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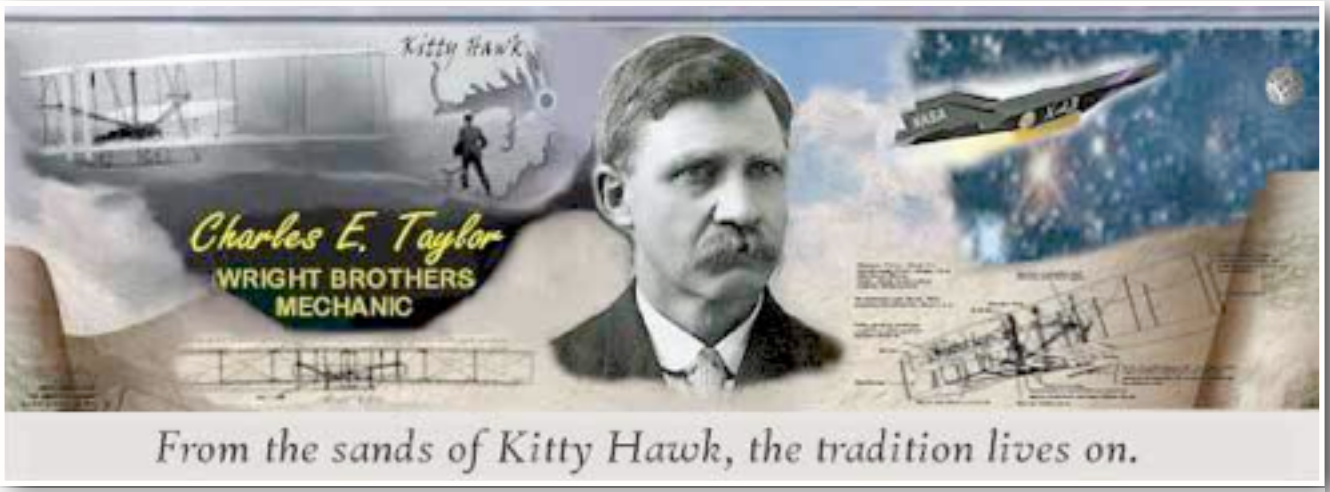


Hello all,

To subscribe send an email to: rhughes@humanfactorsedu.com

In this weeks edition of *Aviation Human Factors Industry News* you will read the following stories:

FAA Safety Briefing Focuses on Aviation Safety Culture

Feature articles focus on what a sound safety culture is and explore ways you can integrate those principles into your everyday flying and airman duties.

The July/August 2019 issue of *FAA Safety Briefing* focuses on aviation safety culture. Feature articles focus on what a sound safety culture is and explore ways you can integrate those principles into your everyday flying and airman duties. We'll also look at the many FAA and industry tools available to help you build your own personal safety culture.

https://www.faa.gov/news/safety_briefing/2019/media/JulAug2019.pdf

Raising Awareness to Assure System Safety

Marshaling Signals and the Need to Look Beyond the Aircraft

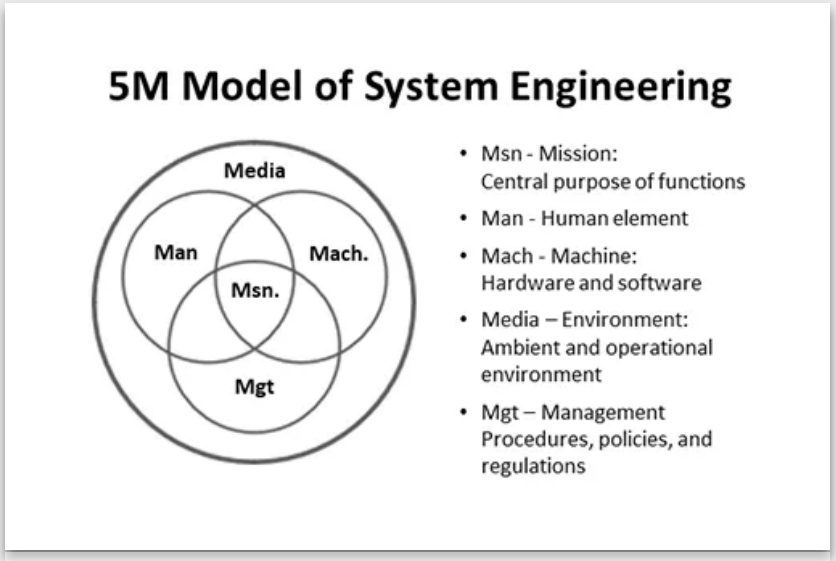
From the earliest days of aviation operations, communication has been at the root of all activities. The act of preparing an aircraft for flight requires a multitude of communication pathways to function effectively, all of which roll up to an in-progress, dynamic risk assessment. If any one of the pathways fails to provide the correct response (input) for the task or go/no go decision, then the overall process stops until cleared. It is not until the clearing is confirmed that the process can continue.

When the Wright brothers set out on their famous first flight, the brothers tossed a coin to determine which brother would make the first flight, setting the stage for the first powered flight of a heavier than air aircraft and for the complexities of the aviation industry that was to come.

Marshaling From a Systems Perspective

So, let's take a look at this from a "systems" perspective. We define a system as a set of interacting or interrelated elements working together as part of an interconnecting network. Sound about right? So, looking at aircraft marshaling, what "elements" are there that impact the effective conduct of communication? For example, applying the 5M model of system engineering, a system is based on the interactions between:

- Management (policy, vision, and objectives)
- Mission (performance goals)
- Machines (aircraft and ground vehicles)
- Media, which is more accurately the operational environment (weather and aviation infrastructures)
- Man (pilots/crew, engineers, ground handlers/line service technicians/ customer service representatives, and air traffic controllers)



In the general/corporate aviation setting, we are about the policies and procedures that provide the standards and guidance for performing the task. The mission is the safe arrival or departure of an aircraft to/from its parking spot. The man or "human" interface is addressed by the lead marshaller and the cockpit crew. If wing walkers are included, they become a part of the overall human element of the marshaling process.

While the aircraft is the obvious machine, consideration must be given to ground vehicles and GSE. The media or operational environment is the immediate ramp/ apron area, any taxiways or vehicle access roadways, >
and other parked aircraft or vehicles that may be impacted by the operation and movements of the aircraft based on power settings.

Marshaling Responsibilities

The marshaling act is not merely the arrival or departure of the aircraft to/from the parking spot, but anywhere along the anticipated pathway of travel where a potential hazard can arise. So, the marshaling team (lead marshaller, wing walkers, and cockpit crew) need to be aware of not only the direct pathway for arrival or departure, but also those areas that may be impacted by the movement, wing-growth, or jet blast/prop wash of the arriving or departing aircraft.

Considerations must be made for idle and breakaway thrust settings and their impact on persons and vehicles that may inadvertently travel through the jet blast/ prop wash areas. Typically, personnel operating within the fence line are taught how to recognize aircraft under power with the activation of the aircraft's rotating beacon and therefore are keenly aware of the potential for jet blast/prop wash. However, in some instances, personnel on the ground may not be able to immediately recognize a jet-powered aircraft that is about to power up to breakaway thrust to move off of its hard stand. For those of us who operate on congested, multi-user aprons, this could result in significant damage and injury to those unaware.

Take, for example, the Gulfstream G550 and G650. The rotating beacon is located in an area on the fuselage belly that is not immediately visible when the aircraft is on the ground, thus preventing 360° visibility of the rotating beacon.

There are times when the activation of the rotating beacon is the only indication of an aircraft under power. Failure to observe the rotating beacon and heed the obvious warning could place life and property at risk.

Aircraft crews and line service techs alike need to be aware of differences within the various aircraft models and variants, and apply this knowledge when performing an initial risk assessment and refresher of your risk registry.

For these particular aircraft, the flight crew, being keenly aware of the impediments to clearly seeing the aircraft's rotating beacon, may suggest the addition of a well-placed tail walker to control and halt vehicle/personnel movements > within the area of influence. This practice should also be a part of any FBOs ongoing risk awareness and assessment process. Alerting other airport users to environmental (media) and peripheral risk is part of an effective safety management and mitigation approach.

Enabling Clarity in a Complex Environment

We work within a complex, ever-changing environment, where our actions can be influenced and impacted by a myriad of variables, some known, some unknown. Today's operators can't rely on a coin toss, but instead must be aware of this ever-changing environment by structuring their training programs to raise awareness. Additionally, operators must prepare personnel to visualize the complete environment, assessing potential influencers and using that heightened awareness to influence others.

DGCA to conduct inquiry, take action in death of Spicejet technician at Kolkata airport

The Civil Aviation Ministry Thursday said the DGCA will conduct a detailed inquiry and take appropriate action in the death of Spicejet technician during maintenance at the Kolkata airport.

WHAT DOES THE RULE BOOK SAY?

A file picture of Rohit Pandey (also in pic right) at airport

DGCA guidelines

- At least two persons should be in charge of maintenance of an aircraft
- Adequate lights should be maintained at the remote bays
- Log entries need to be maintained regarding the technicians manning the maintenance of an aircraft
- Log entries also need to mention the particular kind of maintenance work the technician is undertaking
- Man hour maintenance supervising needs to be done

What SpiceJet has promised to Pandey's family

- An amount of Rs 30 lakh under the group insurance scheme
- An amount of Rs 25,000 per month for a period of 46 years — equivalent to Rs 1.38 crore
- Pay for the education of the two younger sisters of Pandey

PROBE | Cops in Kolkata have conducted a preliminary probe and asked the DGCA to help them with the technical side of the investigation. A DGCA official said they would do a detailed probe and fix responsibility

The SpiceJet technician died after his head was stuck between the hydraulic door flaps of the main landing gear of an aircraft during maintenance at airport on early Wednesday.

A complaint of "unnatural death" was filed at the Airport police station, while aviation regulator Director General of Civil Aviation (DGCA) launched a probe into the incident.

"We are anguished by the tragic incident at Kolkata airport where one Spicejet Technician died while carrying out maintenance work. The DGCA will conduct a detailed inquiry and take appropriate action," the Civil Aviation Ministry said in a statement.

The hydraulic doors "inadvertently" got closed, leaving 22-year-old Rohit Pandey trapped there, SpiceJet said in a statement.

The landing-gear doors of the Bombardier Q400 aircraft had to be broken to rescue Pandey but he was declared dead, it said.

The accident happened at 1.45 am, according to an airport official. Pandey was doing maintenance work in right hand main landing gear wheel well area of a Q400 aircraft which was parked in Bay No 32 at Kolkata airport on July 10.

"Inadvertently, the main landing gear hydraulic door closed and he got stuck in between the hydraulic door flaps," SpiceJet said.

According to a source, the SpiceJet Bombardier Q400 regional jet was recalled Tuesday when it was taxiing for take-off to Silchar from Kolkata due to some technical snag.

Virgin Australia A332 at Melbourne on Jul 10th 2019, fuel leak

A Virgin Australia Airbus A330-200, registration VH-XFG performing flight VA-69 from Melbourne,VI (Australia) to Hong Kong (China), was climbing out of Melbourne's runway 34 when white vapor was seen emanating from the outboard side of the right hand engine (Trent 772). The aircraft continued the climb, leveled off at FL300 and returned to Melbourne due to a fuel leak. The aircraft landed safely on runway 34 about 65 minutes after departure.
The occurrence aircraft is still on the ground about 19 hours later.

The airline reported an engineering fault prompted the crew to return to Melbourne.

Flight 1016 crash led to major aviation safety improvements

What started as a routine flight from Columbia quickly turned dangerous and ultimately deadly as US Air Flight 1016 approached Charlotte on July 2, 1994.

On July 2, 1994, 25 years ago, the lives of 57 people changed forever in a neighborhood near Charlotte-Douglas Airport. Just before 6:43 pm on July 2, 1994, US Air Flight 1016 from Columbia, South Carolina crashed into a home, breaking into three pieces and claiming the lives of 37 people. 20 others, including the flight crew, survived.

Despite the loss of so much life, former National Transportation Safety Board investigator Gregory Feith said we're all safer flying today as a result.

"We shouldn't see another accident like this under the same types of circumstances," Feith said. "We learned lessons about the seating, of course about seat belts and then how the airplane came apart to increase or enhance survivability in future aircraft."

What started as a routine, short flight from Columbia to Charlotte quickly turned dangerous and ultimately deadly as US Air Flight 1016 approached the airport.

It wasn't until long after families received the dreaded news about their loved ones that survivors learned a microburst, a thunderstorm with heavy wind and rain, played a role in the crash.

Feith investigated the crash for the NTSB. He said at the time, neither air traffic control nor the flight crew really knew what they were getting into.

The pilots were in the process of trying to land when they realized it was unsafe in those conditions and were going around for another approach, he said.

"The pilots got lulled into a situation where because they could see the airport they really didn't factor in the severity of the weather," Feith said.

While Doppler radar was available to local television news viewers back then, air traffic controllers did not have access.

"That may have been the difference in getting the crew to abort the landing sooner rather than later," Feith said. "Because Charlotte tower did not have all the latest and greatest Doppler weather radio, Congress forced the FAA to expedite the installation of that type of weather information into each of the control towers, so that we wouldn't have another accident like this again."

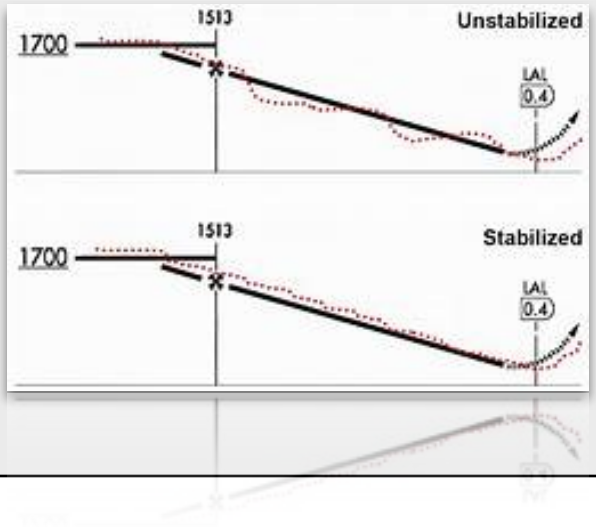
The location of the crash is now part of secured airport property and is marked by a memorial.

"We honor our customers, crew members and those on the ground whose lives were lost, and our hearts go out to those personally affected by the tragedy of flight 1016," American Airlines, which merged with US Air, said in a statement about the anniversary.

Aircraft landing with unstabilized approach in bad weather to attract punitive action: DGCA chief

Grounded: Efforts are under way to retrieve a SpiceJet Boeing 737-800 aircraft that overshot the runway at the Mumbai airport amid heavy rainfall on Monday night.

The DGCA had in a communique on Tuesday asked airlines to make available sufficiently experienced crew in the cockpit and that crew rostering should factor in fatigue element associated with the operations during adverse weather conditions.



In a stern warning to airlines, the DGCA director general said on Wednesday that all aircraft should refrain from landing with "unstabilized approach" while experiencing adverse weather conditions and initiate a go around, non adherence to which will invite punitive action.

The Directorate General of Civil Aviation (DGCA) had in a communique on Tuesday asked airlines to make available sufficiently experienced crew in the cockpit and that crew rostering should factor in fatigue element associated with the operations during adverse weather conditions.

The circular, titled 'Monsoon Operations', comes as the main runway at Mumbai airport continues to remain shut after a SpiceJet plane from Jaipur veered off it while landing and got stuck in the adjacent grass area.

"We have also instructed heads of flight safety of airlines to include in their safety briefings to pilots, an express instruction to refrain from landing with unstabilized approach while experiencing adverse weather conditions and initiate a go around," Director General of Civil Aviation Arun Kumar said in his message.

He also said that safety cannot be compromised at any cost.

"All concerned are requested to strictly comply with the instructions. Non-adherence shall invite appropriate punitive action," he said.

A senior official at the DGCA told PTI that it is probing the incidents of planes overshooting runways.

Earlier in the day, a SpiceJet flight veered off its path on the runway while landing at Kolkata airport, damaging four lights.

On June 30, another SpiceJet plane from Bhopal veered off the runway at Surat airport due to heavy rainfall and wind. On the same day, an Air India Express flight moved away from the taxiway after landing and got stuck in soft ground at the Mangalore airport.

Why The US Airlines Retired Their Boeing 747s

In November 2017, United Airlines flew their last flight using a Boeing 747. Just a month later, the final commercial flight of a Delta Air Lines 747 arrived from Seoul as flight 158. It later embarked on a farewell tour, stopping in Atlanta, Minneapolis, and Los Angeles according to Quartz. With a few major airlines still operating the Boeing 747, why were US Airlines among the first to retire their "Queen of the Skies"?

While major international carriers like British Airways, Lufthansa, and Korean Air are still operating their jumbo jets for passenger flights, you won't find any US Airlines operating the "Queen of the Skies". There are a few reasons why this is the case.

It's all about age

When it comes to aircraft, the phrase "age ain't nothing but a number" doesn't really apply. The older an aircraft gets, the more costly it becomes to operate.

Firstly, as technology develops, newer aircraft of similar size and range achieve higher rates of fuel efficiency. According to Investopedia, fuel accounts for 10-12% of operating expenses.

Secondly, the older an aircraft becomes, the more maintenance it requires. Not only is the actual labor more costly, but time an aircraft is on the >

ground undergoing maintenance is a time the aircraft is not earning money. This is a significant factor when it comes to the commercial aviation industry and the razor-thin profit margins that airlines have to fight for.

Finally for the issue of age, when the above two factors combine with an old, tired, and outdated interior, there are enough economical reasons to replace it with a newer aircraft. You'd eventually start losing passengers who prefer to have USB charging ports and touch screens that don't require excessive force to respond (apologies to the passenger sleeping in the seat in front!).

The triple seven

All US airlines have now moved to the more fuel-efficient, twin-engine, wide-body Boeing 777. In fact, the 777 can fly just as far but its operating and maintenance costs are far less. Furthermore, the Boeing 777-200LR is capable of connecting virtually any two cities in the world.

According to The Denver Post, the 777-300ER (extended range) can carry roughly the same number of passengers as the 747-400 while burning 100,000lb less fuel. Therefore, if 100,000lb of fuel equates to 15,000 gallons and the current price (according to IndexMundi) is $1.87 per gallon, then we are looking at a fuel savings of roughly $28,000. Pair that with the amount of flying these long-haul jets do and the reduction in maintenance and that's a pretty strong case for a newer aircraft.

What about the other airlines?

Looking at numbers at Airfleets.net, it appears that it's a "first in, first out" scenario. The US Airlines were some of the first to receive their Boeing 747-400s and therefore were among the first to retire them and adopt the 777 as a replacement.

This seems to be the case for airlines like British Airways and Korean Airlines, which took their oldest 747s in the mid-90s rather than the early 90s. The one exception is KLM – which still seem to be operating their 747s that were made as far back as 1990 (a sign of good maintenance perhaps?). However, even KLM will retire its 747s by 2021.

And then, of course, there are the newer 747s; The 747-8. Lufthansa and Korean Air opted to continue the 747 legacy by purchasing these newer variants for their passenger services. According to Boeing, the 747-8 reduces carbon emissions by 16% versus the 747-400.

Conclusion

In the end, it's all about operating economics and fuel efficiency. Lower operating costs lead to lower airfares or the ability to spend those savings on other important aspects of the product- all of this attracts more passengers.

It seems like aircraft with four engines just don't have a place in this competitive space. Are you disappointed that the US carriers chose not to take the newer 747? Let us know by leaving a comment!

https://www.investopedia.com/ask/answers/040715/what-are-major-expenses-affect-companies-airline-industry.asp

https://www.indexmundi.com/commodities/?commodity=jet-fuel&months=240

New research highlights why sleep loss poses an insidious threat to flight safety

Sleep-deprived pilots suffer several impairments in mood and cognition, according to new research published in the scientific journal *Biological Rhythm Research*. The findings provide more evidence that sleep deprivation poses a serious threat to flight safety.

"I began by researching the effects of sleep loss on endurance cyclists. As I explored the area further, I got a greater appreciation and understanding of the effects of sleep on performance whether in a sporting, professional or personal capacity," said study author Anna Donnla O'Hagan, a postgraduate researcher at Dublin City University.

"At the time, there was increasing concern for the impact of long working hours and extended periods of wakefulness on commercial airline pilots with a relatively limited amount of research being done in the area. I therefore decided to further investigate this area."

In the study, 7 commercial airline pilots completed multiple rounds of testing over the course of several days. In their final testing session, the participants had been continuously awake for 24 hours.

The participants completed surveys assessing their mood along with several tests of cognitive performance. They also used a high-fidelity flight simulator, in which they were tasked with flying a holding pattern for about 30 minutes. During the simulated flights, the participants were required to conduct a fuel calculation and complete other aviation-specific mathematical calculations.

Some aspects of the pilots' flight performance — such as their ability to maintain the proper flight path — were not significantly impaired by sleep deprivation overall.

That may sound like good news. But the researchers observed that performance on almost all the psychological measures and cognitive performance tasks were significantly affected by the lack of sleep.

"Sleep loss and fatigue pose an insidious threat to flight safety which manifests itself in different ways such as reductions in vigilance, impairments in judgments and increases in reaction times. Everyone is susceptible to the effects of sleep loss and fatigue regardless of skill, knowledge, or training," O'Hagan told PsyPost.

Both the accuracy and speed of aviation-specific mathematical calculations started to decline after 15 hours of continuous wakefulness. There was only one exception: the accuracy of fuel calculations was not significantly impaired.

As they became more sleep deprived, the pilots also had a harder time answering mid-flight situational awareness questions. Loss of situational awareness is a frequent cause of accidents.

"The number of serious accidents as a result of operator error in various industries due to sleep loss and fatigue is large and appears to be increasing," O'Hagan said.

"Enhancing our understanding and identifying and mitigating sleep deprivation and fatigue among operators through implementation of safe and effective working regulations and real-time indicators of working performance will aid in promoting health and safety."

The new research adds to a growing body of evidence that indicates sleep deprivation harms aviation performance and compromises safety.

For instance, in another study, 10 current and qualified F-117 pilots were deprived of one night of sleep and then were tested on precision instruments. Despite their experience and training, the pilots suffered a “clear-cut loss of basic flight control skill.”

“Loss of sleep is a common occurrence in modern civilization. Humans are the only animals who opt to achieve less sleep than is required by their biological clocks and their sleep needs. In today’s society and culture, sleep loss is considered a norm as opposed to an exception with value placed on the attempt to reduce sleep time,” O’Hagan told PsyPost.

“The notion prevails that loss of sleep is not important and can be overcome by force of will. However, these inferences are unsafe and perilous with loss of sleep found to significantly impair behavioral, physiological and neurocognitive functioning and as a result, negatively impact performance. It is vital that sleep loss is further explored and understood to promote and enhance safety and well-being.”

The study, “Flying on empty – effects of sleep deprivation on pilot performance“, was authored by Anna Donnla O’Hagan, Johann Issartel, Aidan Wall, Friedrich Dunne, Patrick Boylan, Jaap Groeneweg, Matthew Herring, Mark Campbell, and Giles Warrington.

https://www.tandfonline.com/doi/full/10.1080/09291016.2019.1581481

https://www.tandfonline.com/doi/abs/10.1207/s15327876mp1603_2

https://www.tandfonline.com/doi/abs/10.1080/09291016.2019.1581481

Google subsidiary Wing is first to use a new drone safety API

A subsidiary of Google called Wing is the first to use a new drone safety API developed by Australia's Civil Aviation Safety Authority (CASA).

Project Wing is an autonomous delivery drone service aiming to increase access to goods, reduce traffic congestion in cities, and help ease the CO_2 emissions attributable to the transportation of goods.

Wing is also developing a platform enabling unmanned aircraft to navigate around other drones, manned aircraft, and other obstacles like trees, buildings, and power lines.

Last month, Wing product manager Reinaldo Negron wrote in a blog post:

> *"Wing hopes to be one of many CASA-approved providers of applications to help drone operators, both commercial and recreational, identify where they can safely and lawfully fly.*
>
> *To advance the development of an ecosystem of CASA-approved apps and services in Australia, Wing is also developing tools for CASA to communicate with drone flyers during major events such as sporting matches, concerts and emergency response incidents.*
>
> *Over time, a CASA-approved ecosystem of apps and services will enhance drone operator choice, public safety, and spur further innovation in the drone industry. By enabling this ecosystem, CASA and the Australian Government provide a compelling example to other countries seeking to safely integrate drones into their national aviation system, and we're excited to help support the future of Australian drone flight with them."*

The API is intended to enable replacements for its 'Can I Fly There?' app which offered guidance on safe flying areas for drone operators.

"The development of our platform aligns with the broader whole-of-government approach to 'open data' in order to improve services to the community," a statement from CASA said. "It is also another first step in helping us to integrate drones into Australian airspace safely and efficiently."

Wing has launched its app packing CASA's API on Android, iOS, and the web.

Researcher seeks pilot input on sharing airspace with drones

As part of his dissertation, Lakshmi Vempati, a doctoral candidate at Embry-Riddle Aeronautical University, is looking for pilots to fill out an electronic questionnaire about flying in airspace and at airports where unmanned aerial systems — drones — also fly.

Pilots who participate can enter a drawing to win a DJI Tello Quadcopter drone.

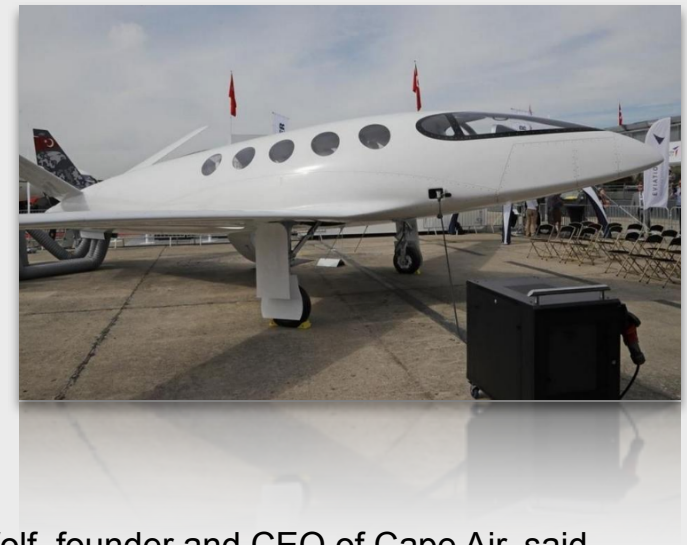
To participate in the research project, you must be at least 18 years old and a civilian pilot (with any rating and experience level) who has flown in the last six months.

Researchers estimate it will take about 15 minutes to complete the questionnaire.If you have any questions regarding the study, or the questionnaire, you can contact the researcher, Lakshmi Vempati, at vempatil@my.erau.edu or the dissertation committee chair, Dr. Scott Winter, at winte25e@erau.edu.

https://www.surveymonkey.com/r/LVPilotSurvey

Cape Cod-based airline plans to fly all-electric plane

Cape Air is on course to become one of the first commercial airlines in the world to operate an all-electric aircraft on its regional routes.



Eviation Aircraft, a startup company based in Israel, unveiled a prototype of an electric airplane at the Paris Air Show last month, announcing that Cape Air would be its first customer.

"It's a really great airplane," Daniel Wolf, founder and CEO of Cape Air, said. The sleek-looking plane, called Alice, is a nine-passenger aircraft that can fly at 240 knots with a range of up to 650 miles on a single charge, according to a statement from Eviation.

"The race is on," Wolf said of the introduction of all-electric aircraft. "They are the lead development company working on the size of plane Cape Air operates. It's perfect."

Eviation, which already had been working with the Federal Aviation Administration, was searching globally for a launch partner and approached Cape Air because of its route structure, according to Wolf.
Cape Air is one of the largest independent regional airlines in the nation, serving 35 cities in the U.S. and the Caribbean, including Hyannis, Martha's Vineyard, Nantucket and Provincetown.

Integration of the Alice aircraft into its fleet will require an infrastructure investment for Cape Air, including proper charging capacity equipment and specialized maintenance and support needs for the new technology, Wolf said.

Cape Air, which has been recognized by the Environmental Protection Agency for its sustainability efforts, plans to charge the new aircraft in Hyannis with solar energy generated at Barnstable Municipal Airport, as well as with wind energy from the Vineyard Wind project, Wolf said.

"The beauty is that this is an electric plane being charged with solar and wind power," he said. "It's sustainable, and there's no negative footprint. And the plane will be quieter, too - it's kind of the perfect picture."

Eliminating fuel costs likely will provide a significant cost savings to the airline and the flying public. Wolf estimates, depending on the cost of electricity, that the cost of operating one of the all-electric planes could be as low as $200 per hour.

On its website, Eviation touts traveling between Martha's Vineyard and Boston "in no time" - a 20-minute flight - as how it is "bridging distances and opening a range of new destinations accessible for on-demand transportation by enabling emission-free air travel for the price of a train ticket."

Eviation says it is conducting test flights this year and pursuing certification in 2021, with a goal of shipping the aircraft to carriers for commercial use in 2022.

But Wolf says that may be an ambitious goal to get the aircraft up and running on Cape Air routes.

"I think it is more realistic that we will be able to operate (Alice) in commercial service in 2023 or 2024," he said.

Eviation said in Paris that Cape Air has a double-digit purchase option for the Alice aircraft. As an early adopter and partner, Cape Air will be involved in customer convenience and comfort features in the plane's development process, according to Wolf, who referred questions regarding the price of the aircraft to Eviation.

Several media reports from the Paris Air Show said the aircraft would have a list price of approximately $4 million.

The 7 Most Common Weight And Balance Mistakes

Weight and balance mistakes can lead to major problems, and even accidents. Here are 7 of the most common errors.

1) Using improper weight and balance information

When determining the weight and balance for your aircraft, it's crucial that you use the weight and balance for your specific aircraft. Weights between a generic POH and your specific aircraft POH could be considerably different.

2) Math errors

If you're using the computational method to determine weight and balance, it's important that you double check your calculations. A simple miscalculation could put you out of weight and balance limits.

Weight and balance mistakes can lead to major problems, and even accidents. Here are 7 of the most common errors.

3) Only knowing one method to determine weight and balance

Different aircraft manufacturers will provide various methods to compute weight and balance. These include graphs, tables, and the general computational method. If you need to calculate weight and balance for an aircraft you're not familiar with, you might be using a different method than what you're used to.

4) Overloading the aircraft

Not taking maximum gross weight seriously can have adverse effects on flight characteristics. **And remember, max gross weight isn't a performance limitation, it's a structural limitation.** You might have the performance to take off, but your airframe may not be strong enough to handle turbulence and G-loading.

5) Rounding weights

Try to be as accurate as possible with determining the weights of various items that may be on board. Doing so could prevent accidentally flying an overweight aircraft that you thought was within weight and balance.

6) "My plane can fly with more weight!"

If you think that crashes related to weight and balance errors "happens to other people," you may be setting yourself up for a bad situation.

7) Forgetting to convert

When you calculate weight and balance, remember that fuel will be given in gallons, and it's your responsibility to convert gallons to pounds. Forgetting to do so may put your weight and balance computations off by hundreds of pounds.

Wrong flap setting leads to crash

The pilot was departing on a post-maintenance flight check in a float-equipped deHavilland DHC-2 from a short water lane at a remote, unimproved seaplane base in Dilllingham, Alaska.

While taxiing for departure, he left the wing flaps in the “up” position to aid in turning the airplane on the water.

After aligning the airplane for the takeoff run, he applied full power, and the airplane accelerated onto the step.

While attempting to rotate, he realized that he had forgotten to reset the wing flaps to the “takeoff” position.He attempted to reset the manually operated, hydraulically actuated wing flaps, but the incorrect flap setting led to a longer-than-normal takeoff run, and the airplane hit the water lane’s far bank, which resulted in substantial damage to the left wing and left-wing strut.

The pilot reported that there were no pre-accident mechanical anomalies with the airplane that would have precluded normal operation.

Probable cause: The pilot’s failure to set the wing flaps to the “takeoff” position, which resulted in a longer-than-normal takeoff run and collision with terrain.

NTSB Identification: ANC17CA038

This July 2017 accident report is provided by the National Transportation Safety Board. Published as an educational tool, it is intended to help pilots learn from the misfortunes of others.