

# Flight Test Safety Fact



Published for the Flight Test Safety Committee

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**Episode 1 - Dec 2019**  
 December 10, 2019

Monthly Podcast with upcoming events, highlights from the Flight Test Safety Fact and the December specialty topic - *Thoughts on How to Improve our Ability to Learn Lessons.*

[flighttestsafety.org](http://flighttestsafety.org)

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## Chairman’s Corner *Tom Huff*

Greetings all! As we are entering our third month dealing with coronavirus, I extend my wishes for health and well-being to you, your organizational teammates, and your families. Times are challenging and the future is uncertain. Still, many organizations continued operations at some level, and others will be executing work restoration strategies. The Flight Test Safety Committee compiled some protocols, references and CONOPS to mitigate risk associated with COVID-19 as a resource for your organizational activities and to aid in prudent decision-making. These were sourced from several aviation alphabet groups, test organizations and Committee members

themselves. This information is available at [flighttestsafety.org](http://flighttestsafety.org) under the Resources tab. Because things are changing rapidly, we encourage anyone making risk decisions or implementing mitigations to consult the most recent information available from government health agencies. Compliance with local, state and federal guidelines is always recommended. By all accounts, it appears the mitigation guidelines are being effective at limiting the spread of the virus. The unique nature of aviation activities can challenge social distancing, and the necessity for specific Personal Protective Equipment (PPE) on the shop floors as well as flight decks, should elicit some critical thinking on how best to implement protocols. At all times, this is about taking care of our number one resource – our people.

Registration is open for the FREE virtual Flight Test Safety Workshop (vFTSW) to be held on 6-7 May. We have a powerful program in the works related to Systems Theoretic Process Analysis (STPA) including a mini-tutorial provided by Dr John Thomas of MIT, one of the country's most recognized names in STPA. STPA moves away from traditional reliability-based hazard analyses methods and employs systems theory to address unique hazards of increasingly complex systems. We've talked about STPA in this forum, and papers have been presented at SETP Symposium and Banquet and Flight Test Safety Workshop. Many may not have had the opportunity to explore this further. Some may have planned to attend the annual March workshop in Boston which was cancelled. With that, we felt that doing a mini-tutorial on this subject may have interest to a broad audience to learn about the background, the methodology, and the practical application of STPA to complex systems. Most importantly, we'll discuss how STPA can be applied to acquisition programs and flight test. We hope you can join us! Did I mention it's FREE? Register: <http://flighttestsafety.org/workshops>.

With the shift to STPA and away from our previously scheduled programming for the workshop theme of Safety Promotion, I thought I'd make a few comments about this critically important component of the Safety Management System (SMS). We'll hold as "dry powder" the content we planned for the 2020 workshop for next year, and since we have a full year, it doesn't hurt to keep a steady strain on the bow line of SMS.

"Safety promotion starts with the strategy to develop a safety culture within the organization. Safety culture enables continuous improvement in safety performance."

"A safety promotion strategy should address the training, education and communication of safety information to support the implementation and operation of the SMS."

These are lead-off sentences within the Safety Promotion section of the [SM-0001 \(2018\) International Industry Standard - Implementing a Safety Management System in Design, Manufacturing and Maintenance Organizations](#). As I've mentioned before, without CULTURE, a SMS is dead on arrival. Any improvement, much less "continuous" improvement will be elusive. By design, the standards don't explain how to achieve safety culture nirvana. Perhaps that's because those secrets are probably best

found in texts relating to LEADERSHIP. Let's remind: The standards describe the "what" but not the "how." That is left to the organization and the safety practitioners. Granted, there is not a one-size-fits all approach to the management of the SMS, but the founding fathers had it right – an effective SMS is predicated on "top down" management and support. I'll leave further leadership discussion for future editions, but hopefully I planted a seed or stimulated some reflection on how vitally important this is to SMS effectiveness, i.e., safety performance.

Let's return to the primary parts of Safety Promotion – Training/Education and Communication. The ICAO Annex 19 and FAA Part 5 are the central documents from which the standards are derived. Although the casual reader might assume that training and education is required for only the dedicated safety practitioners within the organization that have SMS responsibilities, I beg to differ. At a minimum, all personnel are to be educated on means to report a safety issue. For proactive hazard reporting –which is the real goal here – folks need to understand what an [aviation] hazard is. The standard (SMS for Design & Manufacturing Organizations) is unambiguous here: An aviation safety hazard is one that can manifest itself in an aviation safety risk. That is, in the operation of an airplane-industrial/occupational hazards are purposefully excluded.

For a hypothetical, would you agree that a design flaw could potentially result in an aviation safety risk? I would hope so. I submit that if someone is responsible for designing critical systems must have the necessary foundational/recurrent training and education to be reliable (thus safe) in his or her job. Therefore, I believe technical training satisfies the standard to meet the "required competencies" of the organization and should be catalogued/tracked as part of SMS Promotion activity.

Let's touch on safety communication. The standard sets a high bar: "shall develop and maintain a formal means for safety communication" that:

- provides awareness to the SMS;
- transmits safety-critical information;
- explains safety-improving actions; and
- explains changes to safety protocols.

This appears to require a fair amount of transparency. Wouldn't you agree? Mentioned previously, proactive hazard reporting is not the same as "event reporting." Sure, we need to document incidents and accidents, but the goal is to identify the hazards before they manifest into something more serious. By the way, the standard says ye shall communicate "lessons learned" from events (including accidents and incidents), as well as the resulting recommendations/corrective actions. That too, requires transparency. Establishing a culture that encourages (and even rewards) proactive reporting is no small challenge. Did I mention how important CULTURE is? An anonymous reporting system is a very effective tool to gain organizational TRUST. If we don't shoot the messenger, you'd be surprised on how quickly folks are willing to raise a safety concern,

and even offer suggestions on how to fix the problem. Robust reporting is a key element for a successful and effective SMS. Our reaction as leaders sets the tone. Any hint that reporting has detrimental impact to one's career will result in leaders hearing what they want to hear, or nothing at all...How safe can that be?

As always, we seek suggestions and feedback on newsletters, podcasts and workshops. We build the programs based needs expressed by the community. Help us by sharing and debating the topics. On behalf of the FTSC, accept wishes for health and safety during these uncertain times. Launch an air mail to [chairman@flighttestsafety.org](mailto:chairman@flighttestsafety.org).

In your service,

Tom Huff

## AI for T&E Professionals

Most of you did not get the tremendous privilege of attending the best symposium ever. Of course I am talking about the Southeast Symposium, with AIAA, SFTE and SETP. If you had, you would have heard Capt Megan “Nermal” Burke from the 413<sup>th</sup> FLTS talk about the need to train Test and Evaluation professionals in the discipline of Artificial Intelligence. (I hate the term AI, because it's mostly used by marketing departments, but it is the generally accepted word used to describe a host of topics at the confluence of computer science, mathematics, statistics, and related fields.) There is a bull market for AI, and we have already seen “autonomy” saving lives in our field—I'm thinking specifically of the GCAS. The line between algorithm, autonomy, and AI is quickly blurring, but almost certainly, AI will be part of our safety systems and our safety equipment sooner than we think. I can picture it now...

Pilot: “Alexa, activate bailout.”

Alexa: “Looking for takeout near Eglin AFB, FL”

“Nermal” presented at the Symposium, and I wanted to recommend her talk. She has a paper to go along with it, but I will let you reach out to her for that. I know how much time and energy she has put into the paper and the talk—the breadth of opinions she sought as she shaped description of the problem and her recommendations in both the paper and the talk. She has kindly agreed to share the video, and I would be remiss if I did not mention LtCol Jeff Newcamp, co-author of the paper. You can download the video or just the audio here: <https://flighttestfact.com/flight-test-safety-fact-20-05/>.



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