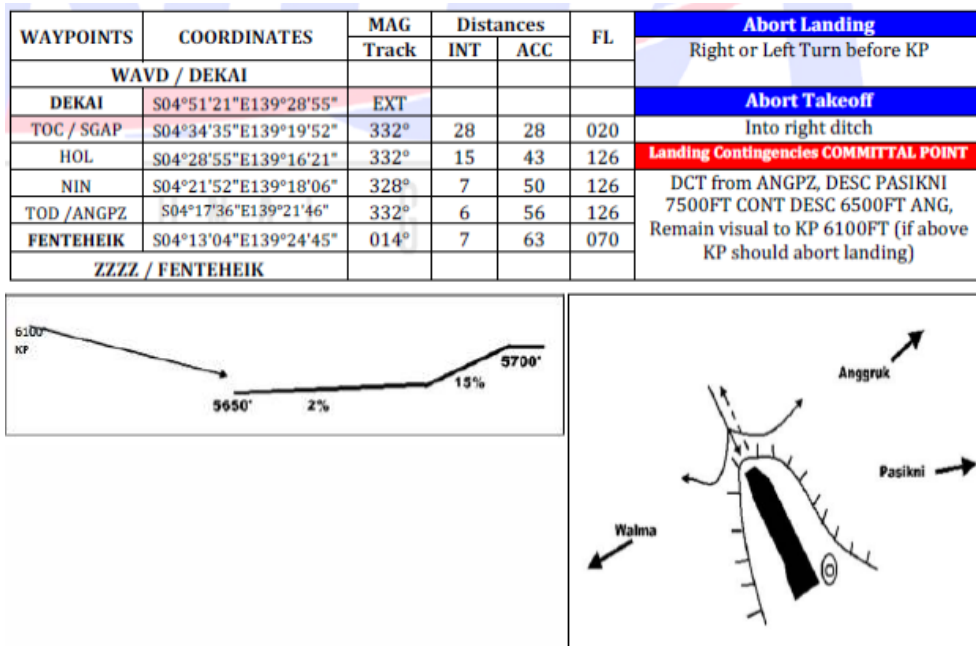


Figure 5: The updated Fenteheik route guidance

On 19 May 2023, published notice to all pilot which included reminder for pilot:

- to implement the stabilized approach procedure
- to review the company route guidance prior to the flight and implement the described procedure including to follow the altitude restriction at a Key Point.

4 SAFETY RECOMMENDATIONS

The KNKT acknowledged the safety actions taken by the aircraft operator and considered that the corrective safety actions were relevant to improve safety. Therefore, the KNKT did not issue safety recommendations.

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