CONVERSATION AVIATION

#03
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STARTING POSITIVE CONVERSATIONS ABOUT SAFETY

EASA
European Union Aviation Safety Agency

together 4safety

CONVERSATION AVIATION #03 2024 WINTER EDITION

Contents

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Guest Foreword by **Mark Searle**

Global Director of Safety at IATA

Welcome to the 3rd Edition of the Conversation Aviation magazine for 2024. At the heart of Conversation Aviation is the concept of collaboration so it is a great pleasure to have the chance to provide the first "guest" foreword on behalf of IATA - collaboration is at the heart of our efforts to deliver a safe environment across all airline operations.

As the voice of airlines on the global stage, IATA is focused on bringing stakeholders together to solve common challenges and help organisations achieve operational excellence in the safest possible environment. Most recently, we brought industry together for the 2024 IATA World Safety and Operations Conference (WSOC) and there were key themes and challenges that aviation will better solve together as a community.

We live in challenging times with the industry facing both rapid technology change and global instability that require truly collaborative, cross-domain solutions. When it comes to Artificial Intelligence (AI), it is clear that the advances are very exciting but, as aviation is a human centric business, we need to tread carefully when considering the benefits AI will provide until the risks are fully understood.

At this time, more than ever, it is important there is resilience into everything we do and this starts by ensuring our industry has solid foundations. This is where the IATA Operational Safety Audit (IOSA) program is key, and its transition to a risk-based audit program, to assess the operational management and control systems of an airline against recognised standards that are comparable on a world-wide basis.

To support greater collaboration on safety, we have launched IATA Connect as a 'one stop shop' for IOSA; the IATA Safety Issues Hub – a global repository of industry hazards and safety risks along with mitigations such as safety risk assessments and guidance material; and Safety Connect – to facilitate peer-to-peer engagement across all aviation disciplines to collectively understand issues and promote best practice. IATA Connect brings together airlines, airports, ANSPs, regulators and other organisations through a platform both online and through a dedicated mobile application.

Flying is so safe because aviation's safety culture permeates through our industry from industry executives, through tiers of management, to frontline safety-critical workers. To highlight the criticality of industry leaders to set the direction, I'm delighted that we received the 100th IATA Safety Leadership Charter in less than a year since its launch and, as this article is published, 120 airline CEOs have signed the Charter. Collectively, this accounts for over 75% of global traffic. We call for all industry CEOs to join as Charter signatories to demonstrate how the whole industry embraces a positive safety mindset at every level.

A final message that came from our Conference is that regardless of all the formal processes, rules and systems that we have in place, it is vital that we use storytelling to really engage our workforce on safety. As I said at the beginning, people are what makes our aviation system work and we need to help our staff feel engaged with the goal of safe and effective operations.

This Conversation Aviation magazine is a collection of stories from different organisations and hopefully they will help you to manage your risks and keep your staff inspired on safety. As well as winter operations, there are various examples of practical safety risks with information on how different organisations have mitigated them. The more we can share this type of information, the better we can work together to keep aviation safe. ■

EASA Update

The Importance of Storytelling to Bring Your Management System to Life

From John, the Regulator

Whatever your role in safety, it can often feel like you are fighting an uphill battle. It doesn't matter whether you are navigating a tough audit with your Aviation Authority, processing and triaging occurrence reports or monitoring your performance indicators, there's a lot to do.

Safety management involves an awful lot of processes and documentation. Somehow you also have to find the time to engage your operational workforce on safety and how it relates to their day-to-day work. They have the same problem, schedules are tight, things keep changing, weather delays, technical problems – the last thing your operational staff want to do is hear from the "Safety police".

So what's the key to bringing your management system to life and to really getting your staff involved and engaged? The answer – Storytelling! Easy to say from the comfort of the EASA office here in Cologne, but a lot harder to turn into reality on a busy Friday evening when the snow is falling and the schedule is falling apart.

Let me tell you a story!

In aviation, we have been trained to rely on processes, documentation and all the good things that keep the regulator happy. That's what Alberto thought on a busy Monday morning driving buses of passengers around the airport. He had been working the night shift and someone on the day shift hadn't made it to work. His bosses asked if he could stay for an extra hour to fill in the gap and of course, worried that he would look bad to his boss, he said yes and carried on driving.

With the extra hour almost finished, Alberto was driving his last group of passengers to the aircraft. As he approached the aircraft, he fell asleep. It was only for a second but when he realised what was happening, it was too late. The bus hit the wing tip of the aircraft and some of the passengers were thrown onto the floor of the bus. The aircraft was damaged and one of the passengers had to go to the hospital.

At that point, Alberto waited for all the processes he had seen in his safety training to kick into life. He'd damaged an aircraft and hurt a passenger – there was no saving him now. There was no hiding what had happened, he was going to have to fill in lots of paperwork and get shouted at a lot before having to look for a new job.

What do you do when something bad happens in your organisation?

When something goes wrong, the easy thing is to discipline (or even fire) the individual involved to remove the "problem" from the operation and get on with the day job. This is particularly the case when one organisation, like Alberto's bus company, are providing a service to an airline or another organisation. The focus is often on finding the "guilty person" who is at fault for this terrible situation.

What should you do?

In the modern world of aviation, bad things don't happen

very often. So when it does, obviously it has to be the person at fault and not the wider system they were a part of. Thankfully, Alberto was working for a forward-thinking organisation with a different view of the world. His bosses sat down with him and empathised with the situation he was in. His bosses had all driven the same busses he was driving that day – they had all stayed that extra hour just to help out despite being so tired they could barely stay awake.

Involve operational staff in the solution.

Alberto's company didn't judge him or blame him. They worked hard to understand how they had put Alberto in that position in the first place. They looked at the way the company did things; the number of staff they needed to be better prepared for unexpected situations; the pressure they put their staff under. They even sat down with the airport and the airline to think about how they could do things better. Throughout this process, they involved Alberto and some of his colleagues.

Then his company did something even more unbelievable. They brought in a human factors expert to help Alberto understand more about himself and why he hadn't felt able to say no to working that extra hour. Then they asked Alberto, the HF expert and the safety team to develop a programme to help more staff understand their strengths and weaknesses, and what this meant for the safety of the work they were doing.

Finally, they encouraged Alberto and his boss to share what had happened with the front-line staff in person.

What happened next?

You might wonder what the result was in Alberto's company. First, the fact that he wasn't fired completely changed how many staff viewed the company when it came to safety. Alberto's toolbox talks became a norm around the company and slowly more and more people felt able to share their own "safety" stories.

As time went on, more people were involved in the human factors programme and got to understand how their personality made them more likely to make errors in specific situations. As more people reported their safety challenges, the company started to understand more about where risks were most likely to occur. This enabled them to better focus resources and change how they did things to manage risks and operate effectively and proactively.

Moving from reporting for compliance towards a continual focus on learning

Because the front-line staff were continually involved in the process of safety – reporting shifted from being something people did when they couldn't hide something bad had happened, or because there was a compliance requirement to be met; towards reporting for learning, because the staff knew the airline understood they were individuals trying to do their best in challenging situations.

Reporting is.....

So the question we would like you to think about from this EASA introduction is this – "What does reporting mean to you and your organistion?" Talk about it with your colleagues and share your thoughts with us.

What's in this Edition of Conversation Aviation?

We have another interesting edition for you this time with lots of useful tips as we look ahead to the Winter Season and all the challenges it will bring.

Various organisations have provided information on Winter Safety Issues that cover the full range of job roles and activities.

We also cover the following topics with articles for all our different contributors:

- ILS Glideslope Interception from Above.
- Erroneous Data Entry.
- Staff Safety on Pushback and Start.
- Airport Lighting and Signs.
- Cabin doors and inadvertent slide activation.
- Reporting and Just Culture.
- Safety for passengers on Internal Stairs.
- Managing recurrent defects.

Huge thanks to all our contributors, we wish you all a safe and warm winter.

Conversation Aviation – A self-help group for Safety Managers and the link to SAFE360

We would love you to join our Air Ops Community Site and also engage in our Conversation Aviation LinkedIn Group. The LinkedIn Group is set up as a help group for Safety Managers to discuss challenges and safety mitigations with each other.

The group was launched at our recent SAFE360 Conference, which is EASA's annual event for Safety Managers to come together in person. You can find the summary of this year's SAFE360 on the event page here (https://www.easa.europa.eu/en/downloads/140421/en). Will shortly be setting the date for the 2025 edition of SAFE which will be held before the summer, linked to our EASA Safety Week. ■

Talking about Winter Safety

From Nuno,
our Safety Manager

As the days get shorter, it feels like the summer season is a distant memory now. When we look back on the summer, one of the most important lessons we learned was the importance of communication. Mostly things went smoothly because we continually talked to each other all the time.

When we identified operational challenges we worked together to solve them. Then we made sure to capture them in our reporting system so that we could learn from them - changing procedures when needed, providing the right resources in the right place or working differently with the many service providers and partners who help keep our operations running.

The importance of a learning mindset

When things don't go to plan it can be easy to focus on who was involved and question why they did what they did. As we look towards winter operations with long, dark nights and colder weather we will be challenged in new ways. It's vital that we keep a learning mindset, even when things get tough. If you spot a hazard or if things don't happen the way we expected, focus on what we can learn and how we can improve the way we do things.

The first reaction after an incident is often to point the finger at a specific person or team. It's important to step back and think about the situation and conditions those people were in at the time. When we work together to figure out why something happened and focus our efforts on what we can do to improve things we have a much better chance of changing things for the better.

Reporting risks, hazards and challenges before something bad happens

Here in the safety team, we encourage you to use the reporting system to tell us about any risks, hazards and operational challenges you come across during your duties. When your report comes into the safety team office we review the report and perform an initial triage to assess the level of risk of whatever you have reported. At this stage, we might come back to you for more information. The more information you can provide in the initial report the better.

It's all about the mindset

After the initial triage, the safety team then follow up on individual reports with the different operational departments. It might be that we need to do an investigation

to find out more. It's a horrible word "investigation" – it suggests a focus on bad people who did something wrong. It's also why we changed the term to "learning opportunity". We know a lot of people laughed at that but hopefully, it changes the way we approach them.

Ultimately, reports are one of the key sources of information on why things might not actually be working in the best way possible or in a different way than we designed it. For operational departments, we encourage you to think about the reports in your area as good things that can help you manage risks, improve processes, better place resources or focus staff training and awareness.

Feedback is key

There's nothing worse than submitting reports on risks or operational challenges and then never hearing anything again. It suggests that we don't care about what you took the time and effort to report. Here at Safewings, feedback is a key part of the process. We aim to provide feedback to everyone who submitted a report – it's even a performance indicator that the safety team get measured on. At any time you can log on to "Wingsafe" (our reporting system) to see all the reports you have submitted and check out what happened to them. You will get a notification if any of your reports are updated.

We can handle the truth...

Our goal at Safewings is to ensure that you trust our reporting system. We understand that you will only report when you feel comfortable telling us even something that might be difficult for us to hear because we are a grown-up organisation. To slightly misuse the famous quote from "A Few Good Men" – We can handle the truth. But what if there is a situation where you don't think you can? Well in such a case we would suggest you use the EASA Confidential Reporting System. We hope we never lose your trust that you will need to use it, but at least you know it's there if you need it.

What your reports tell us we need to focus on this Winter

One way we use your reports is to help us understand what the main winter safety risks will be this year. Here is a summary of the actions we can all take based on the main topics you all reported over the past few winter seasons.

1. Operations and Dispatch

- **Flight Planning for Winter Weather:** Ensure flight paths are designed to avoid severe winter weather and adjust for potential diversions.
- **Alternate Airport Preparedness:** Always have viable alternate airports in case of deteriorating conditions at the destination.
- **Coordination with Ground Services:** Communicate regularly with airport services for up-to-date runway conditions, de-icing availability, and delays.

2. Ground Crew

- **Timely De-Icing:** Perform de-icing activities on time and ensure proper application of anti-icing fluids.
- **Regular Equipment Checks:** Make sure ground handling equipment (such as tugs, de-icing trucks, and loaders) are maintained and functional in cold conditions.
- **Clearing Snow and Ice:** Keep all movement areas (ramps, taxiways, runways) free of snow and ice to prevent aircraft slips and skids.
- **Safe Walking Routes:** Mark and maintain safe pathways around the aircraft for ground staff, especially to avoid icy surfaces, wear proper footwear and use anti-slip equipment when walking on slippery surfaces.
- **There is no such thing as bad weather:** Hopefully, you will all have access to the best possible cold-weather clothing to keep yourself warm and safe.

3. Flight Crew

Thorough Pre-flight Weather Analysis: Pay close attention to weather forecasts, especially for snow, freezing rain, and icing conditions. In case adverse conditions are forecast, ensure that specific required equipment is serviceable, and always act when aircraft warning systems tell you about icing conditions.

- **Surface Condition Awareness:** Obtain regular updates on runway and taxiway conditions, including contamination from snow or ice.
- **De-Icing and Anti-Icing Procedures:** Ensure that aircraft are properly de-iced and understand the time limits of anti-icing treatments.
- **Controlled Taxiing:** Be cautious of slippery conditions and taxi at reduced speeds when necessary.
- **Review of Winter-Specific Procedures:** Revisit and emphasize winter operation techniques such as braking actions on icy runways and cold weather engine start procedures.

4. Cabin Crew

- **Passenger Awareness:** Provide passengers with updates on potential delays due to de-icing or weather conditions to manage expectations.
- **Monitor Cabin Temperature:** Make sure the cabin is kept at a comfortable temperature during boarding and de-icing periods.
- **Safe Movement on Slippery Surfaces:** Ensure that passengers are cautious when boarding or disembarking on icy stairs or walkways. More about safety on passenger stairs later in the magazine.
- **Emergency Procedure Review:** Revisit emergency evacuation procedures and consider winter conditions like ice and snow affecting slide deployment.

5. Maintenance Personnel

- **Cold Weather Aircraft Preparation:** Pay special attention to cold-soaked aircraft, ensuring hydraulic and fuel systems are free from ice or contaminants.
- **Battery and Electrical System Check:** Cold temperatures can weaken aircraft batteries and affect electrical systems, so these should be inspected frequently.
- **Tire Pressure and Brakes:** Cold air causes tire pressure to drop. Regular checks are essential, along with ensuring brakes are functioning properly in icy conditions.
- **Fluid Levels:** Check and top off all required fluids like de-icing fluid, engine oil, and hydraulic fluid.

Finally from the safety team

We are preparing the following activities over the next few weeks to help us all get ready for the winter season.

- **Winter Safety Training:** Conduct refresher training for all staff on winter-specific safety procedures.
- **Review and Update SOPs:** Make sure standard operating procedures (SOPs) reflect the additional risks associated with winter operations.

Everything we do contributes to mitigating the unique challenges of winter operations. Stay safe and warm. ■

What happens to your occurrence reports

Milena, CEO

As we have talked about already in the magazine, occurrence reporting plays a crucial role in ensuring, hazard identification, risk mitigation and continuous improvement.

We thought you might be interested in learning more about the stages of a Safety Report (SR), from the initial occurrence that you might submit to our Wingsafe reporting and management system, through to the closing of the report and any follow up actions. Hopefully, this provides more transparency on the whole process.

We also thought it might be interesting to learn more about what happens when an SR becomes a Mandatory Occurrence Report (MOR) that has to be reported to the National Aviation Authority (NAA).

The Safewings SR process:

1. **Initial Occurrence Report:** Things start with the SR, triggered by any event or hazard that compromises safety or poses a risk to our operation. It doesn't matter what role you perform here at Safewings, anyone can submit a report. If you are in a crew or team, discuss together who will submit a report so we don't duplicate our efforts. Of course, this doesn't mean that different people can't submit different views on the same event, e.g. Pilots, ground staff, cabin crew, engineering etc. The SR outlines the basic details of the event, including an event descriptor, date, time, location, and a description of the event itself. Timely reporting is vital to initiate prompt follow-up activities and, in the case of MORs, there is a regulatory requirement to submit a report within 72 hours.
2. **Daily Review Meeting:** The Safety Office reviews the reports received in the Daily SR meeting. This stage involves gathering essential information from all relevant departments, for example, flight operations, inflight, ground and Engineering. This phase sets the foundation for a more in-depth analysis and risk assessment. A decision will be made whether all the information is available to close the report, monitor the safety issue or if there is a need to investigate further through a "learning opportunity".
3. **OFDM Analysis:** For some occurrences, the Daily Review will request that the OFDM data be downloaded and analysed. This stage aims to help provide more information on handling factors, environmental factors or equipment malfunctions that may have contributed to the event.
4. **Cockpit Voice Recorders [CVR]:** Sometimes an SR will report that the CVR needs to be pulled. The Daily Review will decide whether the unit should be retained

or returned to line. If it is to be analysed then there will always be a request for crew authorisation in advance.

5. **Learning Opportunities:** Based on the decision made in conjunction with the relevant department at the Daily Review or follow-up with the operational department, a formal recommendation will be made for an investigation in the form of a "Learning Opportunity". The goal is to understand the circumstances around the SR in more detail.

6. **Learning Points:** Once the learning opportunity is complete and has been reviewed at a weekly meeting held with the Safety Manager and representatives from the relevant departments, the learning points (actions) will then be agreed upon. These will include, at a minimum, feedback to those involved in the event and other actions for the promotion of the event, and proposals for procedural reviews or training/checking. It is important to emphasise that additional training and/or checking should never be viewed as a bad thing as these steps are designed to enhance knowledge and build confidence in dealing with similar situations in the future.

7. **Did it Work?** The final step after any learning point is to continually monitor the specific risk or safety issue to check if the learning points implemented actually worked in practice. This also involves checking with operational teams on their effectiveness.

The Life of an MOR:

MOR decision: The first decision is whether the SR falls into the category of an MOR. The definition for that is in Regulation (EU) 376/2014 – the European Occurrence Reporting Regulation. The list of reportable occurrences are in something called an 'Implementing Regulation' to this main Regulation – Implementing Regulation (EU) 2015/1018.

1. **Initial Report to the Authority:** Having decided that a report is an MOR, we have a requirement to send an initial report within 72 hours to the relevant NAA depending on which country the AOC or other organisational approval is based.

2. **Follow-Up Reporting:** Where we are unable to provide the Authority with all the relevant information right away, we have a requirement to follow up within 30 days and to provide the full, completed internal investigation report/information within 3 months.

3. **What Happens Next:** It might seem like all the MORs that we send to the different Authorities we interface with just disappear into a black hole, however, the reality is somewhat different. Often we receive feedback on individual reports. Then all the reports are uploaded by the Authority into the European Central Repository (ECR). From here all of the collective reports are analysed by the Network of Analysts with EASA and the NAAs. This feeds into the EASA Annual Safety Review and other analysis work that drives the European Plan for Aviation Safety (EPAS).

4. **From our Reports to Strategic Actions:** EASA then has a number of domain-specific collaborative groups and advisory bodies that use the analysis and intelligence to develop strategic safety actions for Europe. This means that information from the reports that you submit gets to have an impact far beyond the walls of Safewings.

Hopefully, seeing what happens to a report drives learning and improvement both at Safewings and out into the wider aviation community as you will see the value of reporting. Keep them coming.... ■

Winter Ops from the Flight Deck

Winter is on its way once again and with it all the challenges of the cold season we know and love.

- **De-icing refresher course? Done it.**
- **The page in the manual with the cold weather altitude corrections? Found it.**
- **Boots, coat and scarf? Packed them.**

From Rachel, the Chief Pilot

But we don't want to go over all the same things that are covered every year, again. Instead, we want to encourage you to talk about the winter threats specific to your operation, and to think about the aviation team as a whole and how we can all support one another. Building awareness across your aviation team about the challenges each role faces and the joint mitigations we can all apply is one of the best ways to support safe operations during the chilly challenges to come.

Know your shizzle in the drizzle

We've had one of the wettest summers on record, intermingled with one of the hottest (depending on where you are in Europe). Over in the UK, it has been wet and slightly rubbish, and in August an ATR42 heading into Guernsey airport met with some foggy weather which led to them descending below their minima in an attempt to get in, followed by a very low-level go-around when they failed to become visual.

Winter is going to bring more rubbish rain, frigid fog and cr***y clouds; so knowing your minimas and sticking to them is going to be ever more important. But something that is *just as* important is having a Plan B, and Plan B doesn't necessarily have to be a *decision already made.* It might be the point at which you review, an acknowledgement of the threat if conditions deteriorate, and almost certainly an idea of what the lowest fuel level you want to see to start *thinking** about diverting!

**Making the decision at minimum diversion fuel might already be too late.*

Team up for safety: Your Flight Ops Management is not all about fuel saving (not always, anyway). Having clear guidelines from your airline/operator ops team on when you can commit to land, the policy for carrying extra fuel, and of course support in the event of a diversion, is key. If you aren't sure ask, and if you are in the Ops Department, make sure your pilots are supported and don't ever feel any pressure to "get it in!" over "getting it in, safely!"

Cold snap!

Cold weather at altitude can be an issue. Back in 2008, a British Airways 777 landed (crashed) short of the runway after they experienced icing in their fuel which clogged the system and restricted fuel flow during the approach. So, what did we learn from this? Well, check your high-altitude temperatures (and winds while you are there) and know where you might experience low fuel temperatures and potential icing issues. But (and we might have said this before) as important is having a plan B, and that means not just briefing the threats but the mitigation strategies for these as well.

Team up for safety: Your flight planning department should be aware of this but if not, consider raising it with them and asking them to highlight when things might get frosty in flight. Having a flight plan which tells you the "fuel cost" of flying at lower levels means you are already prepared for that

situation if it is required. Ensuring the en-route alternates are suitable and adequate in case they are needed for a fuel stop means plans are already in place. Being provided with a SigWx chart where the potential severe icing spots are highlighted means you won't be caught out in the cold.

The best way to build awareness and understanding between these two critical roles is by getting them talking!

Ur-sinking too low!

We said we weren't going to go over all the same issues that always get raised, but we think this is worth another mention: Pay attention to cold weather temperature corrections or you might find yourself below a safe altitude!

Back in 2021, a 737 came into contact with a snowbank at Ursinsk airport when they failed to correct for cold weather. In fact, the aircraft was lower than indicated by about 280 ft (they were operating into the minus 21°C conditions.) This is an extreme example, and thankfully not many reach these negative degrees, but even the 20ft added on in milder conditions may be 20ft you need.

Team up for safety: Make sure you know when ATC are keeping you clear of terrain and when it is up to you, and always advise them when applying corrections so there is no confusion. If you are heading into especially cold places, then be aware of potential limitations with RNAV approaches and ensure there is another option if it is likely the temperature will be outside the temperature range.

Night Terrors

In January of 2024, the tragic accident involving a Japan Airlines A350 and a Japan Coast Guard Dash 8 aircraft took place. While not necessarily winter-specific, this is a stark reminder of the risk of runway incursions, and an additional threat we often overlook when flying at night; the reduced 'visibility' of aircraft lights in amongst all the many lights that fill the runway, taxiways and general airport area during night time operations.

Briefing the risk specific for *that* airport, in *the conditions expected* is important. The flight deck team can ensure a good TEM brief is done and that both crew are on the same page about what they expect to see, and how to manage it.

Team up for safety: Coming into winter we are likely to find ourselves operating more at night, and we often see more low visibility and reduced visibility conditions from the weather, so it is so important we work harder to maintain those additional barriers to things like runway incursions.

This is something that involves many of the aviation team - ground vehicles, ground workers, ATC, other aircraft etc - we need to maintain our own standards, but also listen out for others and help correct errors before they become a potential tragedy.

In general, ensuring the ground teams you work with are aware of the risks of winter ops means that they can keep an eye out for threats that might be missed. Ground staff

may have a clearer picture of what the weather has looked like in the run-up to departure (before the pilots and other crew turn up), and empowering them to speak up if they think something has been missed is an extra barrier to safety in many situations.

N-Ice Landing!

A Boeing 787-9 set a record for being the largest aircraft to land in Antarctica. Now, not many of us are going to get the chance to do that anytime soon, but we can actually all learn some lessons from this success of a flight.

Two of the main challenges of operating to Antarctica are the weather and performance. The weather matters because there is no de-icing available there, so a clear window of decent weather (usually 3 hours) is required to allow the aircraft to land, turnaround and depart again. This takes a lot of planning and a lot of communication with other departments. The performance requires strict checks on runway condition, aircraft capability and discussions of the threats for landing on not just a contaminated runway, but on one actually made of ice!

Team up for safety: Right, so what can we learn for our more northerly latitude operations? Well, actually we should be applying this level of attention, care and communication at all times, to all airports. For pilots, always think about your performance and handling in these conditions, and make sure you are aware of the planning requirements.

But also work with the dispatch and flight planning staff and ensure they understand the importance of their role in this because that will help catch errors in weather planning, ETOPS alternates, more efficient routing and threats which may have been missed. This shouldn't be considered a tick-box exercise but a team effort to ensure the safest (and most efficient) flight.

GRFfindor (and outdoor)

That was a double pun, in case you missed it. Anyway, Gryffindor might be all about bravery, courage and determination, but we are recommending an attitude that is, well, less of those things and instead a little more go-around minded (less determined to land), conscious of hazards and limitations, and basically not always rushing into battle without thinking first. In this case, we mean battle against the elements.

Airbus produced a handy reminder (but it applies to all operators) - fly the aircraft even after touch down. Know

what the conditions mean for your performance, and make sure you are stabilised to help set up for a safe landing roll.

Team up for safety: ATC should avoid distracting calls during your landing roll, but pilots can support them too. If you know your performance will limit you from taking the 'usual' exit, or that you might be slower vacating, then consider advising ATC, especially if there is an aircraft behind you on the approach. Don't assume they know what you are planning, but try to support their bigger picture, especially with things like separation management, by considering how those conditions might impact the overall operation.

Take a moment to consider ground threats, and not just the ones that apply directly to you. There are often more ground equipment and people working during winter (grit laying, snow clearing, de-icing trucks etc) so consider things like your jet blast while taxying around apron areas, and maintain an especially good lookout at all times to avoid them, or you, from getting hurt.

SIGWX chart changes

In November, we are going to see changes coming for the SigWx charts, and getting to grips with what these are before they come in will be really useful. So, here's what is changing (at least, the bigger things): Turbulence will be better defined, ISOL EMBD will be removed and the charts will be published much more frequently.

Team up for safety: Work with your dispatcher/flight planners to ensure everyone is on the same page about weather and what it all means for your flight routing and fuel planning. Have conversations about it so everyone understands the implications, planning requirements and ways to manage the threats.

Operators/airlines can ensure that training on this is provided to everyone who needs it, and in advance of when it is needed. Try to take it further and ensure your winter ops refresher courses are 'evidence-based' and really look at the challenges your specific operations face, so you can help crew learn and mitigate against these.

Contrail Trials

Yep, while modern jets are more fuel efficient they also potentially contribute a whole lot more to contrail production... which can contribute more to global warming... which can lead to weirder winter weather, amongst other things. So, Eurocontrol are trialling contrail avoidance vectoring.

Team up for safety: The vectoring should not have any significant impact on your fuel situation as they should be limited to small re-routes and temporary level changes, but work with ATC to ensure you are as efficient as possible and if you are experiencing fuel issues, advise early. Remember that these trials are aimed at improving the industry so we should support it as much as we can.

Winter Wonders

One thing this winter is bringing is the removal of the requirement for oceanic clearances over the NAT HLA. Postponed from earlier in the year, we can expect to see Shanwick and Gander do away with these in Q4 2024. It might not be the biggest of changes (you still have to advise what you are planned to fly, and ATC still have to confirm it/send a re-clearance if they need to), but it does mean a big change to procedures that we have been using for a fair old while.

Team up for safety: Know your procedures and work with ATC to ensure you get it right, and to ensure there are no GNE's as early Christmas presents for your company!

Teaming up for safety!

Winter often brings harsh conditions and additional threats to safety, and working together is the trick to not only keeping things safe, but to creating an enjoyable, supportive and safe work environment for all.

Consider the ground staff standing out there in the cold, and the threats they face. Work with airport operations with regards APU usage to ensure your cabin is comfortable not just for passengers but your cabin crew too! Have conversations with dispatchers and planners to better understand the constraints they face and how to manage weather. Think about how disruption and delays impact the whole team - from the flight deck through to the planners and schedulers dealing with the logistics of it all.

Look out for threats impacting other roles and speak up to ensure things stay safe, efficient and resilient!

- We've come up with a handy WINTER mnemonic to help encourage this attitude of support, awareness and collaborative safety across the team.
- Warning - look out for anything that might lead to a potential issue
- Identify - ways to mitigate it
- Notify - those on the team who need to know
- Take action - yourself, or ensure others do
- Evaluate - whether the threat has been mitigated, or if further action is required
- Review - the situation, actions taken and the outcome, and share this to help learning and development across the team.

One last thing...

Well-being this winter is our priority, and we hope it will be yours too. We aren't just talking during operations, but amongst all your team, at all times. Looking out for the mental well-being of one another, creating safe working environments and thinking about the personal challenges winter may bring should not just be given lip service, but needs real action.

When flight and cabin crew miss important holidays like Christmas, this can have a big impact on them and their families mental well-being. We all know it is a part of the job, but operators can show kindness to their crew. Consider providing a Christmas meal in the hotel for those who are away from friends and family, offer some perk to those working, and show some empathy to those who got the raw end of the roster.

Winter means rising energy bills and other stressors in personal lives. Ensure your company's peer support program is available for those who need it, and encourage everyone to look out for others.

Winter often means higher sickness levels because colds and flu are rife. For flight and cabin crew, the risk to their health from a "basic common cold" is much higher than for those working on the ground. Blocked sinuses can lead to significant barotrauma, and the air quality in aircraft (and often hotels), along with disrupted sleep patterns, can result in longer recovery times. While operators need to manage their schedules, try not to lose sight of this.

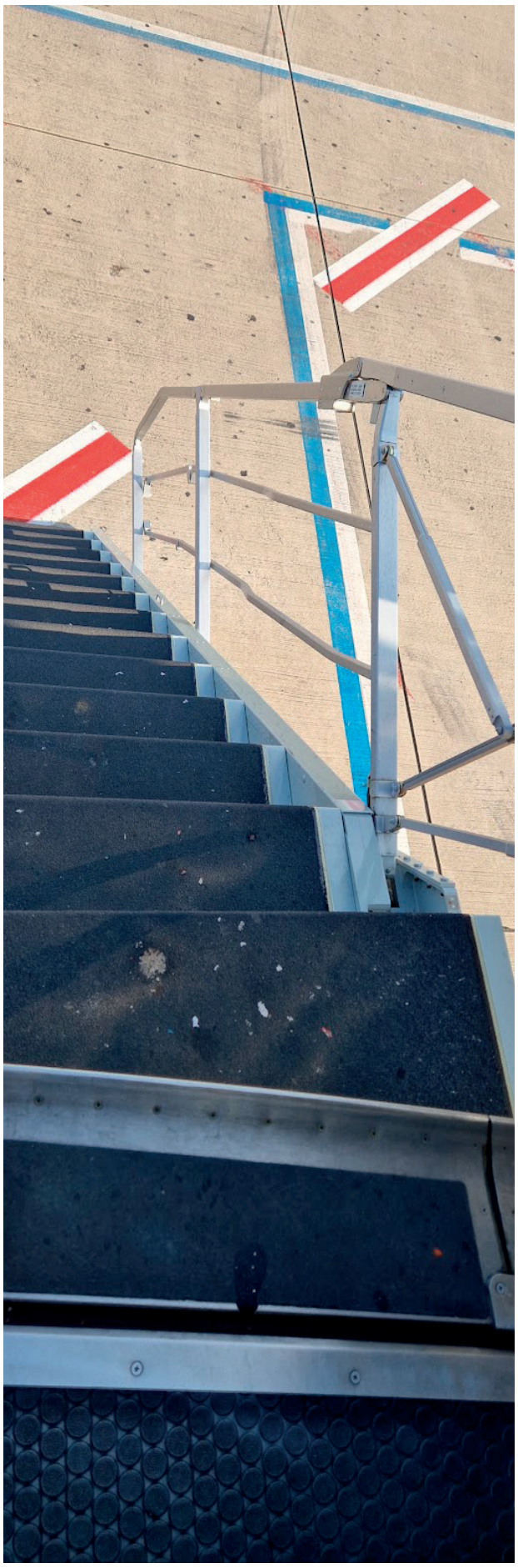
Winter challenges can lead to delays and disruption, which can equal fatigue. Ensuring all crew are aware of the impact on performance and on how to recognise this in others, and ensuring there are means to reporting fatigue and support from the company is critical.

Think about the threats winter conditions can mean when travelling to and from work. If road conditions are icy or dangerous, be careful and stay safe! It is always better to get a call from your manager asking you to explain why you were late, that it is for a loved one to receive a call saying you were injured on the way to work!

Finally...Have a safe and wonderful Winter season! ■

Safe on the stairs

From Sven, Cabin Manager



As a Cabin Manager with Safewings, my responsibilities go beyond ensuring smooth flights. I'm also constantly thinking of how to keep our passengers safe, especially while they are getting on and off the aircraft. It might seem like a simple task to step off a plane but there have recently been a number of injuries in this situation with various airlines on aircraft big and small.

Let me tell you about one such incident we had last winter. A mother with two small children was travelling to visit her parents. The flight had been smooth, but as we landed in freezing temperatures, I noticed her struggle as she prepared to disembark. We were using the plane's integral stairs, which are narrower and steeper than jet bridges, and that day, they were a little slippery. She had her hands full; a toddler holding her hand, an infant strapped to her chest and bags as well. Her toddler was excitedly stepping ahead, unaware of the dangers posed by the icy steps.

Like many passengers since the pandemic, she was hesitant to touch surfaces like handrails, which added another layer of difficulty. We could see her trying to avoid the railing while also managing her children and luggage, a combination that left her unsteady. The potential for an accident was clear.

The crew quickly stepped in to help, taking her bag and encouraging her to hold onto the railing. One of my colleagues guided her toddler safely down the stairs. A fall was avoided because we were proactive, paying attention to a situation that could have turned dangerous quickly.

Winter months present unique challenges for passengers and crew alike. I've seen passengers slip on icy stairs more than once, and it's often because they're juggling too much. Whether it's bags, children, or simply being in a rush, integral stairs, especially in cold weather, pose additional hazards. Passengers often avoid touching handrails due to concerns about germs, a behavior that started during the pandemic but can make steep, icy steps even more dangerous.

Here at Safewings, we emphasise the importance of cabin crew being vigilant during winter travel. We must anticipate when a passenger might struggle, particularly when they are carrying children or heavy bags. Offering a small act of assistance, whether it's taking a bag or encouraging the use of the handrail, can prevent injuries and falls.

Since that incident with the mother, I've made it a priority to remind my team to be extra cautious during the winter months. The combination of steep steps, icy conditions, and overburdened passengers is a recipe for accidents. It's our job to step in and help before a fall happens.

Travelling in winter is tough. Cold, slippery surfaces make the simplest tasks, like stepping off a plane, more hazardous. At Safewings, we don't just focus on the in-flight experience. We are committed to ensuring that passengers disembark safely, every step of the way. Cabin crew are in a unique position to prevent accidents, especially in challenging weather conditions. Small interventions can make all the difference, as we ensure passengers arrive at their destinations without incident.

In the end, what I've learned is that safety isn't just about procedures or checklists. It's about being aware and acting with compassion. As cabin crew, we have the ability to see when passengers need help, even when they don't ask for it. In challenging winter conditions, these small acts of kindness can prevent falls, making the journey safer for everyone. ■

Preparing for Ground Winter Operations

As an Operations Manager and Nominated Person Flight Operations, one of my responsibilities is ensuring that aircraft ground deicing procedures are regularly updated, rigorously implemented and well followed by all our flight crew. The other key thing that my team coordinate with each aircraft captain is the final decision on the route and then the dispatch of each Safewings aircraft into the sky.

From Gemma, Ops Manager

Is it safe to fly?

I'll cover the last part quickly first as this is especially challenging in the winter. Our team continually monitors all our routes for SIGMET and other weather warnings and adjusting routes as needed. The specific question we always ask ourselves is

"Is it safe for that aircraft to be dispatched through the forecast weather conditions? Have I taken in to consideration any specific limitations the aircraft might have and it's operational impact?"

If not – that's when we take the difficult decision to keep the aircraft on the ground instead.

Ground Deicing

When it comes to deicing – the main things we are working on are:

Maintaining the teams knowledge and skills of Deicing

Maintaining my team's knowledge and skills in de-icing is crucial, particularly as it is a seasonal requirement that directly impacts flight safety. The winter months bring unique challenges, such as varying precipitation types and changing weather conditions, which necessitate a deep understanding of weather information, our de-icing procedures and products, and the critical aircraft components.

Regular training ensures we build confidence, and our teams proficiency is maintained. It enables them to make informed decisions quickly and effectively. This commitment not only minimizes the risk of accidents and operational disruptions but also enhances our overall efficiency, allowing us to adapt to evolving circumstances while safeguarding our passengers and crew.

By investing in continuous education, we reinforce a culture of safety and excellence that is fundamental in the aviation industry.

Keeping Procedures Updated

When it comes to updating our Holdover Time (HOT) Guidelines, the main sources are the SAE 'Global Aircraft De-icing Standards' and the FAA 'FAA Holdover Time Guidelines'. These are considered the industry's best practices, in addition to International Civil Aviation Organization (ICAO) guidance on the subject.

HOT guidelines are published each winter season, covering the safe timeframes for specific deicing and anti-icing fluids under various precipitation conditions. These HOT tables help operators determine the time during which their aircraft can remain on the ground after deicing without further deicing being necessary.

HOT Guidelines are critical for flight safety as they directly impact operational and aircraft dispatch decision processes. The Generic Holdover times are updated generally each season as these take into the shortest holdover times for the worst performing fluid for each specific weather condition cell.

Therefore, if a new worse performing fluid is validated for use, it may also impact the Generic Hold Over times. As an example, some holdover times have been reduced for the Type IV Generic Holdover timetable in the Winer 2024-2025 update.

Conversely, the Generic holdover times may improve if a worse-performing fluid is removed from the approved list of fluids, such as was done this year for the Type II Generic Holdover timetable.

One important change that was brought in a few seasons ago was that the operator must ensure that a fluid is in the list of approved fluids before using the Generic holdover times. This was a very important update, and in part negates the usefulness of using Generic holdover times. If you need to positively identify the fluid brand, then why not use the specific, more precise holdover timetable for that fluid instead of the more limiting generic tables?

Operational Improvements

The Winter 2024-2025 updates also include some enhancements on possible weather condition combinations for using Allowance time tables in ice pellet precipitation mixed with other precipitation conditions. Ice pellets are commonly experienced mainly in North America during the winter. Introducing these allowed weather conditions in our documentation will potentially decrease NO-GO decisions. It may also prevent unnecessary return to stand for an unnecessary fluid reapplication and this will have the environmental benefits from less glycol fluid usage.

EFB Holdover Time Applications

One of the things that is very important in our change management for winter operations is to check that our EFB Holdover Time Application provider keeps the application updated as per the latest guidance. We also take the opportunity to remind our flight crew not to use any unapproved applications that may include outdated or erroneous information and guidance which may apply only to other operators.

Conclusion: Ensuring Safety and Operational Excellence

In my role as an Operations Manager, the importance of keeping deicing procedures updated cannot be overstated. The advances in de-/anti-icing technology, regulatory changes, and the need for accurate communication across our teams all underscore the need for continuous improvement. For my part, ensuring that our ground de-/anti-icing procedures are current is about more than just regulatory compliance; it is about safeguarding our flight crew and passengers, protecting aircraft and equipment, and ensuring that every flight departs under the safest and most efficient conditions possible this winter! ■

Case Study

Glide interception from above

From Claudio, our Safety Pilot

Although not specifically related to the winter season, this edition of Conversation Aviation continues with a case study experienced by one of our crews. The article aims to provide discussion, by reviewing one particular risk associated with performing glide interceptions from above. Thank you to the crew for sharing their experience and allowing us to learn!

Crew recollection

We would like to share this recollection as we hope it will help others understand how and why false glideslope captures can occur to avoid events like ours.

Any other threats? - we both agreed no. There were numerous threats that we had briefed extensively and early so to ensure we had adequate SAW. Thunderstorms, windshear, tailwind on approach, shortcuts, ATC, potentially glide slope from above and terrain - we thought that we had covered it all. We used all available resources: Route Manual, LIDO charts and even covered MEM items from the FCOM.

How wrong we were! We weren't aware of one particular threat, and it would come back to bite us.

Approaching Alicante, we were left high by ATC, a large CB was blocking the DME arc onto RWY 10, stretching from 11nm to 20nm, to the left of us was another huge CB. ATC offered us a 10nm final as they were aware that it avoided all the weather. We reluctantly accepted it; we couldn't turn right and get extra track miles and we couldn't turn left. The approach (from 10nm) and go-around were clear of weather.

Having configured the aircraft to a configuration that increased drag to enable a more rapid descent once on the localiser, we were tracking towards a 10NM final. COMs were good, mental models shared and we were cross-checking heights against VOR radials and the approach chart. We were cleared for the ILS; the ILS was identified, and we armed the approach. We were aware that we were high, we were talking about it and quantified how high we were. The glideslope from above was again discussed, the tailwind was noted and the high probability of needing to go-around was reviewed. We felt that with the conditions of the day, we were currently in the safest place.

Just before intercepting the LOC, our mental models were shared again: we would leave the platform altitude set initially. We were around 2500 feet high. In a high drag configuration with an increased rate of descent and terrain below. Established on the LOC we pulled V/S, -2500fpm appeared on the FCU and we changed it to -1500fpm, after all, it is what we initially set with the glideslope from above procedure. Worst case scenario, so we thought (and it was looking very likely) was that we would execute a standard go-around. At Safewings we are trained; if it doesn't work out: go-around.

Then it happened, the glideslope came shooting up and we got GS*. Pilot flying instinctively set 4000 for the go-around, then the aircraft dived towards -10 degrees, the nose came straight back up and then dived violently again. We got a Flaps overspeed warning. We rapidly had gone from a crew with good situational awareness, having followed SOPs, to one startled. The briefest of composing pauses, I have control, AP immediately out, nose raised and Go-around flaps. The TL were set to TOGA and immediately back to CLB, we had 500 feet to go-around altitude and speed was increasing rapidly. We retracted the flaps, raised the gear and then levelled at 4000 feet. With the circumstances, we had just executed a well-flown go-around. The extensive briefing and being go-around focussed had fortunately come to fruition.

We composed ourselves and were vectored for another approach. Quick re-brief, PA and the next approach and landing were uneventful.

A flap overspeed inspection was required. We ran through everything on the phone, which really helped calm the adrenalin. It is good to talk these things through to a sympathetic ear and the tone of the conversation was of welfare. After our discussions, we were deemed fit to operate again.

So, what happened?

The safety team at Safewings completed an investigation following this event. Secondary glide slopes are an inevitable characteristic due to the ILS antenna design. When an aircraft flies well above the main glideslope, the glideslope deviations displayed on the PFD will refer to the nearest glide slope, which may be a secondary glide slope instead of the primary one. This can lead both the flight crew and the autopilot to erroneously consider the secondary glide slope as the reference for the final descent.

There are several types of ILS glide slope antennas that use different technologies. They can be classified into two theoretical categories: "Inverted" glide slope and "repeated" glide slope.

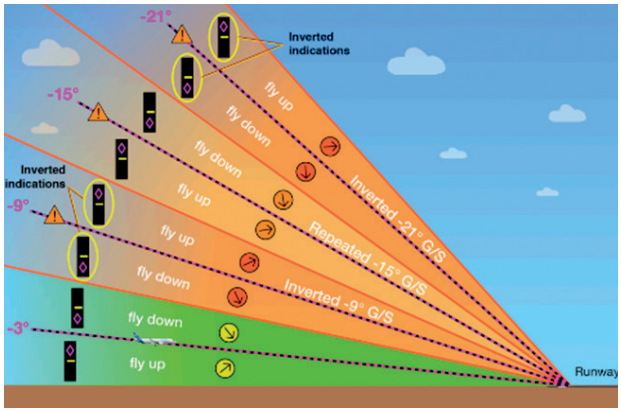


Figure 1 Repeated glideslope

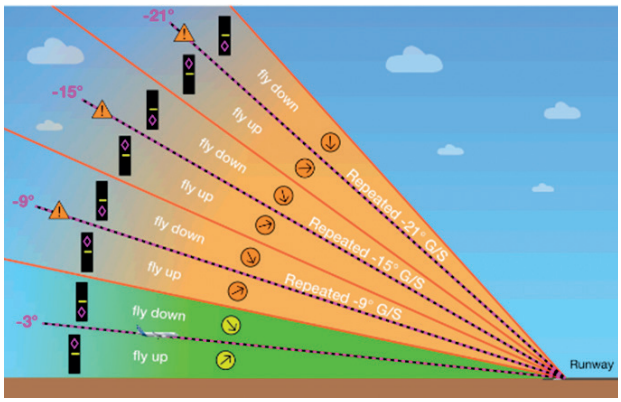


Figure 2 Inverted glideslope

Key Learning Points

All ILS systems have secondary glideslopes that are a potential threat when APPR is armed whilst being significantly above the published vertical profile.

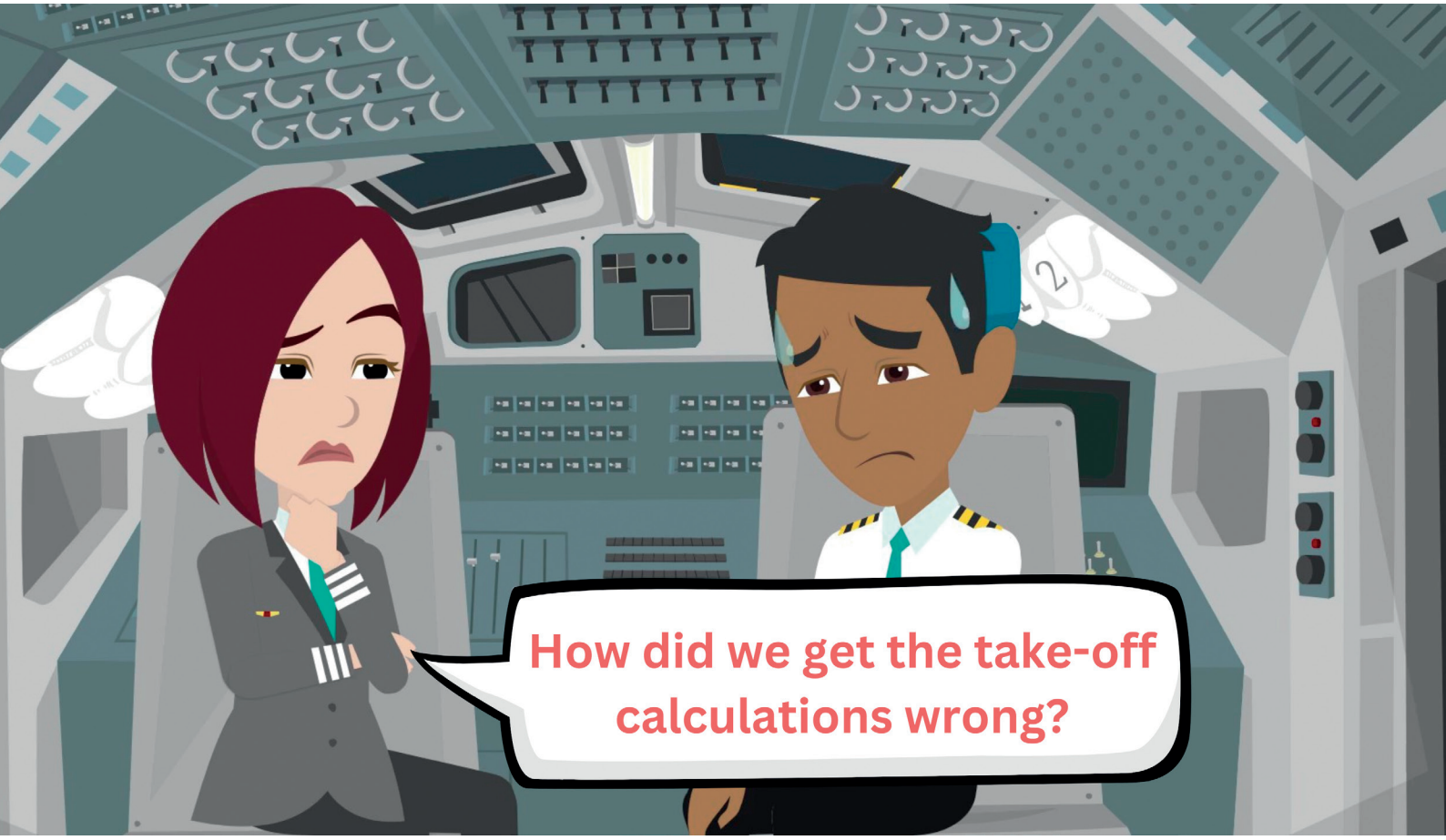
When intercepting the glide slope from above, ensuring that the aircraft remains below the upper boundary of the main glide slope can assist in preventing undue G/S* engagement due to a false signal. This upper boundary is located at approximately twice the value of the primary glide slope angle (approximately -6° for a -3-degree glideslope). In practical terms, this means that when arming the APP at twice the published height, there is an increased risk of undue G/S* activation.

When arming the approach well outside of the normal ILS G/S capture envelope, a spurious G/S* engagement may occur due to a wrong G/S deviation signal. Whenever this is noticed, the AP shall be disconnected (if engaged) to re-establish a normal attitude (and a go-around shall be initiated as appropriate). APPR shall be disarmed.

Furthermore:

- Ensure that the aircraft is established on the localizer [LOC] before initiating the glide interception from above.
- Ensure that the aircraft is positioned above the glideslope when initiating the glide interception from above as initiating the procedure whilst below the glideslope would result in a continued descent due to no glideslope nor alt capture.

Check out https://safetyfirst.airbus.com/lining-up-with-the-correct-glide-slope/ for more information. ■



Human Vulnerability in Take-off Performance Calculation and Insertion

Take-off is one of the most critical phases of flight. It is during this phase that we heavily rely on accurate performance calculations to ensure the safety and efficiency of flight. However, despite advances in technology, the process of obtaining and inserting performance data remains vulnerable to human error, highlighting a significant risk to the operation.

From Gunnar the HF Expert.

This article from the Safewings Safety Team aims to provide a deeper insight into this vulnerability with the aim of raising awareness, and reducing take-off data calculation and insertion errors. It should not be regarded as an overview of "human errors", but rather as an insight into what can adversely affect our performance despite best intentions.

The risk of erroneous performance data

Following a notification from FDM we were made aware of an incorrect take-off with an incorrect thrust setting (we entered an assumed temperature of 67 degrees instead of the calculated value of 56 degrees).

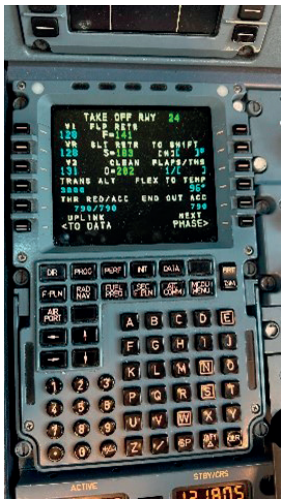
We had no idea that this error had occurred. We both are struggling to understand how we arrived at the 67 degrees figure as we followed SOPs and this figure of 67 is not connected to any part of the numbers either on the FMGC or the FS+ Take-off page. The take-off felt normal for the short runway which is always quite limiting. Rotation felt normal towards the last third of the runway hence no ASR filled. The figure of 67 degrees would have affected the take-off calculations but it was not evident at the time.

The above event highlights how a single-entry error can have significant consequences for flight safety as the actual Accelerate Stopping Distance in this event increased by 163m and the TOD OEI increased by 400m. Since this exceeded both the actual ASDA and TODA, a runway excursion in case of an RTO shortly prior to V1 and a failure to meet the screen height at the end of TODA in case of an engine failure after V1 were credible outcome scenarios. In this instance, with both engines operating normally, the aircraft only crossed the screen height at 58' RA.

Garbage In Garbage Out

GIGO, which stands for "Garbage In, Garbage Out", is particularly relevant in the context of take-off data calculation and insertion. The principle emphasises that the quality of data (the output) is determined by the quality of input. Ensure that the correct registration is selected and ensure that both pilots agree on the input parameters.

"An FMS is only as good as the human who interfaces with it".



Does this look okay?

Data Transcription

When transcribing data from one source to another there is a potential for errors in the combined mental and physical task. This can include misreading data, misunderstanding data, inadvertently transposing values (switching values around), entering incorrect values, entering data in the wrong field, or omitting values entirely.

The investigation into the earlier mentioned event where the aircraft crossed the screen height at 58' RA suggested that such a transcription error likely contributed to the incorrectly entered FLX temperature. Being aware of this error potential whilst transcribing data and checking the entered data after insertion is essential in preventing the use of incorrectly inserted data.

Take-off Data Crosscheck

Crosschecking is a vital element of our duties and considering its criticality in error identification, it is important to be aware of, and acknowledge its limitations.

Our cognitive capability is finite, it can be misled by confusing or contradictory inputs, and it has limited capability to identify our own errors. Using safety reports, the article will continue with highlighting some key factors that can influence our behaviour/ actions and ultimately affect our ability to complete an accurate crosscheck.

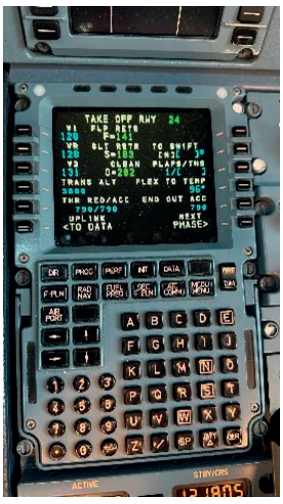
Distractions

During the take-off roll we recognised a flashing "MAN TOGA" indication on the FMA. After a quick look on the performance page on CM1's side (PF) we identified that all was correct, but that the FLX temperature was missing and so we set TOGA as final take-off setting immediately.

Following an uneventful take-off we discussed the situation the situation, and both confirmed that a disturbance by the handling agent on ground at the time of the take-off data crosscheck most probably resulted the omission to check the assumed temperature which was not set by PF before. We learned that a second review of procedures after a disturbance is essential to identify any omissions or errors.

Distraction can be defined as the diversion of attention away from a task or activity to another source of information. Completing the take-off performance data calculation and insertion at a time with a high likelihood for distraction therefore increases the risk for omissions and/or errors.

When working on any task, our mind has a natural tendency to think ahead. This is normal and not a bad thing until that time when we are distracted.



Is something missing here?

Following a distraction, we may come back to the original task thinking we are further along than before the distraction. Without methods or visual aids which support us to continue the task at the point where we were distracted or ones that actively remind us of where we were before the distraction (such as the eQRH checklist), the likelihood of an omission such as the one in the above included event increases.

Clearly verbalising when the performance calculation and insertion process commences and recognizing interruptions and distractions is essential in maintaining situational awareness and identifying what actions are outstanding when distracted.

Safety data highlights that besides distractions due to external stimuli (such as an ATC radio call, ground personnel or cabin crew), distractions may also be created by ourselves when we, for example, initiate a discussion on the requirement for an NADP1 departure as take-off data is inserted or crosschecked.

Be aware of any distraction that may occur during critical times, such as take-off data calculation, validation, and insertion. When having identified a distraction, recommence the process from the start to mitigate any inadvertent omissions that may have resulted from the distraction.

Conclusion and Key Learning Points

Crosschecking is vital for error identification, although has its limitations due to human cognitive constraints. Being aware of our limitations and being diligent in following the take-off data calculation and insertion process assist in preventing erroneous performance data.

- Despite advances in technology, the process of obtaining and inserting performance data remains vulnerable to human error, highlighting a significant risk to the operation. A single unidentified transcription error can have catastrophic consequences.
- The performance team indicated that there is no single “rule of thumb” that can serve as a valid gross error check for performance figures. Reviewing the obtained and inserted speeds and flex temperature on sensibility by comparing it with the available runway length and expected take-off weight is however recognised industry wide as good practice.
- Ensure accurate data entry: The principle of "Garbage In, Garbage Out" highlights the importance of accurate data input into systems. Focus on correct data entry and be vigilant during data transcription to prevent errors. ■

Loading Challenges during Winter

From Val,
Ramp Worker

Specific winter challenges, e.g. skis, PRMs and mobility devices, etc

The airport ramp is a high-risk environment with constant movement of aircraft, personnel, and vehicles. Ramp personnel executing their tasks are exposed to hazards on the best of days; those days usually do not happen during the winter season. The main areas of ramp operations for a ground handling service provider are ramp driving (getting the equipment around), aircraft operational servicing (using the equipment to prepare the aircraft itself) and payload management (embarkation and disembarkation, loading and offloading). Let us take a look at aircraft loading and passenger management during the winter.

The industry should already be preparing for winter in or around August by reviewing regulatory changes, considering lessons learned and planning the next couple of months' worth of activities which will be critical in the assurance of safe and efficient operations in these conditions. But what are the main challenges faced during winter when it comes to passengers and hold loads?

We should start on the ground. Icy and snow-covered surfaces increase the risk of personal injuries to personnel and passengers not using airbridges. Slippery surfaces may result in vehicles skidding ending in collisions. Not just the tarmac, but equipment platforms and stairs surfaces must be kept clean of precipitation or de-icing fluid residue. Snow and ice accumulation can hide debris on the ramp too, increasing the risk of FOD-related incidents. Similarly, snow and ice on the ramp can be blown around by jet blasts, resulting in incidents and accidents.

The cold weather affects facility equipment and all ground support equipment. Pre-season maintenance of the GSE should be standard, operational fluids and maybe fuels themselves may need to be treated with additives to prevent freezing; but even with this preparation, the equipment may be subject to mechanical failures and equipment malfunctions, requiring additional, unplanned maintenance or/and, ideally, additional units as backup. Batteries could lose power at a greater rate, fuel lines may become sluggish, and diesel engines could have difficulty starting. The latter, in case of bad norms present, may be the trigger for one of the most serious offences on the ramp; leaving equipment unattended with engines running! Stepping out of the vehicle for a minute or two might not seem a big deal but runaway vehicles regularly cause aircraft damage and occasionally personal injuries too. Prevention starts in the autumn, but the GSE operators are also required to ensure

that the GSE are cleared of snow or ice and inspected for full functionality, including the lighting required for all visibility conditions and, optimally, the cabin heating features.

Depending on the local climate and weather conditions, heavy winds could increase difficulties and fog could regularly affect visibility, making it harder for ground crews to navigate the ramp and align equipment with aircraft. The ground personnel are usually exposed to freezing temperatures, wind, and snow while loading the holds and handling equipment. A quick low-cost turnaround during the day means lower exposure but a widebody freighter will require the teams to stay outside for a longer time, day or night. This can lead to fatigue, slower work speeds, and an increased risk of accidents due to reduced dexterity and reaction times. Mobility is also reduced, as personnel must wear multiple layers of clothing or even dedicated winter PPE, which can limit their range of movement and make it harder to handle cargo, baggage or to operate GSE effectively.

Talking about airfreight; pharmaceuticals, perishable goods, live animals or electronics, can be damaged by the low temperatures. Special procedures and equipment would be required to protect sensitive items, such as pre-conditioned containers, insulation covers or additional heating. Temperature-control containers may also have a shorter battery life when a longer transportation between warehouse and aircraft happens; the safety of the shipment may be compromised down the supply chain, maybe on another continent, when these ULDs run out of charge. Exposure to outside temperature may also cause that the shipment stored outside to freeze to the loading pallets or containers, making it difficult to load or unload. Ice may form on the containers, requiring additional effort to clean these units with an eye on flight safety, before safely loading and securing them in the aircraft hold.

The change of pace and timing of activities is also a challenge that the ground handling team must tackle. Inclement weather on the flight path will lead to delays or cancellations, which disrupts operating schedules for other flights too, coming from other geographies, resulting in operational inefficiencies. The demanding conditions discussed above will also lead to slower operations as loading and unloading the aircraft may take longer due to the slower vehicle speeds, the physical demands on the personnel and ad hoc issues, like a GSE broken down or ULD dolly latches frozen into inoperability. Ideally, the winter safety precautions are integrated into the basic operations planning.

There might be a change in the ramp traffic, too. De-icing trucks and snow equipment on the roadways can lead to congestion, adding to the time pressure and, especially the de-icing trucks on or near the stand could make it more difficult to manoeuvre the GSE during the aircraft servicing processes.

De-icing aircraft is of course essential, to remove ice, snow or other precipitation from the wings and fuselage. However, this process can also cause complications and pressure for the loading teams when a tight schedule must be kept.

We were discussing the considerations specific to cargo operations but there are concerns for the baggage as well. The baggage handling facilities may be affected by the same technical issues as any other equipment but the bags themselves are more likely to become wet or frozen, especially when stored outside or transported in open baggage dollies. Baggage tags and labels can become wet or frozen, making them unreadable or causing them to tear off, leading to mishandling or lost luggage. Some items in passengers' baggage, such as liquids, electronics, or delicate items, can be damaged by freezing temperatures if left exposed for too long. Both of these may lead to issues far away from the airport and will put a dent in Santa Claus's reputation of safe and timely airfreight operations. Ski charters full of skiing equipment may have weight and balance issues, leading to the airline having to pay for the rentals at the destination until the baggage catches up with the holiday-makers.

So, what are the best practices to ensure the safety and compliance of aircraft loading during the winter season? We listed the concerns above and they are self-explanatory but to give a short summary:

- **Pre-season preparation:** All GSE are to be serviced and prepared for cold weather operation, from general maintenance to winter tyres and cold-resistant fluids. Cold-weather clothing and PPE must be distributed.
- **Staffing and rosters:** rotate ground personnel to reduce cold exposure issues and schedule enough staff to manage slower operations and additional safety measures.
- **Dedicated training:** conduct winter safety briefings for ground personnel on how to handle icy conditions, prevent slips and falls, and operate equipment safely.
- **Communication:** maintain lines of communication between ground personnel, flight crew and aerodrome teams to manage delays and adjust task schedules as needed.
- **Cargo baggage handling:** Reduce exposure to the elements by minimizing ramp transport times. Purchase and use dedicated equipment, e.g. thermal blankets for temperature-sensitive cargo.
- **De-icing procedures**: Plan and schedule de-icing operations in coordination with loading activities to minimize delays. ■

The Untold Importance of Airfield Ground Lighting Competence

From Quentin, the Airport operations technical representative

It was a foggy evening when the Safewings aircraft made its approach to the runway. The captain had his eyes on the horizon, but visibility was poor, barely anything could be seen. He trusted the Airfield Ground Lighting (AGL) system to guide the aircraft safely onto the runway. As the seconds ticked by, however, something wasn't right. The lights ahead weren't providing the clear path he expected. After four attempts to land, the crew had no choice but to abort the landing and divert. What went wrong? The answer lies in the critical, yet often overlooked, role of airfield ground lighting systems, and the people who maintain them.

This scenario is not an isolated incident. Across Europe, AGL systems play a silent but essential role in ensuring that thousands of flights take off and land safely each day. These lights, guiding pilots to the right runway, marking the way through low visibility, and ensuring the safe taxiing of aircraft, are often the invisible heroes of air travel. But what happens when they fail? More importantly, what happens when the very people responsible for their upkeep aren't equipped with the right skills and training?

Behind the Lights: The Human Element of Airfield Safety

AGL is more than just a set of lights illuminating a runway; it's an intricate system that pilots rely on, particularly in challenging weather conditions. Imagine the precision required when approaching an unfamiliar airport during a storm, the rain pounding on the flight deck windows,

obscuring visibility. Now, imagine the consequences if the lights meant to guide the aircraft falter due to poor maintenance or improper training of the staff handling them.

AGL systems are complex, and maintaining them requires not only technical knowledge but also a deep understanding of safety standards. This is where competence management becomes crucial. If staff are not adequately trained to handle these systems, the risks multiply, both for the pilots in the skies and the workers on the ground.

Take the case of an AGL maintenance worker at Edinburgh Airport in 2008. While performing routine maintenance on a lighting transformer, the worker was electrocuted. The cause? A lack of sufficient training in electrical safety and an incomplete understanding of the risks posed by high-voltage systems. The incident left the worker hospitalised with severe burns, but the lessons learned were more significant. The need for proper competence management in handling AGL systems became undeniable.

The Real Risks of Faulty Ground Lighting

When AGL systems fail, the consequences can range from flight delays to near-collisions. In 2014, at Amsterdam's Schiphol Airport, a technical malfunction caused several runway lights to go out unexpectedly. The confusion that followed between pilots and air traffic controllers created a hazardous situation, leading to multiple near-miss incidents. Pilots, trying to navigate the dimly lit runway, were left guessing at their positions, while ground staff scrambled to repair the fault.

In another case, a private jet on final approach to Cork Airport in Ireland found itself in a precarious position when the AGL system failed, leaving the pilots without a clear visual of the runway. Forced to abort their first landing attempt, they circled for another try, praying for better luck on the second approach. Fortunately, they landed safely, but the outcome could have been very different.

These incidents point to a sobering reality: AGL systems are not just helpful; they are essential. And behind every successful takeoff and landing is a team of dedicated AGL personnel. When their competence is compromised, so too is the safety of everyone in the air and on the ground.

EASA's Role: Leading the Charge for Safer Skies

Recognising the importance of AGL systems, the European Union Aviation Safety Agency (EASA) has taken proactive steps to address these challenges. They understand that effective competence management is not just about technical training; it's about ensuring that every person responsible for maintaining AGL systems is equipped with the knowledge, tools, and procedures necessary to keep them functioning at peak efficiency.

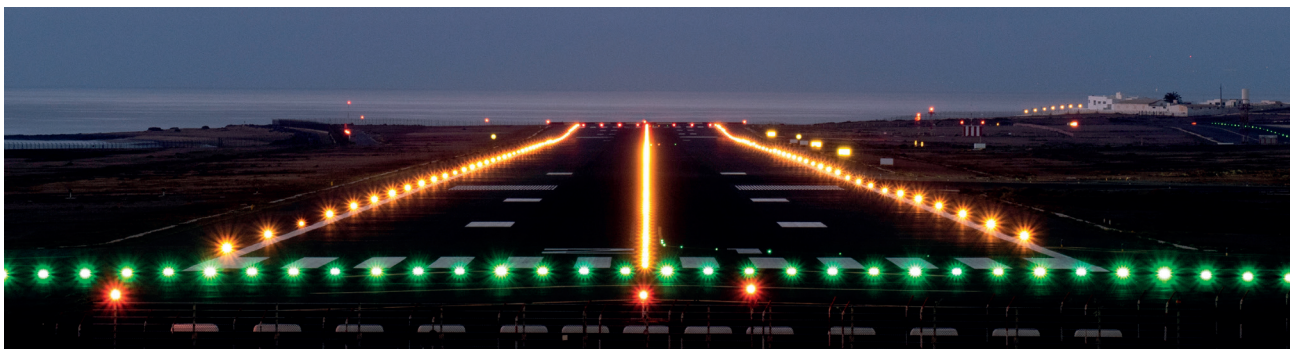
EASA's call to action focuses on the development of specialised training programs tailored to the unique demands of AGL maintenance. These programs would focus on electrical safety, routine maintenance, emergency procedures, and the proper use of personal protective equipment (PPE). The goal is simple: to make sure that every worker who touches an AGL system is prepared to handle it with confidence and care.

Lighting the Path Forward

The future of aviation safety depends on more than just advanced technology and well-maintained aircraft. It relies on the expertise and dedication of the people behind the scenes, particularly those responsible for critical systems like AGL. EASA's push for improved competence management in this field is not just about mitigating risks; it's about saving lives. This is why we have introduced Quentin to the Safewings team. He will be our airport operations technical representative and will support our team with safety-critical knowledge and expertise.

As we continue to see advancements in aviation technology, one thing remains constant: the need for well-trained, competent professionals to manage and maintain the systems that keep our skies safe. The lights that guide aircraft safely to the runway are a metaphor for the unseen efforts of these professionals, and their competence is the foundation of a secure, reliable aviation industry.

So, the next time you see an aircraft landing smoothly in the dead of night or during a foggy morning, remember, that there's more to those lights than meets the eye. They represent the skill and dedication of an entire workforce, one that is essential to the future of safe aviation. ■



Cabin Doors and Inadvertent Slide Activation

From Sven, Cabin Manager

Door operations and associated risks

Managing aircraft doors is a crucial part of both daily flights and emergency situations; directly impacting passenger, crew, and ground safety. Regular maintenance thorough training and strict adherence to procedures are essential for keeping door operations in optimal condition. This careful attention helps minimise risks and keeps both passengers and operations running smoothly.

Establishing and Reinforcing Barriers

At Safewings, we recognise that safety is always evolving. Due to an increasing adverse trend on 'Inadvertent Slide Deployments' (ISD), we decided it was time to analyse all the occurrences and near misses to identify common contributing factors. As an output, we concluded that our door procedure was a barrier that could be improved. Building on established aviation practices and guided by the IATA Cabin Operations Safety Best Practice Guide, we enhanced our approach to cross-checking in response to recurring human factor errors, taking it a step further to improve safety.

To make our operations even safer, we added a layer of redundancy to our door operations routine, ensuring every task is thoroughly double-checked, even after has been verified. This approach was specifically implemented to address factors contributing to ISDs including:

- Distractions caused by passengers, particularly during delayed flights;
- Pressure from managing passengers in transit;
- Disruption of tasks;
- Fatigue;
- Stress;
- Complacency;
- Deviations from standard operating procedures (sops).

Although these hazards are inherent in aviation, their impact can be managed more effectively by introducing additional safeguards.

Therefore, we have introduced two key roles: the Door Operator and the Door Checker. These roles are designed to work in tandem, with one person operating the door and the other verifying the operation and subsequently, cross-checking the action performed. Additionally, the senior cabin crew member, acting as a third member, confirms through the Flight Attendant Panel (FAP) that the door is being properly disarmed. Finally, once all checks are completed, the senior cabin crew member verifies with the captain on the flight deck - adding an extra layer of confirmation - that the doors are disarmed and authorised to be opened.

To ensure our crew members stay focused and clear-headed, we introduced the simple yet powerful "Stop" "Drop" and "Review" processes to be applied even before starting the door procedures:

- **Stop:** Pause everything and focus solely on the task at hand.
- **Drop:** Accompanied by a downward hand gesture, this step physically and mentally distances the crew member from the door controls, giving them a moment to reflect and avoid hasty actions that could lead to mistakes - especially when tired. Even with the captain's authorisation, confirmed disarmed doors, and redundancy in place, it is crucial to double-check what has already been verified.
- **Review:** the door arming and disarming procedures.

When the moment comes to open the door, the same "Stop" "Drop" and "Review" process is applied. The Door Operator announces their intention to open the door, and the Door Checker verifies one last time that the door is disarmed and safe to open. This careful and deliberate process ensures that safety remains our top priority, no matter the circumstances.

Essential Factors for Effective SOP Implementation

Our airline's cabin crew policy for arrival and departure procedures highlights three critical aspects:

- Situational Awareness
- Effective Communication;
- Workload Management.

Situational awareness is more than just following protocols; It's about understanding the space around us, anticipating what can go wrong, recognising potential hazards, and assessing how they can be mitigated.

Communication plays a co-starring role, ensuring that every message between crew members is clear and effective, leaving no room for misunderstandings that could compromise safety.

Workload management is strengthened by a professional approach emphasising vigilance, attention, and focus. This helps maintain situational awareness and allows crew members to efficiently prioritise the tasks at hand, remain adaptable, and be able to pick up where they left off, even in the face of interruptions, fatigue, or stress.

Together, these elements form the foundation for effective implementation of SOPs, which serve as the safety net all cabin crew are continuously trained to rely on. Ultimately, the crew must always adhere to SOPs to ensure safety remains the top priority in every situation, thus reducing operational drift. ■

Safety on the Ramp

From Nuno, our Safety Manager

Driving at an airport, especially in airside areas, requires different trainings, attitudes and behaviours from the drivers of vehicles and self-propelled GSE. The complex environment is unusual for the personnel on foot too; the noise, and constant movement around one's person while having to focus on their work will need some time of getting used to.

The organisational processes of training, rostering and task assignments (among others) need to consider the hazards and risks when managing the personnel but before looking at the best management practices of preparing the staff for the challenge, let's look at a short list of common lapses and errors made by the drivers at airports. These are the irregularities that the operational and safety managers deal with on a daily basis and what the organisation has to handle.

Speeding is one of the most frequent problems. The speed limits are breached by even the most safety-conscious staff members on occasion, if not for anything else, then because they are generally much lower than what we are used to outside the airport.

Ignoring the signage and markings, which have a number of different categories. Ramp signs, ground markings, and cones advise the drivers on how to traverse the ramp while ensuring clearance from aircraft and obstacles. They are also giving detailed direction on what to avoid; restricted areas like parking places, aircraft stands and, indeed, live taxiways and runways. Specifically, not following the designated roadways, service roads and pathways will result in serious safety violations, loss of the airport or national driver's license and retraining in the better scenarios.

Maybe the most serious breach is, naturally, failing to yield to aircraft on the move. While road markings should guide the driver, a common root cause is lack of attention and neglect to check blind spots; a recent serious collision was the result of the driver not paying attention to an aircraft taxiing parallel with the roadway and turning into the stand across it. It is less than unusual that drivers fail to consider the force of jet blast from idling or taxiing aircraft. Passing behind the aircraft too close or too early can cause vehicles to be blown over or get damaged. Propeller wash may pose similar dangers for those that are near to propeller-driven aircraft.

Being at the wrong place at the wrong time is not limited to moving vehicles only. In another case, an aircraft arrived to the stand and collided with a GSE parked in a spot it should have been; parking too close to the stand or taxiways, blocking access roads, or parking in non-

designated areas can, even without a collision, disrupt operations and pose a safety risk.

The lack of paying attention to the surroundings (or lack of awareness) and being overly focused on their current or next tasks is the most common mistake by ramp personnel. Lack of proper communication comes a close second. Failure to maintain the necessary and clear communication with other ramp staff, with flight crew and airport traffic control when required will lead to unsafe situations and in some cases to accidents. That extends to misusing radios, not listening to instructions, or lack of ramp frequency management can lead to confusion and miscoordination between teams. This may happen during the day-to-day work but there's a particular risk when it comes to irregular situations, i.e. with emergency vehicles; as they are required to disregard the same established rules for vehicle priority on the ramp, their movements should be considered by a specific hazard. Such a lesson was learned two years ago, when a fire engine that was crossing the runway as part of an exercise did not yield to an aircraft, resulting in fatalities.

A few other types of discrepancies can also create unsafe situations, like carelessness with FOD, leaving debris like tools, trash, or parts in or on the vehicles. Just the same, not securing loads like luggage or equipment properly can result in these items falling off, right before the next, following vehicle.

The vehicles themselves must be in good technical condition too. The start of work should start with a shift check or day check to ensure that the vehicles and their engines, brakes, lights, windows, heating and operational elements are in good working order and fully useable. The driver must use them too; applying the safety features, securing the superstructures and loads and switching on the lights, too, especially in low visibility conditions that will be more frequent during all winter seasons; not using headlights, hazard lights, or beacons in e.g., fog, rain, or night will make it difficult for others to see the vehicle, thus increasing the risk of collisions.

Talking about winter, the drivers should take care of themselves. Driving under the influence of prescribed or over-the-counter substances, feeling the effect of cold or an upset circadian cycle will reduce their attentiveness, impair judgment and slow down reaction times. The local management practices on all levels of the organisation, and the trainings, already, should emphasise the human factor elements along the colour and shape of signage.

The managers of a ground handling service provider bear most of the responsibility. A safety mindset, when managing work that requires airport ramp driving tasks, is crucial due to the unique and dynamic environment where aircraft, vehicles, and personnel all operate in close proximity.

Successful management involves a combination of training, policies, monitoring, and enforcement to ensure a safe working environment. We've already mentioned training; a comprehensive training concept needs to integrate initial and recurring mandatory training to all personnel authorized to drive on the ramp that covers:

- Familiarity with ramp areas, aircraft movements, and operational protocols.
- Safe driving techniques, speed limits, and proper use of lights and signals.
- Recognition and avoidance of other hazards (and risk reduction) like jet blast, FOD, inclement weather conditions.
- Communication protocols, including radio use and hand signals.

The airport and stakeholder management teams must work together to ensure that signage and markings are clear; both fully readable and not confusing the drivers. Clearly marked vehicle paths should be laid out in a way to minimize possible interactions with aircraft. Low visibility conditions require good lighting on the ramp that provides visual cues about restricted areas or aircraft operating zones.

The control of drivers starts with the certification that ensures their training to operate on the ramp, but supervision ensures a positive observer effect. Drivers are more likely to comply with speed limits and stay righteous when they know that their actions are recorded, analysed and addressed - preferably in a non-punitive way. Transparent and mature oversight and feedback ensure that lessons are learned and the whole community benefits from two-way communications in this topic, too. Ideally, ramp safety officers monitoring driving behaviours will provide real-time guidance or intervention when needed.

Technology is changing this game, thankfully. Safety teams are understaffed to address all safety events and to ensure total oversight. Cameras are assisting in monitoring vehicle movement, enforcing rules, and in reviewing incidents but in the coming period we will see AI solutions doing this for the safety teams. Connecting these systems with telematics or GPS-based systems to track vehicle speed, route adherence, and driver behaviour will create so much data which can be used to identify areas for improvement.

Vehicles are getting safer with backup cameras or proximity sensors to prevent collisions in tight or crowded areas but geo-fencing and warning systems that alert drivers when they are approaching restricted areas or exceeding local speed limits are becoming prevalent too. The next step for airports is to use applications that can assist drivers with navigation, communication, and updates on ramp conditions in real-time. These should be installed in the vehicles of course; we don't want drivers being distracted by their mobile devices.

Until these technological developments become standard at most organisations, we are relegated to maintaining vehicles and drivers and releasing them into the ramp traffic in fully operational status. Then, the safety work continues with observations and other safety management measures; audits of airside driving operations, ongoing risk assessments, change management and the day-to-day incident reporting and analysis. Safety promotion is a priority too; not just to improve driving performance but to encourage the reporting of near-misses and minor incidents, to understand root causes and prevent future occurrences. Incentivisation, reward programs and recognition of safe conduct will also contribute to a positive safety culture. ■

Management of Repetitive Defects

Repetitive defects are not just minor inconveniences in aircraft maintenance; they are significant factors that can undermine flight safety, disrupt operations, and increase costs.

From Helena, our Engineer

The recent European Aviation Safety Agency (EASA) SAFE 360° conference, held in Cologne in September 2024, brought together aviation professionals from airlines, manufacturers, and regulatory bodies to explore new approaches to managing these recurring issues. This collaborative forum allowed for the sharing of best practices and innovations in defect management, with the overarching goal of improving safety and reliability across the aviation industry.

Understanding the Problem: Repetitive Defects and Their Impact

Repetitive defects refer to recurring faults that occur in the same component or system of an aircraft, despite previous attempts to rectify them. These defects may arise from inadequate maintenance, insufficient engineering oversight, or suboptimal repair solutions. As pointed out during the conference, repetitive defects can lead to operational disruptions, increase the risk of incidents, and elevate maintenance costs.

One key observation discussed was that repetitive failures often contribute to incidents and accidents. Many manufacturers have identified that certain maintenance practices do not always address the root cause of recurring issues, leading to an increased likelihood of repetition. This underscores the need for a more rigorous approach to fault analysis and rectification; one that goes beyond temporary fixes and targets comprehensive solutions.

Airlines on the Front Line: Managing Repetitive Defects

1. **Balancing Safety and Cost Efficiency**

Airlines are faced with the challenge of balancing safety, operational efficiency, and cost management when it comes to handling repetitive defects. Their approach often revolves around early identification and resolution, which prevents faults from escalating into larger safety concerns. Managing repetitive defects not only ensures the safety of passengers and crew but also reduces the need for unscheduled maintenance, which can be both costly and disruptive to operations.

By closely monitoring defect trends, airlines can implement targeted maintenance interventions that prevent the recurrence of issues. This proactive approach also feeds into the airline's broader safety management system (SMS), ensuring that defect data is shared across teams to foster continuous improvement. Reducing repetitive defects can ultimately lead to a better overall passenger experience by ensuring fewer delays and cancellations.

2. The Manufacturer's Role in Preventing Recurrences

Aircraft manufacturers have refined their processes for addressing repetitive defects across fleets. A key focus is on data-driven solutions that integrate feedback from airlines and maintenance organisations to better understand the systemic causes of defects.

Manufacturers are improving communication channels between themselves, airlines, and regulatory bodies. This approach ensures that when a defect is reported, the data is analysed not just at the airline level but within the manufacturer's own engineering teams. By integrating advanced data analytics tools, manufacturers can spot trends that may not be obvious in individual defect reports, allowing for more comprehensive investigations and the implementation of long-term solutions rather than short-term fixes.

Moreover, a failure to manage repetitive defects effectively can lead to an erosion of customer confidence, not only in the airline but also in the aircraft itself. Through close collaboration with operators, manufacturers aim to provide necessary support and implement any required design modifications swiftly.

3. Data-Centric CAMO Management

The role of the Continuing Airworthiness Management Organisation (CAMO) in overseeing the health of an airline's fleet is critical to managing repetitive defects. Many airlines have adopted a data-centric approach that leverages aircraft performance and maintenance data to identify recurring patterns.

Using sophisticated defect tracking systems allows CAMO teams to maintain real-time oversight of aircraft reliability. By identifying trends in repetitive faults early, airlines can prioritise maintenance efforts in high-risk areas, ensuring that the root causes of defects are addressed before they become safety issues. This approach not only improves safety but also leads to significant cost savings by reducing the frequency of unscheduled maintenance.

Cross-functional collaboration within airlines also plays an important role. When CAMO teams work closely with engineering and operations departments, it fosters a unified safety culture where all stakeholders align in their efforts to minimise the impact of repetitive defects.

4. **Leveraging Safety Management Systems (SMS)**

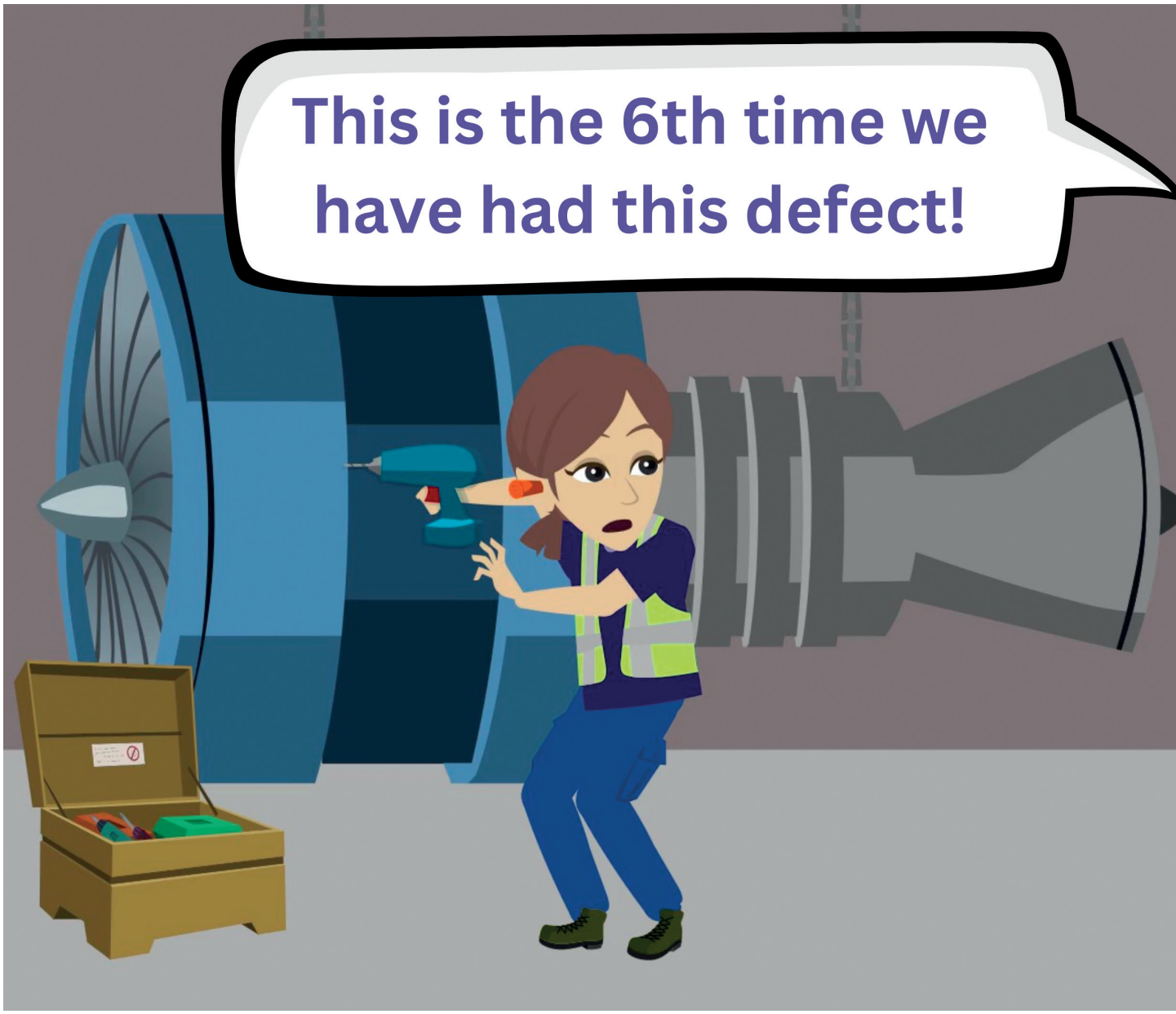
Some airlines have integrated safety management protocols into their repetitive defect management practices. By incorporating SMS principles, these airlines have created systematic processes for identifying, reporting, and resolving defects.

Creating an organisational culture that encourages accurate defect reporting and fosters open communication between maintenance teams, flight crews, and engineers is essential. With SMS tools in place to assess the risk associated with repetitive defects, airlines can prioritise corrective actions based on safety impact and operational significance. Furthermore, automated systems that track defect reports in real-time allow maintenance teams to act swiftly, enhancing safety and ensuring compliance with regulatory requirements.

Best Practices and Strategic Insights for Managing Repetitive Defects

The SAFE 360° conference highlighted several best practices that are crucial for managing repetitive defects effectively across the aviation industry:

- **Accurate Data Collection and Reporting:** Effective management of repetitive defects begins with precise data collection. Whether through manual reporting or automated systems, accurate defect data is essential for identifying trends and understanding the root causes of problems.
- **Root Cause Analysis:** Panelists emphasised the need for thorough investigations that go beyond surface-level fixes. Airlines and manufacturers must focus on identifying the underlying causes of repetitive defects, ensuring that solutions are comprehensive and long-lasting.



- **Cross-Functional Communication and Collaboration:** Strong communication between different departments within airlines and between airlines and manufacturers is key to resolving repetitive defects. This ensures that defect information is shared quickly and efficiently, allowing for coordinated responses that address issues before they escalate.
- Leadership and Accountability: Leadership plays a vital role in ensuring that defect management is taken seriously at all levels of the organisation. By fostering a culture of safety and accountability, airlines can ensure that repetitive defect management remains a top priority.
- **Use of Advanced Technologies:** Data analytics and automated systems can greatly enhance defect management processes by providing real-time insights and predictive capabilities. Integrating these technologies into SMS and CAMO operations can significantly improve safety outcomes.

Conclusion: A Collaborative Path Forward

The management of repetitive defects is an ongoing challenge for the aviation industry, but with the right strategies, it is possible to mitigate the risks associated with recurring faults. The insights shared at EASA's SAFE 360° conference underscore the importance of collaboration between airlines, manufacturers, and regulatory bodies in addressing these issues. By adopting a proactive, data-driven approach and fostering strong communication within and between organisations, the aviation industry can continue to enhance safety and reliability.

As repetitive defects remain a significant focus for safety and maintenance teams, the lessons learned from this conference will undoubtedly shape future defect management practices, ensuring that the aviation industry remains resilient in the face of operational challenges. You can also check out the Airbus Safety First article on closing MEL items. ■

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