



**KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA**

PRELIMINARY

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Aircraft Serious Incident Investigation Report

PT. Volta Pasifik Aviasi

Robinson R66; PK-VPJ

Ungasan, Bali

Republic of Indonesia

1 December 2022

2022

This Preliminary Report was 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.

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Jakarta, 4 January 2023

**KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
CHAIRMAN**



SOERJANTO TJAHJONO

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ABBREVIATIONS AND DEFINITIONS

AOC	:	Air Operator Certificate
AME	:	Aircraft Maintenance Engineer
AMEL	:	Aircraft Maintenance Engineer License
C of A	:	Certificate of Airworthiness
C of R	:	Certificate of Registration
COM	:	Company Operation Manual
CPL	:	Commercial Pilot License
CV	:	Commanditaire Vennootschap
DGCA	:	Directorate General of Civil Aviation
FBH	:	Flybali Heliport
FOO	:	Flight Operation Officer
GCS	:	Glasgow Coma Scale
HDA	:	Helideck Assistance
HLO	:	Helicopter Landing officer
KM	:	Kilometer
KNKT	:	<i>Komite Nasional Keselamatan Transportasi</i>
LT	:	Local Time
LTE	:	Loss of Tail Rotor Effectiveness
LTD	:	Limited
NR	:	Rotor RPM
OM	:	Operation Manual
PFD	:	Primary Flight Display
PT	:	<i>Perseroan Terbatas</i>
PTE	:	Private
RPM	:	Revolutions per Minute
SOP	:	Standard Operating Procedures
SQA	:	Safety Quality Assurance
UAI	:	Urban Air Indonesia
USA	:	United States of America
VP	:	Vice President

SYNOPSIS

On 1 December 2022, a Robinson R66 helicopter registration PK-VPJ operated by PT. Volta Pasifik Aviation to serve tourism flights around Bali. Prior to the departure, there was no record or report of helicopter system malfunction.

The first flight was departed at 1159 LT (0359 UTC) from Fly Bali Heliport (FBH), Ungasan to Viceroy helipad, Ubud then flew back to FBH and landed at 1242 LT.

The flight was continued for another sightseeing flight. At 1248 LT the helicopter took off with 3 passengers on board. The route for the flight was planned to fly over the Garuda Wisnu Kencana Statue – Jimbaran - Uluwatu - Nyang Nyang Beach - Melasti and returned to FBH.

When arriving at Melasti, the pilot noticed that the flight time was still 10 minutes of 12 minutes standard tour package. The pilot decided to prolong the flight to Pandawa beach and reduced the airspeed around 50 knots in order to achieve total 12 minutes flight time. After passing Pandawa beach, the helicopter turned and made long approach to FBH on north west heading with vertical speed less than 300 feet/minute.

While approaching FBH, the pilot noticed that the wind was about 10 knots from the north west. When the aircraft altitude was about 30 feet, the pilot felt that the aircraft yawed to the right then decided to make a go around. The pilot pulled the collective slightly and felt the aircraft progressively yawed to the right. The pilot maintained the collective and the cyclic position then the aircraft attitude was uncontrolled nose down.

Prior to impact, the pilot recovered by pulling the collective and cyclic to level the helicopter and the helicopter skid touchdown on the grass about 30 meters before reaching intended landing point. After the helicopter engine idled, the passengers evacuated the helicopter assisted by the ground crew.

The pilot asked the engineer to check the damage outside of the helicopter visually and reported no damage found. The pilot noticed that there was no advisory light flashing, vibration and unusual noises heard from the engine then decided to perform an air taxi to the main helipad. After landing in the main helipad, the engine was shut down.

At the time of issuing this investigation report, the KNKT had not been informed of safety actions resulting from this occurrence taken by the helicopter operator. Therefore, the KNKT issued safety recommendations to the helicopter operator.

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 1 December 2022, a Robinson R66 helicopter registration PK-VPJ operated by PT. Volta Pasifik Aviation to serve tourism flights around Bali. Prior to the departure, there was no record or report of helicopter system malfunction.

The first flight was departed at 1159 LT (0359 UTC) from Fly Bali Heliport (FBH), Ungasan to Viceroy helipad, Ubud operated by one pilot and carried 3 passengers and landed at 1221 LT. After passengers disembarked, the helicopter flew back to FBH and landed at 1242 LT.

The flight was continued for another sightseeing flight. After the boarding process completed, at 1248 LT the helicopter took off with 3 passengers on board. One of the passengers occupied the left cockpit seat and the others occupied aft passenger seats. The route for the flight was planned to fly over the Garuda Wisnu Kencana Statue – Jimbaran - Uluwatu - Nyang Nyang Beach - Melasti and returned to FBH.

When arriving at Melasti, the pilot noticed that the flight time was still 10 minutes of 12 minutes standard tour package. The pilot decided to prolong the flight to Pandawa beach and reduced the airspeed around 50 knots in order to achieve total 12 minutes flight time. After passing Pandawa beach, the helicopter turned and made long approach to FBH on north west heading with vertical speed less than 300 feet/minute.

While approaching FBH, the pilot noticed that the wind was about 10 knots from the north west. When the aircraft altitude was about 30 feet, the pilot felt that the aircraft yawed to the right then decided to make a go around. The pilot pulled the collective slightly and felt the aircraft progressively yawed to the right. The pilot maintained the collective and the cyclic position then the aircraft attitude was uncontrolled nose down.

Prior to impact, the pilot recovered by pulling the collective and cyclic to level the helicopter and the helicopter skid touchdown on the grass about 30 meters before reaching intended landing point. After the helicopter engine idled, the passengers evacuated the helicopter assisted by the ground crew.

The pilot asked the engineer to check the damage outside of the helicopter visually and reported no damage found. The pilot noticed that there was no advisory light flashing, vibration and unusual noises heard from the engine then decided to perform an air taxi to the main helipad. After landing in the main helipad, the engine was shut down.

1.2 Injuries to Persons

There were no injuries to persons as a result of this occurrence.

1.3 Damage to Aircraft

The aircraft was minor damaged. The aft cross tube skid was found yielding beyond limitation. The distance from tail skid to ground was found 36 inch where the minimum was 38 inch.



Figure 1. Damage of the aft cross tube skid.

1.4 Other Damage

There was no other damage to property and/or the environment.

1.5 Personnel Information

1.5.1 Pilot in Command

Gender	: Male
Age	: 29 Years
Nationality	: Indonesian
Marital status	: Single
Date of joining company	: 25 June 2021
License	: CPL/H
Date of issue	: 15 June 2016
Aircraft type rating	: Robinson R66, Airbus Helicopter EC-155
Medical certificate	: First Class
Last of medical	: 12 July 2022
Validity	: 12 January 2023
Medical limitation	: None
Last line check	: 1 September 2021
Last proficiency check	: 18 September 2022
Flying experience	
Total hours	: 1,263 hours

Total on type : 193 hours 50 minutes
Last 90 days : 125 hours 10 minutes
Last 30 days : 34 hours 50 minutes
Last 7 days : 8 hours 30 minutes
Last 24 hours : 4 hours
This flight : 12 minutes

1.6 Aircraft Information

1.6.1 General

Registration Mark : PK-VPJ
Manufacturer : Robinson Helicopter Company
Country of Manufacturer : United States of America (USA)
Type/Model : R66
Serial Number : 0897
Year of Manufacture : 2022
Certificate of Airworthiness
Issued : 01 November 2022
Validity : 31 October 2023
Category : Normal
Limitations : None
Certificate of Registration
Number : 4327
Issued : 27 October 2021
Validity : 26 October 2024
Time Since New : 1,126 hours 51 minutes
Last Major Check : 1,086 hours 51 minutes

1.6.2 Engines

Manufacturer : Rolls Royce
Type/Model : RR 250-C300/A1
Serial Number-1 engine : RRE-200909
▪ Time Since New : 1,126 hours 51 minutes
▪ Cycles Since New : 1,236 cycles

1.7 Meteorological Information

The pilot utilized visual observation and weather forecast for Ngurah Rai International Airport as reference for daily operations on the FBH. The weather forecast received by the pilot during preflight stated that the wind was from 250° with velocity 10 knots and visibility more than 10 kilometers. The FBH was located about 5 Nm south of Ngurah Rai International Airport.

The pilot also utilized wind information indicated on the cockpit Primary Flight Display (PFD) which showed the wind was from northwest with the velocity varied up to 10 knots during approach and landing on the occurrence flight.

1.8 Aids to Navigation

There was no navigation guidance provided by the company to the pilot for take off and landing on FBH. The pilot received technical briefing about Flybali Heliport from the chief pilot during recurrent training and proficiency check on 17 and 18 September 2022 on FBH.

1.9 Communication

The helicopter was equipped with Very High Frequency (VHF) radio communication systems. The pilot used the VHF radios for routine communication with Air Traffic Control (ATC).

Air Traffic Service facilities was not available in the FBH. The pilot communicate with the heliport personnel using VHF air to ground to inform the position and communicate with other pilot for the traffic communication.

1.10 Aerodrome Information

Heliport Name	:	Fly Bali
Heliport Operator	:	CV Fly Bali
Heliport Certificate	:	0108/RSFC-DBU/I/2021
Validity	:	29 January 2024
Coordinate	:	08° 50' 24.15" S; 115° 09' 43.70" E
Heliport Dimension	:	22.5 meter (circle)
Surface	:	Concrete

The heliport located at Ungasan Village, Kuta Selatan regency, Badung district, Bali about 5 Nm south of Ngurah Rai International Airport



Figure 2. Fly Bali heliport layout

1.11 Flight Recorders

The aircraft was not fitted with a flight data recorder nor cockpit voice recorder. Neither recorder was required by current Indonesian aviation regulations.

1.12 Wreckage and Impact Information

The helicopter skid marks was found in the ground at impact area and the grass on the touch down area was burnt presumably area near the exhaust.

1.13 Medical and Pathological Information

No medical or pathological investigations were conducted as a result of this occurrence.

1.14 Fire

There was no evidence of fire in-flight or after the aircraft impacted the ground.

1.15 Survival Aspects

The passengers were disembarked immediately after landed on the field near the helipad assisted by the helicopter landing officer.

1.16 Tests and Research

There are no tests or research were required to be conducted as a result of this occurrence.

1.17 Organizational and Management Information

The helicopter was operated by PT Volta Pasifik Aviasi which had a valid Air Operator Certificate (AOC) number of 135-068. The operator was authorized by the Directorate General of Civil Aviation (DGCA) to conduct air transportation carrying passengers and cargo in unscheduled operation.

PT Volta Pasifik Aviasi developed operation manuals (OM)s which contain company

policies and procedures that had been approved by the Directorate General of Civil Aviation (DGCA).

The OM part B Chapter Abnormal and Emergency Procedures describe the procedure Loss of Tail Rotor Thrust were as follows:

2.4.6 LOSS OF TAIL ROTOR THRUST

LOSS OF TAIL ROTOR THRUST IN FORWARD FLIGHT

Failure is usually indicated by nose right yaw which cannot be corrected by applying left pedal.

- 1. Immediately close throttle and enter autorotation.*
- 2. Maintain at least 70 KIAS if practical.*
- 3. Select landing site and perform autorotation landing.*

NOTE:

When a suitable landing site is not available, the vertical stabilizer may permit limited controlled flight at low power settings and airspeeds above 70 KIAS; however, prior to reducing airspeed, enter full autorotation.

LOSS OF TAIL ROTOR THRUST IN HOVER

Failure is usually indicated by nose right yaw which cannot be stopped by applying left pedal.

- 1. Immediately close throttle to reduce yaw rate and allow aircraft to settle.*
- 2. Raise collective just before touchdown to cushion landing.*

The aircraft manufacturer issued safety Safety Notice SN-42 on May 2013 and published revision on July 2019 regarding Unanticipated Yaw. The pilot had not been briefed by the company about the issue. The content of SN-42 were as follow:

A pilot's failure to apply proper pedal inputs in response to strong or gusty winds during hover or low-speed flight may result in an unanticipated yaw. Some pilots mistakenly attribute this yaw to loss of tail rotor effectiveness (LTE), implying that the tail rotor stalled or was unable to provide adequate thrust. Tail rotors on Robinson helicopters are designed to have more authority than many other helicopters and are unlikely to experience LTE.

To avoid unanticipated yaw, pilots should be aware of conditions (a left crosswind, for example) that may require large or rapid pedal inputs. Practicing slow, steady-rate hovering pedal turns will help maintain proficiency in controlling yaw. Hover training with a qualified instructor in varying wind conditions may also be helpful.

Note that thrust of any tail rotor decreases significantly as RPM decreases. Low RPM combined with high torque, as occurs when over-pitching, may

result in an uncontrollable right yaw (see also Safety Notice SN-34).

1.18 Additional Information

The investigation is continuing and KNKT plans to complete the investigation within 12 months since the day of the occurrence. 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.

1.19 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 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 helicopter had a valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R). Prior to the departure, there was no record or report of helicopter system malfunction.
2. The pilot held valid license and medical certificate.
3. Prior to the accident, the pilot had performed two landings. The accident flight was the third flight for the pilot on that day.
4. The route for the flight was planned to fly over the Garuda Wisnu Kencana Statue-Jimbaran- Uluwatu-Nyang Nyang Beach-Melasti and returned to FBH for 12 minutes standard tour package.
5. When arriving at Melasti, the pilot noticed that the flight time was still 10 minutes and decided to prolong the flight then reduced the airspeed around 50 knots in order to achieve total 12 minutes flight time.
6. The pilot noticed that the wind was about 10 knots from the northwest and decide to made long approach to FBH heading to northwest with vertical speed less than 300 feet/minute.
7. When the aircraft altitude was about 30 feet, the pilot felt that the aircraft yawed to the right then decided to make a go around.
8. The pilot pulled the collective slightly and felt the aircraft progressively yawed to the right. The pilot maintained the collective and the cyclic position then the aircraft attitude was uncontrolled nose down.
9. Prior to impact, the pilot recovered by pulling the collective and cyclic to level the helicopter and the helicopter touchdown on the grass about 30 meters before reaching intended landing point.
10. The Operation Manual Part B describe the procedure Loss of Tail Rotor Thrust was immediately close throttle then perform autorotation landing.
11. After checking the helicopter condition, the pilot perform air taxi to the main helipad. After landing in the main helipad, the engine was shut down.
12. The aircraft manufacture issued safety Safety Notice SN-42 on May 2013 and published revision on July 2019 regarding Unanticipated Yaw. The pilot had not been briefed by the company about the issue.

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. Volta Pasifik Aviasi

- **04.O-2022-17.01**

When the aircraft altitude was about 30 feet, the pilot felt that the aircraft yawed to the right then decided to make a go around. The pilot pulled the collective slightly and felt the aircraft progressively yawed to the right. The pilot maintained the collective and the cyclic position then the aircraft attitude was uncontrolled nose down. Prior to impact, the pilot recovered by pulling the collective and cyclic to level the helicopter and the helicopter touchdown on the grass about 30 meters before reaching intended landing point.

The Operation Manual Part B describe the loss of tail rotor thrust in forward flight is usually indicated by nose right yaw which cannot be corrected by applying left pedal. The OM Part B also describe the procedure Loss of Tail Rotor Thrust was immediately close throttle then perform autorotation landing.

The recovery action taken was different with the procedure describe in the Operation Manual, therefore KNKT recommends to review pilot training to ensure pilot recognition to the aircraft problem and able to perform correct recovery procedure.

- **04.O-2022-17.02**

The aircraft manufacture issued Safety Notice SN-42 on May 2013 and published revision on July 2019 regarding Unanticipated Yaw. The pilot had not been briefed about the issue since join the company. The absence of the briefing about the issue may influence the pilot awareness and affected the action taken when encounter the unanticipated yaw. Therefore, KNKT recommends to review the relevant safety notice published by the aircraft manufacture and distribute the information to the pilot.

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