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KOMITE NASIONAL KESELAMATAN TRANSPORTASI

Aircraft Serious Incident Investigation Report

**PT. Enggang Air Services
Grand Caravan C208B; PK-RSP
Nalca Airstrip, Papua
Republic of Indonesia
14 November 2013**



KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA
2015



This Final Report was produced by the Komite Nasional Keselamatan Transportasi (KNKT), 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 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).

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

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ABBREVIATIONS AND DEFINITIONS

| | | |
|------------|---|--|
| AGL | : | Above Ground Level |
| ALAR | : | Approach and landing accident reduction |
| ATPL | : | Air Transport Pilot License |
| ATS | : | Air Traffic Service |
| °C | : | Degrees Celsius |
| Cm | : | Centimetre (S) |
| COM | : | Company Operator Manual |
| DFDR | : | Digital Flight Data Recorder |
| DGCA | : | Directorate General Civil Aviation |
| EGPWS | : | Enhanced Ground Proximity Warning Systems |
| FOO | : | Flight Operation Officer |
| ICAO | : | International Civil Aviation Organization |
| IIC | : | Investigator In Charge |
| KNKT/ NTSC | : | Komite Nasional Keselamatan Transportasi/ National Transportation Safety Committee |
| LT | : | Local time |
| Nm | : | Nautical mile |
| QNH | : | Height above mean sea level based on local station pressure |
| SMS | : | Safety Management System |
| S/N | : | Serial Number |
| UTC | : | Universal Time Coordinate |
| VFR | : | Visual Flight Rules |

INTRODUCTION

SYNOPSIS

Based on the Komite Nasional Keselamatan Transportasi (KNKT) Policies and Procedures Manual, reporting for a serious incident can be published in short report format. However, the purpose of the investigation to determine the contributing factor and improve safety is maintained.

On 14 November 2013 an aircraft Cessna C208B, registration PK-RSP was being operated by PT. Enggang Air Service with unscheduled flight route from Sentani Airport to Nalca Airstrip.

The aircraft departed from Sentani at 2206 UTC to Nalca Airstrip which is about south of Sentani Airport for duration of 50 minutes flight time and cruised at flight altitude of 10,000 feet. In this flight, the pilot was conducting a Visual Flight Rule (VFR). As from the interview with the pilot, he stated that this flight was the first flight experience from Sentani to Nalca airstrip.

There were 10 person on board which was consisting of one pilot and nine passengers.

The weather en route to and over the Nalca airstrip was fine and the wind was calm. There were no any abnormalities and or recorded during the flight. The pilot flew the aircraft to overhead the airstrip for observing the runway then to join the downwind of runway 24.

At 22:56 the aircraft touched down runway 24 at landing speed about 78 knots and slightly on the right of the center line. At approximately 20 meters before the parking area which was on the right side of the runway, the right main wheel trapped and stopped with right wing slightly down and right wheel concealed in the ground in about one meter.

After the aircraft stopped the pilot shutdown the engine in normal procedure, and helped the passengers to disembark the aircraft from left side of aircraft. No persons injured.

The aircraft evacuated from the runway and placed at west and safe area out of the air strip.

The investigation concluded that the absence of airstrip information had made the pilot not aware of the runway surface condition that might due to improper of risk management in seeking the risk to identify, analyze, assess and control the risks.

~~As result from the investigation, the KNKT had several safety recommendation addressed to PT. Enggang Air Service and the Directorate General of Civil Aviation.~~

1 FACTUAL INFORMATION

History of the Flight

On 14 November 2013 a Cessna C208B aircraft, registration PK-RSP was being operated by PT Enggang Air Service for unscheduled passenger flight from Sentani Airport to Nalca Airstrip Papua. The flight was conducting under Visual Flight Rule (VFR).

The aircraft departed from Sentani at 2206 UTC (0706 LT) which was estimated to take 50 minutes of flight time and cruise altitude of 10,000 feet. During the interview, the pilot stated that this flight was the first flight from Sentani to Nalca Airstrip.

On board in this flight were 10 people consisted of one pilot and nine passengers.



Figure 1: Archive photo of Cessna C208B

The weather en route to and over the Nalca airstrip was fine and the wind was calm. There was no abnormality reported and or recorded during the flight. The pilot commenced the descend at about 26 Nm to Nalca and planned to fly overhead to observe the airstrip condition prior to landing.

When flying overhead the pilot observed that the runway was clear and flew the aircraft to join the downwind of runway 24, and join the final check point at 5300 feet (182 feet AGL). On final the aircraft has been configured with flap full down and was on centerline.

At 2256 UTC (0756 LT) the aircraft touched down runway 24 on landing speed about 78 knots and rolled normal with slightly right of the center runway. At approximately 20 meters before the parking area which was located on the right of the runway, the right main wheel trapped and the aircraft stopped with right wing slightly down and right wheel concealed on the ground.



Figure 2: Shows the flight track and the right wheel concealed on the runway

After the aircraft stopped the pilot shutdown the engine in normal procedure, and assisted the passengers to disembark the aircraft from left side of aircraft. No person injured.

The aircraft was evacuated from the runway and moved to clear area at the west side of the airstrip.

Information from the local villagers stated that one day before the occurrence the area was rain, and there was no information to the pilot related to the condition of the airstrip.

Damages found on the aircraft were the propeller blades were bent, nose landing gear misalign, the engine cowling bottom shifted and the left engine mounting bent.



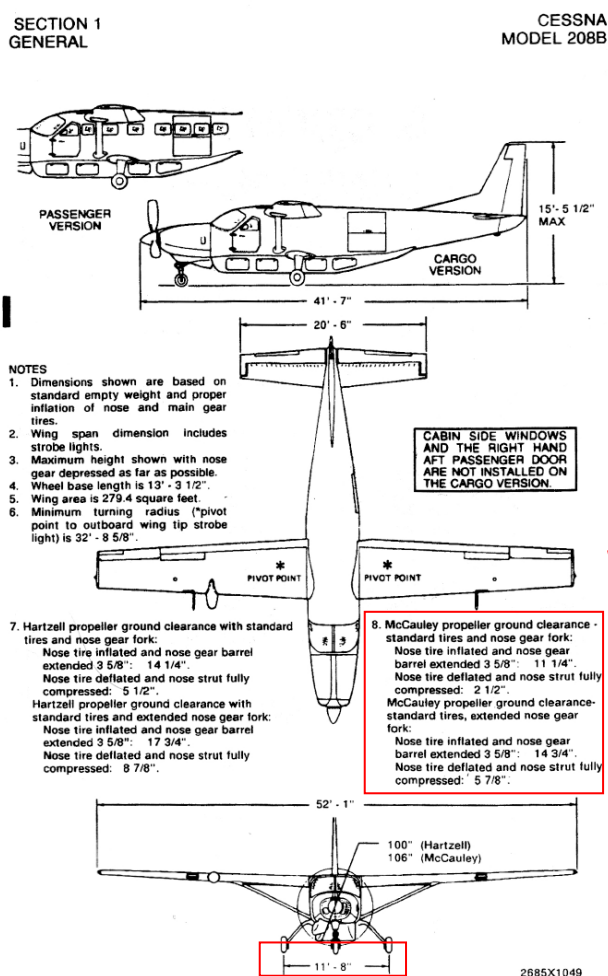
Figure 3: Shows the aircraft and the bend of engine mount in the circle

The pilot was 57 years, joined the company since 1 October 2013, held current ATP License issued on 16 October 2000. He held current C208 type rating and the last proficiency check was performed at 21 January 2013, and his medical certificate valid up to 31 January 2014.

The pilot flight experience according to the document, recorded total flying hours of 16,961 hours 2 minutes, total on type of 1,568 hours 3 minutes, the flight hours on the last 90 days was 32 hours 7 minutes. The average flight hour monthly was 35 hours.

The aircraft information is described as follow;

- The aircraft has serial number 2254, has recorded flight time since new was 556 hours 32 minutes with total of 607 cycles.
- The aircraft installed an engine type/model PT6A-114A manufacturer by Pratt & Whitney with the serial number PCE-PC1789. The engine has recorded total time 556 Hours 32 minutes since new and 607 cycles.
- The propeller install was McCauley Propeller.
- The aircraft actual take-off weight was 8977 lbs and the actual landing weight was 8727 lbs.



- McCauley Propeller Ground Clearance**
- The propeller ground clearance standard tires and nose gear fork: nose tire inflated and nose gear barrel extended 3 5/8": 11 1/4 "
 - Nose tire deflated and nose strut fully compressed: 2 1/2 "
 - propeller ground clearance standard tires, extended nose gear fork: Nose tire inflated 3 5/8 ": 14 3/4 "
 - Nose tire deflated and nose strut fully compressed: 5 7/8 "

Figure 1-1. Three View

1-2 Original Issue - 1 May 1990
Revision 12 - 1 November 1995
For Training Purposes Only

Figure 4: Shows the aircraft dimension based on empty weight and proper inflation of nose and main gear tires (taken from Cessna 208B manual)

The propeller ground clearance and distance between main wheels is specified on the red boxes.

Refers to the data published on the Ministry of Transportation website (dephup.go.id), the Nalca Airstrip located on elevation 5188 feet, at coordinate 04°21'48'' S 139° 50' 07''E. The runway has upslope of 9 %, direction was 16-24 with the length of 363 meters and width of 18 meters with grass surface.

The photographic evidences as shown in the figures below indicated the right wheel mark found on the runway and the aircraft after evacuated (figure 6) and also shows the left wings slightly up (figure 5).



Figure 5: Shows the last position



Figure 6: Aircraft position after evacuated

PT.Enggang Air Service head office located at Halim Perdanakusuma terminal building number A14 and held a certificate number AOC/135-045. The operator operated several types of aircraft including Cessna Caravan, executive jets and helicopter.

The operator has Company Operation Manual and Safety Management System Manuals as required and approved by the DGCA.

Some relevant quotations from the operator manuals are as follows;

Company Operation Manual (COM)

3.2.2. Responsibility for Operational Control

Overall responsibility for operational control rests with the Operations Manager. The PIC and the FOO or Operations Manager are jointly responsible for the pre-flight planning, delay, and dispatch release of a flight in compliance with the regulations and operations specifications.

The Operations Manager or FOO is responsible for:

- 1. Monitoring the progress of each flight;*
- 2. Issuing necessary information for the safety of the flight;*
- 3. Cancelling or re-dispatching a flight if, in his/her opinion or the opinion of the PIC, the flight cannot operate or continue to operate safely as planned or released; and*
- 4. Immediately informing the PIC of changing weather phenomena, airport, platform or heliport suitability or any other condition that would affect the safety of flight.*

Each PIC of an aircraft is, during flight time, in command of the aircraft, crew, passengers and other persons onboard and is responsible for the safety of the passengers, crewmembers, cargo, and aircraft.

Each PIC has full control and authority in the operation of the aircraft, without limitation, over other crewmembers and their duties during flight time, whether or not he/she holds valid certificates authorizing him/her to perform the duties of those crewmembers.

No pilot may operate an aircraft in a careless or reckless manner so as to endanger life or property.

Safety Management System Manual

Chapter 9 - Hazard Identification and Risk Assessment (HIRA)

Risk Management can be defined as the identification, analysis and economic elimination, and/or control to an acceptable level, those risks that can threaten the assets or earning capacity of an enterprise, in this case, a commercial air charter. The risk management process seeks to identify, analyze, assess and control the risks incurred in airline operations so that the highest standard of safety can be achieved. It must be accepted that absolute safety is unachievable, but reasonable safety can be achieved across the spectrum of the operation. If the Safety Management System outlined in this handbook is adopted and the methods diligently applied, the hazards and risks associated with commercial air charter operations can be controlled.

The dictionary defines the word 'risk' variously as:

- 1. A hazard, danger, chance of loss or injury;*
- 2. The degree of probability of loss;*
- 3. A person, object or factor likely to cause loss or danger;*
- 4. To expose to danger*
- 5. To incur the chance of an unfortunate consequence by some action.*

And 'hazard' is defined as:

- 1. A condition that has the potential to cause harm;*

2 ANALYSIS

The analysis will discuss the relevant safety issues related to the serious incident of a Cessna C208B on 14 November 2013, registered PK-RSP at Nalca Airstrip Papua.

The analysis will therefore discuss safety on the following issues:

- Airstrip data and information
- Propeller damage

Airstrip data and Information

On normal preparation prior to a flight, the pilot should be provided with the relevant information to conduct a safe flight includes the aerodrome data, weather, aircraft condition etc. Referred to the operator COM, overall responsibility for operational control rests with the Operations Manager. The PIC and the FOO as representatives of Operations Manager are jointly responsible for the pre-flight planning. The FOO is also responsible for monitoring the progress of each flight and issuing necessary information for the safety of the flight.

The operator SMS manual on the hazard identification stated, informing that the Risk Management can be defined as the identification, analysis and economic elimination, and/or control to an acceptable level, those risks that can threaten the assets or earning capacity of an enterprise. The risk management process seeks to identify, analyse, assess and control the risks incurred in airline operations so that the highest standard of safety can be achieved. It must be accepted that absolute safety is unachievable, but reasonable safety can be achieved across the spectrum of the operation.

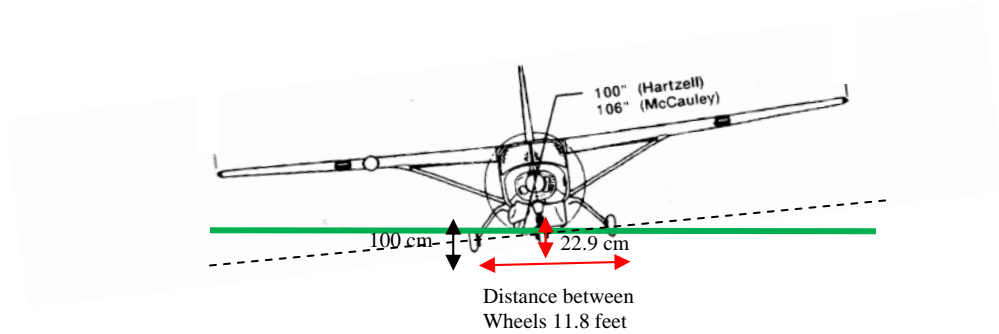
Investigation revealed information that the pilot was not provided with information that a day before the occurrence rain fell on the airport area which may affect to the condition of the runway surface at Nalca Airstrip. In addition, this flight was the first flight for the pilot to Nalca Airstrip.

Therefore the investigation concludes that inadequate information including the runway surface status had contributed to pilot awareness to the condition of the runway and led to the right wheel concealed into the runway soft surface.

Aircraft propeller damage

The observation found that the right main wheel concealed into ground in about one meter and the right wing slightly bank to the right.

The aircraft was installed with McCauley propeller with conditions of standard tires and nose gear fork, nose tire inflated and nose gear barrel extended 3 5/8" Inch the ground clearance was 11 1/4" (Inch).



The calculation of the propeller ground clearance using the highest propeller ground clearance of $14 \frac{3}{4}$ "(Inch) or 22.9 cm and distance between wheels is 360 cm. The propeller blade will hit the runway surface when any wheel concealed at least of 22.9 cm into the surface or the wing of the aircraft roll at least 17° on the ground. In fact the whole right main wheel had concealed into the runway surface which more than 22.9 cm.

3 CONCLUSIONS

Findings

According to information collected and analysis, the findings of this investigation, are listed as follows:

1. The aircraft was airworthy prior to the occurrence and was operated within the weight and balance envelope.
2. The crew has valid licenses and medical certificates and held current C208B type rating and the last proficiency check was performed at 21 January 2013.
3. The pilot was conducting a Visual Flight Rule (VFR) and this flight was the first flight experience from Sentani to Nalca airstrip.
4. The weather en route to and over the Nalca airstrip was fine and the wind was calm.
5. A day before the occurrence the rain fell on the airport area and there was no information related to the current condition of the Nalca Airstrip.
6. The aircraft touched down runway 24 on landing speed about 78 knots and rolled normal with slightly right.
7. At approximately 20 meters before the parking area which was located on the right of the runway, the right main wheel trapped and the aircraft stopped with right wing slightly down and right wheel concealed on the ground.
8. Damages found on the aircraft were the propeller blades were bent, nose landing gear misalign, the engine cowling bottom shifted and the left engine mounting bent.
9. The propeller blade will hit the runway surface when any of the wheel concealed at least of 22.9 cm.

Contributing Factors¹


The absence of airstrip information had made the pilot not aware of the runway surface condition that might due to improper of risk management in seeking the risk to identify, analyze, assess and control the risks.

¹ “Contributing factors” is an event or condition that, if it occurred in the future, would increase the likelihood of an occurrence and/ or severity of the adverse consequences associated with an occurrence.

4 SAFETYACTION

PT Enggang Air Service

At the time of issuing this final investigation report, the Komite Nasional Keselamatan Transportasi (KNKT) has been informed safety actions as result of this occurrence, as stated on the “SAFETY NOTICE” Number: 005/SN/CASO/II/2014 date 5 February 2014 for management, operation and sub Contractor subject: Company flight operations to the new routes & destinations as follow:

| | | | |
|---|--|--|--|
|  | | <h1 style="margin: 0;">SAFETY NOTICE</h1> | |
| PT. ENGGANG AIR SERVICE AOC/135-045 | | | |
| No.: 005/SN/CASO/11/2014 | | Eff. Date: 05 FEBRUARY 2014 | |
| Distribution: <input type="checkbox"/> All Employee <input checked="" type="checkbox"/> Management <input checked="" type="checkbox"/> Operations <input type="checkbox"/> Technical <input checked="" type="checkbox"/> Sub-Contractor | | | |
| Addressed to: 1) Technical Manager. 2) PADOMA | | | |
| Level: RECOMMENDATION | | Reference: PK-RSP Occurrence | |
| Subject: Company Flight Operations to the New Routes & Destinations | | | |
| BACKGROUND: Pilot fly to the destination airfield where he/she never flown, and upon landing aircraft RH main wheel sink into soft ground of the runway area. Mistaken responsive procedures resulted in substantial damaged to the aircraft. | | LATAR BELAKANG: Pilot terbang ketujuan yang belum pernah diterbangi, dan saat mendarat roda pesawat udara terperosok di bagian landas pacu yang lembek. Kelalaian prosedur cepat tanggap mengakibatkan kerusakan besar pada pesawat udara itu sendiri. | |
| HAZARD IDENTIFIED: 1. Flight dispatch procedures not done properly. 2. Knowledge of the airfield environment conditions. 3. Runway consist of grass and rocks, and unevenly surface. 4. Knowledge of abnormal conditions procedures. | | IDENTIFIKASI BAHAYA: 1. Prosedur pemberangkatan pesawat udara tidak dilakukan sebagaimana mestinya. 2. Pengetahuan akan kondisi lingkungan lapangan terbang. 3. Landasan pacu yang terdiri dari rumput dan tanah berbatuan. 4. Pengetahuan akan prosedur kondisi tidak-biasa (abnormal). | |
| RISK ANALYSIS: 1. Aircraft stop operations due to substantial damaged which require specific times & costs as a result of repair process. 2. May endanger to the pilot, passenger, and the aircraft itself, as well as to the environment. | | ANALISA RISIKO: 1. Penerbangan berhenti beroperasi akibat terjadinya kerusakan mendasar yang memerlukan tenggat-waktu & biaya tertentu untuk perbaikannya. 2. Dapat membahayakan pilot, penumpang, dan pesawat udara itu sendiri, termasuk berakibat bagi lingkungan sekitar. | |
| PREVENTIVE ACTION: 1. Prohibited to fly to those destinations which have not been carried out the route and destination airfield assessment by the designated company personnel. 2. Carry out several flight accompanied by instructor pilot, before being allowed to flown the mentioned routes & destinations regularly. 3. Create a customized flight SOP, related to the company flight safety policy. 4. To implement the periodic flight safety indoctrination in appropriate to the procedures applicable in the company. | | TINDAKAN PENCEGAHAN: 1. Dilarang menerbangi rute-rute tujuan yang belum dilakukan pengkajian tertentu oleh personil ahli yang ditunjuk oleh perusahaan. 2. Melaksanakan beberapa kali penerbangan dengan disertai oleh instruktur pilot, sebelum diizinkan menerbangi rute tersebut secara rutin. 3. Membuat SOP penerbangan yang sesuai, terkait dengan kebijakan keselamatan penerbangan perusahaan. 4. Melaksanakan indoktrinasi keselamatan penerbangan secara berkala terhadap prosedur-prosedur yang berlaku di perusahaan. | |

Safety Department, Halim Perdanakusuma Int'l Airport, Terminal Bldg 2nd Floor A14 PK, Jakarta 13510, Indonesia.
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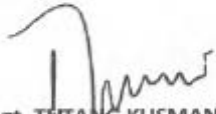
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|---|--|--|
|  | <h1 style="margin: 0;">SAFETY NOTICE</h1> <p style="margin: 0;">PT. ENGGANG AIR SERVICE AOC/135-045</p> | |
| <p>EMERGENCY CALL: In case of an emergency situation in connection with the company operations, responsive in order to take initial preventive actions, and immediately contact Safety Department officer through the numbers listed below:</p> <p>Safety Dept. Phone Number (Office Hour): Safety Dept. Hotline Svc. (Mobile Phone): Company Crisis Center Phone Number: Safety Dept. E-mail Address:</p> | <p>KOMUNIKASI DARURAT: Apabila terjadi keadaan darurat sehubungan dengan operasional perusahaan, agar cepat-tanggap dalam berkordinasi awal dalam pencegahannya, dan segera menghubungi pihak departemen Safety melalui nomor-nomor telepon yang tertera di bawah ini:</p> <p>+62 21 8097231 ext. 108 +62 811 1081 9998 (Call/SMS 24hrs) +62 21 8016998 (Direct Line) caso@enggangair.co.id</p> | |
| <p>CASO Incharge:</p>  (Sahala Patar Simanjuntak) | <p>It's better to lose a minute in life, than to lose a life in a minute. SAFETY begins with TEAM WORK</p> | |



SAFETY NOTICE TO DISPATCHER (REMINDER)

NO person may DISPATCH an Aircraft UNLESS all required documents including Navigation Chart's, Airport Data's are completed, on board the Aircraft and Pilots were briefed.

Jakarta, 10 February 2014


Capt. TUTANG KUSMANA
 Operations Manager

5 SAFETY RECOMMENDATIONS

As a result of this investigation, the Komite Nasional Keselamatan Transportasi (KNKT) issued safety recommendations to address safety issues identified in this report.

Directorate General of Civil Aviation

Consider to the recommendations address to PT. Enggang Air Service, the KNKT recommends to the DGCA to ensure that the particular safety action are well continuously implemented by the operator:-