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SAFETYWIRE

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FAA Reauth, Part 380 Top Topics at NATA Charter Summit

(Source: Curt Epstein; AIN, June 26, 2024)

Describing the hundreds of pages of documentation associated with the agency's recent reauthorization, "It's just a lot; the volume is the issue, not the individual provisions," FAA associate administrator for aviation safety David Boulter said yesterday during the opening session at the NATA Air Charter Summit in Oklahoma City. He termed reauthorization as an "every-five-year opportunity" and noted that many of the items were "holdovers from other reauthorizations, so really some of that is on us."

Boulter also addressed the recent proposed changes to Part 380 operations, which would sever DOT Part 380 regulations from the Section 110 definitions and would convert some Part 135 operators to Part 121, which engendered more than 55,000 public comments. When the NPRM was issued, he said the Part 135 segment was experiencing "an accident rate that was unacceptable. Now a lot has changed and, frankly, in the 135 space the accident rate has been declining over the years, so we need to look at actual data."

Thus, the agency intends to empower a safety risk panel of industry observers over the next several weeks.

Because the summit venue of Oklahoma City is also home to the FAA's aircraft registry unit, Boulter noted that the agency is actively working to reduce the time for aircraft registrations, which are taking nearly 200 days to process.

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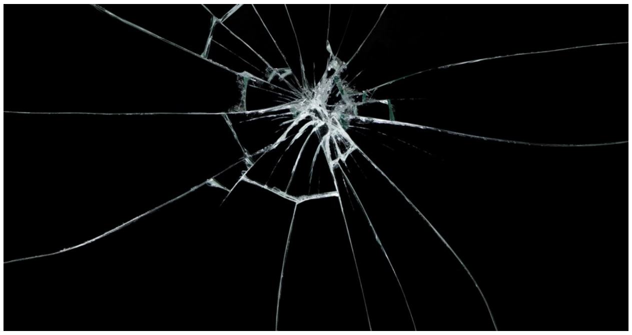
Broken Glass Procedures

(Source: William Dubois; FAA Safety Briefing, May 7, 2024)

Instead of "break glass in case of emergency," in the modern flight deck, "broken glass" is an emergency in and of itself — a first-rate emergency that can spiral out of control with mind-numbing speed. Sure, modern glass avionics are the gold standard for reliability — much more reliable, on average, than their analog pneumatic- and electric-gyro predecessors. That said, anything that humankind makes can break. And when reliability meets Mr. Murphy, the next steps for pilots flying glass are different from those flying steam.



To understand what those operational differences are, we first need to look under the cowl and understand the magic that drives the displays. While the system architecture of glass panel avionics varies by manufacturer and model, all share some basic DNA: the "glass" display itself, the pilot interface, and the black boxes that drive the system. Let's start with the boxes.

Little Boxes

A glass panel system is controlled by two different black boxes, in concept (more on that in a moment). The first box is called an attitude and heading reference system, or AHRS in our acronym-laden lexicon. The AHRS is responsible for interpreting pitch, bank, and heading info. It does this using accelerometers, mini gyros, a magnetometer, and … well … magic. The second box is the air data computer, or ADC, and it's responsible for altitude, airspeed, and vertical speed number crunching and display.

There may be one of each type of box in the aircraft, or, in some installations, there may be dual AHRS and/or dual ADCs. Increasingly, there are units in the field where the ADC and the AHRS systems are combined into a single box, called, you guessed it, an ADAHRS. And, in some systems, the boxes themselves are gone, with the hardware for both built right into the pilot display, an approach that greatly simplifies installation, and reduces weight, cost, and complexity.

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All this variability, along with the rapid pace of technological advancement in contemporary avionics, means that you need to spend some time with the Pilots Operating Handbook (POH) and/or flight manual supplement for any glass panel-equipped aircraft you fly so that you know how the systems are laid out. Flying glass without this knowledge would be akin to jumping into a strange airplane without first understanding how its fuel system is designed. Not to mention, it's your responsibility under 14 CFR section 91.103, Preflight action, to familiarize yourself with all available information regarding the flight, which includes the proper use of avionics installed in the aircraft.

Pilot Interface

The newest glass panel systems are driven by touch screens that feature smartphone-esque icons sporting highly intuitive menus. That said, the bulk of the glass systems found in the general aviation fleet are still button, knob, and softkey driven, often with less than intuitive menus and button press chains required to achieve the desired results. These analog-entry glass panel systems all feature inverse workload: once mastered, they are great workload reducers in the air; but to master them, expect significant ground study.

To avoid draining the aircraft's battery, a ground power supply is recommended for in-airplane ground work. As an alternative, investigate the availability of flight simulators or training devices in your area that match up to the avionics in the aircraft you will be flying. Sims have several other advantages over sitting in the airplane pressing buttons and practicing flows, including the fact you can practice (safely) in simulated flight, as well as on the ground — and they are cost-effective compared to burning avgas or JetA.

Additionally, some glass avionics systems have "emulators," or desktop computer programs that mimic the flight deck systems so that you can learn — and keep sharp with — the flows from the comfort of home.

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Two Screens

The vast bulk of contemporary glass installations on light GA airplanes feature a pair of display panels, the pilot side panel being called the primary flight display, or PFD; and a second display of the same size on the copilot side called an MFD, for multi-function display. The PFD is generally used to display the flight instruments, while the MFD displays navigation and in some cases, engine data.

The beauty of two screens, beyond being beautiful to the eyes of many pilots, is the fact that the screens can often flip-flop data. So not only do the dual screens provide a greater ecosystem of situational awareness, but they also serve a redundancy role. If the PFD screen suffers a failure, the flight data can merely be shifted to the MFD or in some cases, a backup electronic display.

Of course, now everything you need to see and know to control flight is on the wrong side of the airplane. So here's your first tip and challenge: on your next instrument proficiency check, shoot an approach using the MFD. Flop your data and dim, or cover, your PFD — as, generally speaking, most manufacturers discourage disabling the PFD by pulling its circuit breaker.

Bonus points for getting with a flight instructor to get some right-seat time. If you are flying alone and lose your PFD, that experience will make MFD flying more natural. That said, if you are not an instructor yourself, you might find the landing sight picture (and the opposite hand throttle/yoke operation) disconcerting at first, which is why some practice with an instructor is in order.

Of course, in a real-life display failure, you are now essentially flying on one mag. Sure, like magneto systems, the odds of losing both are pretty remote, but why take the chance? If you've lost one display, it's time to get on the ground at the nearest airport.

Reliability's Weakness

Despite the greatly improved reliability of glass avionics compared to legacy avionics, if there is a failure in a glass system, their architecture makes them more prone to system-wide failures. That means you can lose all of the flight data, compared to analog systems failures, where you are more likely to only lose either the air-driven or power-driven instruments — leaving you with at least a 50% solution.

Hence, in glass flight decks, there is a need for standby instruments.

Standbys

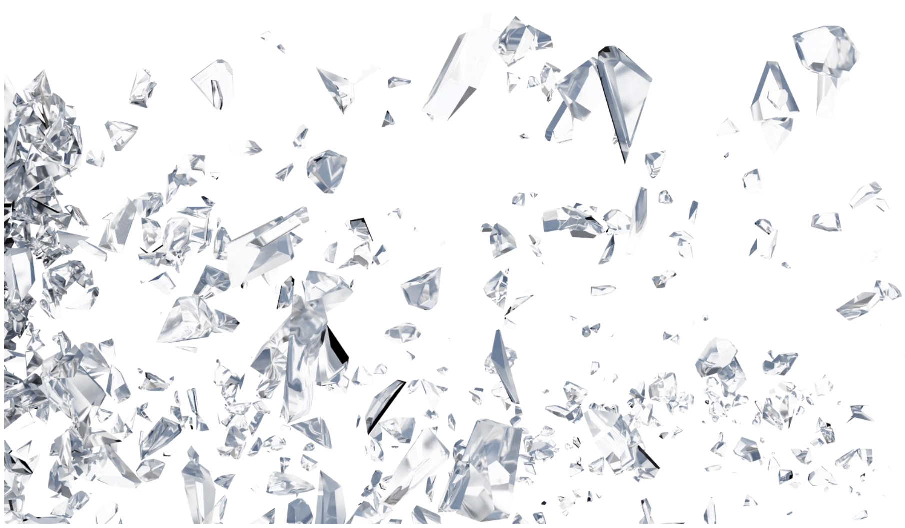
Standby, or emergency backup instruments, might be a set of analog instruments, or they can be an independent miniature glass panel system. Either way, the standby system is your lifeboat in the "IFR sea." Should the worst happen to your primary system in hard IFR, you can still aviate and navigate to an island of safety.

At least in theory.

Because the reality is that standbys are both small and inconveniently located, typically low down on the panel. Yes, you can fly on them. And yes, it will be a "stressfest." So that's your second tip and challenge for today: on your next IPC, shoot a hooded approach on your standbys.

It's Not as Modern as You Think

Contrary to popular belief, a glass panel system isn't totally high-tech. The ADC still uses the aircraft's ol' fashioned pitot static system to connect to the flight environment. That, in turn, means that contemporary glass panels can fall victim to the same pitot-static failures that legacy avionics do, so it pays to review the symptoms of pitot and static blockages. Also contrary to popular belief, the systems won't necessarily alert you to a pitot-static problem, and, for the same reason, it can be hard for pilots to recognize such failures in analog systems — they are subtle and tricky to recognize.



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Power Hungry

When it comes to being prepared for emergencies, the number one thing to understand about glass avionics actually has nothing to do with the glass itself directly, but rather with the glass's food. Modern avionics have ferocious appetites for electricity. So much so, that an alternator failure is possibly a greater emergency than an avionics failure. This is because once the battery is drained — and the battery-backup, if so equipped — the glass shuts down along with the radios and all the rest.

An alternator failure in a glass-equipped flight deck is a much more serious matter than it is in a legacy flight deck. First off, once the battery is dead, all flight instrument data on the glass is lost — rather than just a portion of it. Additionally, the time from alternator failure to system failure is dramatically reduced, due to the power-intensive nature of glass avionics.

In the case of an alternator failure in a glass flight deck, it's critical to quickly shed load on the electrical system. Unplug any personal devices that are suckling on the airplane's USB ports. Then promptly follow the checklist to shut down any unnecessary aircraft power usage.

Speaking of unnecessary power use, in IFR conditions, consider proactively lightening the load on your electrical system. This means not taxing the aircraft's electrical systems by using it as a charging port for crew and passenger tablets, phones, or laptops — their charging load can increase the risk of an electrical system failure.

Lastly, don't expect the lights to stay on as long as the POH says they will after an alternator fails; that number is based on a factory-new battery. As batteries age, their stored load capacity decreases. In an alternator failure, the clock is ticking on your glass avionics. Actually, it's not so much a clock, as a stopwatch. It is critical to get to VFR conditions, or safely on the ground as quickly as possible.

The Right Stuff

In all flying, the key to emergency survival is preparedness. In the case of glass IFR flight, avionics failures are less likely, but when failures happen, they are more likely to be widespread. Additionally, know that glass avionics are more vulnerable to aircraft electrical system failures than legacy systems are, and be ready to act swiftly.

For maximum preparedness, take the time on the ground to study the architecture of the glass panel systems of any glass aircraft you fly. Practice flows — standard, atypical, and abnormal/emergency — parked on the ground, in a sim, or using an emulator. And review those tricky pitot-static failures, and how they would manifest on your glass display.

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In the air, put those IPCs to good use by practicing with the MFD and the standbys. Consider some right-seat time. Right-screen, right-seat practice equips you with the right stuff for a glass emergency.

In flight, keep the load light — the power load. Just like weight affects aircraft performance, so too does the load on the electrical system.

And should it happen — should the infamous red “Xs” appear, or a screen go dark — unplug and navigate to the nearest port in the storm, be that below the weather, above the weather, or on the ground at the nearest airport or airstrip. Time is not on your side. But if you are prepared, there will be time enough.

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The Rotorcraft Collective: Just Say No!

(Source: FAA Rotorcraft Collective, June, 2024)

The most decisive word often missing from a pilot's vocabulary is "no." Pilots are decision-makers who are go-oriented and focused on completing the task at hand. When "no" is the correct answer, it is the only answer. Watch this video before your next helicopter flight.

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SAFETY MANAGER'S CORNER

My SMS Skill Description

When you ask people in an organization what skills they have, they can usually rattle off a few such as "pilot", "mechanic", "facilities management", etc. What you will not hear very often, however, is people referring to SMS as a skill. This is perhaps because we think of SMS activities as just something we "do" - and not as a skill. But what if we thought of SMS as a skill that anybody in the organization can build and maintain, not just the Safety Manager? In the spirit of thinking of SMS as a skill, here are some descriptions of the "SMS Skill" that your people can aspire to.

SMS is a specific framework of activities that were defined by ICAO in 2007 and adopted by the FAA. This framework reflects many years of safety management evolution. I am competent in SMS as follows:

1. I can name the four Components/Pillars of the SMS Framework and I can name at least one activity that I might do to support each Component/Pillar.
2. I am aware of and have read our organization's safety policy—and I participate in all safety training events that I am assigned to. These are activities that support the Policy Component and the Promotion Component of SMS.
3. I submit hazard or incident reports for any hazards that I see or incidents that I am involved in. I understand that it is important to do so because we want to identify our unique organizational weaknesses before they become a more serious incident or accident. I understand that this is an activity that supports the Risk Management Component of SMS.
4. I understand the process to do risk management including how to assess a risk for severity/probability and how to apply appropriate controls. I understand that this is an activity that supports the Risk Management Component of SMS.
5. I read and sign any "Read and Initial" items that are assigned to me. I understand that this is an activity that supports the Assurance Component of SMS.
6. If I am assigned to conduct an Internal Evaluation Program (IEP) checklist, I complete it and submit it back to the IEP Manager who assigned it to me within the time allotted. I understand the purpose of doing internal evaluations are to find any weaknesses in the organization and correct them before they result in an accident. It also helps us learn about our organizational processes. I understand that this is an activity that supports the Assurance Component of SMS.

This list is not exhaustive, there are many more SMS activities that can be named. Hopefully though, this list is a starting point for people to think of their participation in SMS as a skill. So how do you describe your "SMS Skill"?

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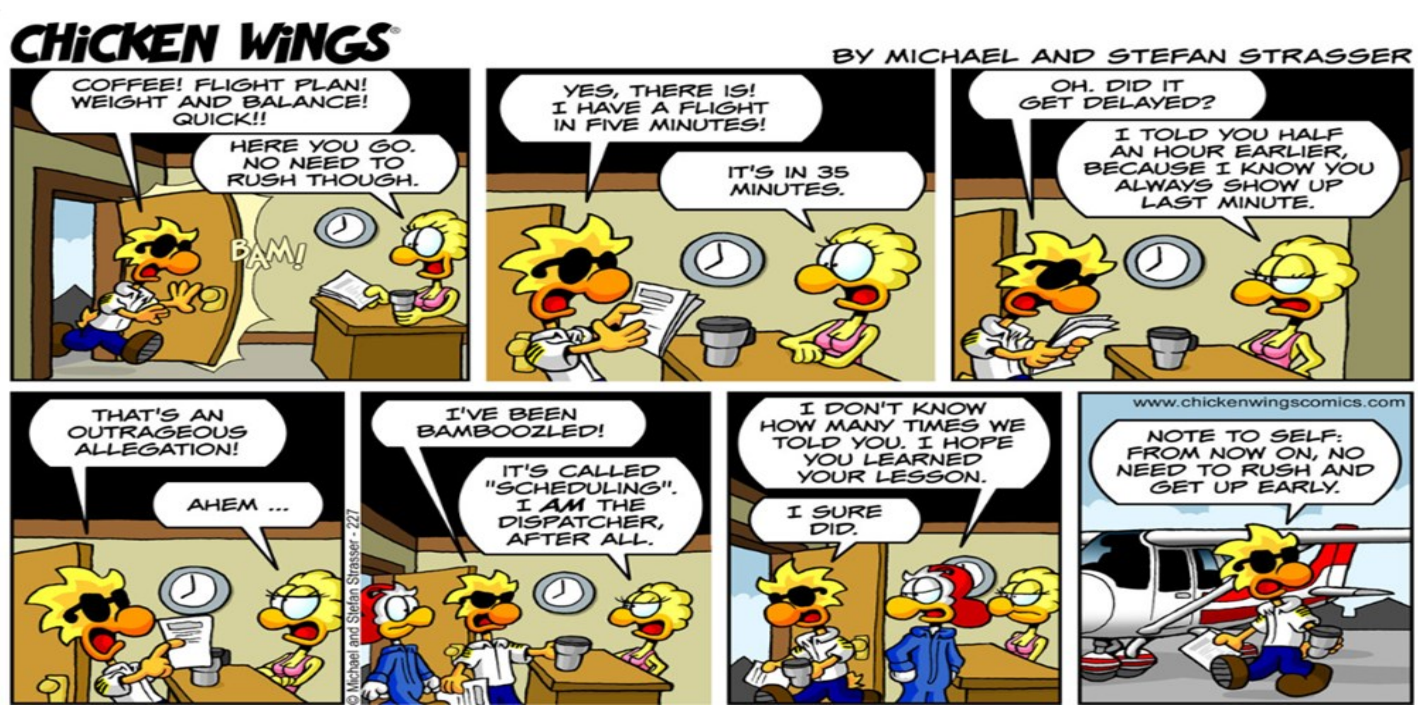
Quote of the Month

Strategy is, at some level, the ability to predict what's going to happen, but it's also about understanding the context in which it is being formulated. And then you have to be open-minded to the fact that you're not going to get it right at the very beginning.

BY: Martin Dempsey

Building your SMS strategy requires first understanding the context in which SMS was formulated. It is the culmination of many years of trial and error in safety management that resulted in a framework of inter-related activities formally named SMS. These activities are designed to be tailored to your organization so you need to have a strategy for how to implement and maintain them. You will probably not get it right from the very beginning but the worst thing you can do is settle for something incomplete—or worse, something that people do not relate to. So form your SMS strategy, examine it regularly, and keep an open mind about recognizing its shortfalls and making adjustments.



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July 11, 2024—PROS Course
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August 26 to August 30, 2024—PROS Course
ALAT Training
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September 12, 2024—PROS Course
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Virtual

September 24 to September 26, 2024—PRISM Course
Safety Management System (SMS)
Denver, CO

November 7, 2024—PROS Course
Risk-Based IOSA Training
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November 11 to November 15, 2024—PROS Course
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