

Safety Investigation Report

Ref. AAIU-2018-07-25-01
Issue date: 8 January 2019
Status: Final

Classification:	Accident	Type of operation:	Non-commercial – Check
Level of investigation:	Desk	Phase:	Landing
Date and time:	25 July 2018 at 11:30 UTC	Operator:	Private
Location:	Aérodrome de Namur EBNM	Persons on board:	2
Aircraft:	Grumman AA5-B SN: 0275	Aircraft damage:	Nose landing gear and propeller
Occurrence category:	Runway excursion	Injuries:	None

1. FACTUAL INFORMATION.

1.1 Flight history

The pilot flew less than 12 hours during the last year. The purpose of the flight was a proficiency check for the revalidation of her SEP-rating in accordance with EU regulation (FCL.740.A Revalidation of class and type ratings).

After approximately 1 hour of flight, when coming back to the airfield of Temploux (EBNM), the examiner asked the pilot to perform a flapless touch-and-go, which was satisfactorily performed on runway 6L. This runway, normally dedicated to gliders, was in use for motorized aircraft due to works on runway 6R.

As the proficiency check was almost finished, the examiner requested the pilot to perform a normal landing followed by a full stop which would make an end to the proficiency check.

At the end of the landing circuit, the pilot flew in a long final leg approach with the flaps lowered on the second position and engine revolutions around 1500 to 1600 RPM. In final, when seeing that the aeroplane was slightly too high and with a little too much airspeed, the pilot fully extended the flaps. The examiner stated that at that moment the approach attitude, the glide path and the airspeed were adequate to land. However, the aircraft floated above the runway and touched down quite far, at an estimated position between 1/3 and 1/2 of the runway. The pilot announced her intention to apply full throttle to make a go-around. This was followed by a brief discussion with the examiner during which no action was taken. At that time, the examiner saw that the engine RPM was not in idle. Considering that a go-around was not a viable option anymore, the examiner took over controls, fully closed the throttle and applied full brakes.

The aircraft overran the runway and stopped in a field recently harvested and located behind the safety area, after having performed an intentional 180° left turn to force the stoppage. Before that, a significant shock was perceived when rolling on a ditch in the interface between the safety area and the harvested field. The occupants left the aircraft uninjured.

Afterwards, the examiner was adamant when telling that the RPM was not on idle during the flare. The pilot initially stated that she reduced the throttle to full idle. However after thinking about it she reminded that the throttle was a little harder than usual to set in full idle, which could have caused an insufficient pull of the throttle.

1.2 Aircraft inspection

The inspection of the aeroplane performed by the maintenance organization after the accident revealed damages to the transversal torque tube that supports the nose landing gear strut. The nose landing gear leg came in contact with the underside of the engine cowling and the aeroplane had an abnormal nose down attitude. One blade of the propeller was found slightly bent forward. On both fuselage sides, the holes used to fix the 2 end brackets of the transversal torque tube to the fuselage structure are ovalized.

1.3 Airfield

EBNM airfield is equipped with 2 bi-directional grass runways. Runway 06L / 24R (630-meter-long) is normally used for gliding activities and runway 06R / 24L (695 meter long) is specifically used for motorized aeroplanes. Both 06 runways feature a slight negative slope. Due to works of replacement of the grass surface by a paved surface on runway 06R / 24L, the other runway (06L / 24L) was temporarily in use for both gliding activities and motorized aeroplanes, although not simultaneously. Independently from the works in progress, both thresholds of runway 06L / 24R were recently displaced over a distance of 100 meters to mitigate the risk of collision of a landing aircraft (glider or towing plane) with gliders possibly parked close to the end of the runways.

The interview of the airfield commander learns that the displaced thresholds were disregarded during the pavement works under the conditions that there was no glider activity and no glider was parked close to the runway ends. The airfield commander also stated that before the flight the pilot enquired about the specificities of the displaced thresholds and that she was aware that it was authorized to land on the runway before the threshold, provided that the above conditions were satisfied. When the accident occurred, the runway surface was very hard and dusty, and the grass was short and dry as a result of a long period of drought.

1.4 Aircraft information

Type	Aeroplane	Certificate of Airworthiness:	Issued 06 August 2015 by DGAC (France)
Manufacturer:	Grumman American Aviation (now Northrop Grumman)	Airworthiness Review Certificate:	Valid up to 25 April 2019
Model:	Grumman AA-5B	State of registry:	France
Built year:	1976	Total airframe time:	1998h11
Serial number:	0275	Time since last inspection:	17h18 since last 100h inspection
Maximum take-off weight:	1092 kg	Number and type of engine(s):	1 reciprocating
Airworthiness:	EASA Aircraft	Engine:	Lycoming O-360-A4K

1.5 Meteorological information

Source:	EBNM airfield report	Clouds:	CAVOK
Time:	11:30 UTC	Temperature:	35°
Distance from site:	On site	Dew point:	/
Wind direction:	080°	QNH:	1017
Wind speed:	07 kt	Reported visibility on site:	CAVOK
Visibility:	CAVOK	Reported wind on site:	Very light righthand crosswind on RWY 06L

1.6 Personnel information

Pilot

Age:	62 years	Medical:	Class 2 valid until 11/07/2019
Nationality:	Dutch		
License:	PPL(A)	Injuries:	None
Ratings:	SEP(Land)	Restraint used:	3-point (Lap + single shoulder belt)
Flight experience:	About 338 hours since 1997 – About 10 hours/year acting as PIC during the last years.		

Flight examiner (FE) information

Age:	55 years	Medical:	Class 1 license valid until 03/12/2018
Nationality:	Belgian		
License:	ATPL(A)	Injuries:	None
Ratings:	A320, SEP and MEP(Land), CRI on MEP(Land), TMG, FI(A), IRI(A), TRI(MPA) on A320, FE(A), IR(A) (SP/ME), Sailplane towing, PA18	Restraint used:	Lap only (no single shoulder belt installed)
Flight experience:	First PPL licence held on 27 June 1988. First ATPL(A) license held on 31/08/1999. Experience SE: 2400H. Experience Single pilot ME: 106h, Experience Multi pilot A/C: 10355h. Examiner since 31 December 2012. Last 6 months experience flying SE aeroplane: 9 flights of which 8 flights of instruction (About 14h30 flight time). Last flight flying Grumman AA5: instruction flight performed 13 days before the accident.		

2. ANALYSIS

2.1 Possible landing far on the runway due to throttle not fully in idle

For the purpose of the investigation, the hardness of the throttle control was evaluated by the maintenance organization before starting the aircraft repair. The mechanic stated that according to his perception, the throttle was slightly harder to move than usually but there was no difficulty to move the control of the carburettor butterfly against the idle stop screw.

As the throttle was slightly hard to move, it is possible that the pilot did not sufficiently pull on it to set the engine in idle during the flare. This could explain the slow deceleration during the flare, the floating of the aeroplane above the runway and finally the touch down rather far on the runway. This is also consistent with the reported too high RPM observed by the examiner just after the touchdown.

2.2 Decision-making

As explained above, the examiner rejected the pilot's decision to go around, took over and applied brakes as much as possible. Following his analysis, it was too late to perform a safe go-around and also too late to brake and stop the aeroplane before the end of the safety area. He further stated being convinced that he chose the "least bad" option.

From the information gathered after the accident it is impossible to determine if a go-around would have been a safe option at the moment the pilot made her decision. However the closest obstacles in the line of runway 06L are trees bordering the highway at a distance of 640 m to the threshold. With a climb gradient of 9,5% at best rate of climb speed, the obstacle clearance would not pose any restricting factor, even if the initial climb rate was lower (due to configuration of flaps).

Anyway, the fact that the examiner assessed that a successful landing wasn't possible anymore and that it was the 'least bad' option means that the aircraft was brought in the so-called undesired state¹, a situation induced by the flight crew where there was a reduction in margins of safety. Bearing the ultimate responsibility for the safety of the flight, the examiner should have taken action earlier, by either taking the controls earlier or instructing to go around earlier.

In general, pilots want to land an aeroplane from the first attempt, even if the approach is not ideal - unstable or done with a too high airspeed. A go-around is usually considered as an ultimate option and the decision for it sometimes delayed due to a mix of various human factors, such as pride (unconsciously or consciously) and the bias to be able to land in any condition.

2.3 Possible influence of the runway configuration

Although the pilot was not accustomed to land on 06L, she performed a successful flapless touch-and-go, showing that the particular configuration of the airfield was not a problem for her. The slight downslope of runway 06L may have marginally increased the distance of the touchdown point.

¹ Undesired aircraft states are defined as "flight crew-induced aircraft position or speed deviations, misapplication of flight controls, or incorrect systems configuration, associated with a reduction in margins of safety". Undesired aircraft states that result from ineffective threat and/or error management may lead to compromising situations and reduce margins of safety in flight operations.

What is not in doubt is that the ground condition (very hard and dusty surface, very short and dry grass) combined with the down slope of the runway had a negative effect on the braking efficiency of the aeroplane but not to such an extent that it was the sole cause of the runway excursion.

2.4 Possible influence of the high ambient temperature

When the accident occurred, the very high ambient temperature (35°C) added to the sun shining full in the sky caused the cabin temperature to be at least equal to 35°, if not more. Although it is impossible to demonstrate that in this case it had an impact on the human performance of both the pilot and the examiner, numerous studies reveal that exposure to high ambient temperature can clearly affect the attention span.

2.5 Regulation regarding the revalidation of class and type ratings

Maintaining proficiency and adequate flying skills can be a challenge for general aviation pilots who fly infrequently. In order to verify that the concerned pilots maintain adequate flying skills, the regulator established the requirement for a biannual proficiency check (Cfr FCL regulation article FCL.740.A). However, the proficiency check will not improve the flying skills but will only require the pilot who fail the examination to achieve a new examination.

The proficiency check is compulsory for the revalidation of single-pilot single-engine class rating when the pilot has completed less than 12 hours of flight time within the 12 months preceding the expiry date of the rating. Each successfully passed examination results in the direct revalidation of the license by the examiner.

When flying more than 12 hours of flight time within the 12 months, this proficiency check is not necessary provided the pilot conducted 6 hours as PIC, 12 take-offs and landings and performed a refresher training of at least 1 hour of total flight time with an instructor within the last 12 months. In this case, every two years a new license has to be delivered by the aviation authority after assessment of the request.

The concerned pilot stated that even when flying more than 12 hours of flight time within the 12 months, there is an interest to opt for the proficiency check instead of the training flight because the examiner may directly revalidate the license, which is quicker and easier than submitting a file to the authority for the re-issue of a new license.

2.6 Examiner function versus instructor function

The interview of the pilot revealed that the difference between a training flight and a proficiency check was not clear to her.

A proficiency check is not a training flight during which the instructor is supposed to provide advice and guidance. During a check, the task of the examiner is to evaluate the flying skills of the candidate without any intervention, except when necessary for the sake of safety.

Flight examiners also hold a flight instructor's license (it is a prerequisite). However they will behave differently depending whether they are examiner or instructor. During a proficiency check it is not the examiner's primary function to correct a piloting error. By contrast, when acting as an instructor during a training flight, he will provide guidance, show exercises and will be more attentive and willing to correct possible piloting errors.

3. CONCLUSION

Cause

Direct cause

The accident was caused by a too late decision to go around following the floating of the aeroplane above the runway during the flare, ending by a touchdown far on the runway
The probable cause of the floating of the aeroplane above the runway is the engine throttle not fully set in idle during the flare.

Possible contributing safety factors

- The pilot's stress during the proficiency check that was performed by another examiner than the one she was used to.
- The very high ambient temperature affecting the attention span of both the pilot and the examiner.

4. SAFETY MESSAGES

Message to general aviation pilots who fly relatively infrequently.

Most aeroclubs, flight schools or other organizations that rent general aviation aeroplane are aware that pilots who fly relatively infrequently often would need a refresher training. Therefore, in the interest of safety and also to mitigate the risk of damage to their aircraft they periodically require the performance of a training flight with an instructor before making the aeroplane available.

AAIU(Be) considers this as a good practice and encourages pilots not obliged to perform such a training flight to do that on their own initiative. In that vein, AAIU(Be) also encourages the performance of a preliminary training flight for the preparation of the proficiency check.

Check flights planned during high ambient temperature.

During the interview, the examiner suggested that flying under high and unpleasant temperatures could have reduced the attention span of both pilots. A proficiency check is not a pleasure flight and therefore requires a lot of concentration from both actors.

AAIU(Be) believes that examiners and pilots should consider deferring a check (skills test, proficiency check) when extreme high ambient temperatures are expected.

About this report

As per Annex 13 and EU regulation EU 996/2010, each safety investigation shall be concluded with a report in a form appropriate to the type and seriousness of the accident and serious incident. For this occurrence, a limited-scope, fact-gathering investigation and analysis was conducted in order to produce a short summary report.

It is not the purpose of the Air Accident Investigation Unit to apportion blame or liability. The sole objective of the investigation and the reports produced is the determination of the causes, and, where appropriate define recommendations in order to prevent future accidents and incidents.