AVIATION SAFETY BULLETIN

CIVIL AVIATION AUTHORITY OF FIJI

ISO 9001:2015 Certified

An official publication of the Civil Aviation Authority of Fiji

Bird Strikes:
Understanding their Impact on Aircraft Engines

The Beijing Convention:
What You Need to Know

ISSUE 1 2025 , ISSUE 1 2025 ,

Safe Skies, Secure Fiji

Navigating Uncontrolled Aerodromes in Fiji

Bird Strikes: Understanding their Impact on Aircraft Engines

Enhancing Aircraft Safety: New Features in Fiji's A350-900Fleet

Defending our Digital Skies

Cover Page: Sourced from Canva Pro.

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

Most images in this publication are sourced from Canva Pro and other royalty-free libraries under their respective Content License Agreements.

MESSAGE FROM CAAF'S CHIEF EXECUTIVE

Bula vinaka and welcome to the first edition of the Aviation Safety Bulletin for 2025.

With every new year, we recommit ourselves to implementing the goals and workplans we have developed to ensure the continued safety, security and integrity of Fiji's aviation system. These plans are only as effective as the collective effort behind them. Without the buy-in and cooperation of our industry stakeholders, our intentions remain unfulfilled. It is through partnership that we can truly achieve the vision of Safe Skies, Secure Fiji.

This edition of the Bulletin features a wide range of topics, reflecting the dynamic environment in which we operate. From the risks posed by bird strikes and the complexities of uncontrolled aerodromes, to the operational challenges of Fiji's unique weather systems, each article offers insights aimed at improving awareness, preparedness, and resilience in our aviation activities.

We also take a closer look at technological advancements and continuous safety improvements, such as the new features introduced in Fiji Airways' A350-900 fleet. These innovations, combined with enhanced practices in runway safety, cybersecurity, and passenger screening, contribute to a robust aviation safety ecosystem.

The Bulletin also highlights important international developments, such as the Beijing Convention, and what it means for Fiji's aviation professionals. We encourage you to read, reflect, and act on these updates as part of our shared responsibility to uphold global aviation standards.

Please take a moment to complete the survey included in this edition, your feedback helps shape how we communicate and collaborate to improve safety and security outcomes across the board.

Rounding out this issue are valuable insights in the Medical Minute and a special focus on Interactive Airspace, underscoring the need for continuous learning and engagement at all levels of aviation.

Let us move forward with a united purpose in 2025, ensuring that our skies remain safe and our nation secure.

Vinaka vakalevu,

Theresa Levestam

CHIEF EXECUTIVE

Dearest Safety Aviators,

Welcome to the revamped Aviation Safety Bulletin. As the new Editor-In-Chief, I am thrilled to present this fresh version of our bulletin, complementing our brand-new identity greatly. Our goal here at CAAF's External Engagement and Communications Office is to continue to keep you, our readers updated with the latest insights and developments in the world of aviation safety.

I look forward to compiling more publications that will continue to inspire, inform and look to elevate the standard of safety and security within our industry. While also doing justice to the legacy of this publication.

Thank you for being here.

Warm regards,

Carissa McKellar

EXTERNAL ENGAGEMENT AND COMMUNICATIONS OFFICER | EDITOR

Bird Strikes

Understanding their Impact on Aircraft Engines

Photo by SkyBrary

Bird strikes are a significant hazard for aviation safety worldwide, including Fiji. A bird strike occurs when a bird collides with an aircraft. While this definition may seem simple, it can have serious consequences if a bird strikes a critical component of the aircraft. This article explores the frequency of bird strikes in Fiji, their impact on aircraft, particularly engines, and the measures taken to minimize the associated risks.

It's a no brainer that bird strikes would be relatively more common near airports, where aircraft operate at lower altitudes. It is very solemn to have a bird strike occur enroute a flight. In Fiji, the Civil Aviation Authority of Fiji (CAAF) monitors and records bird strike incidents to enhance aviation safety. Fiji's tropical climate and diverse bird population contribute to the risk of bird strike, especially during takeoff and landing rolls.

Pilots are trained to be vigilant during critical phases of flight and to respond appropriately to bird strike occurrences. . .

Impact on Aircraft Engines

When a bird strike occurs, the consequences vary depending on the size of the bird and the speed of the aircraft. The most critical impact is on the aircraft's engines. Here's why:

1. **Bird Ingestion:** When a bird is sucked into a jet engine, it can cause significant damage. The engine's fan blades can be bent or broken, leading to a loss of thrust. In severe cases, the engine could fail completely.
2. **Compressor Damage:** The impact of the bird can damage the engine's compressor, which is responsible for compressing incoming air before it enters the combustion chamber. This can disrupt airflow and reduce engine efficiency.
3. **Combustion Chamber Issues:** If bird remains enter the combustion chamber, they can interfere with the fuel-air mixture, increasing the risk of an engine stall or fire.
4. **Turbine Damage:** The turbine, which extracts energy from the high-temperature gases produced in the combustion chamber, can also be damaged. This can lead to a loss of power and, in extreme cases, cause the engine to shut down.

To reduce the risk of bird strikes in Fiji, several measures are in place:

1. **Wildlife Management:** Airports in Fiji have wildlife management strategies to keep birds away from runways. This includes habitat modification, use of bird deterrents, and regular monitoring.
2. **Pilot Training:** Pilots are trained to be vigilant during critical phases of flight and to respond appropriately to bird strike occurrences.
3. **Wildlife Committees:** Industry and regulatory representatives meet regularly to discuss potential wildlife issues, review incident data, and ensure alignment with the Accepted Level of Safety.

Understanding the impacts of bird strikes and implementing preventive measures are crucial steps in ensuring the safety of air travel. By addressing these risks proactively, the aviation industry in Fiji can continue to enhance safety and reduce the likelihood of bird strike incidents.

Sources: This article is inspired by Bird Strike, SKYbrary

(U.S. Military, 2003)

Civil Aviation Authority of Fiji Poster 2024

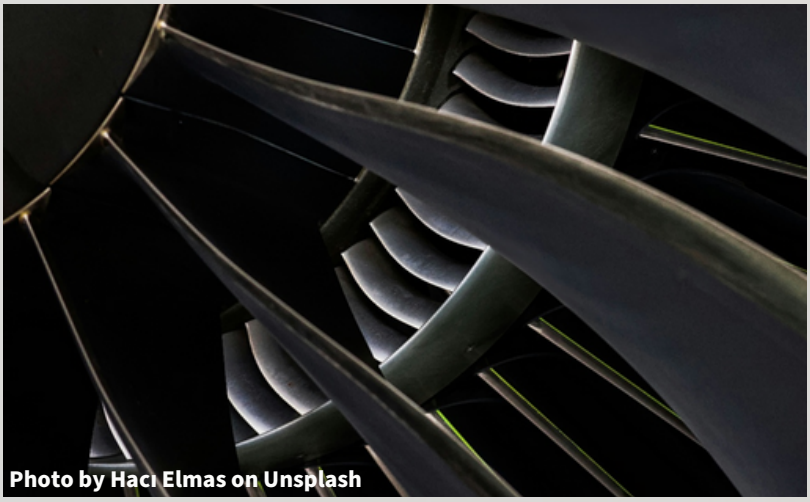


Photo by Haci Elmas on Unsplash

Navigating Uncontrolled Aerodromes in Fiji

Uncontrolled aerodromes play a crucial role in Fiji's aviation landscape, providing essential access to remote regions and communities that are not directly served by larger, controlled airports. These aerodromes, which lack active control towers, pose specific challenges for pilots, who must exercise heightened situational awareness and follow strict procedural guidelines to ensure safe operations. An uncontrolled aerodrome is defined as one that does not have a control tower or where the tower is not in operation. In these environments, pilots must rely heavily on self-discipline and clear communication. Strict adherence to established protocols is key to ensuring safety, as the absence of air traffic control means that pilots are responsible for their own navigation and for avoiding conflicts with other aircraft. It requires a proactive approach to flight operations, where the pilot's situational awareness is of utmost importance.

Fiji's unique geographical features and tropical climate introduce specific challenges for operations at uncontrolled aerodromes. The islands' mountainous terrain, combined with frequent and sudden tropical downpours, strong crosswinds, and reduced visibility, make flying at these aerodromes demanding. Pilots must be prepared for rapidly changing weather conditions and complex terrain, both of which require precise manoeuvring during approach and departure phases. These factors make it essential for pilots to possess a strong understanding of the operational procedures for uncontrolled aerodromes and to approach each flight with extra caution, especially when weather conditions may shift unexpectedly.

In Fiji, Visual Flight Rules (VFR) operations at uncontrolled aerodromes are conducted under Visual Meteorological Conditions (VMC), meaning pilots must be able to see and avoid other aircraft during their flight. When arriving at an uncontrolled aerodrome, pilots are required to announce their intentions on the designated radio frequency before entering the traffic circuit. The circuit is typically flown at an altitude of 1,000 feet above aerodrome elevation (AAE), and left-hand turns are standard unless otherwise specified.

Coordination becomes especially important when a pilot needs to use a runway different from the active one to avoid conflicts with other aircraft. When joining the circuit, pilots are encouraged to approach from the upwind side whenever possible. If it is necessary to cross the aerodrome, the crossing should be done at least 500 feet above the circuit altitude to prevent interference with other traffic. Descents should be made on the upwind side or well clear of the circuit to maintain separation from other aircraft. For departures, VFR aircraft should climb straight ahead on the runway heading until reaching the circuit altitude before making any turns. Turns back toward the circuit should not occur until the aircraft is at least 500 feet above the circuit altitude.

For pilots operating under Instrument Flight Rules (IFR), there are additional considerations when flying at uncontrolled aerodromes. IFR pilots are generally responsible for avoiding conflicts with all traffic operating at uncontrolled aerodromes. This requires clear communication with other pilots, particularly when the active runway differs from the one needed for an IFR approach. IFR pilots departing from uncontrolled aerodromes must obtain and Air Traffic Control clearance before entering controlled airspace. They must also announce their departure intentions on the appropriate frequency and visually confirm that no conflicts exist with other aircraft or ground vehicles before takeoff. Communication and attention to detail are essential to maintaining safety when operating under IFR at uncontrolled aerodromes.

The Civil Aviation Authority of Fiji (CAAF) plays an important role in ensuring the safe operation of uncontrolled aerodromes. Through surveillance, regular training programs, workshops, and coordination with regional aviation authorities, CAAF helps maintain high safety standards and provides pilots with the necessary knowledge and skills to operate safely at these aerodromes. By following established procedures, prioritizing clear communication, and maintaining situational awareness, pilots can mitigate the risks associated with operating at uncontrolled aerodromes. The emphasis on training and adherence to global best practices ensures that the aviation community in Fiji continues to operate with the highest standards of safety.

Fiji hosts several uncontrolled aerodromes, each with its own set of operational challenges. These include Labasa Airport, Savusavu Airport, Taveuni Airport (Matei Airport), Koro Island Airstrip, Gau Island Airstrip, Lakeba Island Airstrip, Kadavu Airport (Vunisea Airport), Rotuma Airport, Moala Airport, Cicia Airport, Vanuabalavu Airport, Bureta Airstrip (Ovalau Island) and Ono-i-Lau airstrip Pilots operating at these aerodromes must exercise caution in adhering to the procedures designed for uncontrolled environments. By doing so, they ensure both their own safety and that of others in the vicinity. With careful planning, communication, and situational awareness, pilots can successfully navigate the unique challenges posed by these aerodromes, contributing to the safety and resilience of Fiji's aviation infrastructure.

Sources: This article is inspired by Uncontrolled Aerodromes- Procedures, SKYbrary


Gau Aerodrome


Koro Aerodrome


Moala Aerodrome

Mastering the Skies

Tackling Fiji's Unique Weather Challenges in Aviation

Fiji's tropical climate and unique geographical landscape present significant weather-related challenges for pilots. These conditions require specialized training, advanced technology, and local expertise to ensure safe and efficient aviation operations.

Pilots flying in Fiji encounter a range of weather challenges that test their skills and adaptability. Tropical storms and cyclones, particularly during the cyclone season from November to April, bring powerful winds, torrential rain, and rapidly shifting weather patterns. These conditions can disrupt flight operations, making takeoffs and landings exceptionally complex. In addition to cyclones, sudden gusts of wind and strong crosswinds are common near coastal areas and mountainous regions, requiring pilots to make quick adjustments to maintain aircraft stability. Heavy downpours, often accompanied by poor visibility, further add to the difficulty, demanding precise navigational skills during critical phases of flight.

To prepare pilots for these conditions, Airline Operators and Flight Training Organizations have developed comprehensive training programs that focus on both theoretical and practical aspects of weather-related challenges. The use of High-fidelity flight simulators plays a significant role in this training, replicating adverse weather scenarios like tropical storms and turbulence. These simulators provide pilots with a safe environment to practice emergency procedures, such as go-arounds in high winds, diversion planning during storms, and low-visibility landings. Such training ensures that pilots are well-prepared to respond effectively when faced with real-life situations.

Emergency preparedness is another cornerstone of pilot training in Fiji. Pilots undergo rigorous drills to handle situations like engine failures, severe turbulence, and sudden weather changes. Special emphasis is placed on navigating cyclone-related scenarios, where pilots must plan alternate routes, make swift decisions, and execute emergency landings when necessary.

In addition to these practical skills, pilots must earn certifications such as the Instrument Rating, which equips them to operate under Instrument Flight Rules (IFR). This certification is particularly critical for navigating through dense rain and low-visibility conditions that are commonplace during Fiji's cyclone season.

Local expertise plays an invaluable role in shaping the next generation of pilots in Fiji. Seasoned instructors and experienced pilots, with their deep understanding of the region's weather patterns and terrain, provide trainees with insights that go beyond standard training manuals. These mentors share real-world knowledge, from navigating strong crosswinds near coastal airfields to anticipating sudden shifts in weather during mountain approaches. Their guidance bridges the gap between theoretical training and the practical realities of flying in Fiji.

Beyond training, CAAF enforces strict requirements for pilots operating in Fiji's challenging conditions.

In addition to standard pilot licenses, recurrent training programs focus on tropical weather navigation, emergency procedures, and managing the effects of density altitude—a phenomenon influenced by the region's high temperatures and humidity levels. These measures ensure that pilots remain proficient and adaptable to the demands of Fiji's operational environment

Mitigation strategies are an essential part of flight planning in Fiji. Comprehensive pre-flight briefings, including detailed weather reports, allow pilots to prepare for alternate routes and identify suitable landing sites in case of emergencies. Adjustments to aircraft performance, such as optimizing takeoff weight and fuel planning, are routinely practiced to account for high-density altitude effects. Coordination between pilots, air traffic controllers, and meteorological services further enhances situational awareness, enabling seamless decision-making during adverse weather.

Fiji's unique weather conditions demand a proactive approach to pilot training and aviation safety. Through advanced simulators, local expertise, and targeted certifications, CAAF ensures pilots are well-equipped to handle the challenges posed by tropical storms, high winds, and reduced visibility. These measures not only uphold safety standards but also foster resilience and adaptability within Fiji's aviation sector.

As pilots master the art of navigating Fiji's complex skies, they contribute to maintaining a robust and safe aviation environment. By combining innovative technology, rigorous training, and collaborative efforts, Fiji continues to set a benchmark for aviation excellence in the Pacific region.

Sources: Article is inspired by Tropical wet climate SkyBrary & Cyclone Season Safety Reminder Aviation Safety Bulletin Issue 4, 2021

Enhancing Aircraft Safety

New Features in Fiji's A350-900 Fleet

Figure 1 - RWY TOO SHORT message on ROW, Source: SKYBrary

In Fiji, leading international airline operators have introduced aircraft that are manufactured and equipped with modern onboard systems to enhance safety and mitigate risks associated with runway incursions (RI) and runway excursions (RE). The continuous demand from airlines across the globe for these advanced features allows for ongoing upgrades, ensuring better solutions and improved safety.

Runway Overrun Prevention Systems (ROW/ROP)

The Airbus A350-900 fleet, one of the latest additions to the Airbus aircraft lineup, is equipped with the Runway End Overrun Warning (ROW) and the Runway Overrun Protection (ROP) systems, which are industry firsts. ROW assists pilots in calculating the minimum stopping distance required, providing real-time alerts if an overrun seems possible. This feature significantly reduces incidents of runway excursions by guiding the flight deck crew in making go-around decisions or correcting flight parameters. The ROP function slows the arriving aircraft down to taxi speed with auto-braking applied with no intervention from the pilots. Except for when there is a need for Reverse Thrust. The aircraft is pre-programmed to exit via a selected taxiway that is communicated by tower and pilots only take control of steering the aircraft when it arrives at that exit point.

Onboard Airport Navigation System (Airport Nav)

This system, also present on the Airbus A350 aircraft fleet, is essentially a moving airport navigation map with aircraft location that improves situational awareness, helps prevent navigation errors at airports, and reduces runway incursion risk. The Airport Nav not only generates airport data but also displays the traffic of other aircraft on the airport

Enhancing Aircraft Safety, Continued:
New Features in Fiji's A350-900 Fleet

Controller/Pilot Data Link Communication (CPDLC)

CPDLC Ground Clearance combines with the Airport Nav to assist in guiding the aircraft during taxiing. For example, if an aircraft receives clearance to taxi via taxiway Golf, the route for the aircraft to take will illuminate blue on the screen before the pilot acknowledges. Once the pilot acknowledges the tower's instructions, the route will then illuminate green.

Runway Proximity Advisory (RPA)

This feature also improves runway situational awareness and reduces the risk of runway incursions and ground collisions. If an aircraft is holding at a taxiway and another aircraft is approaching the runway, the RPA in the holding aircraft will cause the runway name to pulse and flash on the airport map. This visual cue is triggered 7 seconds before the aircraft enters the runway area

Fiji is advancing by already having aircraft with these features in place, personnel trained to use these systems, and regulatory inspectors who are up to date with standards on how they should operate. This proactive approach ensures that Fiji remains at the forefront of aviation safety.

Sources: Runway Overrun Prevention System (ROPS) - SKYbrary Aviation Safety Information Uplifted and rewritten from A350 Manual Excepts

Fiji Confidential Aviation Incident Report (FCAIR)

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

FIJI CONFIDENTIAL AVIATION INCIDENT REPORTING FORMS AVAILABLE ON WEBSITE www.caaf.org.fj OR FRONT DESK, CAAF HQ

Take Our Survey

CAA Fiji 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:

fcair@caaf.org.fj; or
info@caaf.org.fj

Mitigating Runway Incursions and Excursions

Enhancing Safety in Aviation

Runway safety remains a cornerstone of global aviation safety efforts, with runway incursions and excursions recognized by the International Civil Aviation Organization (ICAO) as high-risk categories. These incidents have the potential to result in catastrophic consequences, and their prevention is pivotal to maintaining the safety and efficiency of air operations. This article explores the risks associated with runway incursions and excursions, examines recent examples, and highlights strategies for mitigating these risks.

Understanding Runway Incursions and Excursions

Runway incursions occur when an unauthorized aircraft, vehicle, or person is present on a runway designated for landing or takeoff. These incidents often result from miscommunication, pilot error, air traffic control (ATC) misunderstandings, or inadequate airport infrastructure (ICAO, 2020).

Runway excursions involve an aircraft veering off or overrunning the runway during takeoff or landing. These events are frequently caused by adverse weather conditions, mechanical failures, or misjudged landings (FAA, 2021).

Recent Trends and Examples

Globally, runway incursions and excursions continue to pose challenges:

- Runway Incursion: A recent event at a major international airport involved an aircraft crossing an active runway due to a misunderstanding between the pilot and ATC. Timely intervention by ground controllers prevented a collision (Skybrary, 2022).

- Runway Excursion: A regional jet experienced an overrun during landing in adverse weather conditions. Investigations revealed that the aircraft approached the runway at a higher-than-recommended speed on a wet surface (IATA, 2021).

- Regional Incident: At a Pacific island airport, a runway incursion occurred when a ground vehicle entered the runway without clearance. A scheduled aircraft was forced to abort its takeoff (ICAO, 2023).

These examples underscore the importance of robust safety measures and continual vigilance in runway operations.

Risks in Multi-Operational Environments

- Airports hosting diverse operations, such as flying schools, international flights, and general aviation, face unique challenges in maintaining runway safety. Specific risks include:

- High Traffic Volume: Simultaneous operations by various types of aircraft increase the potential for runway incursions and miscommunication.

- Pilot Training Activities: Student pilots under training may inadvertently breach runway protocols, posing risks to ongoing operations.

- Mixed Aircraft Types: The presence of light aircraft alongside larger commercial jets necessitates heightened coordination (EASA, 2022).

Safety Measures for Multi-Operational Environments

To mitigate these risks, the following measures are recommended:

1.**Dedicated Runway Allocation:**
Implement separate operating schedules or dedicated runways/taxiways for flying school activities and general aviation.

Photo by: Taylor Keeran Unsplash

2.**Enhanced Communication Protocols:**
Establish clear coordination mechanisms between flying schools, general aviation operators, and ATC. Conduct regular briefings to address specific operational challenges.

3.**Improved Surveillance and Monitoring:**
Install advanced surface movement radar to track all aircraft and ground vehicles. Utilize runway status lights to alert pilots and ground personnel to active runways (ICAO, 2020).

4.**Focused Training and Awareness:**
Provide specialized training for ATC personnel to manage mixed operations effectively. Conduct safety workshops for flying school students and general aviation pilots on runway safety practices.

5.**Regular Safety Audits**
Perform periodic reviews of runway safety protocols and incident response procedures.
Engage stakeholders in continuous improvement initiatives.

6.**Weather Readiness**
Ensure that runway drainage systems and friction testing are optimized for wet conditions.
Equip airports with advanced meteorological tools for timely weather updates (FAA, 2021).

Mitigating Runway Incursions and Excursions Continued:

Enhancing Safety in Aviation

Contributing Factors

Several factors contribute to runway safety incidents:

- Human Factors: Miscommunication, fatigue, and situational awareness lapses among pilots, ATC, and ground personnel.
- Environmental Conditions: Wet, icy, or contaminated runways increase the likelihood of excursions.
- Technological Limitations: Insufficient ground radar coverage or outdated airport infrastructure.
- Procedural Gaps: Ineffective coordination between stakeholders or non-adherence to standard operating procedures (Skybrary, 2022).

ICAO's Approach to Runway Safety

ICAO's Global Aviation Safety Plan (GASP) emphasizes runway safety through collaborative efforts, technological advancements, and procedural improvements. States and organizations are encouraged to implement Runway Safety Teams (RSTs), conduct regular safety assessments, and adopt Safety Management Systems (SMS) (ICAO, 2020).

Mitigation Strategies

To address runway incursions and excursions, aviation stakeholders must:

• **Enhance Communication:**
Promote clear and concise phraseology between pilots and ATC.
Provide regular training for ATC and flight crews to minimize miscommunication.

• **Upgrade Infrastructure:**
Install advanced surface movement radar and runway status lights.
Maintain high-visibility markings and signage (EASA, 2022).

• **Adopt Technology:**
Utilize electronic flight bags (EFBs) for real-time airport and runway information.
Implement predictive analytics to assess excursion risks based on weather and aircraft performance (IATA, 2021).

• **Focus on Training and Awareness:**
Conduct regular runway safety workshops and simulations.
Disseminate lessons learned from incident investigations (FAA, 2021).

• **Improve Weather Preparedness:**
Enhance runway drainage systems to mitigate water accumulation.
Equip airports with accurate weather forecasting tools (Skybrary, 2022).

• **Strengthen Regulatory Oversight:**
Enforce compliance with ICAO's Annex 14 (Aerodromes) and Annex 19 (Safety Management).
Conduct periodic audits and inspections of airport operations (ICAO, 2020).

Runway incursions and excursions remain a significant safety concern for the aviation industry. By adopting a proactive and collaborative approach, stakeholders can minimize risks and enhance the safety of runway operations. The integration of advanced technology, rigorous training, and adherence to ICAO standards will ensure that runway safety remains a top priority, fostering a safer global aviation system.

aEASA (2022). European Aviation Safety Agency Annual Safety Review 2022. EASA Publications., FAA (2021). Runway Safety Report. Federal Aviation Administration., ICAO (2020). Global Aviation, Safety Plan 2020-2022. International Civil Aviation Organization., ICAO (2023). Runway Safety, Incidents Report. International Civil Aviation Organization., IATA (2021). Runway Safety Guidelines., International Air Transport Association., Skybrary (2022). Runway Safety: Incursions and Excursions., Skybrary Articles.*evention System (ROPS) - SKYbrary Aviation Safety, Information Uplifted and rewritten from A350 Manual Excepts*

Defending Our Digital Skies

As aviation continues to embrace advanced digital technologies for enhanced efficiency and safety, it simultaneously faces evolving cyber threats. Ensuring robust cybersecurity measures is essential not only for protecting critical systems but also for maintaining the trust of passengers and partners worldwide. This article explores the primary cyber risks in the aviation sector and highlights best practices, citing reputable sources from industry and regulatory bodies.

The Digital Transformation of Aviation

Increased connectivity has transformed every aspect of modern aviation. According to the International Civil Aviation Organization (ICAO), "the dynamic nature of cyber threats demands a robust and flexible approach to safeguarding civil aviation." Today, aircraft rely on avionics systems that gather and process real-time data to manage flight operations, while airports and airlines leverage interconnected digital platforms to support passenger services, security controls, and air traffic management (ATM).

1. **Aircraft Systems**
- Flight Management Systems (FMS): Sophisticated onboard computers critical for navigation and flight control.
- Aircraft Communications Addressing and Reporting System (ACARS): Provides vital communication between pilots and ground stations, potentially susceptible to unauthorized access if left unprotected.

2. **Air Traffic Management (ATM) Networks**
- Centralized structures governing the safe flow of air traffic. Unauthorized intrusion or disruption can impact regional or national operations.

3. **Airport Infrastructure**
- Passenger check-in kiosks, baggage handling systems, and security checkpoints are all reliant on digital networks. Disruption in any of these areas can lead to service outages or compromised passenger information.

Emerging Cyber Threats

Cybercriminals may target aviation for ransom payments, data theft, or operational disruption, while state-sponsored entities could seek to disable critical infrastructure for strategic reasons. The European Union Aviation Safety Agency (EASA) emphasizes that insider threats–whether through negligence or malicious intent–also pose a significant risk. Proper vetting, continuous training, and clear internal policies are vital to mitigate this.

Regulatory Guidance and Collaboration

Recognizing the rising cyber risk, ICAO has embedded cybersecurity considerations within various annexes to the Chicago Convention and published comprehensive guidance, including the Manual on Civil Aviation Cybersecurity (Doc 9985). Member States, including Fiji, are encouraged to develop national frameworks that align with ICAO's Aviation Cybersecurity Strategy. This holistic approach ensures that operators, service providers, and regulators work in concert to protect the entire aviation ecosystem.

Key Industry References

- ICAO's Manual on Civil Aviation Cybersecurity (Doc 9985)
- ICAO Assembly Resolutions A40-10 and A39-19
- EASA Cybersecurity Roadmap
- IATA Guidance on Cyber Safety

Such documents underscore the importance of information sharing through dedicated platforms like the Aviation Information Sharing and Analysis Center (A-ISAC), where real-time threat intelligence and mitigation strategies can be exchanged among industry stakeholders

Best Practices for Aviation Cyber Resilience

1.**Comprehensive Risk Assessments**- Regular vulnerability assessments and penetration testing help identify existing gaps in security. EASA notes that these should encompass both flight operations and ground-based systems to ensure a thorough cyber risk profile.

2. **Robust Network Segmentation**- Critical systems–such as flight controls and passenger data–must be isolated from less secure networks. In line with ICAO Doc 9985, "defense-in-depth" strategies that incorporate multiple layers of security reduce the risk of lateral movement by attackers.

3. **Continuous Monitoring and Incident Response**- Real-time monitoring tools can detect anomalous activity before it escalates. Well-documented incident response plans ensure quick containment and minimize operational disruption, a principle widely adopted in IATA's Cyber Safety guidelines.

4. **Regular Software Updates and Patches**- Legacy systems, common in older aircraft or airport infrastructure, can become easy targets for malicious actors if not regularly patched. Adhering to manufacturer directives and regulatory advisories ensure known vulnerabilities are addressed promptly.

5.**Training and Culture of Awareness**- Human error remains one of the most significant points of vulnerability. Frequent training programs, phishing simulations, and mandatory cybersecurity briefings help foster a vigilant workforce. The EASA Cybersecurity Roadmap highlights that "people, processes, and technology must align to create a robust security culture."

6. **Collaboration and Information Sharing**- Cyber threats often transcend national boundaries. Platforms like A-ISAC, coordinated by various regulatory bodies, enable real-time information exchanges on emerging threats and best practices. By adopting a unified approach, the aviation industry can better anticipate and mitigate cyber risks.

From aircraft avionics to passenger services, the aviation industry's increasing reliance on digital technologies necessitates vigilant and proactive cybersecurity strategies. Supported by ICAO guidelines and best practices from leading aviation authorities, the Civil Aviation Authority of Fiji's commitment to cybersecurity ensures that our skies remain safe and our passengers continue to fly with confidence.

By integrating multi-layered defenses, continuous training, and global collaboration, Fiji's aviation sector can stay one step ahead of cyber threats. In doing so, we uphold not just operational excellence but also the trust that passengers place in us every day–ensuring our digital skies remain secure well into the future.

Sources: ICAO. Manual on Civil Aviation Cybersecurity (Doc 9985). Montreal: International Civil Aviation Organization, 2019, EASA. Cybersecurity in Aviation: A European Perspective. Cologne: European Union Aviation Safety Agency, 2020., IATA. Guidance on Cyber Safety. Montreal and Geneva: International Air Transport Association, 2021.

The Beijing Convention

What you need to know

The Convention on the Suppression of Unlawful Acts Relating to International Civil Aviation, also known as the Beijing Convention, was signed in Beijing on the 10th of September 2010 to criminalise a number of acts constituting new and merging threats against civil aviation.

The Beijing Convention criminalises the act of using civil aircraft for the purpose of causing death, serious bodily injury or serious damage. These acts include:

1. Using civil aircraft to release or discharge any biological, chemical or nuclear (BCN) weapon or similar substances to cause death, serious bodily injury or serious damage;
2. Using any BCN weapon or similar substances on board or against civil aircraft
3. Cyber-attacks on aviation navigation systems; and
4. Unlawful transport of biological, chemical or nuclear weapons and related material.

The Beijing Convention also criminalises the:

1. Directors and organisers of an offence;
2. People who knowingly assist an offender to evade investigation, prosecution or punishment; and
3. Any person making a threat to commit an offence.

The ICAO urges countries to ratify the Beijing Convention as the Convention is the result of collective efforts of the international community to modernise the legal framework for aviation security. By criminalising several acts constituting new and emerging threats against civil aviation, including certain preparatory acts for the offences, it will strengthen the capacity of States to prevent the commission of these offences, and to prosecute and punish those who commit such offences. The Convention will also contribute to the implementation of the United Nations Global Counter-Terrorism Strategy adopted on 8 September 2006 by enhancing the global treaty regime on counter-terrorism.

Fiji is in the process of ratifying the Beijing Convention to strengthen the country's aviation security laws specifically supporting the enhancement on the offence of aircraft sabotage as per section 5 of the Civil Aviation (Security) Act 1994. As of August 2024, 86 countries have ratified the Beijing Convention.

Sources: Article is inspired by the Beijing Convention ICAO administration package.

BEYOND THE PASSENGERS

The Importance of Screening Person Other than Passenger

Aviation security and facilitation are critical aspects of global air travel, ensuring the protection and safety of passengers, crew, ground personnel, the general public, aircraft and facilities. While passenger screening is a well-known component, the screening of non-passengers, such as airport staff, maintenance workers, and other personnel plays an equally important role.

In Fiji, non-passengers have a separate checkpoint at the airport for screening. These individuals must undergo security screening because they have direct access to security restricted areas, making them potential targets for insider threats. Airport personnel could also introduce unauthorized items into security restricted areas, leading to non-compliance with international standards.

> **"In Fiji, non-passengers have a separate checkpoint at the airport for screening. These individuals must undergo security screening because they have direct access to security restricted areas..."**

To mitigate these risks, security screening is mandatory for all persons, regardless of their position or the number of times they enter and exit security restricted areas. The International Civil Aviation Organization (ICAO) requires member states like Fiji to implement security measures for all airport personnel to maintain the integrity of the sterile area.

Challenges in Implementing Aviation Security Measures

Like many other areas of aviation security, implementing robust non-passenger screening in Fiji comes with challenges:

- Limited Resources – Lack of resources and high turnover rates are significant challenges faced in implementing aviation security screening. As a developing nation, Fiji faces limitations in acquiring advanced security screening equipment due to the substantial financial investment required.

This restricts the implementation of cutting-edge technologies that enhance threat detection and operational efficiency. Furthermore, the aviation security sector experiences high employee turnover, as personnel seek better career prospects elsewhere. This continual workforce depletion results in a loss of institutional knowledge and expertise, creating gaps in AVSEC best practices.

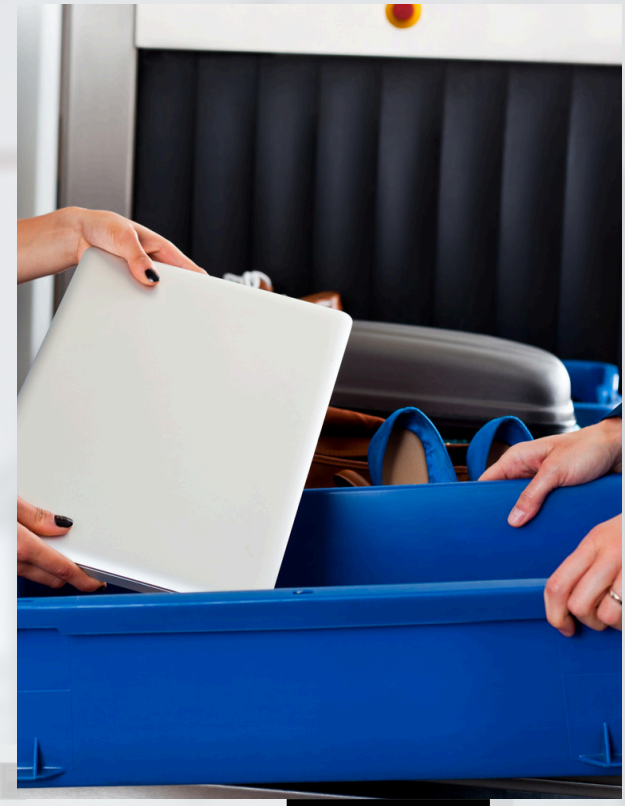
- Balancing Community Trust and Security Compliance in Aviation Security – Fiji's strong sense of community and trust fosters close relationships among colleagues, which, while beneficial for teamwork, can sometimes pose challenges in the consistent and effective implementation of security standards. The familiarity between personnel may lead to complacency, where established security protocols are unintentionally relaxed or overlooked

- Prioritization of Facilitation Over Security – As a country heavily reliant on tourism, Fiji's airport operations often prioritize passenger convenience and seamless facilitation to enhance the travel experience. However, this focus on efficiency can sometimes lead to a reduced emphasis on established aviation security measures.

Enhancements in Fiji's Non-Passenger Screening

The Aviation Security and Facilitation Department, under the Civil Aviation Authority of Fiji (CAAF) is responsible for monitoring the implementation of security standards. As part of its commitment to enhancing aviation security, Fiji requires all airport personnel to undergo an initial background check, followed by a mandatory review every three years.

There are also ongoing discussions to review legal penalties for security violations, ensuring stricter enforcement of aviation security regulations.
By continually improving screening procedures and addressing key challenges, Fiji aims to strengthen its aviation security framework while balancing the need for efficiency in air travel.



Sources: Article is inspired and makes reference to ICAO Annex 17 (4.2.5). Aviation Security and Facilitation- Passengers and Person.

MEDICAL MINUTE

Case Study:

Male Patient with High Cardiovascular Risk for Heart Attack and Stroke

Many of our aviators in Fiji are now struggling with the scourge of Non-Communicable Diseases (NCDs), particularly cardiovascular diseases. A few of our aviators have died from heart attacks in recent years, fortunately while on the ground, while others were fortunate to be at an overseas port when it happened, allowing them to receive swift and effective tertiary care that exists in overseas hospitals.

This is no doubt a huge problem among the small pool of local aviators we have in Fiji, and it is incumbent upon the three major institutions in our aviation industry, namely, the aviators themselves, the airlines and companies that employ them, and DAMEs to raise the level of alarm and institute remedial measures to curb this problem. This is a clear and present danger to aviation safety.

There is a case of a local patient whose current journey through the medical system is in regard to his burden of cardiovascular disease. This serves to exemplify the remedial actions needed and remind aviators who may be in similar situations of the correct mental stance to adopt and the path to take to lessen or reduce the risk of suffering a heart attack (coronary artery disease/ischemic heart disease).

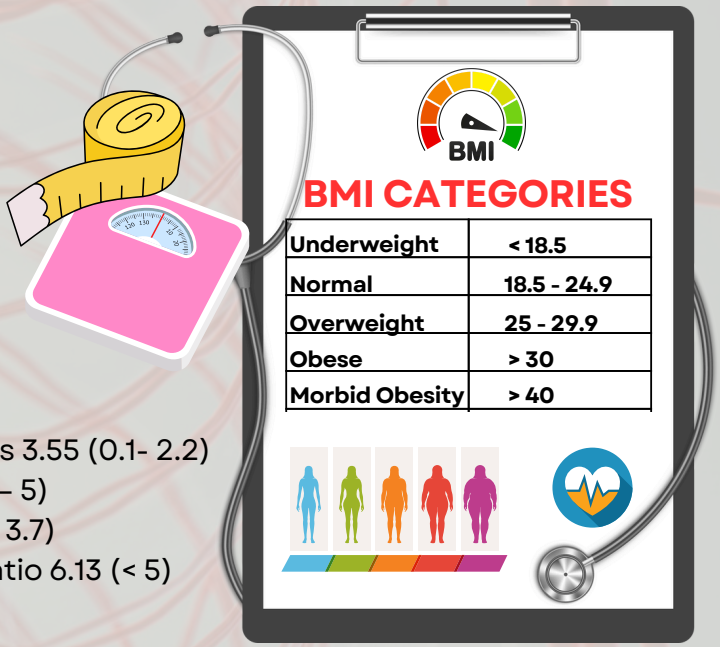
He is currently under the care of cardiologist Dr. Omar at the Heart International Hospital in Namaka, Nadi. After a routine ECG showed abnormalities, he had a CT angiogram initially, followed by an invasive angiogram months later.

OBESITY – THE CANARY IN THE COAL MINE

Carrying excessive body weight could be considered the root cause from which all NCDs emanate. There is an obesity epidemic worldwide, driven by a diet rich in sugar and refined carbohydrates, a sedentary lifestyle, and lack of exercise. For every aviator with a high BMI, remember–this is the canary in the coal mine, an early warning of danger. Obesity is linked to diabetes mellitus, hypertension, hyperlipidemia, heart attack, stroke, fatty liver, and cancer–pretty much all the NCDs.

PATIENT DETAILS.

49 years old Male Bus driver with Hypertension, Hyperlipidemia and Gout.
Smokes 5 rolls daily over 20 years and drinks occasional alcohol and kava. He has an unrestricted diet of various meats and vegetables.



BMI (kg/m^2)33 - Obese Category	Triglycerides 3.55 (0.1- 2.2)
BP 160/90 mm Hg. (Normal < 120/80)	HDL 0.98 (1 – 5)
Serum Glucose 4.4 mmol (Normal)	LDL 4.32 (1 – 3.7)
Total Cholesterol 6.01 (2 – 5.5)	Chol/HDL ratio 6.13 (< 5)

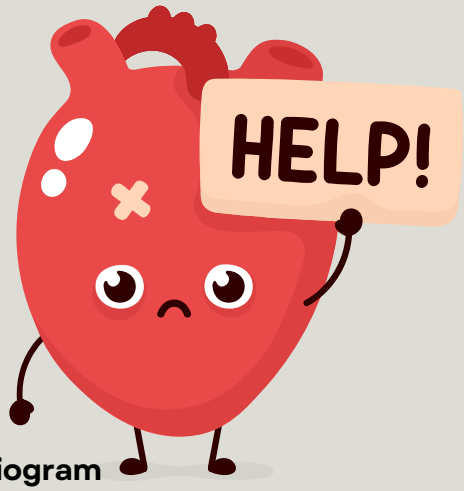
CT CORONARY ANGIOGRAM FINDINGS
HEART INTERNATIONAL, NAMAKA

Reason for Angiogram: ECG revealed LBB (Left Bundle Branch Block) and was conducted for cardiac screening.
Coronary Artery Calcium Score (CAC): 765 Agatston Units – Marked coronary plaque burden.
Coronary Angiography – Right Dominant Circulation:


Image by Tumisu from Pixabay

1. Left Main Artery – Mixed calcified plaque.
2. Left Anterior Descending (LAD) Artery – Proximal LAD 40-50% stenosis. Mid LAD 30-40% stenosis. Distal LAD normal.
3. Ramus Intermedius – Mild plaque.
4. Circumflex Artery – 30-35% stenosis in the mid-section.
5. Obtuse Marginal Artery – Normal.
6. Right Coronary Artery – Proximal portion 30-40% stenosis.

- Posterior Left Ventricular Artery – Normal.
- Posterior Descending Artery – Normal.



CONCLUSION OF CT ANGIOGRAM
Marked coronary plaque burden.

CARDIOLOGIST'S ALGORITHM OF ACTIONS

A) Exercise Stress Test (EST), Echocardiogram (ECHO), and CT Angiogram

1. If the Exercise Stress Test (EST), also known as the Treadmill Test, is POSITIVE or Borderline Positive, and even if the patient is asymptomatic (no chest pain), a CT Angiogram and Echocardiogram (ECHO) are required.
2. A) patient with multiple risk factors (obesity, diabetes, hypertension, hyperlipidemia, smoking) should undergo both EST and ECHO. Even if these tests are NORMAL, a CT Angiogram is still required.

B) After a CT Angiogram or Invasive Angiogram is done:

1. If there is a 30-60% blockage in the two main coronary arteries (Right and Left Coronary Arteries) and the distal flow is good, no stent is required. Instead, medical treatment includes statins, aspirin, clopidogrel, +/- ezetimibe, or bezalip.
2. If there is ≥ 70% blockage in the coronary arteries, a stent or coronary artery bypass graft (CABG) is required.

Case Study Continued:

Male Patient with High Cardiovascular Risk for Heart Attack and Stroke

ACCURACY OF CT ANGIOGRAM VS INVASIVE ANGIOGRAM

- CT Angiogram Accuracy: 98%
- Invasive Angiogram Accuracy: 100%
- No significant difference.

RISK OF STROKE OR HEART ATTACK DURING INVASIVE ANGIOGRAM

- Minimal to none.
- A cardiologist may anticipate a distal infarct in a coronary artery with near 100% blockage and inject a thrombolytic drug before the lead wire penetrates past the blockage.
- Any ischemia during the catheterization procedure is detected in real-time via ECG monitoring and can be treated immediately with thrombolytics.

WHEN TO OPT FOR AN INVASIVE ANGIOGRAM INSTEAD OF A CT ANGIOGRAM

- If ECG, EST, and ECHO are all positive and a stent is likely required, an invasive angiogram is preferred to avoid performing two separate procedures.

THE IMPORTANCE OF MEDICATIONS AS SECONDARY PREVENTION

Many patients with positive angiogram results become careless with their prescribed medications. However, medications, combined with lifestyle and habit changes (weight loss, exercise, quitting smoking, etc.), are critical in stabilizing plaque deposits and preventing further artery blockage.

Patients must take their medications diligently.

Commonly Prescribed Medications:

1. Statins – Rosuvastatin, Atorvastatin, Pitavastatin (high-intensity statins effective in lowering lipids).
- Simvastatin should no longer be used as it is a low-intensity statin with reduced effectiveness.
2. Antiplatelet Drugs – Low-dose Aspirin, Clopidogrel (to prevent blood clot formation).
- The usual cause of a heart attack is a break in the inner lining of the coronary artery, triggering platelets to form a clot at the site. A clot over a partially blocked artery often leads to complete occlusion and a heart attack.
3. Other Cholesterol-Lowering Drugs – Ezetimibe, Bezalip.
- These are not first-line treatments but may be used in combination with statins for further lipid reduction.

CONCLUSION

Always work closely with your cardiologist and follow their advice. While seeking a second opinion from another cardiologist is acceptable, never let friends or acquaintances influence your medical decisions.

Every patient is unique–what works for one person may not work for another. Many patients ignore specialist advice, which is equivalent to playing Russian roulette with their lives.

Key Takeaways:

- Lower your BMI through dietary restrictions, intermittent fasting, and exercise.
- Obesity is the root cause of many NCDs and their downstream complications.
- Be proactive with your health–early detection and preventive measures can save your life.

Sources: Article is written by Doctor. Isireli Biumaitotoya

Interactive Airspace

ASB Word Search

E I O E N G I N E E R I N G N E N S E E
E N U I I I A M O F R E L L I H I G O A
O I E E E E T S R R N O A O F A E T C T
E N N L T I E R C R O S T F A R C R I A
R E H A E R O D R O M E G U N A U N D R
N S G C O C N P Y N P V I I T F O A E T
A I A E R R T I A O T L N A N I C I O T
S I E S F G E N G I N E V N T O C A R E
I E G D G H S A A T E T G A R E V I R S
E A L R Y O E R E A S F G F E P E R T E
E A I A F T T G E I S I Y N S A C E P O
I O C D T I H I S V V H F A N E R T O C
C I F N N F G E H A A M A I E A A P E N
C C G A P C I R N Y F U E H C I A O A R
G I O T E S L H N O L E Y T I R U C E S
S I F S N I F I G G E E E E L E N I O I
A S N E E R P S S N R E A N R F N L G T
N C C N A E I M I A I R A I N S E E T E
C H P E N D E S E T I G V D E G A H H T
G A R A E T E E V F P S C E O T E O I T

AVIATION, SAFE, STANDARDS, ENGINE, AERODROME, LICENSE, FLIGHT, HELICOPTER, AIRCRAFT, SECURITY, NAVIGATION, ENGINEERING

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

We would love your feedback on how we can improve!

QUICK SURVEY

SCAN ME