

Flight Test *Safety* Fact



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What's that smell?!

John Hed

“*What is that smell?*” How many times in your career have you heard that or even said it yourself? I have, numerous times. What did you do? Speak up? Ask someone else if they smelled it? Sniffed around to see if you could tell where it was coming from? Tried to think what it smelled like (electrical, smoke, etc...). Called to the aft cabin to see if they smelled it? Or did you do what you *should* do, and *immediately don your oxygen mask* and work it from there? As the flight safety officer for my team, I am always on the lookout for topics to discuss at our quarterly safety meeting or safety items to just pass on to others. I get several aviation safety blogs and newsletters, and when I started reading them I was surprised at how many events involved smoke and/or fumes in the cockpit or cabin, from all over the world, every day. The average is probably about 2-3 per day, with many of those causing emergency returns or divers. I have been reading about these for a decade, and usually they are dealt with easily. Usually, the event is minor. I think this is why we don't take these events seriously enough. We have become complacent. In some cases, aircrew members don't want to use the mask because it may cause a maintenance action or they would have to repack it. These are poor excuses.

Recently, two of these incidents were almost catastrophic. Both were on British Airways, and both were on A320s. Most importantly, though, both involved incapacitated crewmembers. The first occurred on October 19, 2019. An excerpt appears from [Terrifying: Fumes Nearly Incapacitate Both Pilots on British Airways A320](#) (*Aviation Herald*).

A British Airways A320 (from London Gatwick to Paphos, Cyprus) was on descent, passing 8,000 ft for 6,000 ft, when **the first officer noticed an unusual odor in the cockpit** (which smelled like onion bahjis). When asked, the captain said he did not smell it. **Thirty seconds later the first officer felt his arms and legs tingling and felt faint, so he donned his oxygen mask** and set the oxygen level to 100%. **He then turned and noticed the captain was incapacitated.** Eventually, the captain regained consciousness and donned his mask and set the level to 100%. **The pilots**

missed calls from ATC during this time. The plane landed safely 13 minutes later, and the crew opened cockpit windows upon landing. After engine shutdown, the first officer determined that the cabin was unaffected, but the flight attendant noticed how pale the first officer was and noted that there was a strong smell of fuel from the cockpit. The aircraft also had previous write-ups: on October 2 the plane diverted to Athens due to smoke in the cabin, and on October 17 the plane diverted to Porto while enroute to Marrakech. Four flights later, this incident occurred.

The second event was on January 2, 2020, as excerpted from [Accident: British Airways A320 at London on Jan 2nd 2020, fumes take out first officer](#) (*Aviation Herald*).

A British Airways Airbus A320-200 on final approach to Heathrow's runway 27R, was approximately 4nm from touchdown when the captain donned his oxygen mask and radioed an emergency call, advising ATC he would continue the approach. The aircraft landed safely 2 minutes later. Reports indicated that the first officer passed out, and the captain smelled the odor of old socks. He donned his oxygen mask after witnessing the first officer. Passengers and cabin crew were unaware until after landing. After landing, the first officer recovered in the custody of first responders.

In both cases, any more hesitation could have result in a catastrophic loss. (As an aside, this is why regulatory agencies specify a 5-second donning certification test.) In every Smoke/Fumes checklist the first step is "Oxygen Mask DON." These anecdotes also illustrate why you should take ANY odor seriously, and single pilots should use extra caution.

Another incident, a little closer to home, was on a certification flight test of a Part 25 aircraft. On approach to landing, a fire began in a power panel in an aft electrical bay. Smoke came pouring up along the vents at the edge of the floor. The flight deck door was open as it mostly is during flight testing but since they were on final, the flight crew was concentrating on landing the aircraft and didn't close the door nor don oxygen masks since the positive pressure in the flight deck was keeping out the smoke from the flight deck. After reading the above incident reports, we should be warned: If the smoke/fumes was toxic this could have turned out bad. Bottom line:

- Make sure your oxygen system works—conduct a thorough preflight every time.
- Know how to don and use it quickly—practice.
- And most importantly, never hesitate.

[John Hed](#) is a member of the Flight Test Safety Committee Board of Directors and an FTE (Flight Test Engineer) for the FAA's Northwest Flight Test Section in Seattle.

LinkedIn FTSC Group

John Hed



The FTSC has a private LinkedIn group, where you can ask questions or share safety ideas and best practices. If you have asked to join this group in the past and haven't heard anything, that is my fault. I am currently working on a backlog of over 300. It is open to all, but approval requires some mention of "flight test" in a user's profile to indicate relevance. Contact me if you have problems or don't get approved: Email john.hed@faa.gov.

Flight Test Safety Workshop – Call for Presentations

Come to Colorado for the 2020 Flight Test Safety Workshop, from 5-7 May 2020, at the DoubleTree by Hilton, Denver Tech Center. Join us in Mile High City as we focus on Safety Promotion, the fourth component of Safety Management Systems (SMS).

Call for Presentations

Gene Kranz famously coined the term "Tough and Competent" in his Kranz Dictum to describe the "price of admission" to the ranks of NASA Mission Control. Would you argue with the guy that was central to bringing the Apollo 13 crew home safely? For him, *tough* related to uncompromised responsibilities and total accountability for actions. *Competent* related to knowledge and skill and never being deficient in either. Transposing this to SMS Safety Promotion suggests that we are sufficiently trained to perform to the competencies required by our flight test organization and the SMS. (You do have SMS don't you?). Training underpins all critical functions and effective communications enables awareness and continuous learning. The 2020 edition of the Flight Test Safety Workshop will anchor on training, education, and communication as it relates to flight test safety. We want to hear from test organizations on their successes or challenges in providing necessary training for testers and the means to ensure safety-critical information is shared broadly. Perhaps share your SMS implementation strategy and the tools or methods that paved the way for a positive safety culture. In short, tell us what "Tough and Competent" means to your organization.

Presentations should be limited to 25 minutes. Please send abstracts or briefing proposals to the 2020 Flight Test Safety Workshop Chairman, Jeff Mabry, via susan@setp.org. **The deadline for abstracts is 10 February 2020** to allow time for appropriate consideration and inclusion in the program.

Chairman's Corner

Tom Huff

Dear current, past and aspiring test professionals, I hope you are enjoying the FTSC newsletters and podcasts. When you see Mark Jones and Turbo Tomassetti, please let them know you appreciate their hard work! Of course, we also want the feedback, as well as ideas and content for both.

As you may have seen, Safety Promotion is the topic for the upcoming Flight Test Safety Workshop in Denver. Yes, it's the 4th component of the Safety Management

System (SMS) and I'm sure you're thinking...yawn...but please indulge me... We are working our way thru the SMS components for a reason – not all are familiar with SMS, and certainly many of us struggle with adoption and maturing of SMS. By anchoring on these elements, hopefully we shed light on what's intended by the existing standards, as well as what works or doesn't. An approved SMS isn't required (yet) for a large majority of our test industry, but it looks like it is coming. Doesn't it make sense to get ahead of any regulatory requirement and pursue a voluntary program? Perhaps even shoot for an "approved" program? More discussion to follow on this, and more resources to be added to flighttestsafety.org – your best source of reference material and recommended practices for excellence in test! But, you already knew that...

Back to Safety Promotion. From the [SM-0001 Issue A \(Sept 2018\)](#) Implementing a Safety Management System in Design, Manufacturing and Maintenance Organizations: "Safety promotion starts with the strategy to develop a safety culture within the organization. Safety culture enables continuous improvement in safety performance." Please re-read that second sentence. Furthermore: "A safety promotion strategy should address the training, education and communication of safety information to support the implementation and operation of the SMS."

I'm delighted this document acknowledges how vitally important culture is; the main ingredient to the safety recipe. Unfortunately, standards fall short in describing what enables a POSITIVE safety culture and how to prove you have such a culture. The standard gives a bye on this, and I couldn't disagree more. Culture absent or toxic culture will yield a SMS that is DOA. Have some thoughts on the matter? Come share at the Workshop!

Let's briefly address training. The standard slights toward the training specifically for those charged with managing the SMS. Ok, so what determines what a qualified safety manager is? What credentials assure these individuals are trained, trusted, and competent? It's abundantly evident, specific training and experience is required to satisfy the standard. My view: any individual, in the course of executing their duties, that has the potential to directly affect or influence aviation safety must be qualified from a technical competence standpoint, as well as trained on safety risk management. This then requires the Accountable Executive, Accountable Manager, and those having SMS roles/responsibilities be educated and trained to fulfill those responsibilities. Wow, really?! Yes, and furthermore, this applies to ALL testers! And now you know why the Flight Test Safety Committee is attempting to enable this education and training by framing the Workshops around SMS, breaking down the components and elements, and providing resources and recommendations to develop and sustain a robust SMS. Lastly, let's briefly describe safety communication. Frankly, this is centered on robust reporting and feedback. In between, aggressive and thorough root cause investigation and corrective action must take place. Many get confused about "hazard identification" and what the risk domain is. Let's be clear; the hazards we're concerned about are those

that can manifest in aviation safety risk. That means in the operation of an aircraft. Note, a design issue, production quality escape or maintenance error can definitely manifest in an aviation safety risk and is exactly the intent for having a standard for design and manufacturing organization SMS. This is clearly distinguishable from industrial or occupational safety right? [And no, I'm not trying to dilute the importance of occupational/workplace or off-duty safety.]

Let's wrap up by distilling this down to one simple way to promote safety. Share this newsletter and proudly wear a gold star for effective safety communication. Two stars for listening to the podcast. Want to earn 5-stars? See you in Denver...

Let us know what you think. Launch an air mail to chairman@flighttestsafety.org. In your service, Tom Huff

Flight Test Safety Award – Nominations due 30 March

The Flight Test Safety Committee is soliciting nominations for the Tony LeVier Flight Test Safety Award. The deadline to submit a nomination is **30 March 2020**. Download the nomination form from the website here: <http://www.flighttestsafety.org/awards/35-awards/information/54-tony-levier-flight-test-safety-award>. The FTSC established the *Tony LeVier Flight Test Safety Award* to formally recognize a single individual, or small group of individuals, who, over some period of time, has made a significant flight test safety contribution to the flight test community as a whole, an organization, or a specific program. This award is not meant for entire organizations as there are other professional organizational awards in that category. Nominations for the Tony LeVier Flight Test Safety Award are reviewed by the Flight Test Safety Committee from the past year.



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