



**KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA**

PRELIMINARY

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Aircraft Accident Investigation Report

PT. Rimbun Abadi Aviasi

DHC-6-300 Twin Otter; PK-OTY

Moanamani Airport, Papua

Republic of Indonesia

23 December 2022

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, 6 February 2023
**KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
CHAIRMAN**



SOERJANTO TJAHJONO

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ABBREVIATIONS AND DEFINITIONS

AOC	:	Air Operator Certificate
ATPL	:	Air Transport Pilot License
C of A	:	Certificate of Airworthiness
C of R	:	Certificate of Registration
C&R	:	Challenge and Response
CASR	:	Civil Aviation Safety Regulation
CPL	:	Commercial Pilot License
CVR	:	Cockpit Voice Recorder
DAAO	:	Directorate Airworthiness and Aircraft Operations
DGCA	:	Directorate General of Civil Aviation
FDR	:	Flight Data Recorder
GPS	:	Global Positioning System
ICAO	:	International Civil Aviation Organization
<i>KNKT</i>	:	<i>Komite Nasional Keselamatan Transportasi</i>
LT	:	Local Time
PF	:	Pilot Flying
PIC	:	Pilot in Command
PNF	:	Pilot non-Flying
POH	:	Pilot Operating Handbook
QRH	:	Quick Reference Handbook
R&D	:	Read and Do
SIC	:	Second in Command
TIBA	:	Traffic Information Broadcast by Aircraft
TSB	:	Transportation Safety Board of Canada
UTC	:	Universal Time Coordinated
VFR	:	Visual Flight Rules
VHF	:	Very High Frequency

SYNOPSIS

On 23 December 2022, a DHC-6-300 Twin Otter aircraft, registered PK-OTY was being operated by PT. Rimbun Abadi Aviassi (Rimbun Air) on an unscheduled passenger and cargo flight.

At 0405 UTC (1305 LT), on daylight condition, the aircraft departed from Mozes Kilangin Airport, Timika (WAYY), Timika to Moanamani Airport (WABD), Dogiyai . On board the aircraft was two pilots and one engineer. The Pilot in Command (PIC) acted as Pilot Flying (PF) and the Second in Command (SIC) acted as Pilot non-Flying (PNF).

At 1337 UTC, the PNF reported to Moanamani Info officer that the aircraft was on final. The Moanamani Info officer looked for the aircraft and found that the PK-OTY was on final Runway 03. The Moanamani Info officer then advised PK-OTY that the wind was seven knots, and the Runway 03 was clear.

At 1338 LT, the aircraft touched down Runway 03 and the PF set the propeller levers to reverse position following the application of the brake pedals for few seconds. Shortly after, the PF noticed that the aircraft slightly veered to the right moved away from the runway centerline. The PF then attempted to recover the aircraft by applying the left rudder and the aircraft was slightly veer to the left until the aircraft heading parallel with the runway centerline.

When the aircraft about to abeam the apron, the PF then felt that the aircraft skidded to the right and attempted to recover the aircraft by setting the left propeller lever to reverse position. The aircraft then moved out from runway pavement and impacted airport fence. The right main wheel slipped into a ditch, the nose wheel collapsed, and the aircraft stopped. The pilots evacuated from the left cockpit door while the engineer evacuated from the left cabin door.

The Transportation Safety Board of Canada (TSB) as the State of Engines and Airframe Design and Manufacture was involved in this investigation. TSB had appointed accredited representative to assist the investigation in accordance with the provisions in International Civil Aviation Organization (ICAO) Annex 13.

At the time of issuing this investigation report, the KNKT had not been informed of any safety actions resulting from this occurrence. KNKT issued safety recommendations to the aircraft operator to address safety issues identified in this report

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 FACTUAL INFORMATION

1.1 History of the Flight

On 23 December 2022, a DHC-6-300 Twin Otter aircraft, registered PK-OTY was being operated by PT. Rimbun Abadi Aviasi (Rimbun Air) on an unscheduled passenger and cargo flight. The flight plan of the day for the aircraft and the pilots were from Mozes Kilangin Airport, Timika (WAYY), Timika¹, Papua to Bilorai Airport (WAYB), Intan Jaya, Papua and return for four times with the total of eight sectors and continued with flight from –Timika to Moanamani Airport (WABD), Dogiyai² and return. The flights would be conducted in accordance with Visual Flight Rules (VFR).

The first three flights from Timika to Bilorai and return were uneventful. During those flights, the route was flown over Moanamani and the pilots noticed that the weather over Moanamani was clear. The pilots then decided to change the subsequent flight schedule with Timika to Moanamani.

At 0405 UTC (1305 LT), on daylight condition, the aircraft departed from Timika to Moanamani. On board the aircraft was two pilots and one engineer. The Pilot in Command (PIC) acted as Pilot Flying (PF) and the Second in Command (SIC) acted as Pilot non-Flying (PNF).

After the departure, the pilots performed the After Takeoff Checklist, including to check the nose wheel steering lever position. The PF checked the index marks on the nose wheel steering and found the marks have aligned³.

During the approach, the Cockpit Voice Recorder (CVR) did not record the Approach Checklist reading by the pilots.

At 1335 LT, the PNF made initial call with Moanamani Info officer. The Moanamani Info is an air force personnel who voluntarily providing flight information for pilots. The PNF advised their position was about 4 Nm from Moanamani at altitude 6,500 feet and the estimate time of arrival was at 1337 LT. Moanamani Info officer then advised the PK-OTY to continue the landing approach to Runway 21. At that time, there was an aircraft being departure from Moanamani using Runway 21 and the PK-OTY pilots was aware of that aircraft from monitoring the radio communication.

The PF was able to see the runway clearly including the departure traffic and the windsock of the airport which indicated a calm wind. The PF considered that the wind condition allowed the aircraft to land using Runway 03 and expedite the landing process. In addition, the distance of the departure aircraft was sufficient for the PK-OTW to land using Runway 03. The PF then decided to proceed to final area of Runway 03.

The CVR did not record any pilot discussion regarding the change of the runway that would be used for the landing.

¹ Mozes Kilangin Airport (WAYY), Timika will be named as Timika for the purpose of this report.

² Moanamani Airport (WABD), Dogiyai will be named as Moanamani for the purpose of this report.

³ The alignment of the index marks indicated that the nose wheel has in center position.

The PNF was aware that the aircraft was proceeded to final Runway 03 by the aircraft maneuver. When the aircraft was on final, about 1 Nm from Moanamani, the pilots performed Landing Checklist, including to set the flaps to 20°, propeller levers on full increase position, and check the nose wheel steering lever position. The PF rechecked the index marks on the nose wheel steering and found the marks were still aligned.

At 1337 UTC, the PNF reported to Moanamani Info officer that the aircraft was on final. The Moanamani Info officer looked for the aircraft and found that the PK-OTY was on final Runway 03. The Moanamani Info officer then advised PK-OTY that the wind was seven knots, and the Runway 03 was clear.

At 1338 LT, the aircraft touched down Runway 03 and the PF set the propeller levers to reverse position following the application of the brake pedals for few seconds. Shortly after, the PF noticed that the aircraft slightly veered to the right moved away from the runway centerline. The PF attempted to recover the aircraft by applying the left rudder and the aircraft was slightly veer to the left until the aircraft heading parallel with the runway centerline.

When the aircraft about to abeam the apron, the PF then felt that the aircraft skidded to the right and attempted to recover the aircraft by setting the left propeller lever to reverse position. The aircraft then moved out from runway pavement and impacted airport fence. The right main wheel slipped into a ditch, the nose wheel collapsed, and the aircraft stopped.

The PNF who was aware that the right engine has impacted airport fence then immediately shutdown the aircraft engine. The pilots evacuated from the left cockpit door while the engineer evacuated from the left cabin door.

1.2 Injuries to Persons

The SIC and engineer suffered minor injuries as a result of this occurrence.

1.3 Damage to Aircraft

The aircraft was substantially damaged.

1.4 Other Damage

The airport fence was damaged.

1.5 Personnel Information

1.5.1 Pilot in Command

The PIC was 47 years old Indonesian who held valid Air Transport Pilot License (ATPL). The PIC also held valid First-Class medical certificate with medical limitation to possess glasses that correct for near vision.

The initial DHC-6 aircraft type rating of the PIC was issued on 11 November 2008. In November 2008 until February 2012 the PIC operated the DHC-6 aircraft on another company at Kalimantan, Sulawesi and Papua area, including route to Moanamani several times.

In June 2012, the PIC had ATR 42/72 aircraft type rating and moved to other companies. The PIC flew ATR aircraft types from July 2012 until January 2022 at Kalimantan, Jawa, Bali, Nusa Tenggara and Papua area. During this flying period, the PIC never had flight schedule to Moanamani.

On 18 July 2022, the PIC joined Rimbun Air which would be assigned to operate a DHC-6 aircraft. The PIC then undergone trainings as part of initial DHC-6 aircraft type rating.

The ground training was conducted on 25 July until 5 August 2022 (10 working days) which included training topics as follows:

- flight technique
- flight planning
- aircraft performance
- weight and balance
- aircraft system, and
- flight safety.

The ground training followed by written examination from the Directorate Airworthiness and Aircraft Operations (DAAO). The PIC passed the test and on 1 October 2022, started the flight training for DHC-6-300 aircraft.

The flight training (base training) was carried out in 8 sessions using DHC-6-300 aircraft registered PK-OTY (the accident aircraft). The result of this training was satisfactory with several remarks from the flight instructor regarding directional control as follows:

- In session 1, the PIC looked doubtful while using nose steering wheel, during taxi the nose wheel was not steady, and during rolled out to takeoff, the aircraft was not steady on the runway centerline.
- In session 2, during the landing roll, the aircraft did not remain on the runway centerline.
- In Session 4, during the landing roll, the aircraft sometimes did not remain on the runway centerline.

The remarks were briefed by the flight instructor and considered ready to continue the check ride (base check) by the DAAO inspector.

On 19 October 2022, the base check was conducted, and the result was satisfactory with remark to remember the effect of aircraft power. Since this base check, the PIC had not conducted proficiency check until the day of the occurrence.

On 4 November until 14 December 2022, the PIC continued to undergo an in-flight training (line training) with total of 65 hours 3 minutes including 6 hours 44 minute of line check (check ride). During the line training, up to 36 hours, the PIC had several remarks from the flight instructor and thereafter the training was conducted with good result. The remarks during line training were as follows:

- 1st day of line training (within 6 hours), the approach speed and touch down speed were too high, almost three-point landing and after touched down the aircraft did not remain on the runway centerline.

- 2nd day of line training (within 12 hours), the touch down speed was still too high, almost three-point landing, and sometimes late to flare out.
- 6th and 7th day of line training (within 36 hours), the aircraft lose speed on short final.

On 14 December 2022, the PIC passed the line check and was released as pilot in command on DHC-6-300 aircraft for Papua area except for Beoga route.

Prior to the accident flight, the PIC had not been scheduled to Moanamani and the accident flight was the first flight experience to land at Moanamani of the PIC since joined the Rimbun Air.

The total flying hour of the PIC was 9,888 hours, included 1,785 hours on DHC-6-300 aircraft.

At the day of the occurrence, the PIC had performed seven landings with total flying hours of five hours and seven minutes hours including the accident flight.

1.5.2 Second in Command

The SIC was a 28 years old Indonesian who held valid Commercial Pilot License (CPL) and qualified as a DHC-6 pilot. The SIC also held valid First-Class medical certificate with medical limitation to wear corrective lenses.

The last proficiency check for the pilot was conducted on 20 April 2022, the result was satisfactory without any remarks.

The pilot had total flying hour of 3,266 hours, included 2,519 hours on DHC-6-300 aircraft.

At the day of the occurrence, the SIC had performed seven landings with total flying hours of five hours and seven minutes including the accident flight.

1.6 Aircraft Information

The DHC-6-300 aircraft with serial number of 702, was manufactured by De Havilland Aircraft of Canada, a Canada aircraft company in 1980. The aircraft registered PK-OTY and had valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R).

The aircraft had total hour since new of 54,741.29 hours and the total cycles since of 98,659 cycles. The engine installed on the aircraft was PT6A-27, manufactured by Pratt & Whitney with serial number of PCE-PG0341 (Engine 1) and PCE-PG0340 (Engine 2). The total time of the engine since new was 6,275.20 hours (Engine 1) and 6,262.14 hours (Engine 2).

The propeller installed on the aircraft was HC-B3TN-3DY, manufactured by Hartzell with serial number of BUA31872 (Propeller 1) and BUA19680 (Propeller 2). The total time of the propeller since new was 6,302.47 hours (Propeller 1) and 15,026.20 hours (Propeller 2).

Prior to the occurrence flight, there was no record or report of aircraft system malfunction nor the nose wheel steering problem.

1.7 Weight and Balance

According to the weight and balance sheet of the occurrence flight, the calculation of the takeoff weight was 8,677 lbs (maximum of 12,500 lbs) and the landing weight was estimated at 8,377 lbs (maximum of 12,300 lbs). The aircraft was operated within the weight and balance envelope.

1.8 Meteorological Information

Meteorological information at Moanamani was provided voluntarily by air force personnel using radio communication. The personnel determined the wind information by observing the windsock which located near the taxiway (see figure 1). According to the air force personnel, when the aircraft landed, the weather was clear, and the wind was calm.

The engineer who was on board the aircraft took several pictures during the approach until the aircraft landed. The weather and wind condition depicted the same information described by the air force personnel.



Figure 1: Photo taken by the engineer during aircraft touchdown (windsock annotation by KNKT)

1.9 Aids to Navigation

No ground-based navigation aid was provided at Moanamani.

The aircraft was equipped with a portable GPS (Global Positioning System) which has the capability to provide navigation data. The GPS allows pilot 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.

1.10 Communications

The aircraft was equipped with very high frequency (VHF) radio communication systems. 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. At the day of the accident, the VHF radios were serviceable. The communication was recorded in the Cockpit Voice Recorder which was installed in the aircraft.

1.11 Aerodrome Information

Airport Name	: Moanamani
Airport Identification	: WABD
Airport Operator	: Directorate General of Civil Aviation (DGCA)
Coordinate	: 04°00.32'S 136°02.13'E
Elevation	: 5,113 feet
Runway Direction	: 03/21 (030°/210°)
Runway Length	: 960 meters
Runway Width	: 18 meters
Surface	: Asphalt

1.12 Flight Recorders

The aircraft was not fitted with Flight Data Recorder (FDR) as it was not required by current Indonesian aviation regulations.

The aircraft was fitted with CVR-120A Cockpit Voice Recorder (CVR) manufactured by Universal Avionics with part number 1606-00-01 and serial number 1495. The aircraft was equipped with a portable GPS Garmin Aera 660 which stored flight data limited to aircraft position (latitude and longitude), altitude, speed and heading.

Both CVR and GPS were transported to KNKT recorder facility for data downloading process. The GPS recorded all flight at the day of the occurrence and the CVR recorded 2 hours of audio record.

1.13 Wreckage and Impact Information

The first tire marks on the runway were found about 80 meters from the beginning of Runway 03, and they were identified from the nose and right main wheels. The nose wheel mark was found at the centerline of the runway. The right main wheels mark was found along 30 meters and then disappeared.

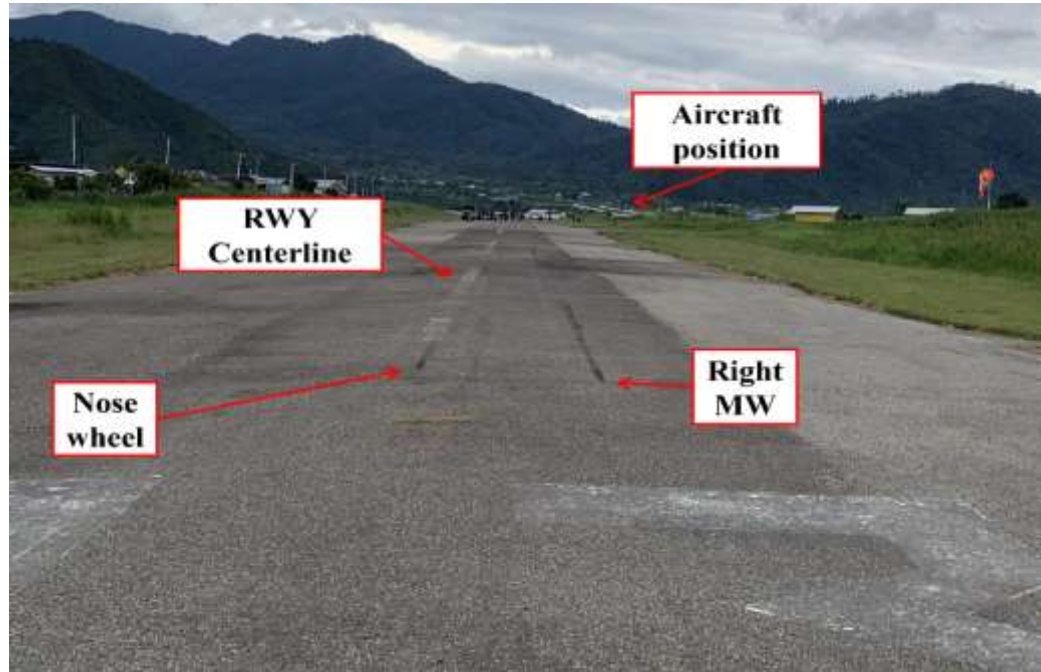


Figure 2: The touchdown marks on the runway

About 150 meters from beginning of Runway 03, another tire mark was found on the runway, and it was identified from the nose wheel. The nose wheel mark continued along the runway to the right direction.

About 320 meters from the beginning of Runway 03, the nose wheel mark continued out of runway pavement to the grass of right runway shoulder followed by the tire mark of the left and right main wheels on the grass.

The distance between the left main wheel and nose wheel marks on the grass was about 2.5 meters while the nose and the right wheel on the grass was about 1.15 meters.

About 380 meters from the beginning of Runway 03, the right wing impacted airport fence. The right nose wheel slipped into ditch, and the aircraft stopped about 400 meters from the beginning of Runway 03 on heading about 040°.



Figure 3: The accident site



Figure 4: The aircraft condition after stopped

The visual examination of the aircraft indicated that the damage on the aircraft mostly on the right section of the aircraft. The details of the damage were as follows:

- Bottom section of the radome was broken.
- Nose cargo compartment skin was punctured.
- Nose wheel fork was broken, and the nose wheel detached. The detached nose wheel was found behind the left main wheel in front of the passenger door.
- Some of fuselage skin on the right section of the aircraft were punctured (between station 111 and 125, and on station 143).
- Blades of the right propeller were damaged.
- Right flaps were dent.



Figure 5: The aircraft condition after the fence was removed

1.14 Medical and Pathological Information

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

1.15 Fire

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

1.16 Survival Aspects

After the aircraft stopped, the pilots and the engineer evacuated by themselves from the aircraft.

1.17 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 relevance to this investigation, it will be included in the final report.

1.18 Organizational and Management Information

1.18.1 Aircraft Operator

The aircraft was operated by PT. Rimbun Abadi Aviasi (Rimbun Air) which had valid Air Operator Certificate (AOC) number 135-065. The Rimbun Air is authorized to conduct air transportation carrying passenger and cargo in scheduled and non-scheduled operation within and outside Indonesia for aircraft operations under Civil Aviation Safety Regulation (CASR) Part 135.

1.18.1.1 Nose Wheel Steering Procedure

The Rimbun Air Quick Reference Handbook for Twin Otter DHC6-300 (QRH) described several pilot checklists to assist pilots verifying that the proper procedures have been carried out. The checklists could be completed in three different manners which identified in the title of the checklist as follows:

- (C&R) means Challenge and Response. This checklist is accomplished by the Pilot Non-Flying (PNF) challenging the Pilot Flying (PF) with each appropriate item. The PF would respond with the appropriate response and cockpit action.
- (R&D) means Read and Do. This checklist is accomplished solely by the PNF. The PNF would read the entire checklist aloud while doing the appropriate cockpit actions.
- (S) means Silent. This checklist is accomplished by the PNF with no verbalizing (except if an item need confirming). The checklist is both read and actioned silently with no involvement from the other crew member.

The QRH contained several procedures for pilot during the takeoff until landing phase as stated in the following figure as follows:

AFTER TAKE-OFF(S)

WARNING

DO NOT RETRACT FLAPS BEFORE REACHING 400 FEET ABOVE GROUND LEVEL. DO NOT REDUCE POWER FROM THE TAKE-OFF POWER SETTING UNTIL THE FLAPS HAVE FULLY RETRACTED.

CAUTION

WHEN DECREASING POWER FROM TAKE-OFF POWER TO CLIMB POWER, REDUCE ENGINE TORQUE BEFORE REDUCING PROPELLER RPM.

5. FLAPS	ZERO
6. Power	SET
7. Nose wheel	CENTERED
8. Cabin Heat /Air Conditioning	AS REQUIRED
9. Ice Protection	AS REQUIRED
10. TAXI Light	OFF
11. Caution Panel	CHECK
12. Engine Instruments	CHECK
13. VENT FAN	OFF
14. PROP AUTOFEATHER switch	OFF

Figure 6: After Takeoff Checklist

APPROACH (C&R)

1. FUEL SELECTOR..... NORM
2. Crossfeed Valve Indicator..... CL
3. Wing Tank Fuel Switches OFF
4. Hydraulic Pressures CHECK
5. Nose Wheel Steering Lever..... CENTERED
6. Minimum Approach Airspeeds (valid for all weights at or below 12,300 pounds):

Flap 0° 94 KIAS
 Flap 10° 85 KIAS

V _{REF} (VS x 1.3) in KIAS SFAR 23						
Flaps	12,300	11,500	10,500	9,500	8,500	7,500
10°	85	83	79	75	71	67
20°	80	77	73	70	66	62
37 ½°	74	70	67	64	60	57

Figure 7: Approach Checklist

LANDING (R&D)

1. FLAPS SELECT 20° OR 37.5°
2. PROP Levers FULL INCREASE
3. Nose Wheel Steering Lever..... USE AS REQUIRED
4. LANDING Lights..... ON

WARNING

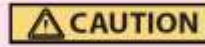
REVERSE POWER CANNOT BE APPLIED UNLESS THE PROP LEVERS ARE AT FULL INCREASE (MAX RPM). DURING THE USE OF REVERSE, ENGINE POWER MAY INCREASE ASYMMETRICALLY.

Figure 8: Landing Checklist

The Pilot Operating Handbook and Aircraft Flight Manual for the DHC-6 Series 300 (POH) for the PK-OTY aircraft described several temporary amendments on normal procedure related to nose wheel steering lever. The temporary amendment was issued on 2 October 2017 which required the user of aircraft to update the After Takeoff, and Approach Procedure on their POH.

The temporary amendment of After Takeoff Procedure required pilot to perform action as follows:

- 4 Nose wheel steering lever – Centered and locked. Align with index marks if required, then apply a slight upward and downward pressure to the nose wheel steering lever to confirm that the nose wheel is locked in the center position.



EXCESSIVE PRESSURE ON THE STEERING LEVER WHILE AIRBORNE SHOULD BE AVOIDED IN ORDER TO PREVENT UNNECESSARY LOADS ON THE STEERING LOCK MECHANISM.

Figure 9: Temporary amendment on After Takeoff Procedure related to nose wheel steering lever

The Approach Procedure also need to be changed with the following amendment:

- 5 Nose wheel steering lever – Centered and locked. Align with index marks if required, then apply a slight upward and downward pressure to the nose wheel steering lever to confirm that the nose wheel is locked in the center position.



EXCESSIVE PRESSURE ON THE STEERING LEVER WHILE AIRBORNE SHOULD BE AVOIDED IN ORDER TO PREVENT UNNECESSARY LOADS ON THE STEERING LOCK MECHANISM.

Figure 10: Temporary amendment on Approach Procedure related to nose wheel steering lever

During the occurrence, the QRH used by the pilot has not accommodated the amendment of the nose wheel steering procedure.

1.19 Additional Information

The Transportation Safety Board of Canada (TSB) as the State of Engines and Airframe Design and Manufacture was involved in this investigation. TSB had appointed accredited representative to assist the investigation in accordance with the provisions in International Civil Aviation Organization (ICAO) Annex 13.

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.

1.20 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 nor the nose wheel steering problem.
2. During the occurrence flight, the aircraft was operated within the weight and balance envelope.
3. Both pilots held valid licenses. The Pilot in Command (PIC) held valid First-Class medical certificate with medical limitation to possess glasses that correct for near vision. The Second in Command (SIC) held valid First-Class medical certificate with medical limitation to wear corrective lenses.
4. The PIC had initial DHC-6 aircraft type rating since 11 November 2008 and flew DHC-6 aircraft on another company until February 2012. During this flying period, the PIC flew to Moanamani several times.
5. In June 2012, the PIC had ATR 42/72 aircraft type rating and moved to other companies. The PIC flew ATR aircraft from July 2012 until January 2022. During this flying period, the PIC never had flight schedule to Moanamani.
6. On 18 July 2022, the PIC joined Rimbun Air which and undergone trainings as part of initial DHC-6 aircraft type rating.
7. The PIC flight training (base training) was carried out in 8 sessions using DHC-6-300 aircraft registered PK-OTY (the accident aircraft). The result of this training was satisfactory with several remarks from the flight instructor regarding directional control (in the session 1, 2 and 4).
8. The base check for the PIC was conducted on 19 October 2022, and the result was satisfactory with remark to remember the effect of aircraft power. Since this base check, was the PIC had not conducted proficiency check for the until the day of the occurrence.
9. The PIC continued to undergo an in-flight training (line training) with total of 65 hours 3 minutes including 6 hours 44 minute of line check (check ride). During the line training, up to 36 hours, the PIC had several remarks from the flight instructor and thereafter the training was conducted with good result. The remarks were related to directional control and aircraft speed management.
10. On 14 December 2022, the PIC passed the check and was released as pilot in command on DHC-6-300 aircraft for Papua area except for Beoga route.

11. Prior to the accident flight, the PIC had not been scheduled to Moanamani and the accident flight was the first flight experience to land at Moanamnai of the PIC since joined the Rimbun Air.
12. The last proficiency check of the SIC was conducted on 20 April 2022, the result was satisfactory without any remarks.
13. At the day of the occurrence, the pilots had seven landings with total flying hours of five hours and seven minutes including the occurrence flight.
14. During the accident flight, the PIC acted as Pilot Flying (PF) and the SIC acted as Pilot non-Flying (PNF).
15. During the approach, the cockpit voice recorder (CVR) did not record that the Approach Checklist was performed by the pilots.
16. About 4 Nm from Moanamani at altitude 6,500 feet, the PNF advised the aircraft position to the Moanamani Info officer and was advised to continue the landing approach to Runway 21. The Moanamani Info officer was an air force personnel who voluntarily providing flight information for pilots.
17. The PF considered that the wind calm condition allowed the aircraft to land using Runway 03 and expedite the landing process. In addition, the distance of the departure aircraft was sufficient for the PK-OTW to land using Runway 03. The PF then decided to proceed to final area of Runway 03.
18. The CVR did not record any pilot discussion regarding the change of the runway that would be used for the landing. The PNF was aware that the aircraft was proceeding to final Runway 03 by the aircraft maneuver.
19. The PF had checked the nose wheel steering lever position while performing After Takeoff Checklist and Landing Checklist. The PF checked the index marks on the nose wheel steering and found the marks have aligned.
20. The PNF reported to Moanamani Info officer that the aircraft was on final. The Moanamani Info officer looked for the aircraft and found that the PK-OTY was on final Runway 03. The Moanamani Info officer then advised PK-OTY that the wind was seven knots, and the Runway 03 was clear.
21. The Moanamani Info officer determined the wind information by observing the windsock which located near the taxiway.
22. After the aircraft touched down, the PF set the propeller levers to reverse position following the application of the pedal brakes for few seconds.
23. The PF noticed that the aircraft slightly moved to the right travelled away from the runway centerline. The PF attempted to recover the aircraft by applying the left rudder which made the aircraft was slightly veer to the left until the aircraft heading parallel with the runway centerline.
24. When the aircraft about to abeam the apron, the PF then felt that the aircraft skidded to the right and attempted to recover the aircraft by setting the left propeller lever to reverse position.
25. The aircraft moved out from runway pavement and impacted airport fence. The right main wheel slipped into a ditch, the nose wheel collapsed, and the aircraft stopped.

26. The PNF who was aware that the right engine has impacted airport fence then immediately shutdown the aircraft engine. The pilots evacuated from the left cockpit door while the engineer evacuated from the left cabin door.

3 SAFETY ACTION

At the time of issuing this Preliminary Report, the KNKT had not been informed of any safety actions resulting from this occurrence.

4 SAFETY RECOMMENDATIONS

The safety recommendation in this investigation report is made with the intention of preventing accidents or incidents and which in no case has the purpose of creating a presumption of blame or liability for an accident or incident.

4.1 PT. Rimbun Abadi Aviasi (Rimbun Air)

- **04.O-2022-20.01**

The Pilot Operating Handbook and Aircraft Flight Manual for the DHC-6 Series 300 (POH) for the PK-OTY aircraft described several temporary amendments on normal procedure related to nose wheel steering lever. The amendments required additional task when ensuring the nose wheel centered and locked to apply a slight upward and downward pressure to the nose wheel steering lever to confirm that the nose wheel is locked in the center position. The checklist response also changed to centered and locked.

During the occurrence, the Rimbun Air Quick Reference Handbook for Twin Otter DHC6-300 (QRH) used by the pilot has not accommodated the amendment of the nose wheel steering procedure. The absence of the procedure amendment in the QRH could make the nose wheel was not properly locked in the center position.

Therefore, KNKT recommends the aircraft operator to ensure that the QRH contains update procedures from the aircraft manufacturer and ensure the update procedures are implemented by pilots.

- **04.O-2022-20.02**

The Rimbun Air Quick Reference Handbook for Twin Otter DHC6-300 (QRH) contained Approach Checklist to be performed by pilots during flight operation. During the approach, the cockpit voice recorder (CVR) did not record that the Approach Checklist which required Challenge and Response was performed by the pilots. The absence of Approach Checklist could not ensure that the proper procedures have been carried out, including to determine the minimum approach airspeeds.

Therefore, KNKT recommends the aircraft operator to ensure that the procedure described in the QRH is performed properly.

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