AVIATION SAFETY BULLETIN

Safe Skies, Secure Fiji

Lithium Battery Fires in Passenger Cabin

9 Freedoms of the Air

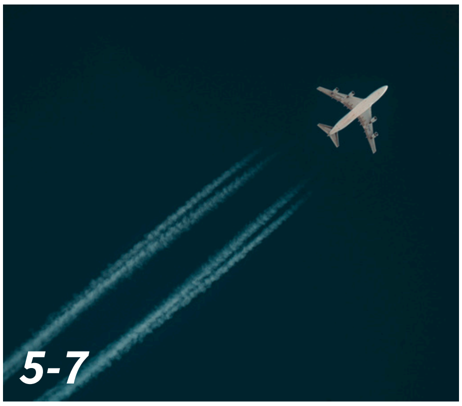
ISO 9001:2015 Certified

An official publication of the Civil Aviation Authority of Fiji

What is the Most Common Cause of Engine Failure on a Plane?

Requirements for Aeronautical Facility Technician Trainee

How Flight Hours and Health Affect Sick Leave in Civilian Pilots



GPS Spoofing in Aviation

Cover Page:
Taken by External Engagement and Communications Officer CAAF

In this issue...

AVIATION SAFETY BULLETIN

Connect with us on our Social Media Accounts ***Civil Aviation Authority of Fiji***

Published by the:
External Engagement and Communications Officer
Civil Aviation Authority of Fiji (CAAF)
Private Mail Bag, NAP 0354,
Nadi International Airport, Fiji.
Tel: (679) 8923 155
Email: socialmedia@caaf.org.fj

Editor
Carissa McKellar

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Aviation Safety Bulletin Editor, CAA Fiji, Private Mail Bag
NAP 0354, Nadi International Airport, Fiji or
email: info@caaf.org.fj.

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Message from CAAF's Chief Executive

Bula vinaka, colleagues and friends of Fiji's aviation community,

Safety is our mandate and our shared outcome. Regulators and industry are not opposing teams, we have different roles, one result. Your responsibilities (competent people, airworthy aircraft, compliant operations, and an effective SMS) are non-delegable. Ours are to provide clear rules, fair and proportionate oversight, and timely, evidence-based decisions. When we each do our part well, Fiji's skies stay safe, secure, and trusted.

This quarter's Bulletin focuses on practical risks that still cause too many events worldwide:

Loss of Control-In-flight (LOC-I) and mid-air collision (MAC) exposure in RVSM remain high-risk categories. Please use the articles here to refresh SOP discipline, monitoring and cross-check habits, upset prevention & recovery training, and altitude/flight-level conformance, especially when workload spikes or when operating in mixed-equipage environments.

GPS spoofing and interference are no longer hypothetical. Crews and ATC should remain alert to navigation anomalies, execute published contingency procedures, and report occurrences promptly so we can share lessons learned across the region.

Lithium battery fires in the passenger cabin deserve constant vigilance. Robust gate-side screening, cabin-crew drills, and the correct use of firefighting and containment equipment save lives.

On engine reliability, a key take-away bears repeating; small lapses in fuel management, maintenance control, and human factors can compound quickly. Use the checklists, stick to your SOPs, and speak up early if something isn't right.

People are at the heart of a safe system. I'm pleased to see the Aeronautical Facility Technician trainee requirements featured here, building a pipeline of skilled Fijian technicians is essential to resilient CNS/ATM services. I also commend the piece on rotorcraft, resilience, and breaking glass ceilings. Talent is universal; opportunity must be as well. Our system is safer when it reflects the diversity of the people it serves.

We also honour Dr. Isireli Biumaitotoya in this edition whose service to aviation and to Fiji reminds us that professionalism, humility, and care for others are the true hallmarks of excellence.

Two quick requests from me:

Engage early. If you need help interpreting a requirement, come early. If you see a hazard, report early. If you disagree with a finding, engage, with evidence. That is partnership, and that is the life-cycle approach in practice.

Keep the feedback coming. See our "We Want to Hear from You" page and try the Interactive Airspace feature at the back of the Bulletin. Your insights help us refine guidance, target surveillance, and improve training.

If at any point you feel a CAAF interaction did not meet the standards above, tell the Head of the area concerned; if unresolved, escalate to my office. Recent headlines do not define our system, our daily conduct does.

Vinaka vakalevu for the work you do every day to keep Fijians and our visitors safe. Let's continue to deliver clarity, consistency, and confidence through a modern, fair, and effective life-cycle framework.

Theresa Levestam

CHIEF EXECUTIVE

What is the Most Common Cause of *Engine Failure* on a Plane?

It may surprise you to know that mechanical failure is not the most common cause of engine failure in single engine piston aircraft.

Compared to a car, aircraft piston engines are relatively slow revving, with a maximum of 2500 RPM and constant cruise RPM around 1800, versus an average sedan which typically revs back and forth between 2000 RPM and up to 6000 RPM as the car accelerates through its gears. This means aircraft engines are under much less stress than a typical sedan engine.

Aircraft engines are built to be reliable. Coupled with the fact that aircraft engines are inspected and maintained with much greater frequency than a typical car engine, and only by highly trained licensed maintenance engineers, it should be no surprise that aircraft engine failures are rare.
However, aircraft engine failures do sometimes occur (between 12 and 15 per 100,000 flight hours).
Statistically, the most probable cause of engine failure in single engine piston is poor fuel management, which includes fuel contamination, fuel starvation and fuel exhaustion, all of which are avoidable through proper fuel management.

Fuel contamination means something in the fuel, most commonly water. Water is heavier than Avgas (which is light blue in color), so will sink to the bottom of the fuel tanks. Before the first flight of each day, and after refuelling, pilots are required to test the fuel in their tanks for the presence of water (or other contaminants) by draining a sample from the bottom of the tank and inspecting it.

Fuel starvation occurs when there is fuel on board but it's not getting to the engine. The most common cause of fuel starvation is the pilot selecting the wrong fuel tank or placing the fuel selector in the OFF position by mistake (where applicable).

Other less common but possible causes are either engine-driven fuel pump failure or blocked fuel lines, injectors or fuel vents.

Fuel exhaustion occurs when there is no usable fuel on board and is less likely to be a factor of engine failure immediately after take-off compared to fuel starvation, because pilots are trained to check fuel levels before taking off. Once exception to this is taking off with the fuel caps left off after refuelling, as this allows fuel to be sucked out of the tanks in just a few minutes by the low-pressure area that forms over the wing surface as the aircraft flies.

More commonly, pilots simply run out of fuel before they reach their destination. The most common cause of that is poor in-flight decision making – not monitoring their fuel usage as they go.

Fuel exhaustion is avoided by careful pre-flight planning, carrying sufficient extra fuel for unexpected delays such as bad weather or being forced to fly to an alternate aerodrome. This requires a thorough pre-flight inspection of fuel levels, properly calculating fuel requirements including reserves and being aware of how much fuel there is on board at all times during the flight.

Mechanical failure is the second most common cause of aircraft failure, and includes a wide variety of failures, some of which have been attributed to poor maintenance.

Most commercial aircraft have two or more engines, with separate fuel systems and the maintenance requirements are more stringent than for private aircraft, so the chances of engine failure are exceedingly rare (less than one in a million flights). Aircraft with two engines can be safely operated if one engine fails, but even single engine aircraft can be glided to a safe landing most of the time, if an engine failure occurs in flight.

Source: This article was written by CAAF's Flight Operations - Domestic Officer.

GPS Spoofing in Aviation

Threats, Detection, and Mitigation Strategies

Aviation safety depends on precise, reliable navigation. In today's interconnected airspace, the Global Positioning System (GPS) is the backbone of many aircraft navigation, approach, and surveillance systems. However, as aviation grows more dependent on satellite navigation, it also faces increasing cybersecurity risks—most notably, GPS spoofing.
This article explains what GPS spoofing is, why it threatens aviation safety, how it works, and how aviation professionals can detect and mitigate it.

What is GPS Spoofing?
Definition and Types

GPS spoofing is a deliberate, malicious act of broadcasting false GPS signals to deceive a receiver. Unlike GPS jamming, which blocks or overwhelms signals (causing loss of service), spoofing tricks the receiver into accepting false location or timing data.
Key types of GPS spoofing in aviation include:

- Simplistic spoofing: Low-power false signals that cause minor errors, often used in amateur demonstrations.
- Coordinated spoofing: Advanced attacks that seamlessly replace authentic signals, leading the aircraft to deviate without raising alarms.
- Meaconing: Re-broadcasting authentic signals with delay to create positional error.
- Adaptive spoofing: Attacks that react to aircraft motion and system feedback to remain undetected.

These techniques exploit vulnerabilities in civilian GNSS (Global Navigation Satellite Systems) that lack cryptographic authentication of signals.

Why is GPS Spoofing a Threat to Aviation?
Navigation Deception

At its core, GPS spoofing represents a navigation deception attack. An aircraft reliant on GPS-derived position and velocity can be led off-course if its systems accept falsified coordinates. This risks serious consequences:

- Deviations from cleared flight paths
- Controlled flight into terrain (CFIT) if vertical navigation is compromised
- Unauthorized entry into restricted or conflict airspace
- Loss of situational awareness, especially in low-visibility conditions

Such risks highlight the essential need for aircraft navigation security to be resilient to deception and interference.

Airspace Security Risks
Beyond individual aircraft, GPS spoofing has systemic implications for airspace security and aviation cybersecurity. Spoofed positional data can confuse air traffic control, disrupting separation standards and complicating deconfliction. Adversaries may use spoofing to lure aircraft across borders in conflict zones, intentionally escalating tensions.
This is why GNSS interference aviation advisories are increasingly common in NOTAMs and ICAO guidance.

Incidents in Civil and Military Aviation
Spoofing and GNSS interference are not hypothetical concerns:

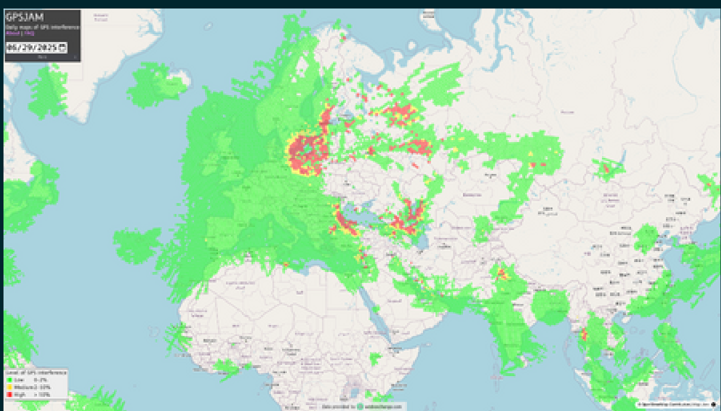
- Civilian GPS outages: Routine military testing in the U.S. southwest regularly causes civil aviation GPS disruptions, documented via FAA NOTAMs.
- Military deception tactics: Conflicts in Eastern Europe have seen localized GNSS interference and suspected spoofing to degrade enemy C2 (Command and Control).
- Academic demonstrations: Research at the University of Texas proved that commercial UAVs could be hijacked with tailored spoofing attacks.

These real-world examples underscore the importance of building resilient systems and procedures.

How GPS Spoofing Works: Technical Overview

Signal Generation

GPS receivers calculate their position by triangulating signals from multiple satellites. Spoofers work by generating counterfeit GNSS signals at the correct frequencies, synchronizing them precisely to match real satellites, and gradually overpowering authentic signals so the receiver locks onto the fake ones.
This attack exploits the open-access architecture of civilian GNSS, which does not include cryptographic authentication in standard signals.



GPS interference map (June 29, 2025), showing global GNSS disruption levels. (Source: GPSJAM.org)

Attack Phase	Description
Synchronization	Matching real GNSS signal timing and data
Overpowering	Transmitting stronger signals than real satellites
Capture	Forcing receiver to accept fake signals
Deception	Feeding misleading location data

Target Aircraft Vulnerabilities

Aircraft are especially vulnerable to GPS spoofing when they rely on a single GNSS source without robust cross-checking. Many systems, particularly older avionics, may lack signal integrity monitoring such as RAIM. Software that's outdated or improperly configured can fail to recognize subtle anomalies in navigation data.

Moreover, automated systems—including autopilot and flight management systems—often trust GNSS inputs by default. Without independent verification, these systems can inadvertently guide an aircraft off course if they're fed falsified location data. This growing reliance on precise GNSS positioning, especially for RNP (Required Navigation Performance) approaches, underscores why aviation cybersecurity is now an essential component of flight operations safety.

Regulatory Guidance and Industry Standards

Civil aviation authorities worldwide recognize the critical threat posed by GNSS interference and spoofing. The FAA issues regular GPS interference NOTAMs, especially during military exercises, to warn operators of potential disruptions (FAA GPS Interference NOTAMs). ICAO has released dedicated guidance in Doc 10121 on GNSS interference, encouraging states to develop contingency procedures and awareness campaigns.

By aligning with regulatory guidance and adopting industry best practices, operators can build robust defences that maintain aviation safety even in challenging electromagnetic environments.

Multi-Sensor Cross-Checking

Improved GPS spoofing detection depends on integrating multiple navigation data sources rather than relying on GPS alone. For example, Inertial Navigation Systems (INS) provide independent position updates that cannot be spoofed in the same way as GNSS. DME/DME triangulation from ground-based beacons can serve as a reliable cross-reference, especially in terminal environments.

Barometric VNAV systems also validate vertical profiles against expected altitudes, while ADS-B In/Out can confirm positional consistency with surrounding traffic reports. These cross-checks give pilots and dispatchers critical tools to identify inconsistencies that could indicate spoofing. Effective pilot navigation training emphasizes interpreting these sources collectively to maintain aircraft navigation security even in contested environments.

Emerging Technologies and Standards

Industry and regulators are developing new anti-spoofing measures:

- Encrypted GNSS signals: Galileo PRS and GPS M-code offer cryptographic protections, though largely restricted to military/government use.
- Advanced RAIM (ARAIM): Multi-constellation approaches that improve fault detection and exclusion.
- Machine learning-based detectors: Experimental systems that identify subtle signal anomalies.
- ICAO and RTCA standards: Work is underway to formalize spoofing resilience requirements for civil aviation.

Mitigation Strategies and Best Practices

Pilot Training and Awareness

Human factors remain at the heart of effective anti-spoofing defence. Training programs should teach pilots to recognize telltale signs of spoofing attacks, such as sudden unexplained course deviations or discrepancies between cockpit instruments and external cues.

Scenario-based simulator sessions can help crews practice diagnosing and responding to these anomalies under realistic conditions. Standard operating procedures should include steps for handling unreliable navigation data, such as reversion to ground-based aids or manual dead-reckoning if needed.

Above all, proactive pilot navigation training ensures that the crew can act decisively and maintain aviation safety even when advanced technology fails.

Equipment and Software Updates

Keeping avionics current is critical in the fight against spoofing. Upgrades that enable multi-constellation GNSS reception improve resilience by combining GPS with systems like Galileo or GLONASS. Enabling RAIM or ARAIM functions adds layers of integrity monitoring that can catch inconsistencies in satellite geometry.

Operators investing in these upgrades not only improve their defences against spoofing but also demonstrate their commitment to regulatory compliance and flight operations safety.

Regulatory Guidance and Industry Standards

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Conclusion

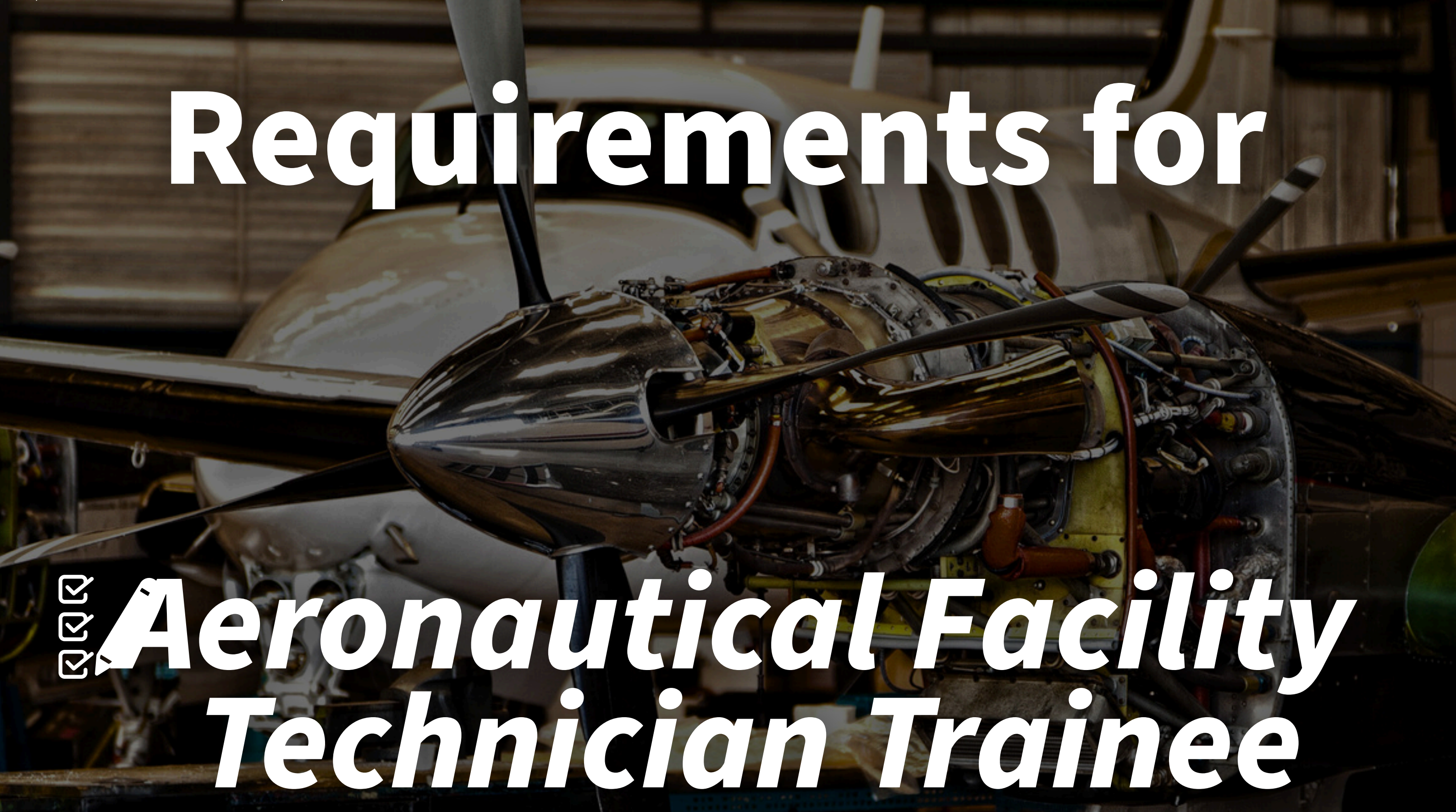
The Future of GPS Resilience in Aviation

GPS spoofing is a real and evolving threat to aviation safety. As aviation systems modernize and global airspace grows more interconnected, protecting aircraft navigation security from cyberattacks is essential for:

- Ensuring safe, predictable flight operations
- Maintaining regulatory compliance with global authorities
- Preserving trust in satellite navigation systems that underpin modern aviation

By adopting anti-spoofing technology, investing in pilot training, upgrading avionics, and following regulatory guidance, the aviation community can stay ahead of this threat and ensure robust defences against malicious interference.

Source: https://flyapg.com/blog/gps-spoofing-aviation-safety



Requirements for Aeronautical Facility Technician Trainee

Age

The applicant shall not less than 17 years of age

Knowledge

The applicant shall have demonstrated a level of knowledge relevant to the privileges to be granted and appropriate to the responsibilities of an Aeronautical Facility Technicians Trainee must pass Air Traffic Safety Electronic Personnel (ASTEP) basic and qualification training

Experience

The applicant shall have had the following experience evidence of

- Experience
- Special equipment training
- On the Job Training records
- Competency checks
- Examination results

Training

The applicant must successfully complete a diploma course in radio telecommunications or electrical and mechanical engineering or equivalent qualification, acceptable to the Authority, as applicable; and have satisfactorily completed ab-initio training course relevant to the duties of an aeronautical facility technician, in the following subject areas:

i) Air law
ii) Air navigation equipment
iii) General knowledge
iv) Human factors
v) Meteorology
vi) Navigation
vii) Operational procedures
viii) Language proficiency: Minimum pre-operational level 3

Privileges and Limitation

An Aeronautical Facility Technician Trainee may perform aeronautical facility duties, while under the direct supervision of licensed aeronautical facility technician having successfully completed an approved OJTI course or an instructor course, for the purpose of obtaining practical experience in aeronautical facility to –

- Qualify for the issue of an aeronautical facility technician licence, rating, or validation; or
- Regain currency of an aeronautical facility technician licence, rating, or validation.

Source: This article is referenced from SD PEL S5/ CHAPTER 3 - AERONAUTICAL FACILITY TECHNICIAN TRAINEE (Pg 287)

Rotorcraft, Resilience, and Breaking Glass Ceilings

At just 24 years old, Talica Tuilovoni has made history as Fiji's first female rotorcraft-licensed engineer. Her journey becoming a trailblazer in aviation is one of resilience, determination, and breaking barriers in a male-dominated field.

In this interview, Talica shares her story, the challenges she faced, and the advice she has for the next generation of women in aviation.

1. Can you tell us a bit about yourself and how your aviation journey began?

My name is Talica Tuilovoni, I'm 24 years old and I hail from the village of Wailevu in Kadavu. I was raised in Nadi by my single parent mum, who has always been my biggest supporter and the strongest role model in my life.

My aviation journey began in 2019, when I enrolled in the Mechanical Program of the Aircraft Maintenance Engineering course at FNU, Namaka, Nadi. Growing up in Nadi, I was surrounded by aircraft and the aviation environment, which naturally caught my attention. With guidance from my mum, I decided to give the program a shot, and six years later, I am a licensed engineer with a deeper passion for the field.

2. What inspired you to pursue rotorcraft (helicopter) training specifically?

During our program, we were required to complete industrial attachments. That's how I ended up at Island Hoppers Limited. Although the company operates both rotorcraft and fixed-wing aircraft, I was immediately drawn to rotorcraft. Their complexity, uniqueness, and how different they are from fixed wings sparked my curiosity, and that interest just kept growing.

3. Were there any key moments or mentors that helped shape your path into aviation?

Absolutely. My family and close friends have always been huge motivators. My lecturers built a strong foundation in theory, and my senior colleagues guided me with patience and encouragement. Their support gave me confidence and shaped me into the engineer I am today.

4. What was the training process like for becoming a licensed rotorcraft engineer?

It was tough but rewarding. The journey included two years of classroom theory at FNU,

"I hope it inspires other women to see that they belong here too…"

followed by two years of industry attachment. After that, I had to sit for CAAF exams, oral assessments, and countless hours of self-study. It took long nights, determination, and sacrifice, but it was worth it.

5. Were there any parts of your training that you found especially challenging or rewarding?

The rewarding moments came every time I passed an exam or solved a technical issue. Those small victories boosted my confidence, especially in a field where women are still underrepresented.

The most challenging part was the physical demands of the job. I couldn't always match the strength of my male colleagues, but I put in the effort, and over time, I've grown stronger and more capable.

6. How did it feel the moment you completed your license?

It was overwhelming. When my two oral examiners said "Congratulations," I tried hard not to cry. The journey had cost me time, money, energy, and even sleep. There were moments I didn't know if I could afford to continue, but friends and family supported me along the way. That moment of success made every struggle worthwhile.

7. You've made history as the first female rotorcraft-licensed engineer in Fiji, what does that mean to you?

It means so much. It proves that women can succeed in male-dominated fields. For me, it's both validation and motivation to go further. I hope it inspires other women to see that they belong here too.

8. Were there any gender-related obstacles or biases you faced during your journey?
Yes, there were times I felt underestimated or unsure of myself simply because I was one of the few women. But with support from colleagues, friends, and family, I pushed past those doubts.

9. What message would you give to other young women or girls considering aviation?
It won't be easy, but it's not impossible. If your heart is in it, stay focused, stay consistent, and don't let anyone tell you it isn't for you.

10. What does safety mean to you in your day-to-day work?
Safety is everything. Engineers play a critical role in making sure aircraft are safe before they fly. It's not about ticking boxes, it's about protecting lives by following strict protocols, using the right tools, and staying alert.

"you don't have to be the strongest, just the most determined..."

11. What role does continuous learning or upskilling play in your growth as an engineer?
Aviation is always evolving, so you must evolve too. I learn from every task, ask questions, read technical manuals, and take any opportunity to train. Staying updated is a responsibility in this industry.

12. What are your goals now that you've achieved this milestone?
I plan to gain type ratings on different aircraft, broaden my exposure to rotorcraft, and continue building my confidence. In the future, I'd love to mentor others.

13. What do you hope to see change or improve in the aviation space, especially for women?
I'd love to see more support and visibility for women in aviation. When women see other women thriving in this field, it helps them believe they belong too.

14. What advice would you give to anyone who feels like the odds are against them?
Don't be discouraged. The journey may be difficult, but it's worth it. Stay focused, lean on those who believe in you, and remember, you don't have to be the strongest, just the most determined.

15. Any final message?
The odds may be real, but they don't define you. Your persistence and attitude are powerful tools. Keep moving forward, even one step at a time.

Talica's journey is a powerful reminder that determination and resilience can break barriers. Her success not only marks a milestone in Fijian aviation but also paves the way for more women to follow in her footsteps.

Source: This article is inspired by Ms. Talica Tuilovoni

Ms. Talica Tuilovoni (left) being presented with her operating license by CAAF's Manager Personnel Licensing.

We Want to Hear from You!

FCAIR
Fiji Confidential Aviation Incident Report

The Fiji Confidential Aviation Incident Reporting (FCAIR) form is a voluntary, non-punitive tool that allows anyone in the aviation community to confidentially report safety concerns or incidents to help improve aviation safety and security in Fiji.

FCAIR forms are available for download from the CAAF website (www.caaf.org.fj) or from the Enquiries counter at CAAF HQ. Completed forms are to be emailed to fcair@caaf.org.fj.

CONFIDENTIAL

Fiji Confidential Aviation Incident Reporting
Forms Available on Website:

www.caaf.org.fj

or front desk CAAF HQ

Take Our Survey

CAAF is keen to hear from you regarding our levels of service.

If you believe you have constructive ideas on how we can improve our services or would like to report instances where we have failed to meet your expectations.

Please send your feedback to CAAF, preferably using the QA 108 form that can be accessed from our website.

This can be sent to CAAF via email or dropping it in the feedback box in the foyer of CAAF HQ; or email to:

info@caaf.org.fj

Safe Skies, Secure Fiji

Honoring Dr. Isireli Biumaitotoya

Celebrating a Legacy of Dedication and Compassion in Aviation Medicine

The Civil Aviation Authority of Fiji (CAAF) and the wider aviation community mourn the loss of Dr. Isireli Biumaitotoya, affectionately known as Dr. Leli, whose unwavering commitment to aviation medicine spanned two decades. Born on 23 October 1969, Dr. Leli dedicated his career to safeguarding the health and well-being of people working across Fiji's aviation system.

Dr. Leli was renowned not only for his clinical excellence but also for his friendly, forthright manner and his ability to see the positives in life, even in the most challenging circumstances. His warmth and optimism strengthened aviation safety alongside his medical acumen, fostering a culture of trust and care that extended far beyond the examination room.

Professional Milestones

- Appointed as a Designated Medical Examiner (DME) by CAAF on 8 June 2005, Dr. Leli became a trusted figure in the aviation sector, supporting pilots, air traffic controllers, and other aviation professionals to meet the highest medical standards.
- On 27 January 2022, he was entrusted with the role of Medical Assessor, a testament to his expertise, integrity, and leadership in aviation health oversight.
- Over more than 20 years of service, he was more than a doctor, he was a confidant, a mentor, and a trusted primary care physician to many within the aviation community.

As we reflect on Dr. Leli's profound impact, we honor Dr. Leli Biumaitotoya a professional who exemplified compassion, professionalism, and dedication. His legacy lives on in the countless lives he touched and the safety standards he helped uphold. The aviation community extends its deepest condolences to his family, friends, and colleagues.

ICAO High Risk Categories

Loss of Control In-Flight (LOC-I)

Loss of Control In-Flight (LOC-I) is identified by the International Civil Aviation Organization (ICAO) as one of the most significant high-risk categories in aviation safety. LOC-I refers to incidents where an aircraft departs from its controlled flight path, often leading to accidents with catastrophic outcomes. Unlike other accident categories, LOC-I tends to occur unexpectedly, frequently without prior mechanical failure, making it particularly dangerous for both flight crew and passengers. The complexity and unpredictability of LOC-I make it a critical area of focus in aviation safety efforts.

Understanding LOC-I

The ICAO defines LOC-I as a situation where an aircraft deviates from its intended flight path due to various factors such as human error, environmental conditions, system malfunctions, or even external threats (ICAO, 2022). LOC-I accidents can occur during any phase of flight but are most common during takeoff, climb, and descent when the aircraft is under higher operational stress.

A variety of factors contribute to LOC-I, including turbulence, spatial disorientation, icing, and improper recovery from stalls. While technology has advanced to mitigate risks, human error whether in terms of decision-making, loss of situational awareness, or poor coordination, remains a leading cause.

Case Study: Boeing 737 Max Ethiopian Airlines Flight 302

One of the most prominent recent examples of LOC-I occurred on March 10, 2019, with Ethiopian Airlines Flight 302. The Boeing 737 Max 8 aircraft crashed just six minutes after takeoff from Addis Ababa, killing all 157 people on board. The cause was attributed to a malfunction in the Maneuvering Characteristics Augmentation System (MCAS), designed to prevent stalls by automatically adjusting the aircraft's nose. The system erroneously activated due to faulty sensor data, pushing the nose down repeatedly, leading to a catastrophic loss of control (Ethiopian Civil Aviation Authority, 2020).

Findings and Recommendations

The investigation into the Ethiopian Airlines Flight 302 disaster highlighted several critical issues related to LOC-I. The key findings were:

1.System Malfunction:
The MCAS system relied on a single angle of attack sensor, making it vulnerable to failure.

2.Lack of Pilot Training:
The crew was not adequately trained to manage the failure of the MCAS system and the rapid sequence of events that followed.

3.Automation Reliance:
Overreliance on automated systems without sufficient manual override options was a significant contributing factor.

In response to these findings, several recommendations were made:

•Redesign of MCAS:
Boeing was instructed to redesign the MCAS software to prevent erroneous activation based on faulty data and improve the integration of redundancy systems.

•Pilot Training Enhancement:
Aviation authorities worldwide have mandated better and more comprehensive training for pilots on the 737 Max, focusing on manual aircraft handling and recovery from unusual attitudes.

•Increased Oversight of Aircraft Certification:
Regulators have been advised to improve the scrutiny of automated systems during the certification process, ensuring multiple layers of redundancy are included.

These findings and recommendations highlight the need for continuous improvements in both technology and human factors to prevent LOC-I accidents in the future.

Conclusion

LOC-I remains one of the most dangerous scenarios an aircraft can encounter. While advances in aviation technology have improved safety, the Ethiopian Airlines Flight 302 crash serves as a tragic reminder of the importance of human oversight and training in handling automated systems. As LOC-I continues to pose a significant risk, the industry must remain vigilant in addressing both technological and human factors to prevent future incidents.

Source: Ethiopian Civil Aviation Authority (2020). Ethiopian Airlines Flight 302 Final Investigation Report. Addis Ababa. ICAO (2022). Safety Management Manual (Doc 9859). 4th ed. Montreal: International Civil Aviation Organization.

9 FREEDOMS of the Air

Aviation has always been about more than just flying an aircraft, it is about connecting people, economies, and cultures across borders. For international flights to operate smoothly, countries must agree on market access. This is where air traffic rights come in. The most basic way an air traffic right is expressed is the right to transport passengers, cargo and mail, separately or in any combination.

Air traffic rights come in the form of International Air Services Transit Agreements (IASTA), International Air Transport Agreements, Bilateral Air Transport Agreements and Multilateral Air Transport Agreements.

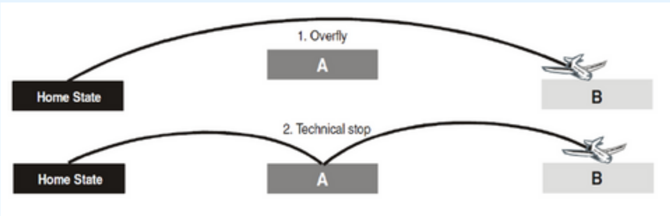
Here's an overview of all nine freedoms of the air which relates to air traffic:

First Freedom Right – Overfly

Airlines have the right to fly over another country's airspace without landing. For example, a flight from Australia to the United States may pass through Fiji's airspace without stopping.

Second Freedom Right– Technical Stop

Airlines may land in a foreign country for technical reasons, such as refueling or repairs, but cannot board or disembark passengers or cargo. For instance, an European airline flying to New Zealand could land in Fiji to refuel without picking up passengers.



Third Freedom Right – Set Down Traffic

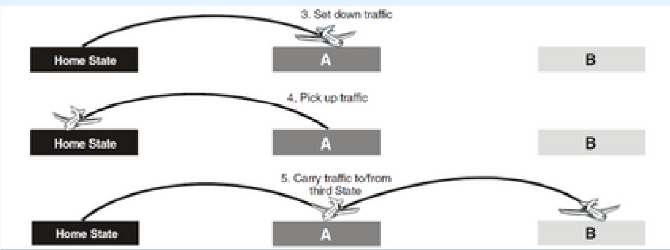
This allows an airline to fly passengers or cargo from its home country to another country. For example, Fiji Airways flying passengers from Nadi to Sydney.

Fourth Freedom Right – Pick up Traffic

The reverse of the third freedom, this allows an airline to carry passengers or cargo from a foreign country back to its home country. For example, bringing passengers from Sydney back to Nadi.

Fifth Freedom Right – Carry Traffic to/from Third State

This grants the right to fly between two foreign countries on a route that originates or terminates in the airline's home country. For example, Fiji Airways could operate a service from Nadi to Los Angeles with a stop in New Zealand and carry passengers between New Zealand and Los Angeles as well.

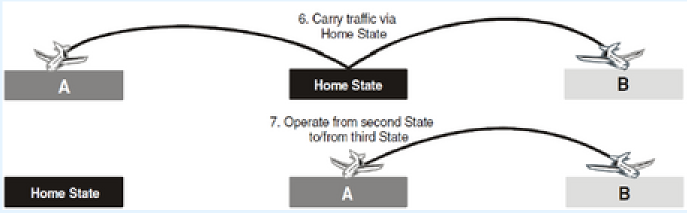


Sixth Freedom Right– Carry Traffic via Home State

This allows airlines to carry traffic between two foreign countries via their home country, essentially using it as a hub. For instance, Fiji Airways could transport passengers from Fiji to New Zealand and to the United States.

Seventh Freedom Right– Operate from Second State to/from Third State

This gives airlines the right to operate flights between two foreign countries without linking back to their home country. For example, Fiji Airways could operate a service entirely between Australia and New Zealand.

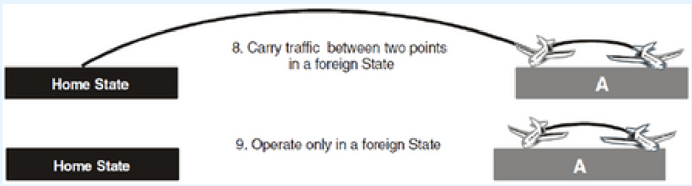


Eighth Freedom Right– Carry Traffic Between Two Points in a Foreign State

This permits airlines to carry passengers or cargo between two points within a foreign country, but only as part of a service that starts or ends in their home country. For instance, an airline flying from Fiji to Auckland could then continue to Christchurch and carry domestic passengers between Auckland and Christchurch.

Ninth Freedom Right – Operate only in a Foreign State

The most restrictive right, this allows airlines to carry passengers or cargo entirely within a foreign country without any link to their home country. For example, Fiji Airways operating purely domestic flights within Australia. Few countries grant this right, as it competes directly with local carriers.



Why These Freedoms of the Air Matter

The Freedoms of the Air are more than agreements, they shape the way the global aviation industry works. They determine which airlines can serve which routes, influence ticket prices, and even affect tourism and trade. Without these freedoms, international air travel would be far less connected, and global aviation would struggle to operate efficiently. For Fiji, these freedoms highlight the importance of international partnerships and bilateral agreements, ensuring that our airlines can compete and that our nation remains connected to the world.

Sources: ICAO Doc 9626, Manual on the Regulation of International Air Transport, Third Edition, 2028
ICAO Global Aviation Training Trainer Plus, International Air Law, Module 4, Air Transport Agreements and Liberalisation
ICAO Global Aviation Training Trainer Plus, International Air Law, Module 4, Air Transport Agreements and Liberalisation

How Flight Hours and Health Affect Sick Leave in Civilian Pilots

In-flight medical incapacitation jeopardizes flight safety. To reduce such breakdown episodes, airlines have implemented a sick leave system. This study aimed to examine the association of total flight hours and health status with sick leave use among civilian pilots in South Korea and to identify the demand for a health promotion program.

In April 2016, an Easter Jet copilot lost consciousness in the cockpit while preparing to depart from Phuket, Thailand, to Incheon International Airport. At that time, the copilot's total flight time was 2980 h, and there had been no previous reports of any medical conditions. The International Civil Aviation Organization defines in-flight medical incapacitation as a state in which medical fitness is reduced to the extent that flight safety is at risk. Furthermore, it implies incidents occurring in the critical phase in which the pilot is incapable of performing their flight duties.

Although incidences of in-flight medical incapacitation are extremely rare (0.19–0.45 times per 1 million flight hours), it can greatly compromise aviation safety and lead to fatal accidents. Between 2010–2014, there were 4 cases of in-flight medical incapacitation where normal operations were completed and 11 cases where there were interruptions to aviation safety. These interruptions resulted in three cases of terrain collision, two cases of diversion, two cases of return, two cases of airspace infringement, and two case of preventive descent or landing. The mental and physical health of pilots is one of the major human factors in aircraft accidents. Therefore, appropriate aviation-related health promotion activities for pilots should be performed to reduce medical risks threatening flight safety.

The main causes of in-flight medical incapacitation include cardiovascular, neurologic, gastrointestinal, otorhinolaryngological, laser strikes, and psychiatric.

Health risk factors include fatigue, disturbance of the circadian rhythm due to shift work, long flight hours, and work stress. In addition, other health risk factors such as smoking, excessive alcohol consumption, lack of exercise, and limited healthy food options should also be considered.

Based on the present findings, aviation health researchers should further examine targeted, cost-effective interventions to promote healthy lifestyles, which can reduce the risk of in-flight medical incapacitation.

Aviation medical examination is an important system in terms of flight safety, as, beyond determining the pilot's suitability for flight, it enables the early detection and early treatment of any disease. However, this examination is insufficient for preventing medical problems or even promoting health. Accordingly, the International Civil Aviation Organization enacted regulations to make aviation-related health promotion compulsory in November 2015. It recommended the implementation of appropriate aviation-related health promotion strategies for license holders subject to a medical assessment, in order to reduce future medical risks to flight safety.

This initiative aims to improve flight safety levels by preventing or delaying the onset of diseases that threaten flight safety through health promotion activities. While most pilots maintain good health practices, this initiative can encourage those who do not consistently engage in health promotion activities to adopt healthier habits.

Such activities promote health by improving health awareness or lifestyle. It is well-established that maintaining a healthy lifestyle through practices such as smoking cessation, engagement in regular physical activities, reduction of alcohol consumption, and adequate rest can prevent or delay the onset of physical or mental disease. However, considering pilots' working conditions, such as irregular flight schedules, jet lag, overnight flights, and long flights, it is not easy for them to regularly engage in health promotion activities on their own.

Furthermore, although pilots' health promotion is an important aspect of flight safety, there is a paucity of research on related matters in South Korea.

Hence, this study aims to determine the association of factors related to pilots' working conditions and personal health with sick leave use.

The study also seeks to identify the need for programs that can promote pilot health and support safe flight operations.

The hypotheses of the study are as follows: 1) pilots' working conditions are associated with sick leave use and 2) pilots' health status is associated with sick leave use.

Methods.

For data collection, an online survey was conducted between August–November 2018, involving pilots of nine civil airlines in South Korea. A total of 456 pilots responded, of which data from 6 were excluded due to missing items; 450 pilots were included in the final analysis. The SPSS WIN 26.0 software was used for analysis, and a logistic regression analysis was performed.

Results and Discussion.

This study aimed to determine the association of pilots' working conditions and health status with sick leave use, thereby contributing to improved pilot health and safe flight operations. It was found that 28.4% of subjects had taken one or more sick leaves in the past year. A previous study reported that 12.9% of pilots of one airline took sick leaves, which was lower than that observed in this study. This discrepancy may have arisen from the use of different sample sizes; while the previous study considered only one airline in Korea, the current study involved pilots from nine civil airlines across South Korea. The causes of sick leave included the common cold, gastrointestinal diseases such as enteritis, and infectious diseases such as herpes zoster. Existing literature has reported that the cabin environment and long flights can influence the incidence of infections. Additionally, many aircrew members continue to fly when sick, which may further contribute to the spread of infections. This highlights the importance of addressing sick leave utilization among aircrew members. The next most frequently observed health conditions among pilots were ENT diseases such as otitis media, which is supported by previous research that found common medical problems in flight attendants and pilots. The treatment period for otitis media usually lasts for 8.23 days; therefore, it is essential for pilots to undergo sufficient treatment before returning to resume their flight duties.

Existing literature identified syncope, chronic gastritis, and herniated discs as health conditions associated with longer sick leaves.

In this study, conditions such as musculoskeletal disorder, cancer, and stroke were also observed, as well as chronic fatigue under the option "other."

Regarding the subjects' health behavior, 22.0% were current smokers and 21.3% had inadequate physical activity. Considering that most subjects were men, the rate of smoking was low while that of physical activity was high compared to the national smoking (36.7%) and physical activity rates (51.0%) in Korea. The same study also reported high rates of e-cigarette use; however, it is difficult to compare the findings with the results of this study as data on pilots' current use of e-cigarettes were not collected. In addition, the smoking rate of Korean pilots in this study was higher than that of U.S. adults (reported to be 19.0% in a previous study), which is perceived as a cultural difference. The rate of high-risk alcohol consumption among the subjects (69.1%) was also relatively high compared to the 2018 national rate of high-risk alcohol consumption among Korean men (20.8%). Previous research also found that the health status of flight attendants was better than that of other groups; however, their rate of excessive drinking was higher.

In particular, despite the high prevalence of smoking and high-risk drinking, there was little demand for smoking cessation and alcohol reduction programs. This is interesting because even though smoking cessation and moderation are commonly targeted in health promotion programs, the pilots did not perceive these program outcomes as important. This perception may impact the effectiveness and focus of health promotion strategies. Although pilots tend to engage in healthy lifestyle habits equally or more than other groups, there is a need to identify their hidden high-risk behaviors. High-risk alcohol consumption is highly associated with stress and depression, although leisure time is often spent drinking with colleagues or friends. In other words, high-risk alcohol consumption is considered socially acceptable as a means to relieve stress; however, such behaviors are also highly associated with diminished health-related quality of life in pilots.

Future research should investigate the cultural factors that shape these behaviors and how they can be

incorporated into more effective health promotion interventions for pilots.

In this study, a factor affecting sick leave was a total flight time of between 1000–4999 h, whose impact was 7.39 times greater than that of a total flight time of under 1000 h.

There is a paucity of research on the relationship between flight time and sick leave. New pilots with less than 1000 flight hours may have less opportunity to use sick leave because they have not accumulated much sick leave, or they may be more cautious about using sick leave because they are more likely to be on probation. On the other hand, pilots with between 1000–5000 flight hours may have had the time to accumulate sick leave after 1–2 yr of employment, have the leeway to use sick leave to treat previously untreated health problems, and feel more comfortable using sick leave as they become more accustomed to working for an airline.

Nevertheless, owing to reports linking longer flight times to increased fatigue, sleep disorders, mental health problems, and susceptibility to obstructive sleep apnea during daytime sleep after night flights, it is often assumed that pilots with long total flight times mainly operate large aircrafts at night and engage in long-haul operations. However, the study by Venus and Holforth reported that short-haul pilots experienced more issues in these areas than long-haul pilots. This underscores the importance of understanding the different health challenges associated with short- and long-haul flights and implementing tailored health management interventions to effectively address these specific needs. However, a total flight time of 5000 h or more did not seem to influence sick leave, which may be a limitation attributed to the cross-sectional design of this study. This is because pilots on sick leave or those permanently grounded for medical reasons were not included in this study, which may present as a limitation of the healthy worker effect. Indeed, a follow-up study on pilots who have lost their licenses for medical reasons may be needed in the future.

In this study, health behavior was not associated with sick leave. However, previous studies have demonstrated the impact of health behaviors on absenteeism. For instance, smoking led to a 2.89 times higher rate of absence, while high-risk alcohol consumption was also found to have a significant impact on absence.

At a workplace, the absences are generally classified as sick leaves—it must be noted that health problems and sick leaves are regarded as the same in pilots' medical assessments.

Such a phenomenon can be explained by the findings of this study, which revealed a 2.19 times greater likelihood of taking sick leave among pilots with a health condition compared to those without. This means that, although there was no direct correlation in previous research between health problems and sick leave, smoking and high-risk alcohol consumption influenced absence in individuals without pre-existing health conditions. Although these studies highlight the relationship between health behaviors and absenteeism, there is currently no research specifically addressing the impact of health behaviors on sick leave or absenteeism within the aviation industry. Therefore, follow-up research is needed to explore the relationship between pilots' health behavior and absenteeism rates. The type of pre-existing diseases also had an impact on the number of days of sick leave. Dyslipidemia and hypertension were identified as causes of an increased rate of absence in previous studies, while sleep disorders were reported to affect workplace safety due to drowsiness during work hours. Therefore, there is a need to develop and implement health interventions to manage sick leave.

In this study, 12.9% of pilots responded that they had taken part in a health promotion program. Furthermore, there were discrepancies in the health promotion programs the subjects had attended and those they believed were needed. According to previous research, the reasons for nonparticipation in health promotion included irregular flight schedule, lack of motivation, and lack of time to participate.

Similar results were revealed in this study, in which workload, lack of motivation, stress, and shift work were identified as reasons for neglecting health promotion activities.

Pilots face a variety of health risks such as disturbance of the circadian rhythm, flight fatigue, and stress. Moreover, working overnight shifts can lead to increase saturated fat intake, smoking, and overdrinking.

Furthermore, although more active engagement in health promotion activities is needed with an increase in age, there is a shortage of health promotion programs dedicated to older staff, and those available are said to be of low quality.

Therefore, it is essential to develop and enhance health promotion programs specifically tailored for older pilots and improve their overall quality to better meet their needs.

Limitations of this study include a lower-than-expected response rate, despite efforts to encourage participation, and the excluded pilots who dropped out owing to health-related factors, which may limit the generalizability of the results. Furthermore, as the survey was conducted online, it is likely that individuals who were already interested in health were keener on participating. In addition, this study is cross-sectional, which does not allow clear causal statements to be made, and inferences from the results should be drawn with caution. Although this study identified associations between chronic medical conditions and sick leave, it does not directly support the conclusion that health promotion programs will necessarily improve these outcomes or enhance aviation safety. Further, the survey revealed that some pilots were engaging in risky drinking and had high smoking rates. Additionally, the participants reported the need for sleep management, nutrition, and exercise programs. Therefore, while this study explores the relationship between health-related factors and pilots' use of sick leave, it contributes to the broader understanding of aviation health. The findings may also serve as preliminary data for developing strategies to improve pilots' health. Future research should focus on modeling the relationships between health behaviors, work conditions, health issues, and absenteeism.

Based on the above research results, first, it is necessary to intensively study the relationship between chronic diseases of pilots and sick leave use, as well as the relationship between sick leave use and health promotion behaviors, in the future. Second, the development of health promotion programs tailored to the characteristics of pilots' work is recommended. Despite the implementation of an existing health promotion program, no significant effect was observed on the pilots' use of sick leave. This may be because the content of the health promotion program and its method of delivery may not be sufficiently sound or attractive, resulting in low participation rates among the pilots. Third, despite the high prevalence of high-risk drinking in this study, the demand for health promotion programs to reduce drinking was low. This highlights the need for increased counseling and education programs regarding the harms of high-risk drinking. This could include emphasizing the negative effects of drinking on flight safety and personal health.

Sources: Dr. Isireli Biumaitotoya

RASG - APAC
Published by ICAO's APRAST

SAFETY ADVISORY
June 2025 No. 25-002

Lithium Battery Fires in Passenger Cabin

Subject: Raising Awareness of Risks of Cabin Fire and Smoke Events Associated with Lithium Batteries Carried by Passengers

Intended Audience: Air Operators, Aerodrome Operators and States' Civil Aviation Authorities.

Background: Two known cabin fire events in the APAC region occurred in 2025 Q1. One resulted in a hull loss on ground and while the other occurred at cruising altitude with the fire extinguished during the flight. Both events were suspected to have been caused by lithium battery power banks stowed in the cabin overhead compartment. Fortunately, neither event resulted in loss of life, but both have drawn attention from governments, industry stakeholders and the general public about risks of lithium batteries carried by passengers.

Nowadays, the majority of energy storage devices, including batteries powering portable electronic devices (PEDs) contain lithium batteries due to their higher energy density and efficiency which are suitable for compact applications. However, these benefits come with risks, especially when not handled properly.

A lithium battery fire can be started by heating, overcharging, crushing or internal short circuit triggered by poor manufacturing quality, aged batteries or damage due to mishandling. Unlike other fires, lithium battery fires may be self-sustaining and require special methods to handle. Fire propagation may be fueled by the heat released from burning batteries, which may potentially escalate into a catastrophic event if not properly managed in a timely manner.

The ICAO Doc 9284 - Technical Instructions for the Safe Transport of Dangerous Goods by Air (TI) permits passengers to carry devices containing lithium batteries (e.g. mobile phones, tablets and laptops) in carry-on baggage or checked baggage while spare lithium batteries (e.g. power banks) may only be permitted in carry-on baggage subject to certain conditions and safety precautions. IATA has promulgated additional guidance on quantity limits with regard to spare lithium batteries and PEDs.

Currently, passengers are generally advised about the restrictions of items carried as baggage at various touch points such as check-in and during pre-flight passenger briefings etc. Lithium batteries with not more than a specified energy capacity may be permitted for carriage by passengers without prior approval from air / aerodrome operators.

After the recent cabin fire events, civil aviation authorities (CAAs) and air operators have become more conscious about the associated risks. Some have implemented measures, such as forbidding stowage of power banks in the cabin overhead compartment and enhancing preflight passenger briefings, in addition to the ICAO TI requirements.

The general measures to mitigate for such risks include measures to minimize opportunities that induce battery failures; support early detection in case of fire; and reinforce effectiveness of firefighting procedures, etc.

Recommendations: To mitigate the risk of lithium battery fires in cabins, RASG-APAC recommends the following:

To Air Operators:

- *Conduct* a review of safety risk assessments on the carriage of lithium batteries by passengers; *get familiarized* with hazards of lithium batteries and potential consequences of incidents involving such batteries; and *keep abreast* of the latest technology / devices containing lithium batteries;
- *Adopt* mitigating measures that reduce the likelihood of inducing lithium battery fire in the cabin, and also measures that help to reinforce early detection and effective firefighting;
- *Review* the adequacy of aircraft emergency equipment, particularly on the provision for firefighting aboard aircraft;
- *Review* the operating procedures for the crew and *align* operating procedures with relevant guidance and requirements from ICAO, IATA, OEMs and/or CAAs;
- *Review* and if necessary, *reinforce* crew's competencies through Safety and Emergency Procedure training by drawing from experiences in mitigating lithium battery related incidents during flight;
- *Review* the effectiveness of current promulgation methods for dangerous goods information to passengers and *cooperate* with all stakeholders in communicating with passengers about relevant requirements such as through signage, messaging; and
- *Report* safety issues to its CAA.

SSP/SMS Collaborations: CAAs may coordinate efforts amongst stakeholders on enhancing safety awareness of passengers to achieve "Prevention, Early Detection and Coordinated Actions to Mitigate Risks of Power Banks and other Lithium Battery Devices"

To Aerodrome Operators:

- *Promulgate* dangerous goods information to *passengers* at airport terminals; and
- *Cooperate* with all stakeholders to enhance effectiveness of campaigns to raise passenger awareness on inherent risks of lithium batteries and advise them on the actions needed for securing the safe carriage of lithium batteries and associated consumer products.

To Civil Aviation Authorities:

- *Take* proactive safety management actions, *assess* operators' risk management processes, *consult and engage* operators in harmonizing practices to minimize confusion to passengers, *coordinate* with stakeholders to enhance public awareness;
- *Align* State's requirements with international practices as far as practicable; and
- *Share* findings, safety risks or concerns at local and international forums in a timely manner.

About RSAs: *A Regional Aviation Safety Group – Asia Pacific Safety Advisory (RSA) contains important safety information shared by the RASG-APAC and/or its contributing bodies with the aviation community which may contain recommendations for consideration. The purpose of the RSA is to inform air operators, air navigation service providers, aerodrome operators, industry associations, CAAs and other aviation service providers of a potential threat to safety in the region. RSAs are designed to be concise while RASG-APAC analyzes the safety issue further to develop comprehensive recommendations if necessary. RASG-APAC members are advised to take note of the Advisory to evaluate the occurrence of the identified safety issue in their operations with the purpose of mitigating it.* ***This does not supersede State regulation/advisories or Original Equipment Manufacturer guidance.***

RASG - APAC

Published by ICAO's APRAST

SAFETY ADVISORY

June 2025 No. 25-001

Elevated Mid-Air Collision (MAC) risk in Reduced Vertical Separation Minima (RVSM) Airspace

Subject: Risk of Mid-Air Collision at Flight Information Region (FIR) airspace boundaries within RVSM airspace due to ATC Unit to ATC Unit coordination errors.

Intended Audience: Civil Aviation Authorities responsible for State Safety Oversight of Air Navigation Services, and Air Navigation Service Providers (ANSPs)

Background: Any reduction in separation minima requires a safety monitoring mechanism as a part of its implementation. Therefore, States are required to establish safety monitoring arrangements for their Reduced Vertical Separation Minima (RVSM) airspace. An annual assessment of Mid-Air Collision risk in such airspace is one of these existing monitoring arrangements. Airspace occurrence reports from applicable States are crucial to this process as they are a key measure of MAC risk in RVSM airspace. An airspace occurrence report that contributes to vertical MAC risk is called a Large Height Deviation, or LHD.

By definition, a LHD is a vertical deviation from an ATC assigned or coordinated altitude that results in an error of 300 ft or more. The deviation may be the result of human error, equipment malfunction or environmental factors. However, LHDs are not just altitude deviations. Essentially, a LHD happens when an aircraft occupies a space unexpected by ATC, leading the trajectory anticipated by ATC to no longer correspond to the actual trajectory. Not knowing that the space is occupied, ATC may clear another aircraft to that location, which increases the risk of a mid-air collision. Therefore, LHDs could be all instances where an aircraft occupies a point in space unknown by ATC as the result of an operational error or condition affecting the flight.

Regional Monitoring Agencies (RMAs), established by each ICAO region's Planning and Implementation Group, use LHDs to calculate airspace collision risk and identify airspace Hot Spots. States involved in the identified Hot Spots are expected to coordinate measures for minimizing the causal factors of the LHDs.

Category E LHDs are defined as coordination errors in the ATC-unit-to-ATC-unit transfer of control responsibility because of human factors issues **(e.g., late, or non-existent coordination, incorrect time estimate/actual, flight level, ATS route etc. not in accordance with agreed parameters).**

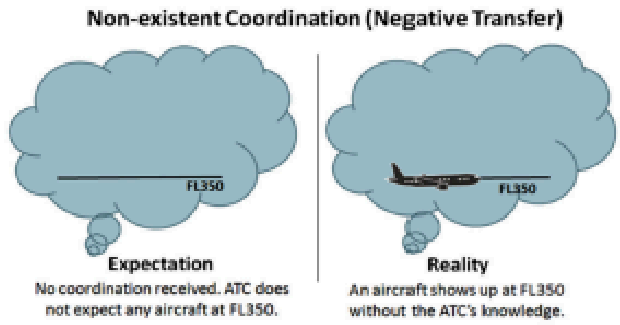


Figure 1: Category E LHD due to non-existent coordination.

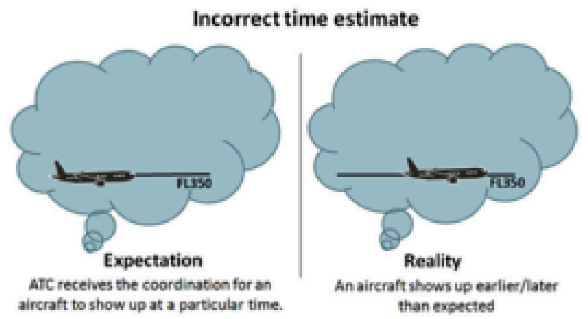


Figure 2: Category E LHD due to an incorrect time estimate versus the actual boundary time.

An LHD occurs when an air traffic controller expects an aircraft to be at one location, but the aircraft is at another location. This significantly increases the risk of mid-air collision.

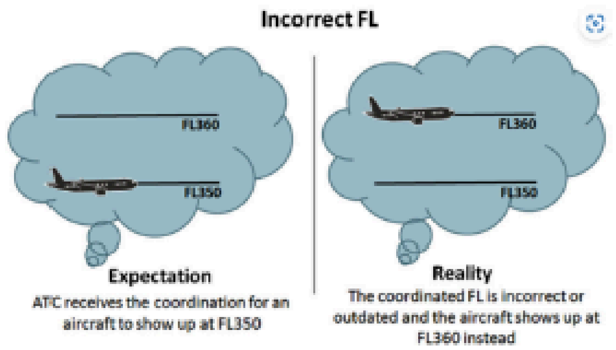


Figure 3: Category E LHD due to incorrect altitude coordination by ATC.

Category E LHDs are a direct result of the way in which an ANSP coordinates an aircraft transfer across airspace boundaries, mainly in oceanic airspace. These coordination errors result in the aircraft being unprotected by ATC in all domains because ATC either does not know an aircraft is in its airspace, or believes the aircraft occupies a point in space and time that it does not occupy.

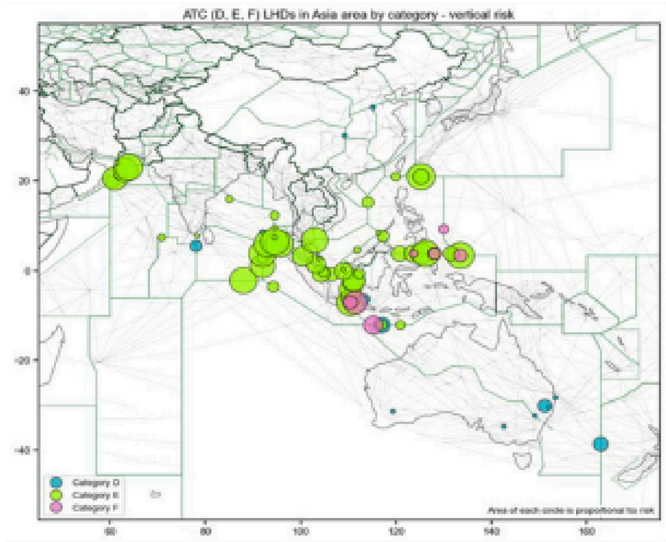


Figure 4: Category E LHDs (green) in Asia Pacific for 2023. The larger the circle, the more LHDs occurred and for a longer duration.

Recommendations: To mitigate the risk of MAC resulting from Category E Large Height Deviations, the RASG-APAC recommends the following:

To Civil Aviation Authorities responsible for State Safety Oversight of Air Navigation Services:

- Conduct a safety oversight inspection, audit or assessment to ensure that the ANSP(s) providing services in your State, in both sovereign and delegated airspaces, have established procedures for safely and effectively transferring aircraft across Flight Information Region airspace boundaries.
- Ensure that these procedures have adequate redundancies and are captured in an inter- or intra- facility agreement document.
- If the ANSP does not have such procedures, direct the development of procedures to ensure a safe and effective way of transferring control responsibility of cross-border flights between ATC Units or service providers.
- If the ANSP does have established procedures, assess the effectiveness of,

and the ANSP's compliance with, these procedures.

- If the oversight activity results in a lack of effectiveness of the aircraft transfer procedures, or ANSP non-compliance with the procedures, mandate the development of a Corrective Action Plan to mitigate this mid-air collision risk.
- Leverage ICAO data provided by the Regional Monitoring Agencies to provide further clarity of this MAC risk.
- Conduct regular meetings with neighboring or regional ANS Oversight Organizations to discuss cross airspace boundary safety issues, systemic issues of non-compliance, lessons learned, and best practices.
- Ensure the ANSP is sharing LHD occurrence data with the relevant RMA.

To Air Navigation Service Providers:

- Conduct an internal safety assurance review to confirm that your organization has established procedures for effectively transferring aircraft across Flight Information Region airspace boundaries. If so, determine if your organization is compliant with those procedures.
- Ensure that these procedures have adequate redundancies and are captured in an inter- or intra- facility agreement document.
- If the safety assurance review reveals a systemic issue of non-compliance with transfer of control responsibility procedures, create a Corrective Action Plan to mitigate this mid-air collision risk.
- Ensure that air traffic controllers are aware of the importance of conducting an accurate and timely transfer of aircraft when transitioning across airspace boundaries, and the elevated risk of mid-air collision if the transfer is not conducted correctly.
- Manage the performance of ATC units or air traffic controllers that are not implementing transfer of control procedures correctly.

Together, State Safety Oversight Authorities and ANSPs can eliminate Category E LHDs in RVSM Airspace.

- Conduct regular meetings with neighboring ANSPs or ATC Units to discuss cross airspace boundary safety issues, lessons learned, and best practices.
- Share LHD occurrence data with the relevant RMA.

Additional Resource(s):

- RASMAG Safety Bulletin, Issue 1: July 2019;
- Monitoring Agency for Asia Region (MAAR), Large Height Deviation (LHD), LHD Analysis and Mitigation;
- Guidance Material for the Continued Safety Monitoring of the Asia-Pacific RVSM Airspace (Version 3.0 August 2024).

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INTERATIVE AIRSPACE

ASB Word Search

Word Search Puzzle

E	E	F	U	K	C	L	I	E	U	E	A	H	E	D
G	F	D	U	T	X	A	L	H	D	E	T	N	C	I
K	I	C	E	A	G	A	F	I	O	A	I	T	K	I
C	E	A	E	I	G	R	R	T	T	K	P	E	C	A
E	N	E	D	R	A	H	K	L	A	R	K	H	T	T
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H	L	A	I	E	A	C	I	F	G	K	C	X	K	E
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I	T	C	L	D	H	E	R	C	L	W	R	P	O	T
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A	F	E	U	K	T	E	G	G	P	N	E	A	K	U
D	E	W	R	A	E	G	G	N	I	D	N	A	L	E
L	T	N	A	I	T	E	E	A	D	C	T	A	N	C

Hangar	Takeoff	Taxiway	Fuselage
Airspeed	Altitude	Cockpit	Flight Deck
ATC	Landing Gear		

Through the AeroLens: Your Safety, Your Spotlight

Calling All Aviation Safety Champions! Submit a photo of your workplace showcasing top safety practices—whether it's proper equipment use, clear signage, or your team in action.

The best shot will be featured in our next issue!

Submit your photos to: socialmedia@caaf.org.fj

FLYING DRONES IN FIJI

- **Mandatory Registration** – All drones must be registered, regardless of their weight.
- **Restricted Areas** – Avoid flying over police stations, military bases, and prison compounds.
- **Permission Required** – Always seek prior approval from hotel or resort management before flying on their property.

Always check with CAAF or local authorities before flying in tourist locations.

FLY SAFE WITH THESE TIPS

1. Check the weather: Wind and rain can damage drones.
2. Inspect your drone: Ensure it's functioning correctly before each flight.
3. Have your authorization, either recreational or commercial, on hand or on your mobile device when actively flying drone.
4. Plan your route: Avoid restricted areas and crowded places.
5. Land immediately if manned aircraft is nearby.

Phone: +679 2224222 | +679 8923155
Emergency: +679 9995207
Email: drones@caaf.org.fj
LinkTree: linktr.ee/caafiji

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Safe Skies, Secure Fiji

WHY ARE DRONE REGULATIONS IMPORTANT?

Regulations ensure the safety of Fiji's airspace and protect the public, wildlife, and property. Whether for fun, filming, or commercial use, you must follow the rules to avoid accidents and legal issues.

WHEN DO YOU NEED A LICENSE?

- **Recreational Use:** Drone Licencing is currently not required for recreational drone operations.
- **Commercial Use:** All commercial drone activities require a Drone Pilot License (DPL) or CAAF Approved Certification.

Always register drones or any commercial drone with CAAF, regardless of weight.

To apply for registration please visit any of our social media platform's pinned posts for detailed instructions.

Our social media platforms can be accessed through linktr.ee/caafiji

RESTRICTED ZONES:

- Avoid Airports, Heliports, National Parks, Conservation Areas, Prison Compounds, Sporting Events, Public Areas/Gatherings and Parliament/ Government House.

Contact CAAF to check for no-fly zones and local restrictions.

DRONE SIZE & FLIGHT ZONES

- Under 2kg: Fly up to 30m away from people, vehicles, and buildings.
- Over 2kg: Must comply with stricter regulations and require a license.

KEY DRONE RULES AND REGULATIONS

- **Drones Above 2kg:** Must be operated under commercial authorization with the appropriate licenses or certificates, unless otherwise approved by the authority.
- **Maximum Altitude:** Drones may operate up to 200 feet (61 meters) above ground level, unless otherwise approved by the authority for commercial operations.
- **No-Fly Zones:** Operations are prohibited within 5km of international airports and within 3km of other airports and helipads.

SCAN ME

We would love your feedback on how we can improve!

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