



**KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA**

1st INTERIM STATEMENT

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Aircraft Accident Investigation Report

PT Genesa Flight Academy

Robinson R44 Raven II; PK-RTO

Near Wiladatika Airport

Republic of Indonesia

28 May 2021

2022

This Interim statement 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).

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Jakarta, 26 August 2022
**KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
CHAIRMAN**



SOERJANTO TJAHOJONO

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ABBREVIATIONS AND DEFINITIONS

AGL	:	Above Ground Level
C of A	:	Certificate of Airworthiness
C of R	:	Certificate of Registration
CPL	:	Commercial Pilot License
GFA	:	Genesa Flight Academy
GPS	:	Global Positioning System
KIAS	:	Knots-Indicated Air Speed
Km	:	Kilometer
KNKT	:	<i>Komite Nasional Keselamatan Transportasi</i>
LT	:	Local Time
Nm	:	Nautical Mile
PF	:	Pilot Flying
PSC	:	Pilot School Certificate
RPM	:	Rotation per Minute
SPL	:	Student Pilot License
UTC	:	Universal Time Coordinated

SYNOPSIS

On 28 May 2021, a Robinson R44 helicopter, registered PK-RTO was being operated by Genesa Flight Academy to conduct circuit flight training at Wiladatika Airport, Cibubur (WIHC), Jakarta.

The weather condition during this flight was reported clear, the wind condition was calm and the visibility was 5 km.

At 0230 UTC (0930 LT), on daylight condition, the helicopter took off then conducted circuit flight exercise. There was no abnormality of the aircraft system during the flight training

On the third circuit exercise, the flight instructor took over the aircraft control and acted as Pilot Flying (PF). The instructor demonstrated to the student pilot the autorotation over water exercise. About 50 feet, the instructor intended to go around and increased the throttle gradually, however the main rotor RPM did not increase and decided to land on the water.

The helicopter ditched and submerged in the shallow water lake, the instructor and the student pilot evacuated by themselves through the broken windshield. No one injured in this occurrence and the aircraft had substantially damaged.

The *Komite Nasional Keselamatan Transportasi* (KNKT) was informed of the safety actions undertaken by the Genesa Flight Academy which were considered relevant to improve safety.

The investigation is ongoing, should further safety issues emerge during the course of the investigation, KNKT will bring the issues to the attention of the relevant parties and issue safety recommendation(s) as required.

1. FACTUAL INFORMATION

1.1 History of the Flight

On 28 May 2021, a Robinson R44 helicopter, registered PK-RTO was being operated by Genesa Flight Academy to conduct circuit flight training at Wiladatika Airport, Cibubur (WIHC), Jakarta.

Prior to flight, the instructor and the student pilot conducted preflight briefing related to the exercises that would be conducted during the training, including straight in autorotation and hydraulic off into running landing.

The weather condition during this flight was reported clear, the wind condition was calm and the visibility was 5 km.

At 0230 UTC¹ (0930 LT), on daylight condition, the helicopter took off then conducted circuit flight exercise, the instructor recalled that they performed the take off with maximum power available since there was another helicopter on the runway that was conducting ground exercise. There was no abnormality of the aircraft system during the flight training until the commencement of the emergency procedure of Power Failure Above 500 Feet Above Ground Level (AGL) in conjunction with autorotation training.

On the third circuit exercise, the flight instructor took over the aircraft control and acted as Pilot Flying (PF). While the aircraft position on the downwind runway 09, the instructor informed the student pilot that he would demonstrate autorotation over water. At altitude approximately 700 feet, the instructor reduced the throttle gradually and selected a lake as the spot for emergency landing exercise. The instructor maintained the helicopter speed and main rotor RPM by manipulating the pitch collective. About 50 feet, the instructor increased the throttle gradually, with intention to go around. The instructor noticed that the main rotor RPM did not increase and decided to land on the water.

The helicopter ditched and submerged in the shallow water lake, the instructor and the student pilot evacuated by themselves through the broken windshield. No one injured in this occurrence.

1.2 Damage to aircraft

The aircraft had substantially damaged.

¹ The 24-hours clock in Universal Time Coordinated (UTC) is used in this report to describe the local time as specific events occurred. Local time is UTC+7 hours



Figure 1. The broken windshield and main rotor blade bent



Figure 2. Damaged on the fuselage



Figure 3. Main rotor mast cowling bent forward

1.3 Personnel Information

The instructor was male, 29 years old and held valid medical certificate, Commercial Pilot License (CPL) and Instrument Rating. The total flying experiences on helicopter was about 607 hours 30 minutes. The exercise autorotation over water was the first time for the instructor.

The student pilot was male, 45 years old and held valid Student Pilot Licence (SPL) and medical certificate. The total flying helicopter experience was about 27 hours 25 minutes. The student pilot conducted first solo flight on 27 May 2021 and conducted pre-second solo flight training during the occurrence flight.

1.4 Aircraft Information

The helicopter registered PK-RTO manufactured by Robinson Helicopter Company in United States of America, with the type/model was Robinson R44 Raven II and serial number 12127. The aircraft had valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R) with total hour of 2,419 hours and 46 minutes.

The helicopter was not equipped with emergency floatation device. The helicopter engine manufactured by Textron Lycoming in United States of America. The type/model was IO-540-AE1A5 with serial number L-28084-48E. The engine installed on 6 June 2020 and the total hour of the engine was 1,032 hours and 7 minutes since manufactured.

1.5 Aerodrome Information

Wiladatika Airport was operated by PT. Asia Aero Technology which located in East Jakarta. The airport serves aerosport and training flight of civil flying school. The runway dimension was 760 meters length and 20 meters in width and the surface was grass. The runway designation number was 09-27.

1.6 Flight Recorder

The helicopter was not equipped with flight recorder and it was not required by current Indonesia regulation for this type of aircraft. The aircraft was equipped with Garmin Aera 500 Global Positioning System (GPS), the GPS memory were succesfully downloaded.

The data for the accident flight recorded 14 parameters on approximately 26 minutes of flight operation. The investigation utilized the flight data log to retrieve the flight path and imposed to Google Earth (figure 4).



Figure 4. The flight data log superimposed to Google Earth, the orange line shows the trajectory of the occurrence flight.

1.7 Wreckage and Impact Information

The helicopter was submersed in a shallow water lake, located about one Nm South of the runway. The helicopter was found in position tilted to the left. There was no scar or mark on a tree or building found near the accident site.



Figure 5. The helicopter position immersed on the shallow lake, part of the right cockpit door appeared on the water surface (the right door opened by the personnel during the evacuation of the helicopter properties).

1.8 Survival Aspect

After the helicopter stopped and partially immersed in the lake, the water was flowing into the cockpit. Both pilots opened the seatbelts. The student pilot broke the windshield and assisted the instructor to evacuate through the broken windshield. Both pilots evacuating the aircraft and did not utilize available life vest since they were able to swim to the nearest land.

1.9 Test and Research

Any test and research for the investigation will be included in the final report.

1.10 Organizational and Management Information

The aircraft owned and operated by PT. Genesa Dirgantara (Genesa Flight Academy) which had a valid Pilot School Certificate (PSC) number 141D-16.

Genesa Dirgantara operated two Robinson R44 helicopter and one Robinson R66 helicopter, also eight Cessna 172 & one Piper Seneca III for fixed wing fleets.

Wiladatika Airport was used as training base for Rotary wing and Tunggul Wulung Airport, Cilacap used for fixed wing training base.

1.10.1 Instructor Guidance

Genesa Flight Academy issued the GFA Rotary Wing Flight Instructors Training Guide as a part of standard flying technique for all flight instructors. The guideline has not included specific procedure/guidance of conducting autorotation training over the water.

For normal autorotation over the runway, the instructor guidance state that:

A succesful normal autorotation can be achieved by establish nice straight line with runway at 800 feet, airspeed 70-75 Knots and vertical speed indicator (VSI) zero, then as the discretion of the instructor, lower the collective smoothly and close the throttle, aft the cyclic to maintain nose attitude. Maintain RPM in the green band through out the auto with minimum of 60 knots until approximately 50 feet off the ground and make a gentle flare, open throttle smoothly while on the flare without jerking the aircraft. Care must be taken not to over speed the Main Rotor RPM (RRPM) at the end of the flare. As the aircraft begin to stop level the aircraft and apply the collective and maintain heading, terminate the auto at 5 feet hover.

The investigation could not find the specific procedure/guidance for conducting autorotation training over the water issued by Genesa Flight Academy.

1.10.2 Emergency Procedure Power Failure Above 500 Feet (Autorotation)

The emergency procedure for power failure above 500 feet above ground level as stated on the student pilot handbook dan pilot operation handbook as follow:

A. POWER FAILURE ABOVE 500 FEET AGL

1. *Lower collective immediately to maintain rotor RPM.*
2. *Establish a steady glide at approximately 70 KIAS.*
3. *Adjust collective to keep RPM between 97 and 108%.*
4. *Select landing spot, if altitude permits, maneuver so landing will be into wind.*
5. *A restart may be attempted at pilot's discretion if sufficient time available (Minimum 2,000 feet AGL).*
6. *If unable to restart, turn unnecessary switches and fuel valve off.*
7. *At about 40 feet AGL, begin cyclic flare to reduce rate of decent and forward speed.*
8. *At about 8 feet AGL, apply forward cyclic to level ship and raise collective just before touchdown to cushion landing.*

Touch down in level attitude with nose straight ahead.

1.11 Additional Information

The investigation is continuing. KNKT plans to complete the investigation within 24 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.

1.12 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. FINDINGS²

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

1. The flight instructor and student pilot held valid licenses and medical certificates.
2. The aircraft had valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R).
3. The helicopter was not equipped with flight recorder and it was not required by current Indonesia regulation for this type of aircraft. The aircraft was equipped with Garmin Aera 500 Global Positioning System (GPS).
4. The helicopter was not equipped with emergency floatation device.
5. The weather condition during this flight was reported clear, the wind condition was calm and the visibility was 5 km. There was no record or report of aircraft system malfunction or abnormality during the flight training until commencement the emergency procedure autorotation training.
6. The accident flight was pre-second solo flight for the student pilot. The exercise of autorotation over water was the first time for the both pilots.
7. The instructor demonstrated to the student pilot the autorotation over water exercise. About 50 feet, the instructor intended to go around and increased the throttle gradually, however the main rotor RPM did not increase and decided to land on the water.
8. The helicopter ditched and submerged in the shallow water lake, the instructor and the student pilot evacuate by themselves through the broken windshield. No one injured in this occurrence.
9. Genesa Flight Academy issued the GFA Rotary Wing Flight Instructors Training Guide has not included a specific procedure/guidance for conducting autorotation training over the water.

² Findings are statements of all significant conditions, events or circumstances in the accident sequence. The findings are significant steps in the accident sequence, but they are not always causal, or indicate deficiencies. Some findings point out the conditions that pre-existed the accident sequence, but they are usually essential to the understanding of the occurrence, usually in chronological order.

3. SAFETY ACTION

At the time of issuing this preliminary report, the Genesa Flight Academy issued the new procedures of the autorotation exercise, the detail procedure were as follows:

A. Autorotation Procedures – Power recovery

1. *Under no circumstances all of the autorotation exercise will be conducted over water.*
2. *All autorotation exercise will only be conducted over the runway, with the flare out at approx 100 ft Agl followed by opening the throttle, and continue to steady hover to 5 ft.*
3. *Should the force landing exercise will be conducted at the area other than Cibubur airstrip, the Instructor may do so with the following precautions:*
 - a. *Always select the open area over the land only.*
 - b. *Ensure the area selected is clear from high tension power lines, populated area, somebody's property to avoid environment and property damage.*
 - c. *The instructor may not close the throttle during this exercise, he can only lower the collective throughout the descent, and the go around has to be conducted at no lower than 300 Agl.*

The aim is just to see student's decision making and to ensure that the student can maneuver the helicopter in to the safe area selected. The go around has to be conducted at no lower than 300 ft Agl.

4. *Before the exercise begun, the **HASEL** check has to be perform, such as:*
 - a. **Height** (min of 700 ft Agl)
 - b. **Area** (area to be conducted is clear from population, somebody's else property and over clear area with no obstruction)
 - c. **Security** (to ensure the cabin is fully secure and no loose articles during exercise)
 - d. **Engine** (to ensure engine T's and P's is operating normally)
 - e. **Look Out** (carefully look out at the spot of the intended landing is well clear, sudden wind direction changing, ect)
5. *The autorotation with ground contact is prohibited.*

B. R44 Emergency Water Landing

1. *In real emergency water landing will refer to R44 POH section 3 Emergency Water Landing – Power On/Off.*
2. *Simulated emergency water landing will only be conducted when the helicopter is equipped with emergency floatation gear.*
3. *Senior Instructor with HUET experience will conduct the safety briefing for all pilots and students.*

4. SAFETY RECOMMENDATIONS

The Komite Nasional Keselamatan Transportasi (KNKT) acknowledged the safety action taken by the Genesa Flight Academy and considered that the safety actions were relevant to improve safety.

The KNKT is not issuing safety recommendations in this report.

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