

Flight Test Safety Fact



Published for the Flight Test Safety Committee

In This Issue

Laundry Folding and Trains of Thought – the Editor shares sundry observations about development of skills in Flight Test
Introducing the eVTOL Flight Test Committee
Turbo Talk – debrief the Workshop and “Boldly go where...”
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Folding Laundry and Trains of Thought

Mark Jones Jr., Editor

Implicit Learning versus Deliberate Practice in Knowledge Work Domains

I was doing what every great flight test professional does on a Sunday afternoon. As I folded my laundry, several trains of thought converged. At least, that’s how I first described it to myself. When I imagined what the scene would look like, I decided that “trains of thought” and “converged” probably was not the best metaphor for a safety newsletter, unless I clarified what I meant. Hence, I substituted “converged” for “arrived,” and what comes next is a peek into the grand central station of my imagination.

The first idea comes from an article about “sight reading,” a phrase anyone familiar with music should understand, and it is found in an article by Andy Matuschak.

The best scientists, entrepreneurs, and engineers I know pour themselves into their work. You couldn’t capture their working hours on a timecard. Their creative gears turn restlessly, and insights produced in the shower or on walking conversations [*or folding laundry*] are no less valuable than those produced at the office.

I had forgotten this introduction to the article on the day that I was doing laundry and thinking about flight test safety, but perhaps that makes it an even more accurate description of the flight test professional.

Andy compares the habits of the “knowledge workers” described above to those of professional sports, and he analyzes the skills needed in each domain. He says this about the baseball player:

During a 3-hr baseball game, a batter may get only 5-15 pitches (perhaps one or two relevant to a particular weakness), whereas during optimal practice of the same duration, a batter working with a dedicated pitcher has several hundred batting opportunities, where this weakness can be systematically explored. (<https://andymatuschak.org/sight-reading/>)

We ought to consider his comparison and apply it to the knowledge work of flight test safety. Our profession is probably more like the baseball game than the batting practice. How often do we dedicate time and energy to deliberate practice that will sharpen the skills we need to understand risk and doing “safe” flight test? Could we even come to consensus on a list of such skills or the activities necessary to hone those skills?

A second train arrived at the platform of my mind, and its passengers began to mingle with the thoughts above. In a book about “Innovation and the Modern Military,” I found a similar argument: “It is in war itself that men learn how to fight—if time is given to them in which to learn” (Stephen Rosen). The difference in this statement of the principle is the difference between the cognitive demands of war and baseball and the *consequences* of getting it wrong. It is easier for us to understand how hard it is to learn from the chaos and uncertainty in war, and it is also easier to understand that life hangs in the balance. We must sharpen our skills.

Perhaps, though, the second principle is closer to the truth that flight test professionals experience: In the “heat of the moment” (a metaphor that is a close cousin to “heat of the battle”), we may overlook important information—can anyone perfectly understand how their mind arrived at an error that occurred during a high-altitude windup turn with tight performance tolerances and the stress of a demanding crosscheck imposed by ATC altitude constraints? Or can we find time to assess how clean one executed the stick rap in a dive at high Mach during flutter testing as we wait for the gyrations and vibrations to subside?

Matuschak argues convincingly in his article that “implicit practice” (the kind a batter gets during game play) is insufficient to improve certain skills. I believe the characteristics of the skills he describes in his article are the same as the skills we use when we consider test hazards and try to make risk assessments and imagine mitigations and execute safe flight test. Thus I am convinced that our implicit practice is not enough, but my goal is not to share my conclusion but to get you to read his article and consider the topic yourself. Head over to <https://andymatuschak.org/sight-reading/>, and when you are done, perhaps reconsider checking out the videos from this year’s Flight Test Safety Workshop, because I think at least one of the videos may be relevant: <https://flighttestsafety.org/2022-palm-beach-gardens-fl>, Intellectual Virtue Grounds Sound Organizational Culture, by Rob Niewoehner of the U.S. Naval Academy.

The second article in this month’s edition also attempts to organize a deluge of train passengers and direct their flow as it arrives at the great concourse wherein information about evolving technology, certification, safety, and hearty discussions about all of the above take place. This month, I share without much more editorial commentary, several informational updates from the eVTOL Council. I recommend boarding their train of thought, if you have time and whimsy to do so, as it will inform and inspire you, and what you encounter on the journey may make you a better flight test safety practitioner.

The eVTOL Flight Test Committee

Al Lawless

Editor's Note: I have republished (with permission) an email from Al Lawless, chairman of the eVTOL FTC. Their committee is exploring new tech and making substantial progress in ensuring we test this tech with professionalism and safety. This month's newsletter also includes as pdf attachments some of the presentations mentioned by Al in his announcement—see illustration below for a notional example of how to find pdf attachments inside the FTSF pdf itself.

(Letter to the eVTOL FTC)

Hey everyone -

Today's meeting was especially interesting as it was dedicated to Dave and Paul who got into the nitty gritty of challenges they saw when using a helicopter to assess DI difficulties in flying.

This information really hits on the purpose of this council and so should have a high interest to most members. Attached is the report and the presentation slides UAM (see attachment: *E-VTOL FTC Report Attachment 2022-08-23 Dynamic Interface for Urban Air Mobility*). The session recording and slides are posted in our library too.

Also, please help put the word out about our webinar in two weeks. This is aimed at OEM managers and others with nil cert experience. The goal is to show them the depth needed to get through cert flight testing - sort of a wake up call to get staff and training (webinar was held on 6 Sep).

al

Also included as attachments are two of the monthly reports to give you an idea of the depth and value of material they cover and projects they work: *E-VTOL FTC Report 2022-08-23.pdf* and *E-VTOL FTC Report 2022-07-26.pdf*.

You can contact Al directly by email if you are interested in the eVTOL FTC: sfte@alawless.com.

You can read the full eVTOL FTC reports by opening the attachments to this pdf as illustrated here.

The screenshot shows the Adobe Acrobat Pro DC interface. The main window displays the 'September 2022' issue of 'Flight Test Safety Fact'. The left sidebar shows a list of attachments, including 'E-VTOL FTC Report 2022-07-26.pdf'. A blue arrow points from the text 'opening the attachments to this pdf as illustrated here.' to the attachment list.

September 2022 22-09

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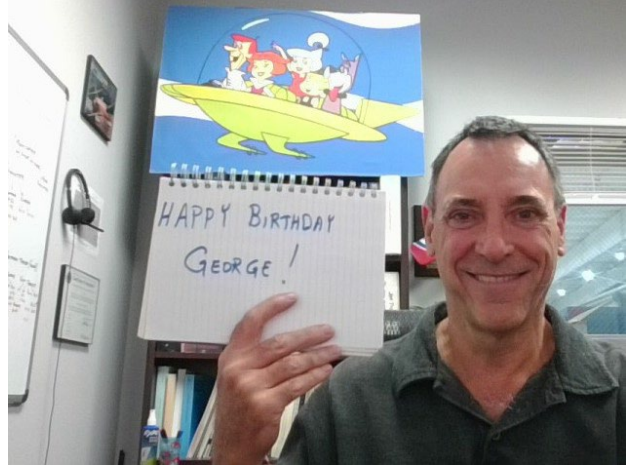
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Mark Jones Jr., Editor



Turbo Talk – Chairman’s Corner

Art “Turbo” Tomassetti

As we close out summer in the Northern Hemisphere, I hope it was a safe and enjoyable one for each of you. I recently had the opportunity to speak to a group about the “No Vote.” It is a topic I have talked on many times in the past. In the presentation I have always given an example of a time I should have used the No Vote and didn’t and a time where I should have used the No Vote and did. (Well at least at the time I should have... I think... pretty sure). The incident where I used the No Vote came about 4 years after the incident where I didn’t. I learned a lesson; I changed my behavior. I did that because I took the time to analyze, dissect, debrief, and well, ponder. While no one seeks to have an accident or incident or goes out of their way to fail (usually), when those things do happen we are presented with an opportunity. An opportunity to learn from the event. There was a time in my younger days when my ego sometimes got in the way of doing that post-failure pondering. But close calls can sometimes be a catalyst to adopt a different approach. So if you are the type of person who analyzes their mistakes and failures, Bravo! Give yourself points. If you figure out a way to communicate those to others, give yourself bonus points. We happen to have a few events each year where we can help with that communicating to others part. I mean who doesn’t want Bonus Points, right?

Going back to my No Vote presentation it would be such a great ending to say failed once to use the No Vote, learned a lesson, updated my Firmware to Turbo 2.0, and now all is well. But it doesn’t really work like that. See this last presentation I added a 3rd example. It had nothing to do with airplanes at all, but it was an opportunity, in a potentially hazardous situation, to exercise the No Vote, and I did (sort of). The takeaway being you must always be actively working to avoid hazards; you really can’t ever get into a passive mode. Well at least I can’t, or so I have learned, and life keeps providing opportunities for me to practice that. So points for me for learning a lesson and Bonus points for sharing it (assuming you are still reading the article at this point.)

Until next time: Be Safe, Be Smart and Be Ready.

Turbo

News of Note

We should all be paying attention to the advances in “air taxi” technology, the state of regulations and certification, and the effect of AI and related technologies on flight test safety. The following provide good overviews of these topics.

A company that specializes in the AI domain reports its perspective on EASA regulations and UAS, and this is smack-dab in the bullseye of “flight test safety” and emerging tech. <https://daedalean.ai/tpost/820yyyc8m1-overview-of-easa-regulations-on-uas-and>

Seattle Times is a Pulitzer Prize winning publication that often breaks many stories on the aerospace industry. This summarizes the air taxi industry and includes discussion about the safety record of the industry that should interest our readers.

<https://www.seattletimes.com/business/up-up-and-oh-no-the-trouble-with-air-taxi-startups/>

I can see it now...just as you are about to finish your simulation of the eVTOL tech, a windows pop-up appears: “Your computer will restart in one minute to update with a critical security patch.” (Even more ironic if that happens while flying an eVTOL.)

<https://www.urbanairmobilitynews.com/utm/farnborough-2022-microsoft-launches-project-airsim-an-end-to-end-platform-to-accelerate-autonomous-flight/>

Please send an email to mark@flighttestfact.com if you have recommendations for news that we ought to include in future editions of the Flight Test Safety Fact. Include a brief description of why the news is relevant to our audience.

Subscribe to our Podcast

Turbo met with several flight test professionals in the beautiful Emerald Coast SFTE Chapter and SETP SE Chapter heartland.

While there he recorded two conversations about FTSW Survey Results, the 3Q, & Safety Culture.

Available on iTunes, Spotify, Podbean, Google Play, and Amazon Music: FTSCChannel

Podcast: flighttestsafety.org/ftsc-news/flight-test-safety-podcast-channel

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