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NATIONAL TRANSPORTATION SAFETY COMMITTEE

Aircraft Accident Investigation Report

**Bandung Pilot Academy
Cessna 172 S; PK-IUA
Nusawiru Airport
Pangandaran, Jawa Barat
Republic of Indonesia
03 May 2013**



NATIONAL TRANSPORTATION SAFETY COMMITTEE
MINISTRY OF TRANSPORTATION
REPUBLIC OF INDONESIA
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This Final Report was produced by the National Transportation Safety Committee (NTSC), 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 NTSC 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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ABBREVIATIONS AND DEFINITIONS

| | | |
|-------------|---|---|
| AMSL | : | Above Mean Sea Level |
| ATS | : | Air Traffic Service |
| °C | : | Degrees Celsius |
| CASR | : | Civil Aviation Safety Regulation |
| CG | : | Center of Gravity |
| CPL | : | Commercial Pilot License |
| COM | : | Company Operation Manual |
| CRM | : | Cockpit Recourses Management |
| CSN | : | Cycles Since New |
| DGCA | : | Directorate General Civil Aviation |
| ICAO | : | International Civil Aviation Organization |
| ICAI / STPI | : | Indonesia Civil Aviation Institute / <i>Sekolah Tinggi Penerbangan Indonesia</i> |
| Km | : | Kilometer(s) |
| KNKT / NTSC | : | <i>Komite Nasional Keselamatan Transportasi /</i> National Transportation Safety Committee |
| NM | : | Nautical mile(s) |
| QFE | : | Height above airport elevation (or runway threshold elevation) based on local station pressure |
| QNH | : | Altitude above mean sea level based on local station pressure |
| SPL | : | Student Pilot License |
| TT / TD | : | Ambient Temperature / Dew Point |
| UTC | : | Universal Time Coordinate |
| WIB | : | <i>Waktu Indonesia Barat /</i> West Indonesian Standard Time |

SYNOPSIS

On 3 May 2013 a Cessna 172 aircraft registration PK-IUA operated by PT Bandung International Aviation trading as Bandung Pilot Academy performing a touch and go exercise at Nusawiru airport.

The aircraft was flown by a student pilot who has 26 hours experience on type. The aforesaid pilot was released for first solo flight at a total of 24 flight hours after three times flight check with several landings.

The day of the occurrence, the weather was cloudy, visibility 10 km and the wind was calm.

Prior to conduct the solo flight, the student pilot was briefed by the flight instructor which contain of instruction to perform 4 times touch and go exercises and then proceed to the area which assigned as solo area.

At 01.12 UTC the aircraft touch down on runway 07 normally. During rolling the pilot prepared all things for re takeoff. While opening the power at approximately 600 meter from end runway 07, the aircraft veered to the left, crossed the runway shoulder then hit the drainage concrete and stop into rest on upside down position.

The student pilot incapacitated and evacuated by the other students who came to the accident site before the airport rescue team arrived a few minutes later. The student pilot suffered minor injuries and brought to the nearest hospital.

The aircraft substantially damage.

An observation on site, found excavated lines along the surface on the runway shoulder in approximate 50 meter.

There were differences of checking methods and limitation between PT Bandung International Aviation Management and the Indonesian Civil Aviation Institute (ICAI/STPI).

Prior to issuing this final report, the NTSC has been not informed any safety action taken by PT Bandung International Aviation.

Included in this final report, the NTSC issued several safety recommendations to the PT Bandung International Aviation and the Indonesian DGCA to address the safety issues identified in this final report.

1. FACTUAL INFORMATION

On 3 May 2013 a Cessna 172 aircraft registration PK-IUA operated by Bandung Pilot Academy performing a touch and go exercise at Nusawiru airport.

The aircraft was flown by a student pilot who has 26 hours experience on type.

The day of the occurrence, the weather was cloudy, visibility 10 km and the wind was calm.

In the interview with the Bandung Pilot Academy Management the aforesaid pilot was released for first solo flight at a total of 24 flight hours after three times flight check with several landings.

Prior to conduct the solo flight, the student pilot was briefed by the flight instructor which contain of instruction to perform 4 times touch and go exercises and then proceed to the area which assigned as solo area.

At 01.06 UTC aircraft took off from runway 07 and while on downwind leg the pilot requested for touch and go and Nusawiru Radio officer advised to call again on final runway 07.

At 01.11 UTC the aircraft was on final runway 07 the student pilot advised for touch and go exercise with additional information that the runway was clear for touch and go.

At 01.12 UTC the aircraft touch down on runway 07 normally. During rolling the pilot prepared all things for re takeoff. While opening the power at approximately 600 meter from the end of runway 07, the aircraft veered to the left, crossed the runway shoulder then hit the drainage concrete and stop into rest on upside down position.

The student pilot incapacitated and evacuated by the other students who came to the accident site before the airport rescue team arrived a few minutes later. The student pilot suffered minor injuries and brought to the nearest hospital.

The aircraft nose section, engine, propeller and most of the flight control parts were damaged. The flaps position was found at full down position. The wreckage was secured by the local security until the NTSC team arrived one day after.

An observation on site, found excavated lines along the surface on the runway shoulder in approximate 50 meter.

The pilot held valid license and medical certificate.

The aircraft was airworthy and no repetitive problem and or abnormalities recorded on the Maintenance log.

There was no policy of the limitation for solo flight qualification at Bandung Pilot Academy, while the Indonesian Civil Aviation Institute (ICAI/STPI) applies policy that the standard hour given for a student to pass solo flight check is 20 hours and allows two times recheck.

1.1 Personnel Information

Student Pilot

| | |
|-------------------------|------------------------------|
| Gender | : Male |
| Age | : 30 years old |
| Nationality | : Indonesia |
| Marital status | : Single |
| Date of joining academy | : February 2012 (as student) |
| License | : SPL |
| Date of issue | : 08 February 2012 |
| Validity | : 08 February 2014 |
| Aircraft type rating | : Cessna 172 |
| Instrument rating | : None |
| Medical certificate | : Second class |
| Last of medical | : 01 February 2013 |
| Validity | : 01 February 2014 |
| Medical limitation | : None |
| Last line check | : None |
| Last proficiency check | : 02 May 2013 |

Flying experience

| | |
|---------------|-------------|
| Total hours | : 25 hours |
| Total on type | : 25 hours |
| Last 90 days | : None |
| Last 60 days | : None |
| Last 24 hours | : 25 hours |
| This flight | : 6 minutes |

The figure 1; show an illustration of accident aircraft trajectory and wreckage information.

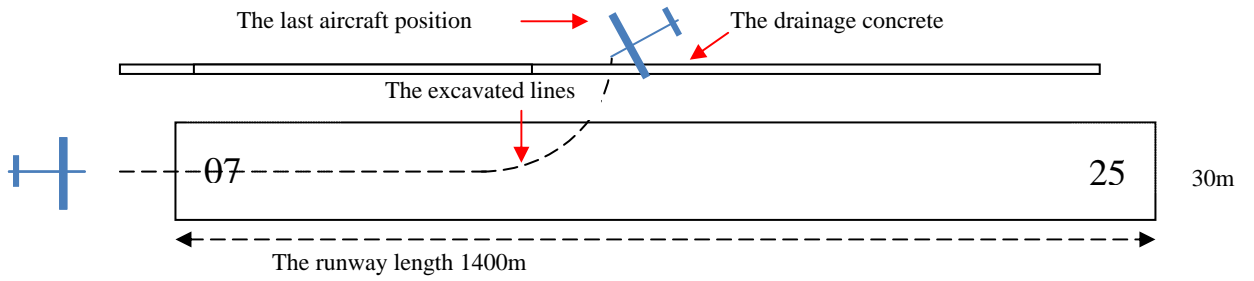


Figure 1: Illustration of accident aircraft trajectory



Figure 2: Aircraft position

2. ANALYSIS

The analysis part of this report will discuss the relevant issues resulting in the aircraft veered off the runway on 03 May 2013 at Nusawiru aerodrome. The investigation determined that there were no issues with the aircraft and all systems were operating normally. The analysis will therefore focus on the following issues:

- Dynamic effects of opening power on a single engine propeller aircraft.
- Checking method and limitation for Solo flight qualification.

2.1 Dynamic effects of opening power on single engine propeller aircraft

The yawing moments produced by the propeller are mainly caused by the spiralling slipstream. It depends on the airplane, but for conventional configurations about half of that yaw is caused by the slipstream striking the fuselage aft of the CG, and the other half is from the slipstream striking the vertical stabilizer.

The reaction to this is a left yaw of the aircraft (for a prop which rotates clockwise as viewed from the rear) because the thrust being produced on the right side of the aircraft (down going blade) is about twice as much as the up going blade on the left side (Figure 2-30)

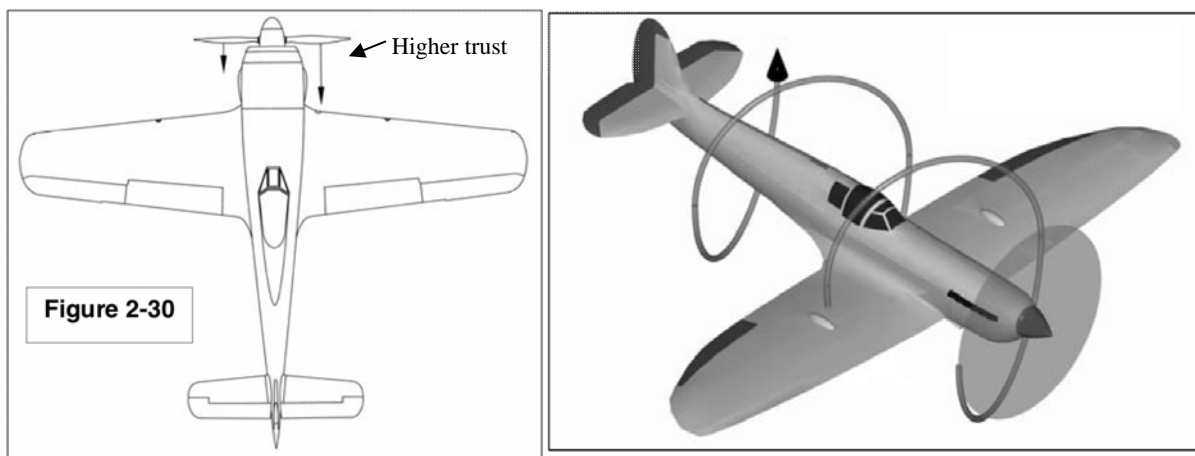


Figure 3: The Yawing Moment

Much rudder is often needed to compensate in some flight conditions, so much so that very little is available for maneuvering (less control authority). Although spiraling slipstream occurs constantly, it imparts more influence to the airflow at slow speed and higher power settings.

During rolling the student pilot opened the power then suddenly the aircraft veered to the left. This was consistent with the theory dynamic effect aforesaid above.

The student was released for the first solo flight after 3 times check flight. As such, it most likely due to that the student pilot has not achieved the minimum requirement skill and knowledge of dynamic effects of opening power on single engine propeller aircraft therefore failed to anticipate.

2.2 Checking method and limitation for solo flight qualification

There was no policy of the limitation for solo flight qualification at Bandung Pilot Academy, while the Indonesian Civil Aviation Institute (ICAI/STPI) applies policy that the standard hour given for a student to pass solo flight check is 20 hours and allows two times recheck.

In the interview with the Bandung Pilot Academy Management the aforesaid pilot was released for solo flight at total of 24 hours after 3 (three) times flight checked with several landings.

Consider to the factual on the particular policies above, it indicated than there were differences checking methods and limitation in both Bandung Pilot Academy Management and the STPI.

As a common practice a limitation is required, where it uses to prompt the target of knowledge, skill and experience. In fact, the Bandung Pilot Academy did not have the limitation for the solo flight check which was most likely caused the accident student did not have enough knowledge, skill and experience for the dynamic effect when opening the power.

3. CONCLUSION

3.1 Findings

1. The aircraft and the student pilot have valid documentations.
2. The day of the occurrence, the weather was cloudy, visibility 10km and the wind was calm.
3. There were no any discrepancies on the aircraft system
4. The pilot was released for solo flight at a total of 24 hours after three times flight checked with several landings.
5. When the aircraft rolling the pilot prepared all things for re takeoff, but while opening the power then suddenly at approximately 600 meter from end runway 07, the aircraft veered to the left.
6. The aircraft crossed the runway shoulder then hit the drainage concrete and stop into rest on upside down position.
7. The Flaps position was at full down position
8. The student pilot was incapacitated and assisted by the other students who came into the accident site before the airport rescue team arrived a few minutes later.
9. Before the accident the Bandung Pilot Academy did not have the limitation for the solo flight check.

3.2 Factors¹

The student did not well anticipate the dynamic effect when opening the power.

3.3 Contributing Factors²

The Bandung Pilot Academy did not have the limitation for the solo flight check which was most likely caused the accident student did not have enough knowledge, skill and experience for the dynamic effect when opening the power.

¹ “Factors” is defined as events that might cause the occurrence. In the case that the event did not occur then the accident might not happen or result in a less severe occurrence.

² “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. SAFETY ACTION

At the time of issuing this draft final investigation report, the National Transportation Safety Committee has been informed of safety actions resulting from this occurrence.

4.1 Bandung Flight Academy

The Bandung Pilot Academy revised *Training Procedure Manual; chapter III; page 3-4* to include the limitation for the solo flight check.

The New Revision of Training Procedure Manual; chapter III; page 3-4 date issued June 07, 2013 was as follows:

First Solo

Prior undertaking the first solo flight cadets has to meet the following training requirements:

- *Hold student pilot license and medical certificate*
- *Pass an oral or written examination set*
- *Assessed having achieved the required standard in all sequences for the first solo phase of training*
- *Assessed by chief instructor or assistant chief instructor that the cadets is competent for the first solo flight.*
- *Minimum 10 hours released First Solo. If fail, continue flight with the same stage until 20 hours, if not pas cadet should be Discontinue.*

5. SAFETY RECOMMENDATIONS

As a result of this investigation, the National Transportation Safety Committee issued safety recommendations to address safety issues identified in this report.

The safety recommendation is addressed to:

5.1 PT Bandung International Aviation Management

- a. As indicated in this analysis and finding that the student pilot had 3 times checked for his solo flight qualification prior to be released for solo flight, for this particular issue, the NTSC recommends the management to review their current SOP for solo flight checking criteria.
- b. Before the accident the Bandung Pilot Academy did not have the limitation for the solo flight check, the NTSC recommends that the Bandung Pilot Academy has to review the policy and training syllabus.

5.2 DGCA (Directorate General of Civil Aviation)

As indicated in this finding that checking method and limitation for solo flight were difference between PT Bandung International Aviation Management and the STPI which may also exist to other flying schools.

The NTSC recommends to the DGCA to review the current over sight procedure and system including the implementation of determining the qualification standard criteria to the flying schools in Indonesia.