Safety Awareness Bulletin

3rd Safety Awareness Bulletin

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Welcome on board!

Dear pilots and members,

The publication of a detailed safety bulletin on a yearly basis has not been possible due to several challenges including regulatory changes requiring our attention, a transition into and out of covid, and several operational issues and developments requiring the commitment of resources. Nonetheless, for every safety management system to flourish, feedback mechanisms are essential and thus we decided this year to come up with a safety bulletin focusing less on the quantitative aspects of our SMS and more on the qualitative characteristics of your reports. In this bulleting we are sharing openly anonymised reports as a feedback mechanism and as a tool to educate and trigger discussions on different topics. With over 500 reports registered since the introduction of our SMS it would have been impractical to share all of them therefore, we only present a selection of reports which we believe are of educational value and create an easy narrative for our members to follow.

One of the primary objectives of this publication is to acknowledge the existence of occurrences and to encourage their reporting. We want to show that things do happen and that like all organizations we are not perfect. Mistakes are made they are acknowledged, and we try to learn from them. Planes and systems will malfunction, we will make mistakes, students and flight instructors will encounter situations which need to be handled properly and sometimes despite our best efforts we might experience situations which we could not have foreseen. In all but the unluckiest occurrences, our training and airmanship enables us to defend and protect ourselves. This is not a passive process. We need to ask ourselves; do I know my aircraft and my emergencies well to respond to any situation? Am I making sensible decisions? Am I fit to fly? Am I looking out for traffic, and do I maintain my situational awareness? Am I complacent or proactive when my student is flying and am I ready to handle the unexpected?

As every organization we are facing the challenge of keeping up with changes in our environment and the regulatory framework as well as adapting to the recent trends, new technologies and their subsequent implications. Our Safety Management System has reached a level of maturity, and it is a constant challenge to ensure that new joiners as well as more experienced pilots can benefit from it by utilise this material and engaging with it in the best way possible to promote our safety culture. The purpose of this bulletin is not to create a fertile ground for gossiping on incidents but to cultivate our reporting culture which is open and transparent. Following the trends of our time we have focused more on exposing the content and commenting on it rather than pure theory. We are attempting to present the material from a neutral perspective, but we need to acknowledge that we all have our own biases in interpreting the related material.

We are all thankful to all of you for your positive contribution and we wish you a successful and safe 2024!

On behalf of Mesogeion Aeroclub,

Iason Rigas
Safety and Compliance Monitoring Manager

Contents

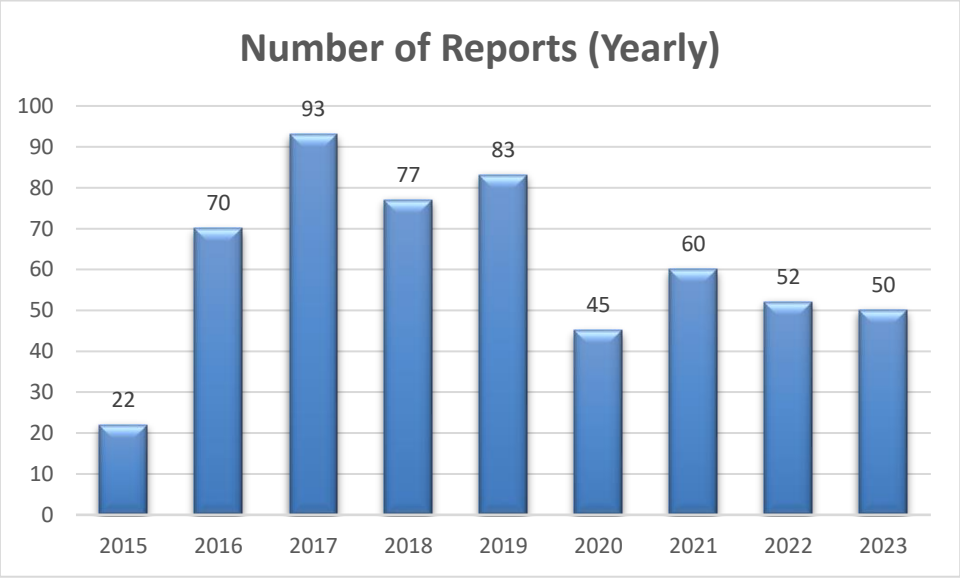
1.0 Short Overview (Skip it if you are easily bored)

How meaningful are the numbers in this report?

Before looking into any reports submitted and any statistical numbers it is important to keep in mind that not all statistics are meaningful even if the best efforts are made. The yearly volume of reports submitted to our safety management system varies between 50-100 reports. From a statistical perspective this sample is hardly sufficient for calculating statistics or drawing meaningful conclusions solely on data. As a result, we always focus more on a qualitative analysis of the reports rather than focusing purely on the numbers. We also consider this to be more interesting for the reader and it also improves the educational value of our safety material.

How well is our safety management system functioning?

For a small organization operating 2 airplanes we consider the number of reports received yearly to be a positive sign that many of our members feel comfortable reporting occurrences and place trust in our system. Over the years this number has been fluctuating scoring a low in 2020 which we have attributed to the pandemic circumstances. It appears that although we have recovered from covid the low reporting trend has persisted and it is one of the aims of this publication to boost safety awareness and encourage new and old members to report more. We attribute this change to several causes such as the cultural shift in the post-covid change in which we socialise, meet face to face and hence we discuss our experiences, including safety topics, less often. We are already trying to address that to create again a sense of community and connection and to share again our common passion.



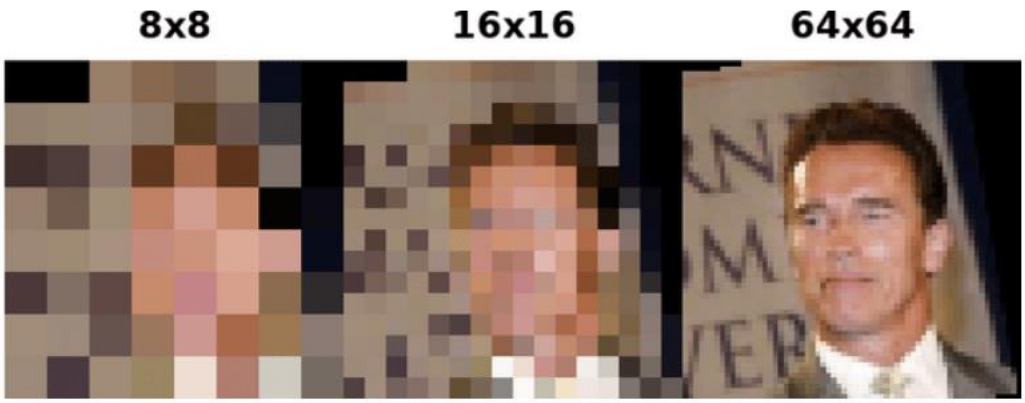
Why is the number of reports important?

The number of reports is not our only metric and on its own it is not extremely important by itself. There are some key practical safety objectives which we are trying to achieve through our SMS:

- Identify hazards early and mitigate any risks so as to ensure safety and protect our own lives.

- Have confidence that occurrences are reported and not hidden from us so that we can all learn from them.
- Meet our legal obligations as an ATO to comply with regulations and report safety critical occurrences to national authorities and other stakeholders responsible for ensuring safety.
- Collect and process safety relevant information and feed it back to our community.

The more safety data we can obtain from our own operation the more confident we can be that what we analyse as a safety level in our organisation is at least close to reality. We can draw an analogy to the image below (Arnold was the best example I could find online – apologies), the more data we have about the image (the higher the resolution) the more confident we are about what we are seeing:



In flight safety the pure number of reports is not sufficient as we also need to draw conclusions on the quality, complexity, and gravity of submitted reports. Every report is useful and important, but little does it help us if pilots are willing to report some types of occurrences (e.g., forgotten switches) while others remain hidden (entering IMC on VFR or an engine malfunction).

How can I submit a report?

We have tried to make it as easy as possible and any of the following ways can be used:

- Submit it online through our website (PC or Mobile) by clicking “Occurrence Report”.
- Use the occurrence report box in our premises at LGTT.
- By sending an email at sm@mesogeion-aeroclub.gr

There are no compulsory fields in our reports and if you feel uncomfortable submitting a report do remember that **you can submit a fully anonymous report!** For us it is more important to know what happened and how instead of who was involved! You don’t need to spend too much time and effort into it as you don’t need to fill all the fields. Some reports come over only with a narrative explaining what happened. Please help us continue gathering the right data so that we can protect you!

2.0 Collection of reports (The juicy part!)

2.1 Very short introduction

We have organised this section differently this time to avoid long tables, statistics, graphs, and too much theory. We try to focus on short and easy to digest text and visual content.

Method used:

- We looked into over 350 reports in the past 6 years and selected the most appropriate ones for the purpose of this publication.
- We divided them over the next sections into phases of flight to group them together and we also added some commentary in an attempt to enrich it and create a narrative.

Each report looks like this:

Each occurrence has a title here to help you get the context
"The text of the occurrence is presented here. It is usually an excerpt of text and not the complete one so that you won't be bored. Sensitive information is removed and replaced by [] as the law requires reports to by anonymised before they are stored. It is all real content and we have not made anything up – and we hope neither have you when writing your reports! Enjoy!"

In single engine flying you have spent quite a lot of your training in recognising and dealing with engine failures and rightfully so. By reading this bulleting you will realise that very few reports concern the engine itself and several other failures or occurrences could have led to disaster. In that sense, just knowing your engine failure emergencies will never be sufficient to protect you when flying so take some time while reading the next pages to reflect on that. Staying current and operating safely requires much more than just doing 3 landings every 90 days and refreshing your handling of emergencies.

Key Takeaways:

- This is not intended to be a training book; it is more of a self-reflection exercise.
- Read the reports and reflect on how each of the occurrences could have been avoided.
- As we are humans, we are prone to errors. How could you recover from the situation? What would be your key takeaways out of the occurrence?

2.2 Pre-flight, flight prep and everything in between

The importance of a good preparation and preflight inspection cannot be overemphasized for all the reasons you learned during your training and for a few more worth repeating here:

- It is an opportunity to gain confidence that your plane is safe. This is not your car, and you are not the only user. You never know what happened in the previous flight and what someone else might have done.
- People make mistakes and you can never trust your life on the amount of fuel someone else thinks has added to the tanks, the amount of oil, or anything related to the plane's condition!
- Be careful with handling the aircraft on the ground, propellers cut heads and arms, fuel tanks explode, aircraft are left unattended in wind and start taxiing on their own etc…

Figure 1 Always make sure your plane is in a proper condition

For the flight preparation and preflight phases, the most common issue is skipping items or not carrying out one. Preparation starts well before getting to the apron so let's start out journey!

Passengers declaring wrong weights on purpose
"…During a demo preparation flight i realized (by weighing) that 2 pax had declared intentionally their weights (deviation more that 35Kgr in total) less that real."

A very interesting case indeed! Do not expect your passengers to understand the importance/relevance of being truthful about their weight. **In our premises you will find a scale and you are encouraged to use it**. Let the passengers know that it is a normal procedure and essential for safety. If you are planning a trip with passengers and their belongings remember to check on their weight as well as their luggage! If you are not convinced check the video below:

C172 Overweight take-off crash

The pilot departs clearly overweight leading to a loss of control and a crash, all passengers on board die: https://www.youtube.com/watch?v=VTnW2TXOacY

Always make sure before your flight that your airplane is properly loaded and within its mass and balance limits **both for take-off and landing as the mass and balance is changing as you are burning fuel**. If this is not the case, you are risking:

- Crashing because of lack of performance and impaired stability
- You have no guarantee that the aircraft is controllable in normal flight conditions and manoeuvres
- The insurance is invalidated and your flight is not covered as your airplane is not airworthy

Departure while destination airport is below VMC minima
"…During a PVT flight I decided to fly to [Aerodrome] while SWC, METAR and TAF showed that VIS was below 5km: *METAR [ICAO] 210850Z 00000KT 3000 BR SCT018 BKN040 OVC080 15/12 Q1021=,* *TAF [ICAO] 210800Z 2109/2118 VRB03KT 8000 FEW015 BKN025 TEMPO 2109/2110 1600 BR SCT006 SCT025 BECMG 2110/2112 16008KT="*

It is not obvious in the phrasing above, but we can assume that the pilot did not actually check the weather at the destination before deciding to fly. Always check the weather thoroughly before you fly including the weather along your route. Make sure you also check the TAF for your destination and departure aerodrome (if you plan to return).

It is equally important to plan your flight properly and make sure you land within working hours and during VFR. Remember that at LGTT the last landing does not coincide with VFR closure (Sunset+30min) but exactly at sunset. The following two occurrences are indicative:

Landing after sunset
"…I landed back at LGTT 2 minutes after sunset"

Do understand that the airport has no obligation to accept your landing if you are late even by 1 minute. Being on the frequency at closing time is no guarantee for a landing clearance. In both cases out of courtesy the controller on duty accepted the flights but you can never count on their goodwill. Always plan to arrive well in advance of closing time to avoid having to divert to another airport in darkness which is extremely dangerous if you are not trained for it. If your destination is LGTT your main option for diverting at that point will be LGAV which under those conditions and its traffic complexity will most likely be a stressful experience.

Landing after hours
"…violation of airport's working hours. the planned flight was a VFR navigation from [] to []. The planned etd was 14.00 and arrival 15.10 utc, however there was an unexpected delayed in the departure. Airport's closing time was 16.00 and the arrival of the flight occurred on about 16.13.

In case of unexpected delays in departure you are responsible for figuring out if your flight can be carried out within the time constraints in place. If you are not certain about it its better to stay on the ground and cancel your flight.

Let's look into some occurrences related to the actual preflight. Preflight checks are essentially a continuation of the previous flight's process, as they can reveal any issues that may have occurred during that flight and could affect your own. Very often during the preflight we find switches forgotten in the wrong positions (often because the securing checklist was skipped), pitot covers missing, the aircraft not tied down and other skipped items. These are important but let's look at some selected cases.

Primer found unlocked
*"…*Training. During preflight inspection - interior check we found PRIMER unlocked and 1cm out."

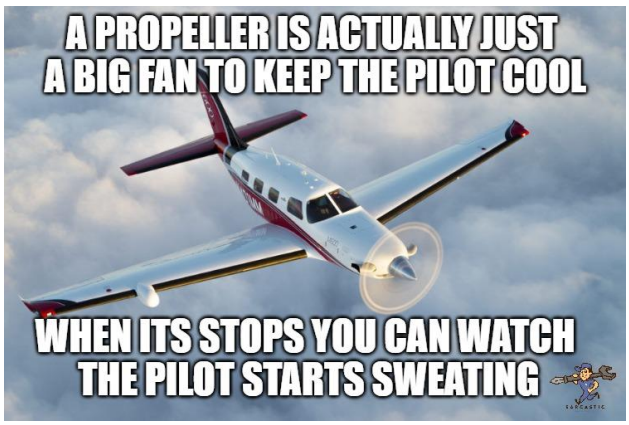
You are expected to check the primer several times before actually taking off. Do not just assume by looking at it that it is locked but always unlock it and make sure it locks back in properly to avoid surprises during flight! An unlocked primer will lead to an extremely reach mixture and rough running of the engine at low RPM mimicking magneto problems below 1700 RPM.

The preflight is your opportunity to ensure the aircraft is in an airworthy condition. Don't just walk around it and stare at it. Use your checklist and carry out each item looking at the actual components and consider if they are in their proper condition. If in doubt ask someone for help, you are not expected to be an engineer and to know everything. The following two reports show how important a meticulous preflight is:

Engine oil leakage
*"…*After shutdown, i noticed that there was an oil leakage below the engine. The PIC reported that he had normal indications during his NAV flight (approx. 2h). The total oil consumption was approx. 1.3 QTS."

Engine oil leakage
"Yesterday and after a long flight an oil leakage was detected. There was no increased oil consumption but the leakage was visible below the engine. I looked into the engine and I saw a drop of oil coming from the right cylinder"

Despite our best-efforts mechanical failures WILL and DO occur. If something doesn't look right, feel right or smell right it probably isn't right! Carefully inspect your engine and treat it always with respect, you don't want it to surprise you during flight!



Leaving without checking the fuel?

"…I did not check visually the fuel quantity before start as the estimated fuel from the previous flight was more than sufficient for my flight."

This is certainly a big no-go. We all make mistakes. Surely you don't want to put your life at risk just because someone before you didn't measure the fuel quantity properly, or failed to notice a leaking tank, an overconsumption, an increased headwind, or anything which could result in you not having sufficient fuel on board.

Always know exactly how much fuel you have on board **in litres**. The equivalent amount in hours of flight time is a rough figure which will not be helpful in any calculation you might need to carry out in flight. You should be able to calculate at any point along your route your fuel remaining and make decisions based on that. You do not want to end up in a situation in which you are uncertain about the fuel on board and how long you can safely fly, everyone who has found themselves in this position will tell you that it is an incredibly stressful experience. Your flight manual contains all the figures you need in the following tables please use them. Do not rely on generic consumption figures (such as 30lt/hr) which are only true as a rough approximation under certain conditions and for certain flight profiles!

MAXIMUM RATE OF CLIMB DATA — FLAPS RETRACTED — FULL THROTTLE

GROSS WEIGHT	AT SEA LEVEL AND + 15°C			AT 1524 M - 5000 FT AND + 5°C			AT 3048 M - 10,000 FT AND - 5°C			AT 4572 M - 15,000 FT AND - 15°C		
	IAS	Rate of Climb	Fuel Used	IAS	Rate of Climb	Fuel Used	IAS	Rate of Climb	Fuel Used	IAS	Rate of Climb	Fuel Used
750 kg	135 km/h 73 kts 84 MPH	1085 ft/min	3.8 litres	128 km/h 69 kts 79 MPH	825 ft/min	7.2 litres	117 km/h 63 kts 73 MPH	570 ft/min	10.6 litres	106 km/h 57 kts 66 MPH	315 ft/min	15.5 litres
900 kg	141 km/h 76 kts 88 MPH	840 ft/min	3.8 litres	132 km/h 71 kts 82 MPH	610 ft/min	8.3 litres	120 km/h 65 kts 75 MPH	380 ft/min	13.6 litres	110 km/h 59 kts 68 MPH	155 ft/min	23.5 litres
1043 kg	145 km/h 78 kts 90 MPH	645 ft/min	3.8 litres	135 km/h 73 kts 84 MPH	435 ft/min	9.9 litres	126 km/h 68 kts 78 MPH	230 ft/min	18.2 litres	115 km/h 62 kts 71 MPH	20 ft/min	43.5 litres

NOTE : Flaps retracted, full throttle, mixture leaned above 915 m - 3000 feet.
Fuel used includes warm-up and take-off allowances.
For hot weather, decrease rate of climb 20 ft/mn for each 5°C above standard day temperature for particular altitude.

Figure 2 Climb performance figures

CRUISE PERFORMANCE

ALTITUDE m	ALTITUDE ft	RPM	% BHP	FUEL CONSUMPTION (PER HOUR) Litres	TAS km/h	TAS kts	TAS MPH	144 LITRES (NO RESERVE) Endurance Hours	144 LITRES (NO RESERVE) Range km	144 LITRES (NO RESERVE) Range NM	182 LITRES (NO RESERVE) Endurance Hours	182 LITRES (NO RESERVE) Range km	182 LITRES (NO RESERVE) Range NM
762	2500	2700	87	36.4	224	121	139	3.9	880	475	5.0	1110	600
		2600	78	32.6	214	116	133	4.4	955	515	5.6	1205	650
		2500	70	29.2	205	111	128	4.9	1010	545	6.2	1280	690
		2400	63	26.9	196	106	122	5.3	1055	570	6.7	1353	720
		2300	57	25.0	187	101	116	5.7	1065	575	7.2	1350	730
		2200	51	23.5	174	94	108	6.1	1075	580	7.7	1350	730
1524	5000	2700	81	33.7	222	120	138	4.3	945	510	5.4	1195	645
		2600	73	30.7	215	116	133	4.7	1010	545	6.0	1280	690
		2500	66	28.0	205	111	128	5.1	1055	570	6.5	1335	720
		2400	60	25.8	194	105	121	5.6	1085	585	7.0	1370	740
		2300	54	24.3	183	99	114	5.9	1095	590	7.5	1370	740
		2200	48	22.7	172	93	107	6.3	1085	585	8.0	1370	740
2286	7500	2700	76	32.0	222	120	138	4.5	1010	545	5.7	1280	690
		2600	69	28.8	213	115	132	5.0	1065	575	6.3	1345	725

Figure 3 Cruise performance figures.

Working with the numbers

Just create a hypothetical trip and grab a pen and paper and try to calculate the fuel needed for your flight based on the figures in C172 manual.

- How much more fuel do you need if you have a 30 min delay in taxying?
- How much fuel will you consume to climb to 8000 ft?
- How much should your final reserve fuel be?

The following rare occurrence demonstrates the importance of checking fuel cap security and fuel quantity before each flight.

Fuel cap loose in flight

"I went to the airport to refuel SX-ASG and I found the filler cap of the left tank open. By comparing the existing fuel with previous flight records a small fuel quantity had been lost in the previous flight between 5-10 litters. The previous flight was a checkride but neither the candidate nor the examiner could recall anything out of the ordinary. Further investigation suggests that the cap was either not secured properly before the previous flight and/or at some stage became loose. "

In over 16000 flying hours Mesogeion Aeroclub has never encountered a similar occurrence. It is worth doing a short analysis here as such occurrence can have grave consequences. A missing fuel cap can lead to a rapid loss of fuel due to the lower pressure above the wing and cause fuel starvation. By exploring aviation safety databases, we found several occurrences which led to fatal accidents. As several factors interplay in such a scenario it is not entirely clear how much fuel will be lost and when. For example, some fuel will escape the open tank and as the fuel selector valve is on both it will also potentially lead to fuel loss on the other tank as well. As the engine is running and pulling fuel it is

likely that the engine will not quit immediately upon the cap becoming unsecure, but if fuel is lost an engine failure will be the result.

Luckily in the specific occurrence there was no significant fuel loss, but we cannot tell at which point in time during the flight the cap was displaced. As this occurrence was during a flight exam a photo was taken after the student successfully passed the exam and it can be seen that the cap is not in its proper place:

Figure 4 Fuel cap not secure after landing

Examining the area around the cap showed scratches and unusual signs of paint suggesting that the cap at some point became loose and started bumping against the wing while it remained attached to the aircraft by its chain.

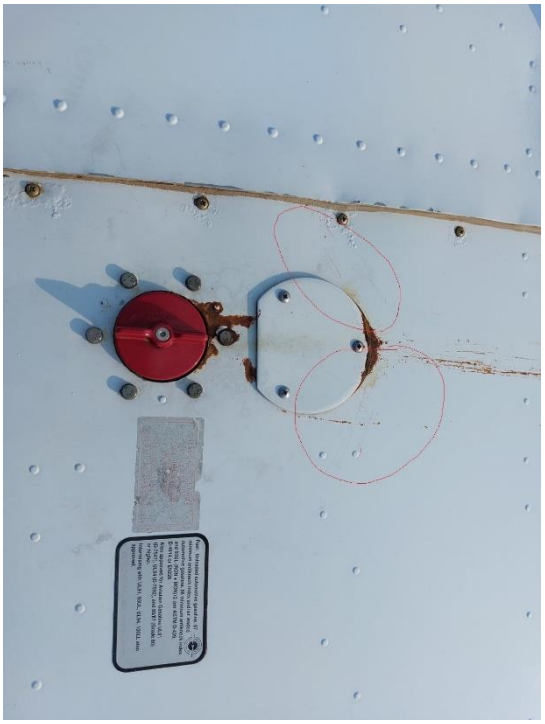


Figure 5 Signs of damage around the tank

A hypothetical Scenario

Imagine for a moment that your most trusted pilot friend was the one flying before you and for whatever reason the fuel cap became loose in-flight losing tenths of litres of fuel while nobody notices. After landing he tells you that he only flew for 1 hour and the plane has another 4 hours of fuel for your local 1-hour flight. You have no reason to doubt him, after all you arrived early at the airport and you saw the plane being refuelled. Maybe you even helped him! You can imagine the outcome of this chain of events.

In fact, this scenario is an excellent opportunity to refresh the concept of the Swiss cheese mode introduced by Prof. James T. Reason in 1990. You certainly have heard about the phrase "chain of events" leading to a disaster in aviation. The main idea is that a chain of events (or error chain) consists of the contributing factors leading to an undesired outcome. Prof Reason proposed the following cheese model showing that when several conditions align (the hole in the cheese) then an accident can happen. Each cheese slice is a layer of defence but every layer can have a hole in it. For example, your preflight check is there to protect you, but if you choose not to check your fuel or you forget to do so then you are going through the hole. Fuel caps are supposed to be secured before flight and remain so during the flight. If you don't secure one properly or if it mechanically fails, then again you are exposed to an accident.

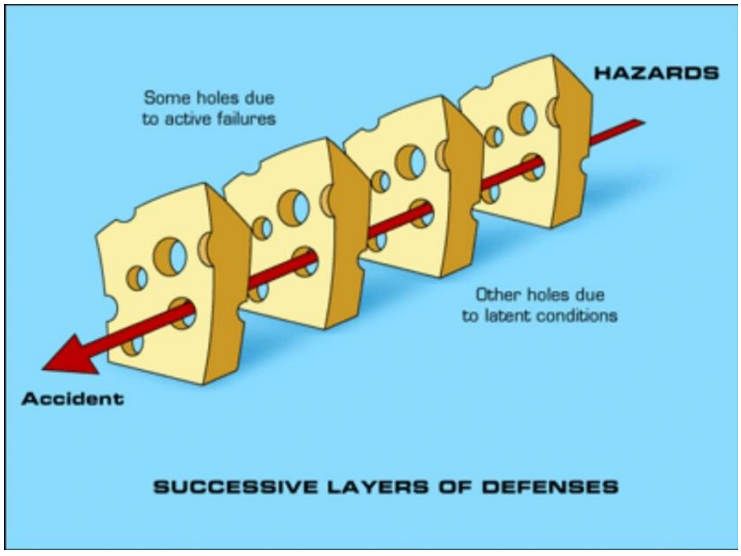


Figure 6 The Swiss cheese model

As pilots we should try to use every defence layer possible to protect ourselves, our passengers, and those on the ground. It is also our duty to report to the organization and the authorities anything which has compromise or has the potential to compromise safety.

Fuel quality is important and it is very likely that you have already found water or other contaminants while checking fuel in the past. For those of you who are new or who have not come across fuel contamination the following photos are representative. The left one shows fuel contaminated with water and as water is heavier it will stay in the bottom. The right one shows contamination with particles which in this case are also staying in the bottom.

Figure 7 Different types of fuel contamination

Before your flight make sure that any water or contaminants are fully drained out from the tanks. This might require the repetition of draining several times. Always drain fuel before each flight even if you are flying consecutive flights yourself with the same aircraft as moisture might accumulate or find its way to the tank even if no refuelling has taken place!

Refuelling is a hazardous activity and especially gasoline (MOGAS) is highly volatile and much more explosive than diesel. Proper precautions must be taken ensuring the aircraft is properly grounded and that master switch and ignition switches are off. Always make it a habit to cross check and visually ensure that both are off before you start refuelling the plane!

Refuelling with master on?

" I was ready to refuel the aircraft and asked the PIC to confirm that Master is off and ignition off. The PIC confirmed that both are off but after grounding the aircraft and checking the panel I found the master on!"

In addition, keep in mind that refuelling the aircraft using anything other than a certified fuel pump is strictly prohibited. Refuelling using canisters or any other containers is highly dangerous. Besides a risk to your life -which is the most important element- refuelling in a non-approved way will invalidate the aircraft's insurance should an accident occur. When refuelling or when dealing with fuel

(such as sample draining from the tanks) always ensure that no risk exists – and always brief your passengers properly!

Passenger smoking next to fuel

"A passenger was smoking next to the plane and fuel tank while the PIC was executing his preflight checks and draining fuel from the tanks. I asked him to stop smoking immediately and the PIC admitted that as he was running late he had not briefed the passenger properly"

Sometimes skipping parts of the checklist can lead to the discomfort of having to stop a running engine to remove chocks or untie the aircraft. In the example below the crew was under pressure and rushed to start their flight not noticing that the aircraft is tied down and not realising that with a running engine on the ramp there is nowhere they can go unless they push the aircraft back!

"The pilot started the aircraft in the ramp and then realised they have to untie it push it back and start it up"

*"…*During start-up, I forgot to untie the airplane and remove the chocks. Upon notification by the CFI, I followed the shut down checklist, he untied the airplane and removed the chocks, and I reinitiated the startup procedure**.**

When pushing back the aircraft be very careful and make sure its gear does not fall off the concrete!

Ground handling , aircraft gear falling off the ramp!

"…During push back of the plane by the crew, the left main gear fell off the ramp. In the particular spot the height was small, the recovery of the plane back onto the ramp was easy and no damage occurred on the wheel, gear strut, braking system and ramp. The plane was pushed forward onto the ramp again, realigned and pushed back successfully."

2.3 Start-up, Taxi, Before Take-off, Take-off

During those phases of flight, you have a unique opportunity to check the functionality of your instruments, systems, and engine. This is your chance to detect any issues before finding yourself up in the air troubleshooting a malfunctioning system or an engine running out! As the following reports show you will find issues at some point so never miss your chance!

Alternator failure malfunction

*"…*A PPL holder called me on the phone immediately after the startup and reported to me that the ammeter was not responsive when ALTN MASTER SWITCH was set to ON, while the ALTN light switched OFF. After few trials I told him to park the plane again on the ramp and cancel the flight (probably ALTN field malfunction)"

A failed alternator means that your battery will not be charging, and you will soon find yourself flying without electricity and comms. A very unpleasant situation to be if it can be prevented by checking your instruments.

AI Failure

"…Attitude indicator failure. During run-up and before take-off for a dual training flight, both the student and me noticed the AI drifting and then completely failing. Vacuum pump and DI did not seem to be affected. A post it sticker was used to cover the AI"

During a VFR flight a failed AI can be confusing as it will be showing the wrong attitude. You should be able to quickly pick up the failure by looking outside and ignoring the fault. In a night VFR flight or during IFR a failed AI can be very dangerous until it is detected by the pilot as attempting to manoeuvre the plane based on the information displayed will lead to the aircraft adopting an unusual attitude. Such an adventure can be avoided by checking properly the instruments on the ground. A textbook example from the internet can be seen below, although the AI indicates a left descending turn other instruments provide conflicting information. The VSI shows a climb and the turn coordinator indicates almost wings level.

Figure 8 Artificial Horizon failure

DI malfunction
"…During local flight run-up student aligned the DI and it was operating when we entered the runway. Shortly after we both noticed that it was rotating constantly and were unable to re-align it. AI and suction gauge were both operating normally.

This is a less demanding failure since looking outside in VFR conditions confirms no turn and at night or IFR the magnetic compass will quickly reveal the truth. Nevertheless, it is good airmanship to check that your DI is functional and that it does not drift at an unacceptable rate. For example, a DI losing 30 degrees in 10 minutes can be a very dangerous instrument to be used for navigation. Check and align your DI frequently if needed and should its rate of drift be too high do not use it for navigation.

Besides checking your instruments during taxiing you need to always be aware of other traffic including any vehicles at LGTT. Do not assume that others will understand the right of way on an apron and always be vigilant and taxy defensively!

Right of way during taxiing
"…Upon arrival of a training flight, approaching the aeroclubs area, during taxing back, at least 3 cars did not stop in view of our plane, violating the right of way (even cars that were on the left of us). I am sure that all drivers have seen our plane taxing back to the aeroclubs area…"

The runup is an opportunity to figure out if there is something wrong with your engine before the actual take-off. Don't rush through you runup and don't assume that your engine is performing well just because you never experienced an issue in the past.

Rough magneto during runup
"…Rough (RIGHT) magneto and excessive drop (200-300RPM). We followed the standard troubleshoot procedure (for 30sec), then magnetos check was performed normally (within limits and smooth operation)

An excessive drop suggests fouled spark plugs. If the mixture is not leaned properly during flight, an overly rich mixture will burn incompletely, leaving a coating of deposits on the spark plugs. It is important to know by heart the procedure for cleaning the spark plugs and after applying it you can carry out the runup again and check if the drop is within limits. If it isn't, return to the apron and do not fly as the cause of the drop might be different and it will require further investigation!

What does rough running look/sound like?

The following video from a 172 is a good demonstration of what rough running is:

https://www.youtube.com/watch?v=Es69LVZLcYc

Smoke in the cockpit!

"…During the run-up (1700rmp) I immediately noticed a faint burning smell. I started checking the cabin heat and cabin air and investigating outside in case we had smoke outside. I couldn't see something and the smell got stronger. I indicated it to the student. Initially he could not smell it. I started checking the CBs but none was popped out. I started touching the panel near the strobe and beacon switches. It felled warm. Then my student noticed the smell as well. By that time I could see a small patch of white smoke coming out from under the panel in the electrical switches area. I then noticed that the overhead light rheostat was turned all the way to on. We throttled back to idle and I switched the rheostat off. I could no longer see smoke and the smell continued for a few more seconds. by the time we turned back to the air-club parking area we could no longer detect it. A visual inspection that was carried out after shutdown could not reveal anything burned"

The decision to turn back to the apron was the right one even if the smoke source was not detected after subsequent investigations. The smell of smoke and even more visible smoke in the cockpit should never be ignored. Make sure you know your emergencies well and the actions expected in case of smoke or fire!

Departure without take-off clearance

"…After run-up, we took clearance for lineup and departure directions. We start the flight without take off clearance."

Taking-off without a clearance is a seldom occurrence compared to landing without a clearance. This is not very surprising considering the high volume of training hours with repetitive touch and goes. Confusion during departure can stem from a departure expectation bias when you expect a line up and take-off clearance and instead you are asked to hold on the runway.

2.4 Enroute/Cruise

In the cruising phase different types of occurrences can be experienced from system failures to deteriorating weather conditions. If you find yourself looking out of the window for a long time it might mean that you are neglecting your duty to continuously monitor your aircraft and its systems. Keep your eyes open for malfunctioning instruments and systems and always take good care of your engine and monitor its indications.

Vacuum pump failure in flight

"…Vacuum pump failure during cross-country flight.

We lost all gyro instruments during the last leg of the dual practice of the qualifying cross-country going from LGTT to LGSY, LGSK and back.

The student did not realize. I noticed a weird bank indication on the AI and then verified that vacuum pump pressure indicator was 0. I had post it noted with me but the glue had worn off so we di not use them. It did not affect the rest of the flight."

Putting up a post-it note or a piece of paper to cover malfunctioning instruments is always a good idea as a malfunctioning artificial horizon for example can be a real distraction.

Altimeter failure in flight

"…while flying from [] to [], upon initial contact with Athina TMA information, they informed us that the altitude they saw in their radar, was 6,200ft instead of 7.000ft as indicated in our altimeter with 1009 local QNH. I immediately checked the altimeter on the Garmin GPS installed in the airplane and from the ipad I had with me and confirmed that the altitude was actually 6.300ft. I tried to unblock the altimeter by opening the alternate static valve and by tapping on the instrument glass, but nothing changed. I continued a small part of the flight by looking on the gps and ipad altimeter and then landed at lgtt."

The altimeter together with your air speed indicator are essential instruments for flying even in visual conditions. A GPS can be of help if your altimeter fails and with some experience you can also judge your approximate height above ground simply be looking out. An air speed indicator failure can be more problematic as you need to rely on your knowledge of the aircraft and its performance under different power settings and attitudes. Judging your airspeed by looking outside might be largely misleading especially under strong wind conditions. Aim to approach on the safe side (higher airspeed) and be particularly observant of signs indicative of a low airspeed such as sloppy and ineffective controls due to reduced airflow or signs of an approaching stall, including the stall horn.

: Carburator icing during a dual nav flight with a student pilot

*"…While scanning for traffic outside I initially noticed that **the magnetic compass was shaking** more than usual. Then i started scanning the instruments and within a second the whole **instrument panel was vibrating and the vibration now was felt through the whole airplane**. I did not have my hands at the controls but at a glance I noticed them shaking quite a bit. I quickly scanned engine instruments, RPM and airspeed. All were in the green and the ASI was showing steady cruise around 97 knots. Rpm were slightly less than 2300 but well within the green arc. My initial thoughts were that there might be something wrong with the engine and/or propeller **however I immediately pulled out the carb heat**. **The engine almost felt like quitting for a split-second**. Then, the engine started running smoothly and rpm went up to 2500. No vibrations were felt anymore. I left the carb heat on for a while. All this time the pilot was occupied (it all took probably less than a minute). I asked him if he understood what happened and that we had carb ice, he said he did not realize anything."*

Carburetor icing is a real danger in general aviation aircraft and the conditions under which it can develop vary significantly between aircraft, engine models, fuel used, and environmental conditions. In our C172's running MOGAS carburetor icing is extremely likely on descend with a low power setting and when flying close to visible moisture in any power setting. It is also important to remember to check carb heat on ground during the before take-off checklist execution and to let the carb heat on for at least 15 seconds to melt any ice before departure. The following diagram shows the likelihood of icing under different environmental conditions using AVGAS. You can clearly see that carburetor icing is possible even at high temperatures due to the venturi effect which reduced temperature within the engine. The diagram below is not valid when operating on MOGAS situation is further aggravated by the use of MOGAS which is more volatile and increases the engine's susceptibility to carburetor icing. Due to its higher volatility, MOGAS is more susceptible to the formation of carburetor icing.In severe cases, ice may form at outside air temperatures up to 20°C higher than with aviation gasoline (AVGAS)

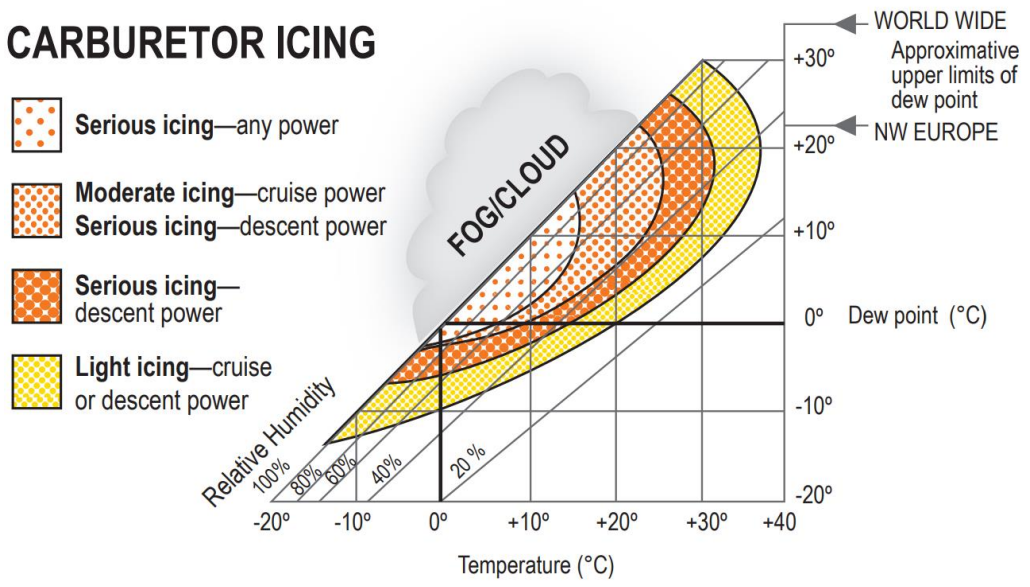


Figure 9 Carburetor icing using AVGAS. Icing is possible at virtually any temperature when using MOGAS

What is carburetor icing and what to do about it?

The following short video highlights some of the main points regarding carburetor icing:

https://www.youtube.com/watch?v=VFBNy5-B7nA

VFR into IMC conditions

"…from [location] to [location], while descending from 4500FT to 2500FT. Clouds in the area SCT LOC BKN CUSC from 3000FT to 4000FT. On the planned heading (194 deg) there was cloud opening too narrow to allow descent with the sea in sight continuously. I changed heading eastwards (120 deg) where conditions seemed better. Yet I was unable to find big enough opening for full descent with sea in sight. I decided to enter clouds on straight descent to clear this layer while still over sea and before approaching shoreline mountains. I was for about 10 seconds in IMC conditions until I cleared the clouds and had the sea in sight at about 3000FT…."

If you are not instrument rated entering IMC conditions is most of the times a deadly idea and it should be avoided at all costs. A good flight preparation should be your first defence against encountering IMC but it is no assurance that you wont encounter deteriorating conditions. In a navigation flight you should consider all options starting by track reversal, climbing or descending, contacting ATC to request assistance and clearance into other controlled airspaces if possible, even carrying out a precautionary landing on any suitable surface such as a normal field. As you are reading those lines do you feel confident performing a 180 turn to get out of IMC conditions? Think of the following scenarios and try to answer to yourself how would you react if:

- You are flying to an island destination and realise there are broken/overcast clouds below you.
- You are flying in your local area and suddenly encounter IMC conditions ahead.
- In the scenario above you make a 180 degree turn only to realise there is no escape path backwords as you are caught up in the weather.

How many seconds to live?

There are several videos out there created by authorities to try and demonstrate what entering IMC feels like and how many seconds you have on average from that moment until you die if you are not instrument rated:

https://www.youtube.com/watch?v=b7t4IR-3mSo (aeroplanes)

https://www.youtube.com/watch?v=ERUveRF7xC4 (helicopters)

Never push the weather to the limits, don't risk your life for your hobby. Obtaining an instrument rating - even if you are not consider a career as a pilot – is always an excellent idea and an invaluable experience which will teach you a lot!

The following occurrence is an extremely rare one and in over 16000 hours of flying our club has not encountered it before.

Flap deformation in flight!

*"…*During a SEP(land) revalidation flight, upon arrival at [airport] 4000FT overhead we executed a slow flight with 40o flaps. During recovery we noticed asymmetric flap retraction. I took the controls, informed ATC requested priority to land, and landed safely. During approach, as the airspeed decreased I noticed that ailerons became heavy. After shut-down, we noticed that right flap deformation caused right aileron excessive friction."

Depending on which part the asymmetry occurs the outcome can be fatal. A flaps asymmetry can induce roll which should be possible to be counteracted by using ailerons. In theory the aircraft should remain controllable but certainly depending on other factors such as ground proximity and weather conditions a more unfavourable outcome can be the result. Luckily in this case the aircraft remained controllable. The photo below shows the deformation when the aircraft returned on the ground:

Figure 10 Flap deformation following asymmetric flap retraction

Thankfully the ailerons were not jammed due to the deformation and the flaps asymmetry did not cause excessive roll. The route cause for the deformation was determined to be structural fatigue. Although such occurrences are extremely rare this event reminds us that we should be vigilant and alert all the time and ready to encounter even emergencies which were not included in our training. Most importantly we should always treat our aircraft with respect and operate it within its approved limits. Exceeding the Vfe (maximum flaps extended speed) by a few knots will -hopefully- not cause structural damage. But operating flaps recklessly over a period, ignoring Vfe, and pushing the aircraft to its structural limits can have the effect above and a very sad outcome. Never forget that we are not

only responsible for our own flights. We have a responsibility towards our fellow pilots and the wider community to not put the life or property of anyone at risk. Pushing the aircraft to its limits might mean that a component can fail in one of the next flights or in some years without any signs or warning, no matter how well the engineer inspects the aircraft or you inspect it before your next flight!

Altitude deviation under IFR

*"…*We took off full of fuel from [] to []under IFR. Performance of the airplane during the climb was not great so I requested a non-standard F080 when we were asked. I did not notice any big difference after passing 5000 feet and I felt the airplane would reach 8000 feet without any problem but still passing 6500 feet I started slowly leaning for better performance. Levelling at 8000 feet proved very challenging for the student since we experienced consequent up and downdrafts. I was instructing him to be more involved with power and attitude inputs and not just try to hold the airplane with small trim changes. Visibility was great, we had no visible moisture and although we knew the wind was strong since we applied a 20 degrees wind correction angle to follow our intended track , the airplane was not experiencing the slightest turbulence. At some point I noticed the airplane climbing with 500 fpm and reaching 8300 feet and I instructed the student to be more positive with his correction inputs. I looked down at my papers for a brief moment to see the effect of a new direct instruction we received. After a few seconds I noticed the airplane indicating 7800 feet with 500 fpm descent rate while on cruising power and attitude. I remember saying at least 3 times add power, nose up before I also joined in the controls. We were at Vy attitude with full power on a 200 to 300 fpm descent. I started trying to understand what was happening because we did not feel like descending and there was no turbulence. I started second guessing the pitotstatic instruments and checked the pitot heat in the on position. Nothing changed and all 3 altimeters as well as the transponder indicator were in agreement. Trying to improve our climb rate I instructed the student to pitch up to 65 knots since we were high**,** and I thought maybe the IAS for Vy should be lower. I also quickly tried to re-lean for best power. By that time approach started inquiring about our height loss. I indicated that we experienced an un-commanded descent and that we experienced performance issues climbing back. At that point approach correctly reminded me that I should have informed leaving the assigned altitude. I just replied that it was unintended while still trying to troubleshoot. For a few seconds we were stable at 7000 feet with nose up attitude, around 65knots IAS, full power and attempting to lean for best performance . At that time**,** I was thinking maybe I should abort the flight and continue to the alternate. Approach offered to investigate if it was possible to continue our trip at 7000 feet…"

Troubleshooting a performance issue during training under IFR at night can be challenging. The first thoughts are indeed whether instruments are telling the truth since the first symptoms of any failure would be abnormal indications. Under IFR it is important to inform ATC if the cleared level cannot be maintained as there might be a separation risk, but the first priority remains to understand what is happening and flying the plane. This performance issue example is not only relevant for IFR rated pilots. Always remember that a C172 might encounter performance issues especially reaching higher altitudes. At any altitude you might find yourself struggling to maintain altitude or to climb. If that is the case, then use maximum power and fly at Vy for as long as it will be required. Eventually you will get out of the downdraft and be able to climb again. If you are close to the terrain or need to avoid obstacles use a gentle bank angle of a few degrees to maintain directional control and avoid any

obstacle required. In mountainous terrain always consider the wind and try to imagine how downdrafts can be formed behind mountains and avoid areas of potential downdrafts. Remember that downdrafts in mountainous areas can be stronger than the climbing capabilities of your aircraft and push you to the ground.

2.5 Approach

Approach and landing are critical phases that require vigilance and good preparation especially when flying in complex environments with high traffic or in settings with increased workload such as training flights. Let's look at some interesting cases.

Drone encounter

*"…*While at the east downwind of Rwy 03, approx. abeam airport and at pattern altitude, I noticed a black circular object ahead of us, about 1.5nm, flying and moving from South-South East (imagine at 45 degrees angle and south from the point we would turn from downwind to base of Rwy 03) towards the North. When I spotted and asked the passenger sitting on the front right seat to also check, he positively identified it as well and confirmed it was a drone. The drone was estimated to be at approx. 2.500ft and as we passed to the right of it and at about 0,3nm, we also noticed a green light, like a NAV light on it. We immediately reported it to the LGTT Twr controller and said we would make a 360 right turn (at the time we were just past abeam the threshold of Rwy 03) to try to notice where it was heading to. Unfortunately, by the time we were turning through north, we lost it from sight and assumed it descended rapidly. We completed the 360 turn, cancelled our intentions for touch and go and requested to land. We continued the approach and landed without any further issues"

Over the past decade drones are becoming a real threat for air traffic. Many drone users are unaware of legal requirements and certification for flying their drones. The situation has improved as vendors employ geofencing technologies to prevent drones from entering controlled airspace and flying close to aerodromes and protected areas. The system however is not bulletproof. For a small fee it is possible to hack modern drones and circumvent those restrictions to allow users to fly without geofencing restrictions, beyond normal ranges, and without altitude restrictions to altitudes even beyond 16.000 ft. Be especially suspicious when flying at low altitudes over scenic areas such as when departing or approaching islands in summer as you might encounter anything ranging from a careless "influencer" to a curious drone pilot trying to get airborne pictures of your flight.

Total comm failure during approach

*"…*During the approach to [Airport] and over [VFR point] point (VFR ROUTES) the crew was unable to communicate with the ATC using any of the two radios on board. The crew was unable to receive any other stations and therefore contacted LGIR over a mobile phone to coordinate the approach. A mechanic on the ground diagnosed the issue as an audio panel failure and fixed the audio panel to restore its operation. The crew was able to fly back on the same day without any issues."

This is another rare occurrence as a number of redundancies exist such as two radios on board. In light aircraft there will always be some single points of failure for non-critical systems. In the scenario above

calling over a mobile phone is not the approved procedure but it perfectly fine to improvise in such cases and use whatever means are available to you to coordinate with ATC. It is certainly much smoother and stress-free to give ATC a call, if possible, instead of flying over the pattern and looking for light gun signals. Whatever you elect, remember to follow established procedures such as setting squawk 7600 to alert all units of your issue and act. If you elect to use a mobile phone for contacting ATC do not become fixated on that if you don't have the right number and don't waste your time to call others to get the right number for you. Stick to the basics, follow the established procedures and you will be just fine.

ATC repeatedly issuing ATC instructions in Greek

"…heading to the airport there was a lot of ATC in Greek. I reported in English and asked for landing instructions. I got answer in Greek and asked for English twice..."

That's a bit different. If you don't speak Greek or you are not fluent/confident in doing ATC in Greek please insist. Controllers should switch to English not just to you but to all aircraft in your presence. Over the years the situation has improved and especially the younger generation of controllers is much more fluent than their mentors. Some difficulties might be more apparent in smaller military aerodromes which do not get foreign traffic regularly.

Flying in the traffic pattern can become tricky if communication or coordination breaks down and dangerous if pilots are not aware of each other's position and intentions. A good lookout technique might save your life one day. Never assume that others report their position accurately and never assume that they have you in sight or that they are properly following instructions. This is not to say that the majority of pilots act recklessly but mistakes happen, and you definitely don't want your life to depend on someone else's mistake. Sooner or later, you will be the one making a serious mistake and the good airmanship of a fellow pilot might be the one saving the day, and your lives.

Loss of separation/near miss in the traffic pattern

"…Immediately after our take off from RWY 21 for east traffic pattern, we listened another airplane coming from HOLARGOS instructed by TWR to report over OAKA. In the middle of x-wind leg while levelling off at Traffic pattern altitude, we listened the other airplane reporting ENTERING downwind at 1500FT. Immediately i tried to look for him. I managed to establish visual contact at 2 o clock lower that us. LGTT TWR responded to other aircraft to report entering downwind as No 2. In few seconds later we were on the beginning of east downwind at 1800FT and the other aircraft was 5 o clock lower than us. The controller called other airplane and asked if he has No 1 (us) in sight but the pilot did not respond. Then we proceeded to base extending for a while the downwind due to traffic on final. We reported on left base while the other pilot had reported before us. We get clearance to report on final us No 1 and the other airplane as No 2 on final. Immediately after completing our turn on final the other airplane appeared on the left upper side of our windshield. We execute go-around for separation and reported this to TWR."

In this serious incident the separation achieved could not be determined with accuracy, but it was in the order of magnitude of a few meters. Separation was lost as the No 2 aircraft violated sequencing and a disaster was averted because of the proper actions of the crew and luck. The following report

is from a different occurrence, in which the pilot involved made a mistake and violated the established sequence. Luckily the other aircraft maneuvered to give way.

Making a mistake on base and overtaking preceding traffic
"…As I entered the left base for runway 21 I made a mistake and did not notice the preceding traffic which was flying a wider patter and as a result I turned on final before him. The other aircraft maneuvered to give way and avoid a collision risk."

Always make sure that you understand the established sequence and try to spot all related traffic. IF you are unsure about what the plan is or the instructions you have been given just ask. If you notice something out of the ordinary – such as a pair of aircraft losing separation- please speak up, you might be the one saving their lives. When flying always maintain a good lookout continuously and be even more careful when inside the traffic pattern. Before turning check for traffic, before existing a turn check for traffic on the down going wing. When climbing remember to lower your nose frequently to check for traffic which would otherwise not be visible due to your high nose attitude. Finally, don't forget to do the same on the ground and if you are uncertain about the situation developing stop the aircraft and query the other aircraft's intention.

Violation of ATC instructions risks separation
"…The controller told me to stay above the airport at 2500 feet**,** but I didn't hear correctly and thought he told me to go downwind with result to come close with another aircraft which was taking off.

When given a clearance or instruction always make a proper readback. If you do so chances are that the ATC will spot your mistake or misunderstanding and issue the clearance again. Readbacks are an essential mechanism to ensure information has been passed on correctly. It does not matter what the clearance given by the ATC is, because you will only execute whatever you have heard so in essence what matters is your readback. Experienced controllers know that very well and are always scrutinizing the readbacks for inconsistencies.

On final approach your concentration and alert levels should be high as a good approach is a prerequisite for a safe landing. Let's look at some situations colleagues encountered in this phase.

Bee falling off the vent
"…Insect bite attempt prior to landing. A bee fell from the left vent on my leg"

Some might laugh thinking about it but think for a moment how would you reach if you are on final, and a bee is trying to sting you. We can all agree that so be it, you will continue flying in pain. Visualise it and decide for yourself would you go around, establish level flight, kill the invading insect and then land or would you continue the approach? I once flew with an arachnophobic student and a 0.5 mm spider appearing on the instrument panel was sufficient for a go-around in screams and terror.

Rope extended on the runway

"During a training flight, i instructed student to perform a spot landing on RWY 21 (the aiming point was the numbers). Approaching the threshold of RWY 21, I noticed that a towing rope was extended partially on the threshold. I helped student to avoid touch down on this part of the RWY."

Despite having obtained a landing clearance you should always check the runway for anything which my pose a risk. Remember that you and the air traffic controller see different perspectives of the runway and something visible to you might not be visible from the tower. This should include also adjacent areas as persons, cars, or even stray dogs and wildlife can find their way to the runway. Birds are another hazard which is often unavoidable and should be taken seriously. Bird strikes are a more frequent occurrence than you might think depending on the aerodrome location and associated wildlife control capabilities. A bird strike - depending on the bird's size - can cause anything from a small dent in the wing to a broken windshield and structural damage to the aircraft. In the occurrence below there was no damage.

Bird strike

"…During the landing of a TRN flight, we had a bird strike. Airplane inspected immediately after shut down. No damage found."

When flock of birds are spotted on the runway ask the ATC to send the follow me car to scare them away. Never attempt to scare birds yourself and do not make abrupt manoeuvres. Keep your landing light on so that you are more visible and keep your normal trajectory. Birds consider planes to be larger birds and will naturally avoid them out of instinct in most cases. If you manoeuvre abruptly, you risk forcing them into a panicking escape reaction and as you will be significantly faster, miscalculation of your trajectory resulting to a strike.

Go around due to unstabilised approach

"…Performed pilot induced GO-AROUND on the final moments of landing approach to RWY 21 for full stop after navigation flight. The aircraft was affected by very abrupt winds over the threshold of RWY 21 (much different had the reported winds by ATC) and as a result the approach became unstabilized just prior the touch down, the aircraft was deflected greatly from the correct flight path and attitude. Performed go-around remained on the traffic pattern and landed successfully on the 2nd attempt after 5 minutes…"

You might find yourself in an unstabilised approach for several reasons ranging from poor planning and aircraft energy management, to a poor ATC clearance and unexpected weather influences. No matter what the reason is, the safest option is to do a go around and make another attempt.

Go around due to wind

*"…*on approach to 03 after a fire patrol flight i was given instructions to land on runway 03, the wind was reported by the tower to be 020/12 knots gusting to 26 knots. as i was entering a long final the plane in front of me made a pilot report to the tower that there was wind shear off the end of the runway. this alerted me to the probability of encountering a tricky landing. as i approached the end of the runway the plane made several severe lurches in the gusting winds pushing me off the center of the runway. i elected to make a go-around. on the second approach i was better prepared and made a successful landing even though the winds were probably worse (just after i landed the tower reported winds at 16 knots, gusting to 32 knots to a plane just behind me on final. "

ATC will pass you information on the prevailing wind over the last few minutes and this can vary significantly in conditions of changing wind or windshear. Keep in mind that wind is measured on the ground and the wind on final might vary. In gusty and variable winds, you might encounter significant deviations compared to what the ATC reports. In light winds you might even encounter a light tailwind despite headwind being present on the ground. In such cases go around and ask ATC to try an approach from the opposite direction.

A casual go around due to a bounce

"…I touched down and bounced so decided to go around"

Sometimes a bounce can be sufficient for a go around decision if for whatever reason you don't feel comfortable with trying to land. This is always encouraged and flying for another 5 minutes wont harm anyone.

Did you know? Go-arounds are discounted!

Almost a decade ago we adopted a go-around discount policy to encourage go arounds themselves and reporting on go arounds.

A go-around is not an occurrence on its own and it's a perfectly normal manoeuvre to carry out. In Mesogeion when you do a go-around we are discounting the additional flight time due to the go-around if an occurrence report is submitted detailing the reasons for going around. Our aim is to understand your reasons for going around and to collect and share anonymously such reports with other pilots so as to encourage more pilots to go around when it is wise to do so.

Nosewheel landing and bouncing on the runway

"…During touch and goes (active Runway 21), on the 3rd touch and go, I crossed the rwy threshold at about 70-75kts, flaps 25-30 and at aprox 50-60ft. Although the aircraft flared reasonably well, I felt that the ground effect was a bit more \"present\" than other times. I lowered slightly (but safely) the nose, the aircraft lost a few feet and when I pulled back just a little again, it lost more height and touched the rwy with the main gears and it bounced back a little. This happened again but next time the bouncing happened a bit more abruptly (still safely as far as the nose gear is concerned) but this time it oscillated first a bit, thus first touching with the right main gear, then the left, then both and rebounced. It felt like the bouncing was getting stronger (gain a few feet at every bounce) till the 3rd or 4th one (now the aircraft was aprox at the middle of the runway) when it felt that it climbed too much. As soon as it touched the ground after that \"big\" bounce, I (wrongly) switched the flaps lever to full up and immediately an simultaneously applied full throttle and carb heat off. The aircraft, although flaps were retracting, gained speed and while keeping the nose high (as if it were a soft field takeoff) gained speed and climbed normally. Next 2 landings were absolutely fine with flaps 40. Thinking back at the event, I understand that after the 2nd bouncing, I should have had initiated immediately a typical go-around, initially raising the flaps to 20 etc, instead of bouncing down the rwy (especially from 21 -> 03) losing rwy length, gaining feet at every bouncing and losing speed. Also, even during the \"go-around\" after the 4th bounce, I shouldn't have retracted the flaps at once."

This is textbook case of a situation which can be avoided after the first bounce by going around and avoiding this bounced landing phenomenon also known as porpoising. If the landing is not aborted and an oscillation is established, it can lead to porpoising and subsequent airframe damage. Remember that the best remedy is to apply power and initiate a go-around. A mishandled bounced landing will increase the amplitude of the oscillation and lead to increasing aircraft stress in each cycle until the point at which the propeller will hit the ground or the nosewheel will collapse. Trying to save a bounced landing is unwise and can lead to serious damage and injury.

Bounced landing example

The following video shows an example of a mishandled bounced landing:

https://www.youtube.com/watch?v=G9FkYpvTyrc

Student inadvertently applies breaks during touch and go

"…During our training flight after the execution of a simulated engine failure from high altitude the student came high on final. After the touch down he retracted flaps (from full to up), then applied FULL PWR (he forgot carb heat ON) and pressed inadvertently both brakes (symmetrically). I immediately asked to pull back his feet, thus we avoided excessive tyre abrasion (confirmed after walk around). However, both wheels instantaneously blocked"

Mistakes do happen and sometimes students might do something like that out of habit or entering the wrong mindset such as a full stop landing instead of a touch and go. Instructors should always stay vigilant and expect the unexpected.

Front passenger applying brakes on landing

"…During a PVT flight the front passenger few seconds after touch down raised his feet and pressed brakes to stop the plane. The wheels did not block. Immediately i told him to release brakes and get the feet down and back. Before flight passenger briefing has been executed normally according to checklist. The same passenger had executed another two flights in the past (one recently)."

It is unclear in this report why the passenger decided to apply brakes. Passengers in the front sit must be properly briefed and you should always keep an eye on them. Disasters have happened because of a front passenger's seat getting unlocked during take-off (seat moved backwards and passenger grabbed the controls), or a passenger interfering inadvertently with the controls of the aircraft. In any case it is important to make sure brakes are properly used when taking off or landing. Inadvertent or asymmetric application of brakes can lead to a loss of directional control on the runway and a runway excursion.

Where to place your feet on the rudder pedals?

You have to make sure that your feet are only resting on the rudder during take-off, landing and taxying. If you are taxying downhill and the slope excessive it is ok to have your feet on the brakes but make sure that you are not riding on them and only apply brakes when needed. The following video discusses the topic with some good visuals:

https://www.youtube.com/watch?v=udGIy0XPuZ4

Tail strike

"…the pilot (holder of PPL) came high and slow for landing. At the last stage of flare in order to reduce as much as possible the high rate of descent and in order to avoid hard landing i pulled back elevator (probably simultaneously with him) and we've got a tail strike. Contributing factor of my bad decision (pulling back and not to apply power and go-around) was my complacency about the student (PPL holder with more than 150h experience). "

It is easy to become complacent when someone you trust is flying but you should always remember even the most experienced and skilled people make mistakes and might have a bad day. In the C172 tail strikes will be visible at the rear tie down ring and beyond that as the following textbook image shows:

Figure 11 Tail strike example (not our aircraft)

During preflight examine the particular area carefully for signs of ground contact and if you experience a tail strike or you suspect on let us know and the engineer will check the aircraft.

Runway excursion in solo flight

"During the solo flight the wind was from 70 degrees 7 knots (runway in use 03). The flare and touchdown were normal and safe. A few seconds into the rollout the aircraft started veering into the wind. The student applied full left rudder pedal to correct without applying enough right aileron or brakes. The right main landing gear lifted for a moment and the aircraft veered a bit more into the wind and towards the runway edge. The aircraft speed was low however the student reported that the right main landing gear passed outside the runway limits onto hard dirt surface. He is uncertain if the front wheel also passed outside the runway limits. He did not notice or heard any indication of impact with any object or any kind of rough rolling. He regained control of the aircraft and requested to vacate the runway. He was instructed to vacate and hold position. After contacting the tower by telephone they reported possible debris at the point the aircraft exited the runway and asked me to inspect the aircraft before continuing taxi."

Loss of directional control is more common during landing and can lead to runway excursions. Solo students are slightly more prone to such experiences as they might be surprised by changing wind

or might fail to apply proper techniques for maintaining directional control even if they have successfully demonstrated them during training. A short reminder/discussion during the day might help them refresh their memory and increase the chance of them utilizing the proper technique.

2.8 Shutdown and Securing

We skipped taxying back to the apron on purpose as reports on this phase are like the initial taxying out. The most essential element of the shutdown checklist is switching the master off. Do follow the checklist and make it a habit to make one last check before locking the aircraft that all switches are off and in particular master switch is off. Forgetting to switch off the master switch will deplete the battery and it can become very inconvenient if you are out of base. Imagine booking the aircraft for a weekend flight to an island and on Sunday evening finding out that master switch is on and that an engineer with a battery needs to come and rescues you. This has of course happened more than once.

Figure 12 Aeroclub member counting the days for the engineer to arrive with a new battery.

Most of you are familiar with the magneto cut-off procedure. This is a somewhat controversial procedure between organisations and operators. Its purpose is to checks that magnetos are grounded when the ignition switch is in the off position but if the check is not performed correctly it can lead to the engine backfiring and engine damage. We have decided to stop performing this procedure and the checklist will be updated very soon to reflect this decision. With the next version of the checklist coming up soon the related step will be removed from the checklist. Proper grounding will be checked by the maintenance organization in 50 hours interval checks. Magneto grounding failure is not a frequent occurrence but as the following report shows it can happen.

Magneto grounding failure

"…Training flight, DUAL then SOLO. During shutdown the student pilot did not notice that magneto cut-off did not worked and she tried to move to the next step of mixture idle cut off. I took the controls, I re-checked magnetos. Cut-off clearly DID not work. I show her that setting ignition switch at OFF position the engine did not stop and was running only with one magneto. Immediately after that we informed CAMO/PART 145 engineer for repairing and our OPS manager."

A live magneto means that while the aircraft is parked movement of the propeller can cause the engine to start. Do not turn the propeller manually and always brief your students and passenger to treat the propeller as being always live. Before starting the engine always exercise a good lookout and shout "clear prop" before turning the key.

There are several occurrence reports concerning the shutdown and securing phase. The most common issues are failing to switch off systems and lights, not placing the pitot cover or the control wheel lock, improperly securing the aircraft etc. Always remember that whatever you forget or not carry out is will have to be carried out by the next crew. Besides actual damage which can be cause such as forgetting to tie down the aircraft properly in strong winds or letting the battery deplete, skipping the checklist and leaving the aircraft in a bad state is disrespectful to the next crew which will realise that the last crew flying didn't care to perform the right actions correctly. It is your responsibility and duty to deliver the aircraft back in the same condition that you received it.

3.0 Conclusion

We rightfully spend a considerable amount of time thinking about engine failures as the main risk associated with single engine flying. Yet, the reports above reveal a rich landscape of threats and risks in our daily operations which should not be underestimated. We hope the areas identified in this bulletin were a useful material which made you reflect on your own experience and practices. It would not have been possible to draft this bulletin without your efforts and your willingness to file occurrence reports and to keep us aware of safety related issues. Safety has to be a two-way communication process and therefore this feedback mechanism is essential.

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Share your feedback!!!

We are constantly trying to improve and make sure we provide relevant and interesting safety feedback through our flight safety related publications. We always value your feedback!! Any feedback or suggestions can be sent to:

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