



AVIATION SAFETY REPORT

A REVIEW OF 2011-2020 AVIATION SAFETY IN PAPUA NEW GUINEA
FOCUSING ON AIC MANDATE AND INTERNATIONAL AGREEMENTS



Mission of the AIC

To improve aviation safety by conducting independent no-blame safety investigations to determine the causes and contributing factors of aviation accidents and serious incidents, and by disseminating the findings and recommendations to the public across the aviation community in compliance with the Civil Aviation Act 2000 (As Amended), and the Standards and Recommended Practices of Annex 13 to the Convention on International Civil Aviation.

About the PNG Accident Investigation Commission

Established under the Civil Aviation Act 2000 (as amended), the AIC is an independent Statutory Organisation with complete independence from other government agencies, aviation authorities and stakeholders. The AIC functions primarily to improve aviation safety by conducting aircraft accident and serious incident investigations, determining the factors that affect, or may affect, aviation safety, and communicating its findings and issuing safety recommendations to relevant stakeholders. The AIC conducts its investigations without apportioning blame or liability and does not seek to determine any liability of persons or organisations in transport matters.

Annexes 13 and 19 to the Convention on International Civil Aviation, and the International Civil Aviation Organization (ICAO) guidelines relevant to aircraft accident and serious incident investigation and safety management, set out the standards, procedures and guidelines against which the AIC benchmarks its work.

The AIC consists of a Board of Commissioners, a Chief Executive Officer, corporate staff and aviation safety investigators. The Board provides Governance oversight and policy direction, and the Executive Management team is responsible for strategic planning and leadership for the day-to-day operations of the AIC.

Aviation safety investigators cover the aviation disciplines of Flight Operations, Air Traffic Management, Aircraft Maintenance Engineering, Avionics and Electronics Engineering, Safety Management Systems, Human Factors, Cabin Safety, and Flight Recorder Replay and Analysis. Corporate staff provides support to the core business in the areas of Finances, Legal, Human Resources, Information Technologies, security and access control and general maintenance of the facilities.

The AIC's headquarters, including Operations, Corporate and Training Facilities and Flight Recorders and Engineering Laboratories are located in Port Moresby on Level 1, NAQIA Haus, 6-Mile.



Foreword

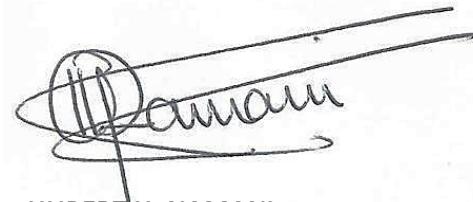
Aviation safety is a multi-dimensional activity, that directly involves the State through its agencies including the Civil Aviation Safety Authority (CASA PNG) and the Accident Investigation Commission (AIC), the aviation service providers, the industry, and the relevant stakeholders. It is only through the commitment of all these parties, from their respective roles and functions in the aviation system, that effective, consistent, and sustainable safety improvement can be achieved.

Annex 19 to the Convention on International Civil Aviation requires the State to ensure the continued availability of safety data and safety information to support safety management activities and, in particular, recommends the use of a standardised taxonomy to facilitate safety information sharing and exchange, encouraging the use of a system compatible with the ICAO Accident and Incident Data Reporting System (ADREP). The AIC utilizes the European Coordination Centre for Accident and Incident Reporting System (ECCAIRS) to meet the international requirement.

To accompany the evolution of aviation safety, decision making must transit from an intuitive-based approach to become a data-driven process. In this context, safety data subject to analysis by the AIC for this Aviation Safety Report was obtained from reactive sources including accident and serious incident investigation, and proactive sources such as ICAO Integrated Safety Trend Analysis and Reporting System (iSTARS) and Universal Safety Oversight Audit Programme (USOAP) Continuous Monitoring Approach (CMA) Online Framework and it is released to the public as a contribution to aviation safety in Papua New Guinea.

This Aviation Safety Report 2011-2020 is the first of its kind in Papua New Guinea, representing the efforts of the AIC to provide transparent, consistent and reliable information to support safety management processes and decision making at the different levels of the aviation system, and to highlight areas of interest that the AIC believes are essential to the improvement of aviation safety.

As safety data analysis and management matures, safety data exchange practices should be implemented amongst the key players of the aviation system in a joint effort to understand and agree on the main areas of interest for aviation safety. State authorities and aviation stakeholders are invited to support future editions of the Aviation Safety Report by sharing safety information of national and regional impact.

A handwritten signature in black ink, appearing to read "Hubert H. Namani". The signature is fluid and cursive, with some loops and variations in line thickness.

HUBERT H. NAMANI
Chief Commissioner

Port Moresby
June 2021

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A review of 2020

Accident and serious incident investigations in 2020

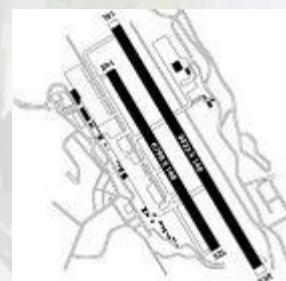
In 2020, the AIC continued the investigation into four accidents and two serious incidents that occurred in 2019 and commenced investigations into five aircraft accidents and five serious incidents occurred in Papua New Guinea, and also commenced one accident investigation under delegation in part from other State.

Over the year, nine investigations were finalised and the Final Reports issued were made publicly available, in accordance with PNG international obligations under Annex 13 to the Convention on International Civil Aviation. The status of the investigations conducted by the AIC in 2020 is presented in the table below, followed by a brief overview of each case.

<i>Investigations</i>	<i>Total</i>
<i>Investigations from 2019 continued in 2020</i>	6
<i>Investigations commenced in 2020</i>	11
<i>Investigations finalised in 2020</i>	9
<i>Investigations ongoing as of 31 December 2020</i>	8

Table 1. Status of investigations as of 31 December 2020.

AIC 19-2001. On 23 May 2019, the AIC commenced an investigation into a serious incident that occurred on 22 May 2019, due to a major electrical power outage at Jackson's International Airport, Port Moresby, PNG, affecting the entire electrical system of the airport and its ground aids including all airfield lighting, instrument landing system (ILS), domestic and international terminal apron lights, internet, telephones and closed-circuit television. At the time, a number of aircraft was in flight and were required to divert to their alternate airports because they were unable to continue their intended flights into Jackson's airport. The investigation was finalised and its Final Report made available to the public on 2 October 2020.



AIC 19-1001. On 11 August 2019 the AIC commenced an investigation into an accident that occurred at about 11:24 local time that day, involving a Bell 427 helicopter that was conducting a flight under Visual Flight Rules (VFR) from Kokopo, East New Britain Province to Kimbe, West New Britain Province, when it impacted the water near Baluma township. The pilot suffered minor injuries. The investigation was finalised and its Final Report released on 29 December 2020.

AIC 19-1002. On 29 August 2019, the AIC commenced an investigation about the accident that occurred on the same day around midday, involving an Air Tractor AT-502B that encountered deteriorating weather during a VFR ferry flight from Daru, Western Province, to Gusap, Madang Province, colliding with trees near Baimuru Airstrip, Gulf Province. The pilot was fatally injured. The investigation was finalised and its Final Report released on 16 October 2020.



AIC 19-1003. On 13 September 2019 the AIC commenced an investigation into the accident that occurred on the same day at about 11:15 local time, involving an Airbus BK117 C-1 helicopter that, during a VFR charter flight from Buka Airport, Autonomous Region of Bougainville to Tokua Airport, East New Britain, encountered adverse weather and impacted the water near the shore. The pilot was fatally injured and the passenger was uninjured. The investigation was finalised and its Final Report made publicly available on 31 December 2020.

AIC 19-1004. On 9 October 2019, the AIC commenced an investigation into the accident that occurred on 7 October 2019, involving a PAC 750XL aircraft that departed from Jacksons International Airport, Port Moresby, to Efogi Airstrip, Central Province, Papua New Guinea. During the landing, the nose landing gear collapsed. The investigation was finalised and its Final Report made available to the public on 16 October 2020.



AIC 19-2002. On 22 November 2019 the AIC commenced an investigation into a serious incident that occurred on 21 November 2018 at about 16:00 local time, involving a Fokker 70 aircraft on a passenger flight from Tokua International Airport, to Jacksons International Airport, Port Moresby, that had an in-flight emergency due to a loss of cabin pressure during descent, 51 nm North East of Jacksons. No injuries were reported. As of 31 December 2020, this investigation was ongoing.

AIC 20-1001. On 24 January 2020 the AIC commenced an investigation on a DJI Matrice 210 remote piloted aircraft accident that occurred on 14 November 2019, during an inspection of the Exxon Mobil PNG marine terminal. The pilot temporarily lost line of sight and the unmanned aircraft collided with a pylon and fell into the water, resulting damaged as a consequence of the impact and because of the effects of sea water. This investigation was finalised and its Final Report made publicly available on 16 October 2020.



AIC 20-1002. On 14 February 2020, the AIC commenced an investigation into the accident that occurred on the same day at 14:45 local time, involving a Cessna 208 Caravan single engine aircraft that lost directional control on ground at Miyanmin Airstrip, while conducting a non-scheduled passenger commercial air transport flight from Telefomin, Sandaun Province. No injuries were reported, and the aircraft resulted substantially damaged. The Final Report of this investigation was made available to the public on 30 December 2020.



AIC 20-2001. On 16 March 2020 the AIC commenced an investigation on a serious incident that happened on the same day at about 11:30 local time, involving a Bombardier DHC-8-402 aircraft that shortly after departure from Jackson's International Airport, Port Moresby, National Capital District, Papua New Guinea, on a scheduled international flight to Cairns, Queensland, Australia, had an in-flight emergency due to fumes and smoke in the cabin and subsequently returned and landed at Jackson's International Airport. No injuries or damage were reported. As of 31 December 2020, this investigation was ongoing.



AIC 20-2002. On 20 March 2020, the AIC commenced an investigation into a serious incident that happened on 18 March 2020 at 14:15 local time, in which a Fokker 100 aircraft, experienced a cabin depressurisation event during a scheduled IFR passenger flight from Boram Airport, Wewak, East Sepik Province to Jacksons International Airport, Port Moresby. The aircraft subsequently diverted and landed at Madang Airport, Madang Province. No injuries nor damage were reported. As of 31 December 2020, this investigation was ongoing.

AIC 20-1003. On 19 March 2020, the AIC commenced an investigation under delegation in part from the Republic of Vanuatu, with regard to the accident that occurred on 23 October 2018, at about 15:23 local time, in which a Cessna U206G aircraft suffered an engine failure in flight, leading to a forced landing near Dillon's Bay Airstrip, Vanuatu. Despite of the efforts of the AIC, the investigation was unable to continue due to lack of information provided by the solicitor State, and on 12 October 2020 the AIC formally declined the delegation and finalised the process.



AIC 20-1004. On 19 March 2020, the AIC commenced an investigation into the accident that occurred on the same day at 13:10 local time, involving a Cessna 208 Caravan aircraft that was conducting a VFR non-scheduled passenger flight operation from Kompiam to Yenkisa, Enga Province, Papua New Guinea, and had a runway excursion during its landing roll at Yenkisa strip 31. No injuries were reported, and the aircraft resulted substantially damaged. As of 31 December 2020, this investigation was ongoing.

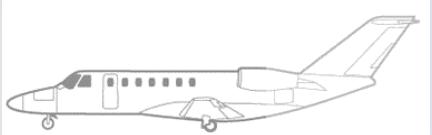
AIC 20-1005. On 26 July 2020, at 12:46 local time, the pilot of a Cessna 402C aircraft aborted the take-off at an uncommissioned field near Papa – Lealea, about 16nm North-West of Port Moresby, Papua New Guinea. During the aborted take-off, the aircraft collided with trees, resulting damaged. No injuries were reported. The AIC commenced an investigation into this occurrence on 27 July 2020 and its Final Report was made available to the public on 31 December 2020.



AIC 20-2003. On 19 October 2020, the AIC commenced an investigation with regard to a serious incident that occurred on 18 October 2020, at 08:54 local time, involving a DHC-6-400 Twin Otter aircraft that was conducting an IFR passenger flight from Kairik

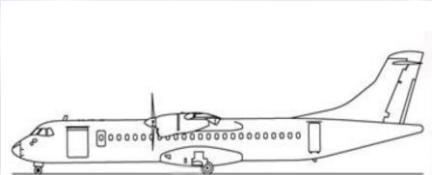
Airstrip, Enga Province to Mount Hagen Airport, Mount Hagen, Western Highlands Province and had a smoke event and a hydraulic failure in flight after conducting a go around due to low visibility in the approach to runway 30 of the destination airport. No injuries or damage were reported. As of 31 December 2020, this investigation was ongoing.

AIC 20-2004. On 29 October 2020, the AIC commenced an investigation into the serious incident that occurred earlier that day, at 10:59 local time, in which a Cessna Citation 525B aircraft that was conducting a Medivac flight from Kunaye Airport, Lihir New Ireland Province to Jacksons International Airport, Port Moresby, had a baggage compartment smoke warning. The aircraft was 40 nm North East of Jacksons International Airport. At 11:00, the crew declared a PAN and subsequently landed at Jacksons International Airport. No injuries or damage were reported. As of 31 December 2020, this investigation was ongoing.



AIC 20-1006. On 1st December 2020, the AIC commenced an investigation into the accident that occurred on the same day at about 9:00 local time, in which a De Havilland Canada DHC-6-300 Twin Otter aircraft was involved in a runway excursion occurrence during takeoff at Wobagen Airstrip, Sandau Province. As a result of the occurrence, there was one person with minor injuries and the aircraft suffered substantial damage. As of 31 December 2020, this investigation was ongoing.

AIC 20-2005. On 23 December 2020, the AIC commenced an investigation into the serious incident that occurred on the same day at 13:52 local time, in which an ATR 72-212A on a scheduled passenger flight from Kiunga Airport, Western Province to Mount Hagen Airport, Western Highlands Province, had an engine fire warning activation, during approach at its destination airport. As of 31 December 2020, this investigation was ongoing.



Safety Recommendations in 2020

As per its mandate under the Civil Aviation Act, and in compliance with international obligations derived from Annex 13 to the Convention on International Civil Aviation, the AIC contributes to advance safety in the aviation system not only through identifying the underlying causes and contributing factors to accidents and incidents, but also by making recommendations to aviation authorities, other Government agencies and the aviation industry, and Foreign States of aircraft operators, registry, manufacture, design, and aircraft, engine, and component manufacturers, to eliminate or reduce safety deficiencies and hazards identified as a result of the activities performed by the AIC. In 2020, the AIC issued 36 Safety Recommendations.

The AIC requests a formal response from all addressees of AIC recommendations within 90 days of the issue date. Recipients may respond to the AIC with their proposed safety action and follow up with a statement of safety action taken, including with supporting evidence at a later date. In such cases the AIC will continue to monitor the progress of safety action. The table below shows the status of the Safety Recommendations issued by the AIC as of 31 December 2020.

Recommendation status	Total
<i>Recommendations issued in 2020</i>	36
<i>Recommendations closed in 2020</i>	6
<i>Recommendations monitored in 2020</i>	3
<i>Responses under assessment as of 31 December 2020</i>	14
<i>Recommendations active as of 31 December 2020</i>	23

Table 2. Status of Safety Recommendations as of 31 December 2020.

The 36 Safety Recommendations produced in 2020 were issued to authorities, manufacturers and the aviation industry, as follows:

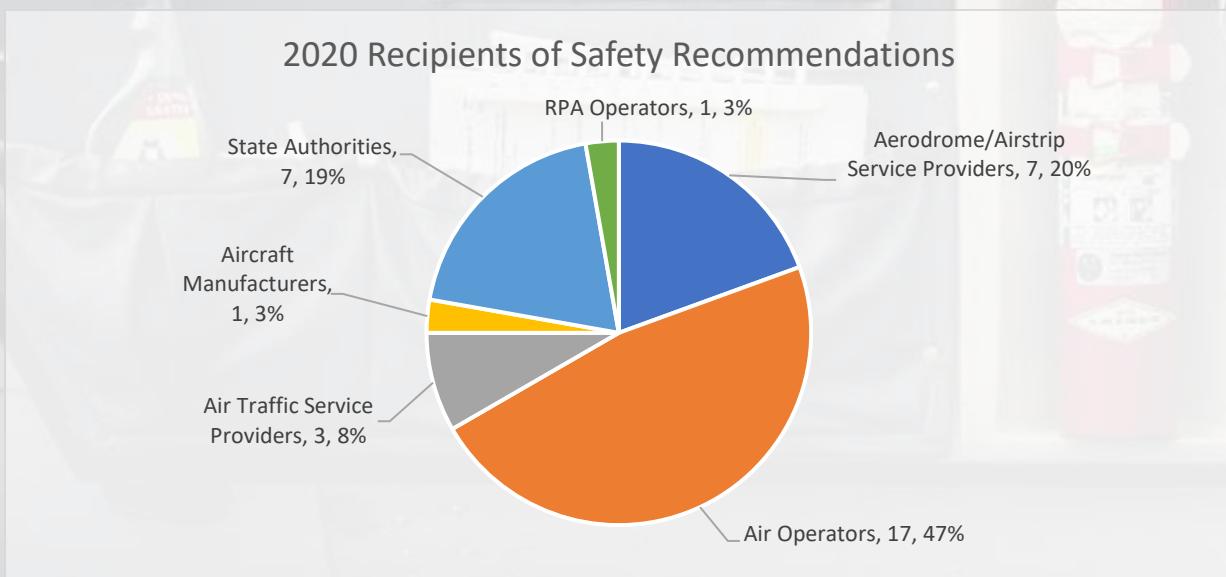


Figure 1. Distribution of Recipients of Safety Recommendations issued in 2020.

The following paragraphs present a summary of the Safety Recommendations issued, monitored and closed by the AIC in 2020.

AIC 16-R12/16-1002. PNG Air Services Limited, should take action to improve High Frequency radio capability to ensure, as much as possible, that transmissions are clear and readable so vital transmissions for the safety of aircraft operations are not missed. Status as of 31 December 2020: Monitor.

AIC 17-R06/17-2002. Commander PNG Defence Force (PNGDF) should require the replacement of the unserviceable Propeller Gearbox (PGB) Serial Number UDAG0616, currently fitted to the right engine of Casa CN-235M aircraft, registered P2-502, before further flight. Status as of 31 December 2020: Monitor.

AIC 18-R02/17-2002. The Civil Aviation Safety Authority of PNG should require the promulgation of Holding and Instrument Approach to Land Procedures (IAL), and an Aerodrome Chart for Goroka Airport, in the Aeronautical Information Publication, Flight Supplement. Status as of 31 December 2020: Monitor.

AIC 16-R05/15-2028. PNG Air, as a matter of urgency, should ensure that its Exposition and other relevant documents and manuals are amended to comply with the Civil Aviation Rule requirement to notify the Authority of an accident or incident “with a minimum of delay and by the most suitable and quickest means possible”⁴. Specifically: 1. for a pilot in command who is involved in an accident or incident to notify CASA with a minimum of delay and by the most suitable and quickest means possible. 2. for a pilot in command who is involved in an accident or incident to notify the company with a minimum of delay and by the most suitable and quickest means possible, which may include by telephone or company radio; or 3. if a pilot is incapacitated or is unable to notify CASA, the company, after being notified of an accident or serious incident should notify CASA with a minimum of delay and by the most suitable and quickest means possible. Status as of 31 December 2020: Response under assessment.

AIC 17-R04/16-2001. Air Niugini Limited, as a matter of urgency, should ensure that its Exposition and other relevant documents and manuals are amended to comply with the Civil Aviation Rule requirement to notify the Authority of an accident or incident “with a minimum of delay and by the most suitable and quickest means possible”. Specifically: 1. for a pilot in command who is involved in an accident or incident to notify CASA with a minimum of delay and by the most suitable and quickest means possible. 2. for a pilot in command who is involved in an accident or incident to notify the company with a minimum of delay and by the most suitable and quickest means possible, which may include by telephone or company radio; or 3. if a pilot is incapacitated or is unable to notify CASA, the company, after being notified of an accident or serious incident should notify CASA with a minimum of delay and by the most suitable and quickest means possible. Status as of 31 December 2020: Response under assessment.

AIC 19-R02/18-1004. Honeywell Aerospace, in consultation with the Federal Aviation Administration, should re-evaluate TSO’s 151b and 151d and DO-367 related to EGPWS warnings and cautions, and ensure that the Honeywell EGPWS MK V Computer provides a timely warning in the form of a continuous flashing visual display of ‘PULL UP’ at the bottom of the Primary Flight Displays, as an absolute minimum standard. The flashing visual display ‘PULL UP’ warning, simultaneously with the aural caution ‘SINK RATE’, would require immediate action from the flight crew when encountering an excessive Rate of

Descent at very low Radio Altitude, similar to that flown by the crew of P2-PXE. Status as of 31 December 2020: Active.

AIC 19-R17/18-1004. The Federal Aviation Administration should reevaluate TSO's 151b and 151d and DO-367 related to EGPWS warnings and cautions, and ensure that the Honeywell EGPWS MK V Computer provides a timely warning in the form of a continuous flashing visual display of 'PULL UP' at the bottom of the Primary Flight Displays, as an absolute minimum standard. A flashing visual display 'PULL UP' warning, accompanying an aural 'SINK RATE', would require immediate action from the flight crew when encountering an excessive Rate of Descent at very low Radio Altitude, similar to that flown by the crew of P2-PXE. Status as of 31 December 2020: Active.

AIC 19-R19/18-1002. ATR should ensure that the word 'Note' on the 'SMOKE' checklist is reclassified to, and represented by, an amber 'CAUTION' that is ergonomically able to draw the attention of flight crews to the ambiguity presented by the electrical smoke warning. Status as of 31 December 2020: Active.

AIC 19-R20/18-1002. ATR should ensure that a 'CAUTION' statement with content similar to the content of the 'Note' in the 'QRH Smoke' checklist is included in the 'QRH Electrical Smoke' checklist. Status as of 31 December 2020: Active.

AIC 19-R21/18-1002. ATR should ensure that the either: 1. The rudder Travel Limitation Unit (TLU) Low Speed check, along with other essential check and action items, is included in the before landing section of the 'Alternating Current Wild (ACW) GEN 1+2 LOSS' checklist, and every abnormality and emergency checklist that has gear and flap extension procedures; or 2. the Quick Reference Handbook (QRH) contains appropriate information that informs the crew that the before landing sections of the 'ACW GEN 1+2 LOSS' checklist and other abnormality and emergency checklist is not a substitute for the normal 'Before landing' checklist. Status as of 31 December 2020: Active.

AIC 20-01/19-2001. The National Airport Corporation should ensure that all the issues identified in the context of this investigation are rectified in a timely manner to improve and upkeep the Power Systems at Jacksons International Airport to achieve an operational baseline consistent with the minimum international applicable standards of *ICAO Annex 14* and national regulations included in *CAR Part 139 Aerodrome – Certification and Operation*, ensuring the availability of a Secondary power source when required to maintain operational continuity. Status as of 31 December 2020: Closed.

AIC 20-02/19-2001. The National Airport Corporation should ensure that documented procedures are in place on the following areas: 1. Power system operations. 2. Maintenance of the power systems. 3. Training for technical officers responsible for the maintenance of the power systems. Status as of 31 December 2020: Closed

AIC 20-03/19-2001. The National Airport Corporation should ensure that all technical officers responsible for the maintenance of the Power Systems at Jacksons International Airport should be equipped with the skills and knowledge for continuous upkeep of the systems. Status as of 31 December 2020: Closed.

AIC 20-04/19-2001. The National Airport Corporation should develop, implement and improve safety assurance activities such as audits, observations and Safety Performance Indicators (SPIs) directly oriented to identify areas and activities that could be "practically drifting", and the timely mitigation of their associated safety risks. Status as of 31 December 2020: Closed.

AIC 20-05/19-2001. The National Airport Corporation should review the safety management processes and procedures, including but not limited to those contained in the *Safety Management System Manual* and *Risk Assessment Template* to ensure that: 1. Processes and procedures related to management of change enable to identify significant restructuring of the organisation, significant changes in staffing levels and key personnel as triggers for formal management of change processes. 2. Safety management responsibilities with regard to management of change are at the appropriate organisational levels to ensure operational, environmental and strategic factors that could trigger these processes are able to be identified. 3. The applicable processes and procedures are reviewed and updated to ensure consistency between the *Risk Assessment Template* and the effective safety management actions. Status as of 31 December 2020: Closed.

AIC 20-R06/19-1002. Ramu Agriculture Limited, should ensure that: Section 3 of the Standards Operating Procedures Manual is amended to include a sub-section that provides guidance to pilots pertaining to VFR meteorological minima to ensure pilots are provided with the standards as per CAR Part 91.301 that will ensure essential flight crew actions during planning. Status as of 31 December 2020: Active.

AIC 20-R07/19-1002. CASA PNG, should ensure that RAIL establishes and implements a Safety Management System for its aircraft operations meets the requirements of CAR Part 100 pursuant to CAR Part 119. Status as of 31 December 2020: Active.

AIC 20-R08/19-1001. Niugini Helicopters should ensure that a procedure is developed and implemented to ensure that aircraft are not released to service until all requirements under their respective manuals and CAR Part 43 are met. Status as of 31 December 2020: Active.

AIC 20-R09/19-1001. Niugini Helicopters should ensure that a procedure for operational flight check pursuant to PNG CAR Part 91.613, is developed and documented in the Operator's exposition and that the pilots fully understand it. Status as of 31 December 2020: Active.

AIC 20-R10/19-1001. Niugini Helicopters should ensure that its 'Quality Assurance System' and any other relevant organisational systems, processes and procedures identify deviations from the requirements of the Aircraft Maintenance Manual and management. Status as of 31 December 2020: Active.

AIC 20-R11/19-1001. PNG Air Services Limited should take action to improve High Frequency radio capability to ensure, as much as possible, that transmissions are clear and readable so vital transmissions for the safety of aircraft operations are not missed. Status as of 31 December 2020: Active.

AIC 20-R12/19-1001. PNG Air Services Limited should ensure that the RCC is fully compliant with CAR Part 176, and it is staffed 24 hours a day by trained personnel proficient in the use of radiotelephony communication. Status as of 31 December 2020: Active.

AIC 20-R13/20-1001. The Minister for Civil Aviation should include provisions for notifying accidents and incidents involving remotely piloted aircraft in the appropriate Civil Aviation Rules, to ensure that in such an event, timely notification is made by operators of remotely piloted aircraft to the relevant PNG authorities. Status as of 31 December 2020: Active.

AIC 20-R14/20-1001. Applus Wokman should ensure that all remotely piloted aircraft operations are conducted in accordance with the provisions of CAR Part 101 and procedures are developed to ensure

that visual line of sight is maintained and the role of an observer is included during these operations. Status as of 31 December 2020: Response under assessment.

AIC 20-R15/20-1004. CASA PNG should ensure that airstrips are maintained in accordance with the provisions of rules and regulations including but not limited to CAR Part 139 and AC 139-6 to the extent applicable. Status as of 31 December 2020: Response under assessment.

AIC 20-R16/20-1004. Rural Airstrips Agency (RAA) should establish a set of procedures to properly identify hazards and manage risks associated to their operational activities considering to the highest possible extent, the principles of the Safety Management System provided by the International Civil Aviation Organization and those included in CAR Part 100. Status as of 31 December 2020: Response under assessment.

AIC 20-R17/20-1004. Mission Aviation Fellowship PNG (MAF) should improve the hazard identification process and procedures, to ensure that hazards are captured and their associated risks managed, especially in the context of operations into advanced airstrips like Yenkisa. Status as of 31 December 2020: Response under assessment.

AIC 20-R18/20-1004. Mission Aviation Fellowship PNG should review and improve the procedures related to pilots' proficiency, to ensure proficiency is always maintained up to the required level to perform operations into advanced airstrips. Status as of 31 December 2020: Response under assessment.

AIC 20-R19/19-1004. Air Sanga Limited should ensure Safety Management System procedures are effectively in place to allow proper hazard identification and timely risk management. Status as of 31 December 2020: Active.

AIC 20-R20/19-1004. Air Sanga Limited should implement effective maintenance control measures to ensure scheduled maintenance is conducted within the time intervals prescribed by the manufacturer. Status as of 31 December 2020: Active.

AIC 20-R21/19-1004. CASA PNG should implement effective procedures to ensure timely dissemination of Airworthiness Directives issued by other States to PNG operators. Status as of 31 December 2020: Active.

AIC 20-R22/19-1004. CASA PNG should ensure that the Civil Aviation Registry contains all the aviation document records as required by the Civil Aviation Act 2000 (As Amended) and that such records can be accessible and retrieved in a timely manner. Status as of 31 December 2020: Active.

AIC 20-R23/19-1004. Air Sanga Limited should implement effective procedures to ensure maintenance, operations and safety related documents and records are kept up-to-date and a proper record keeping system is in place. Status as of 31 December 2020: Active.

AIC 20-R24/19-1004. Rural Airstrip Agency (RAA) should timely disseminate to the appropriate air operators any safety related information on airstrip conditions identified during a survey or by any other means. Status as of 31 December 2020: Active.

AIC 20-R25/19-1003. Tribal Aurora Helicopters should implement procedures to effectively monitor its Aircraft Tracking System "Spidertracks" during their flight operations. Status as of 31 December 2020: Active.

AIC 20-R26/19-1003. Tribal Aurora Helicopters review and amend its Flight Operations Manual to ensure it is completely aligned with the relevant provisions of the PNG Civil Aviation Rules including, but not limited to, CAR Part 91 and CAR Part 136 as applicable. Status as of 31 December 2020: Active.

AIC 20-R27/19-1003. CASA PNG to consider the findings and safety issues identified in the Final Report AIC 19-1003, disseminating the relevant information to the aviation community, and especially to helicopter operators, through Safety Promotion activities. Status as of 31 December 2020: Active.

AIC 20-R28/20-1002. Mission Aviation Fellowship PNG Limited, should review the Safety Promotion component of its Safety Management System, to ensure effective actions are taken to improve pilot's safety reporting culture. Status as of 31 December 2020: Response under assessment.

AIC 20-R29/20-1002. Mission Aviation Fellowship PNG Limited should ensure training programs include specific procedures for the use of reverse thrust, aligned with the framework of MAF SOP – C208, Section 2.21.3 Short Field Landing, Note 1. Status as of 31 December 2020: Response under assessment.

AIC 20-R30/19-2002. Air Niugini Limited should ensure that the use of abnormal/emergency QRH checklists, is reinforced for flight crews to ensure that relevant checklist items are referred to and actioned in a timely manner. Status as of 31 December 2020: Response under assessment.

AIC 20-R31/19-2002. Fokker Services should ensure that its information relating to Emergency Communication (type of pre-recorded tape) is updated in the AOM. Status as of 31 December 2020: Response under assessment.

AIC 20-R32/19-2002. Air Niugini Limited should ensure that passengers seating arrangement are managed prior to departure of each flight to ensure that passengers with special needs, or minors flying unattended are able to receive assistance from adjacent passengers. Status as of 31 December 2020: Response under assessment.

AIC 20-R33/19-2002. Air Niugini Limited should ensure that its emergency response procedures at the departmental level are adequate and consistent with its Corporate Emergency Response Policy, and are understood by the staff. Status as of 31 December 2020: Response under assessment.

AIC 20-R34/19-2002. Air Niugini Limited should ensure that their procedures relating to access to aircraft in the event of an accident or serious incident consider the level of involvement of the AIC as per its mandate under the Civil Aviation Act 2000 (As Amended) and PNG Civil Aviation Rule Part 12, as applicable. Status as of 31 December 2020: Response under assessment.

AIC 20-R35/20-1005. NiuSky Pacific Limited should implement effective procedures to ensure the effective management of signals transmitted by aircraft in distress including but not limited to ELT and, when appropriate, the effective coordination of Search and Rescue operations, in accordance with applicable international standards and national regulations. Status as of 31 December 2020: Closed.

AIC 20-R36/20-1005. CASA PNG should ensure effective oversight to the aviation service providers performing functions of Search and Rescue coordination and operation. Status as of 31 December 2020: Active.

International Safety Commitments

The Beijing Declaration

As a result of the Asia Pacific Ministerial Conference on Civil Aviation held in Beijing, China from 31 January to 1 February 2018, the Ministers of the Asia and Pacific States agreed to a number of commitments in the areas of aviation safety, air navigation services, accident investigation and human resource development, in view of the obligation as contracting States to the Convention on International Civil Aviation and considering a number of areas of interest including the importance of air transportation worldwide, the growth and development of the aviation market in the Region, the ICAO "No Country Left Behind" initiative, the ICAO Global Air Navigation Plan (GANP) and the Global Aviation Safety Plan (GASP), the regional fora including the Asia and Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) and the Regional Aviation Safety Group (RASG-APAC), the numerous bilateral and multi-lateral working relationships and platforms, the importance of active States' participation to advance civil aviation development in the Region, acknowledging the evolution of regional relationships and partnerships with meaningful technical cooperation and assistance programmes, mindful of the importance and impact of aviation safety and efficient air navigation services on the sustainable development of air transport, recognising the effectiveness of the ICAO Universal Safety Oversight Audit Programme (USOAP), considering the diversity of the Asia and Pacific regions in terms of capacity and civil aviation development, recognising the ICAO "Next Generation of Aviation Professionals" initiative, considering the need to support the timely implementation of the Asia/Pacific Seamless Air Traffic Management (ATM) Plan and mindful of the need to take into account resolutions agreed at future ICAO Assembly Meetings including those on GASP and GANP.

The commitments of the States participating in the Ministerial Conference, including Papua New Guinea through its representatives, the Minister for Civil Aviation, the Director of Civil Aviation, the Chief Commissioner of the AIC and the PNG Ambassador in Beijing, were captured in the Declaration of the Asia Pacific Ministerial Conference on Civil Aviation (Beijing Declaration).

As the Accident Investigation Commission is mandated by law and directed by the Minister for Civil Aviation to comply with Annexes 13 and 19 to the Convention on International Civil Aviation, this Safety Report includes a review of the status of implementation of the commitments of the Beijing Declaration in the areas of Accident and Serious Incident Investigation and Aviation Safety, to the extent of the information available to the AIC at the time of publishing this report.

Regional commitments on accident and serious incident investigation

Beijing Declaration commitment: In accordance with the Chicago Convention, commit to either establish an accident investigation authority that is independent from State aviation authorities and other entities that could interfere with the conduct or objectivity of an investigation or where appropriate develop a bilateral, sub-regional or regional partnership to support the establishment of accident investigation capabilities to serve the Region, sub-region or State.

Besides the commitment of the Beijing Declaration, independence of the States accident investigation authorities is a requirement of Annex 13 to the Convention on International Civil Aviation.

Even when independence of the AIC from other authorities and service providers has been declared a matter of national interest for Papua New Guinea, as stated in Section 6 (c) of the Civil Aviation Act 2000 (as amended), it is important to consider that the International Civil Aviation Organization (ICAO) provides five criteria that must be met for an accident investigation authority to be considered functionally independent¹. These criteria are:

Functional independence: ICAO requires the State to demonstrate that there are no real or perceived examples of influence by the ministry concerned on the conduct of the accident investigation authority's investigations, the issuance of findings, safety recommendations, interim report(s) and the Final Report.

Autonomous investigation: According to ICAO, the accident investigation authority, during the conduct of its investigations, neither seeks nor takes instructions from other authorities and has unrestricted authority over the conduct of investigations.

Unrestricted authority to publish information: It must be demonstrated that the accident investigation authority can issue interim statements or report(s), findings, safety recommendations and the Final Report under its signature, without having to obtain approval from any outside authority.

Independent funding and staffing: It must be demonstrated that funding and staffing of the accident investigation authority cannot be influenced by the ministry concerned or any other organisations.

Critical elements embedded in the legislation: The criteria listed above need to be outlined in legislation and need to be apparent in the operation of the accident investigation authority in order for it to be considered functionally independent.

In the case of Papua New Guinea, the Civil Aviation Act 2000 (as amended) establishes the mandate, functions and powers of the AIC which, coupled with the policies and procedures of the organisation allow the AIC to meet the international requirements emanating from Annex 13 to the Convention and to demonstrate that critical elements are embedded in the legislation for functional independence. Section 220 of the Act provides for AIC's key functions, which are specifically referred to functional independence, autonomous investigation and unrestricted authority to publish information, including: *to make such inquiries and investigations as it considers appropriate in order to ascertain the cause or causes of accidents or incidents, to co-ordinate and direct all such inquiries and investigations and to determine which other parties, if any, should be involved in the investigation, and to prepare and publish findings and recommendations, if any, in respect to such inquiries and investigation.*

In the context of unrestricted authority to publish information it is important to mention that all the investigation reports and safety recommendations issued by the AIC as a result of its activities, are authorised for release only by the Chief Commissioner. With regard to it, Section 233 of the Civil Aviation Act establishes that *no action, suit, protection or other proceeding shall be brought or instituted personally against the Chief Commissioner or a Commissioner in respect of any act done bona fide in pursuance or execution or intended execution of the Act.*

Additionally, Sections 237, 238, 241 and 242 of the Civil Aviation Act 2000 (as amended) establish that the AIC *shall be funded from monies appropriated in an Appropriation Act* and that the Chief Executive Officer, who *shall be appointed by the Head of State, may appoint as employees of the AIC such persons, including persons on secondment from any Department or organisation, as the Chief Executive considers*

¹ ICAO Doc. 9756 Manual of Aircraft Accident and Incident Investigation Part I – Organization and Planning.

necessary for the efficient performance of the functions of the Commission, and any suitable qualified person, as an expert assessor for the purposes of investigation².

Regional commitments about aviation safety

National planning framework

Beijing Declaration commitment: *Include aviation safety in national planning frameworks such as National Development Plans (NDPs) supported by robust Civil Aviation Master Plans.*

The National Transport Strategy³ is the 20-year framework of the Government of PNG for policy principles and prioritisation approach to guide the policy, institutional/legislative and infrastructure investment programs for the transport sector. The strategy is supported by succeeding 5 year implementation plans that deliver the strategy's vision: "*A well-integrated, competitive, safe, affordable, financially and environmentally sustainable transport system that efficiently serves the economy and society of Papua New Guinea*".

Aviation safety is included in the National Transport Strategy as one of its key goals is to deliver a safe and secure transport system for users and the public, which is addressed through a project-based approach in the Medium Term Transport Plan 2 (2019-2022). Some of the projects scheduled for the time period between 2019 and 2022 that directly involve the AIC include:

- Accident Investigation, Operation and Capital Formation
- AIC Maritime Division – Construction
- AIC Aviation Division – Upgrading
- AIC Aviation Division – Maintenance

Regional cooperation

Beijing Declaration commitment: *Promote regional government and industry collaboration for sharing of best practices in safety management through the Regional Aviation Safety Group (RASG).*

More than a decade ago, the Regional Aviation Safety Group – Asia and Pacific (RASG-APAC) was established to address global aviation safety matters from a regional perspective in the Asia and Pacific Regions, involving State aviation authorities, international associations and stakeholders. The APAC-AIG is a key RASG-APAC subgroup specifically aimed to assist the States in the development and improvement of independent no-blame accident and incident investigation capabilities.

The AIC has been actively involved with RASG-APAC and APAC-AIG and delivered a presentation to promote capacity development and cooperation between the Pacific States during the Eighth APAC-AIG Annual Meeting hosted in 2020, and will host the Ninth APAC-AIG Annual Meeting in 2021.

Additionally, the AIC has actively contributed to the Pacific Region by establishing agreements and understandings with other Pacific States to provide assistance and capacity for investigation. In 2018, the AIC conducted accident investigations on behalf of Federated States of Micronesia and the Republic of Vanuatu under delegation in accordance with Annex 13 to the Convention on International Civil Aviation.

² Civil Aviation Act 2000 (as amended) Section 242.

³ As defined in the Medium Term Transport Plan 2 (2019-2022).

Safety oversight capability

Beijing Declaration commitment: *To progressively enhance safety oversight capability to achieve a USOAP⁴ EI⁵ score higher or equal to the global average by 2022.*

According to ICAO, States should establish, implement, maintain and improve 8 critical elements distributed in 8 areas to demonstrate an effective safety oversight system, which are measured through the USOAP audit framework.

The eight Critical Elements of a Safety Oversight System include:

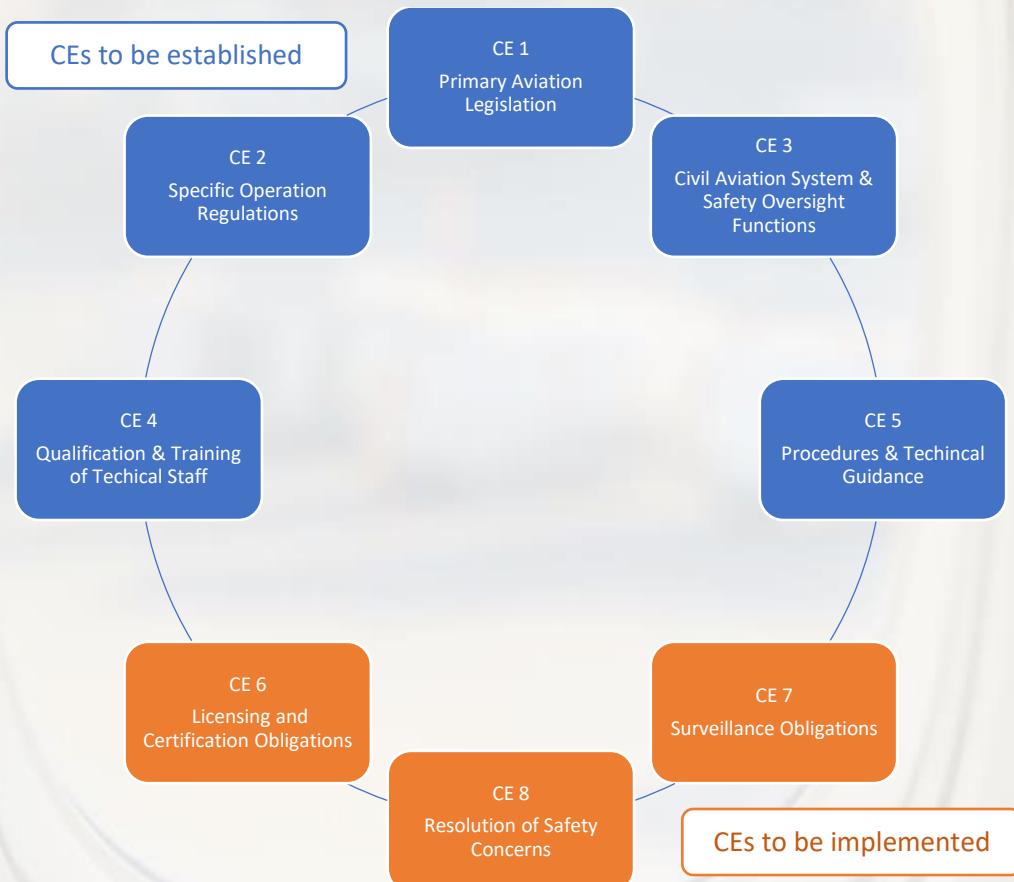


Figure 2. Eight Critical Elements of a Safety Oversight System.

The eight areas identified by ICAO are:

LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
• Legislation and Regulations	• Organisation and Safety Oversight Functions	• Personnel and Licencing	• Aircraft Operations	• Airworthiness of Aircraft	• Aircraft Accident and Serious Incident Investigation	• Air Navigation Systems	• Aerodrome and Ground Aids

Figure 3. ICAO Eight Areas of a Safety Oversight System.

⁴ USOAP: Universal Safety Oversight Audit Program

⁵ EI: Effective Implementation

It is important to note that the ICAO Global Aviation Safety Plan (GASP) 2020-2022 set as one of the goals to strengthen States' safety oversight capabilities that all States should improve their EI to 75% by 2022. According to iSTARS⁶, the current World Average is 68.9%.

PNG initial USOAP score was 47.68% audit in 2009, PNG has improved the EI score from 47.68% to 63.32%, and after a number of ICAO Coordinated Validation Missions, however, it continues to remain below the World average as seen in the following charts.

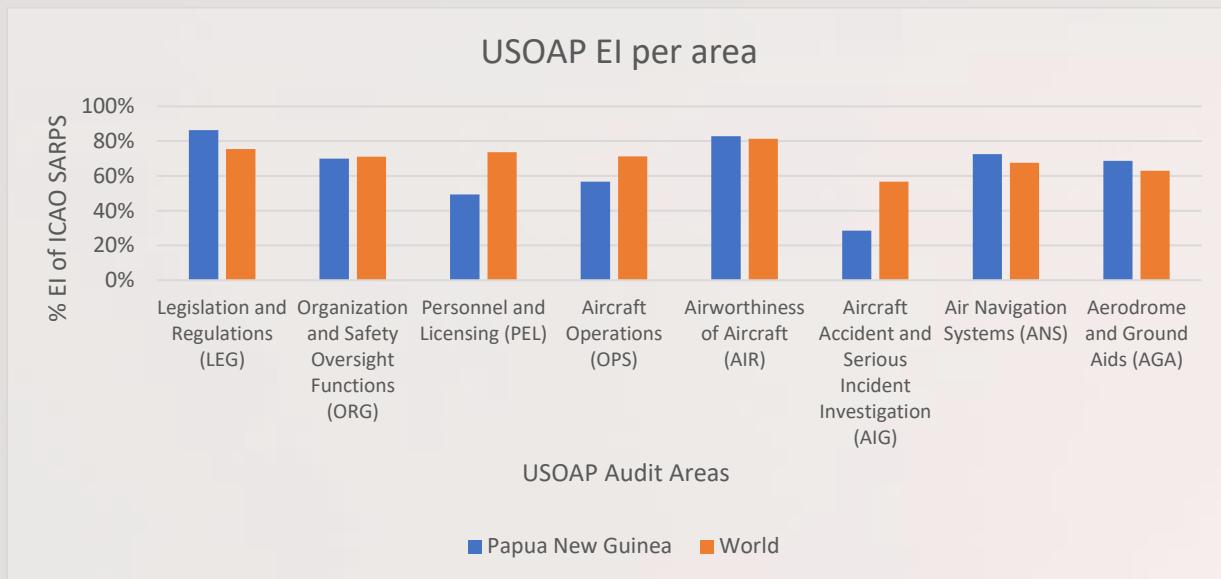


Figure 4. USOAP EI per Area. Papua New Guinea vs. World averages. Source: ICAO iSTARS.

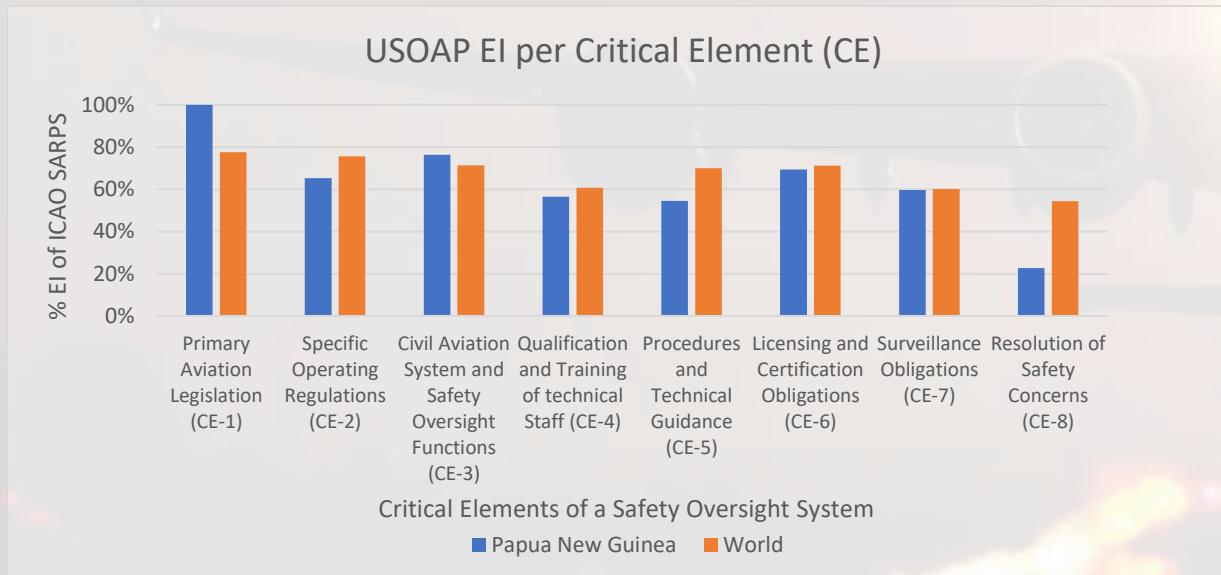


Figure 5. USOAP EI per Critical Element. PNG vs. World.

⁶ iSTARS: Integrated Safety Trend Analysis and Reporting System. iSTARS was queried on 22.02.21 for this report.

In the area of AIG, which includes the responsibilities and functions that the Accident Investigation Commission performs on behalf of the State, PNG has shown improvement by moving from the 24.18% of EI obtained in the 2009 full scope USOAP audit to 28.57% as a result of an ICAO Coordinated Validation Mission (ICVM) of a limited scope conducted in 2017.

Being aware that after a USOAP audit and its subsequent limited scope validation missions States continue to improve compliance with ICAO SARPS, ICAO has established metrics to allow States to measure improvements on their safety oversight systems through a process of self-assessment. It is important to consider that results of a self-assessment only reflect the State's perspective about its safety oversight system and only further ICAO audits can validate those results.

According to PNG self-assessment information, the overall status of effective implementation of ICAO SARPS is 94.49%⁷. The following chart presents a comparison between validated and self-assessed % of Effective Implementation of ICAO SARPS by audit area.

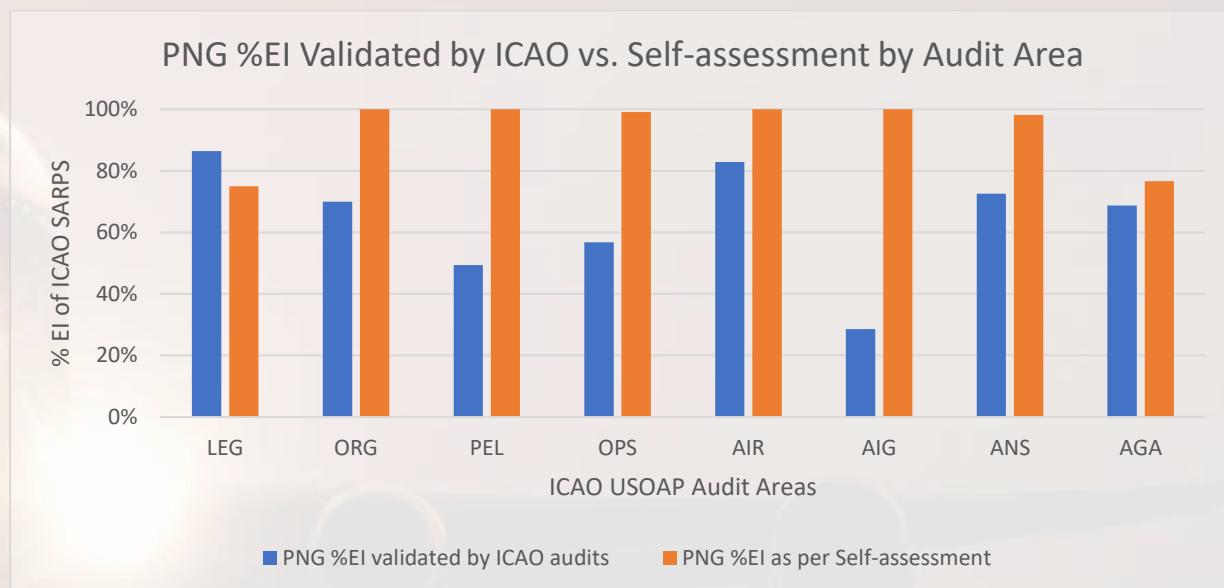


Figure 6. PNG %EI of ICAO SARPS Validated by ICAO vs. Self-assessment by Audit Area

State Safety Programme (SSP) implementation

Beijing Declaration commitment: *To implement an effective State Safety Programme (SSP) by 2025.*

ICAO uses a subset of 299 Protocol Questions (PQs) from the USOAP questionnaire as the foundation for a State Safety Programme (SSP) implementation, grouped by 17 subject areas. The following chart shows the percentage of implementation of the SSP foundation by subject area, including Protocol Questions validated during ICAO Audit missions and Corrective Action Plans (CAP) completed by Papua New Guinea, according to ICAO iSTARS⁸:

⁷ As of 26 April 2021.

⁸ Queried on 26 April 2021.

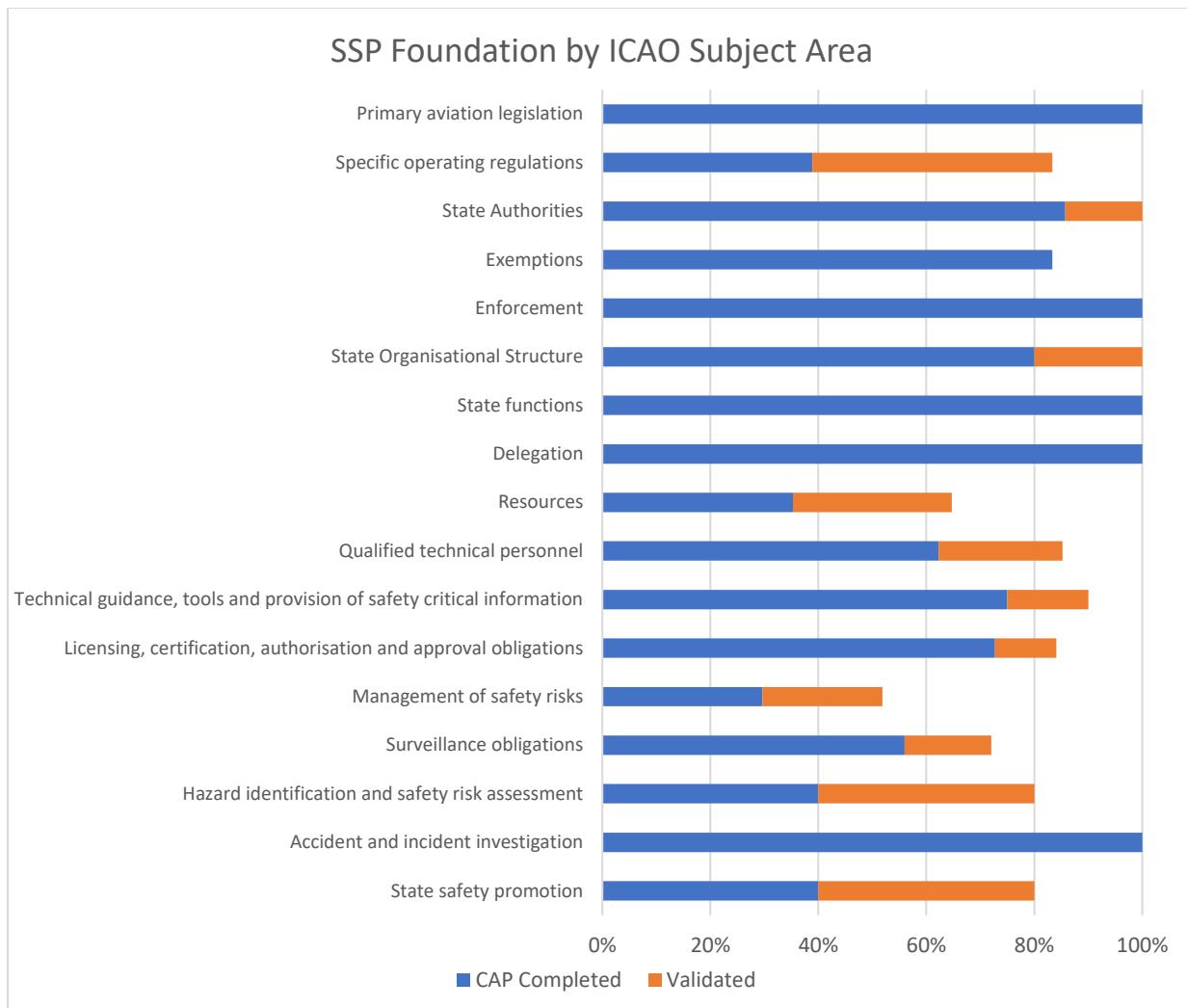


Figure 7. SSP Foundation in PNG by ICAO subject area.

Significant Safety Concerns (SSCs)

Beijing Declaration commitment: *Endeavour not to have any Significant Safety Concerns (SSCs) under the USOAP Continuous Monitoring Approach (CMA), and to resolve any future SSCs within the time frame agreed with ICAO.*

A Significant Safety Concern (SSC) can be identified during the course of an ICAO audit, if it is found that a State is not providing sufficient safety oversight to ensure applicable ICAO Standards are effectively implemented.

According to the information on ICAO iSTARS⁹, Papua New Guinea has no SSCs.

⁹ As of 26 April 2021.

Certification of international aerodromes

Beijing Declaration commitment: *Certify all aerodromes used for international operations by 2020.*

ICAO has established three protocol questions (PQs)¹⁰ in the USOAP audit questionnaire to assess the implementation of the process for certification of international aerodromes.

The results of the ICAO USOAP audits to PNG identified the process for certification of international aerodromes as satisfactory.

High-risk categories of occurrences (HRCs)

Beijing Declaration commitment: *Use data driven methodologies to identify high risk categories of occurrences (e.g. runway safety, loss of control in flight and controlled flight into terrain), and implement collaborative solutions to reduce accident rates and fatalities in the Region.*

As recommended by ICAO, the AIC uses ECCAIRS to manage aviation safety data. At the time of this Safety Report, the AIC ECCAIRS database contained a total of 817 occurrences including accidents, serious incidents, incidents, and occurrences without safety effects, most of them reported to the AIC under Civil Aviation Rule Part 12. For the period between 2011 and 2020, 43 occurrences were classified as accidents and 21 as serious incidents.

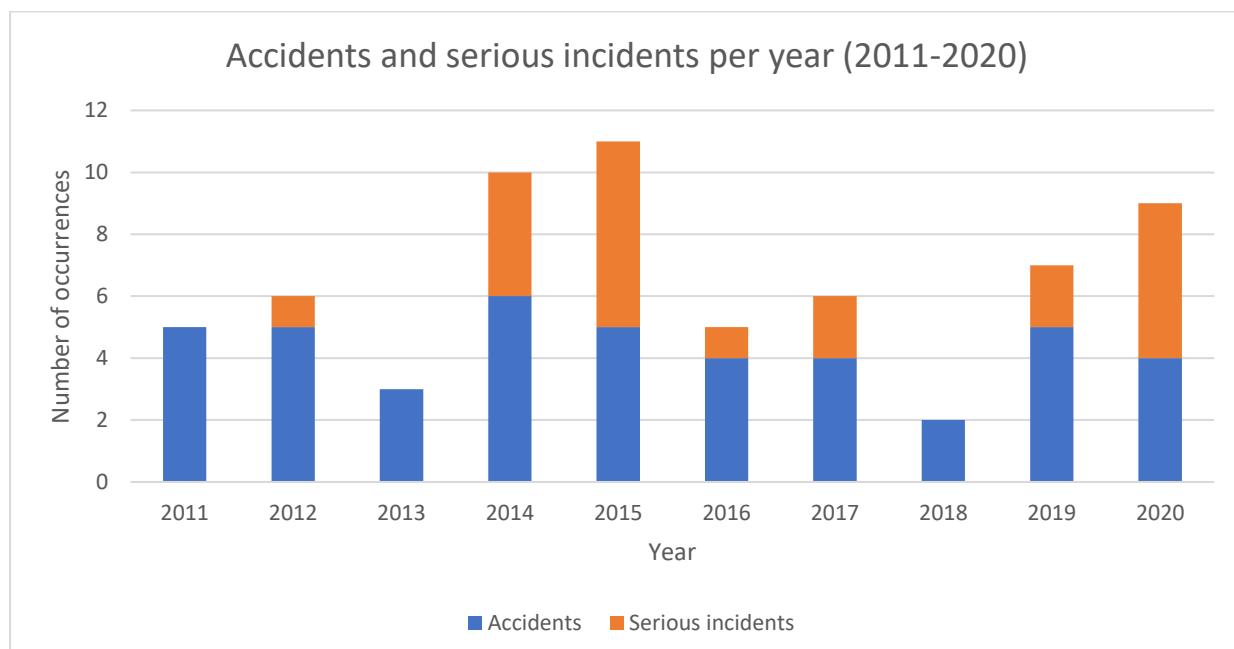


Figure 8. Distribution of accidents and serious incidents per year (2011-2020).

According to the ICAO methodology for occurrence classification¹¹, a single occurrence can be classified in more than one category at the same time, if the most representative circumstances of the occurrence meet the criteria of different categories at the same time. Out of the 64 records of accidents and serious incidents of the AIC ECCAIRS database, 42 occurrences were classified with one category, 16 required

¹⁰ PQs 8.081, 8.083 and 8.086

¹¹ Occurrence categories are developed, reviewed and updated by the CAST-ICAO Common Taxonomy Team (CICTT).

the use of 2 categories, and the remaining 6 were classified using three different categories at the same time. The following charts show the distribution of the occurrence categories used to classify the accidents and serious incidents stored in the AIC ECCAIRS database.

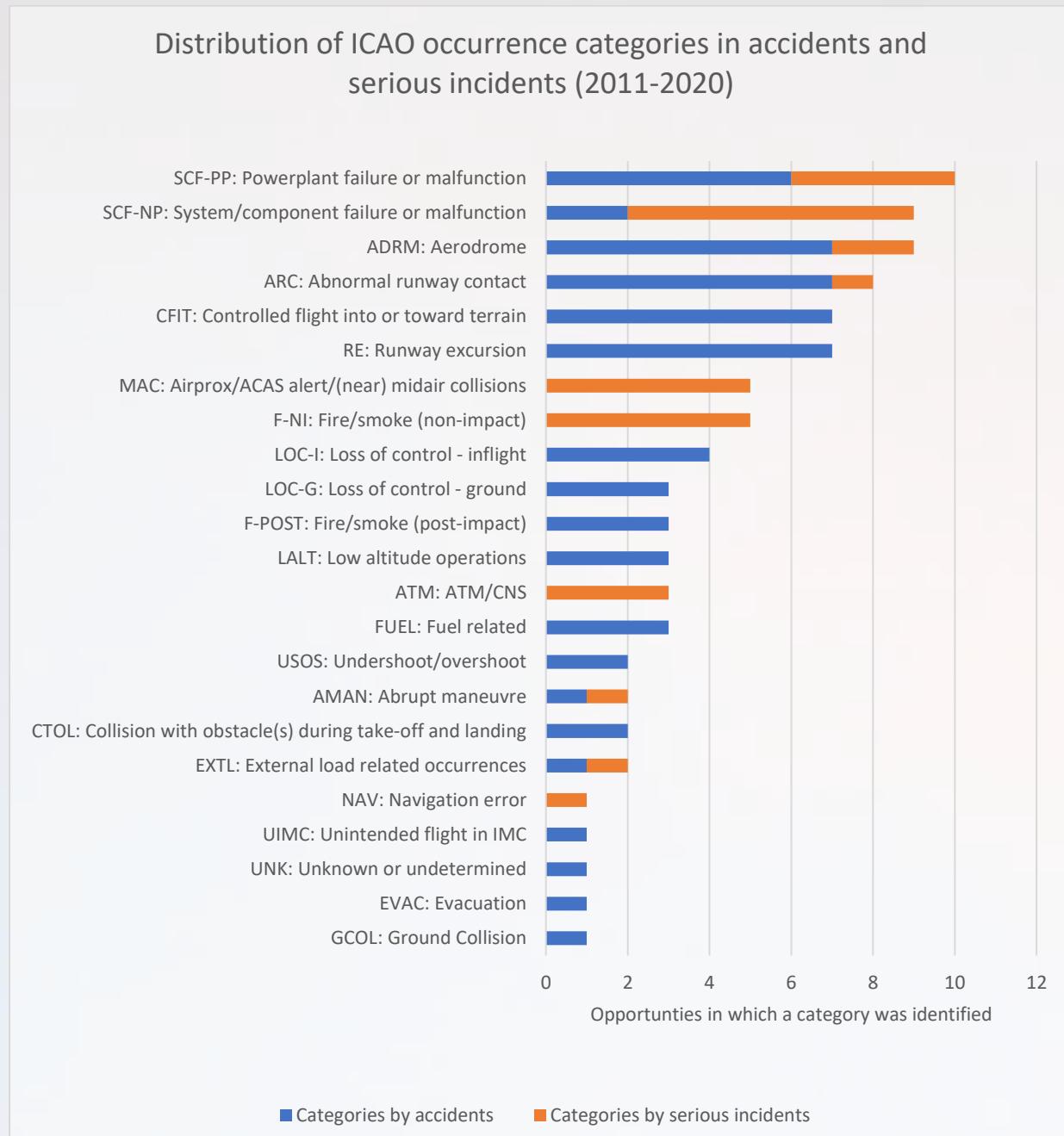


Figure 9. Distribution of occurrence categories in accidents and serious incidents (2011-2020).

High-risk categories of occurrences (HRCs) are used by ICAO as a baseline for a continuous reduction of operational safety risks, based on the analysis of safety data from different sources. The ICAO Global Aviation Safety Plan 2020 – 2022 identified five HRCs including Controlled Flight into Terrain (CFIT), Loss of Control In-flight (LOC-I), Mid-air Collision (MAC), Runway Excursion (RE) and Runway Incursion (RI).

Additionally, the Asia-Pacific Regional Aviation Safety Plan 2020-2022, monitors Abnormal Runway Contact (ARC), in conjunction with RE and RI grouping these three categories as Runway Safety (RS).

Individual distribution of HRCs vs. other categories identified in accidents and serious incidents (2011-2020)

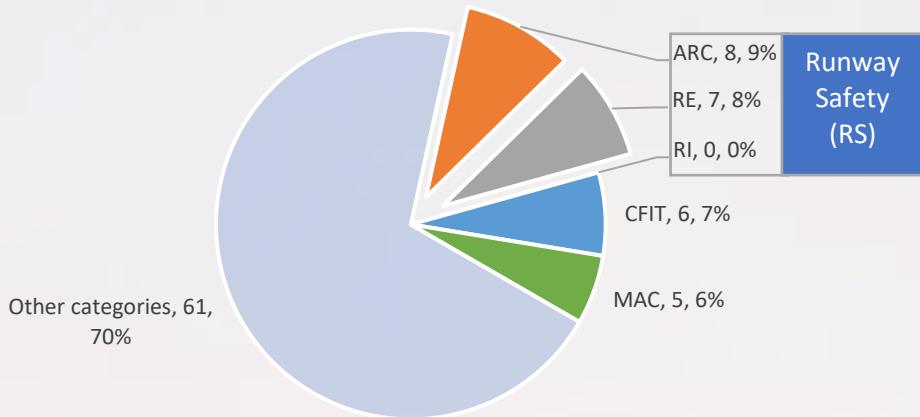


Figure 10. HRCs in accidents and serious incidents (2011-2020).

A specific analysis of the behaviour of HRCs against the 64 accidents and serious incidents recorded for the 2011-2020 period was conducted, as presented in the following paragraphs:

1. Controlled flight into terrain (CFIT)

Controlled Flight into Terrain (CFIT) includes inflight collisions or near collisions with terrain, water, or obstacle and where there is no indication or evidence of loss of control, regardless of the flight crew's situational awareness.

According to the records of accidents and serious incidents of the AIC, within the last ten years a total of six accidents and no serious incidents were classified under this category.

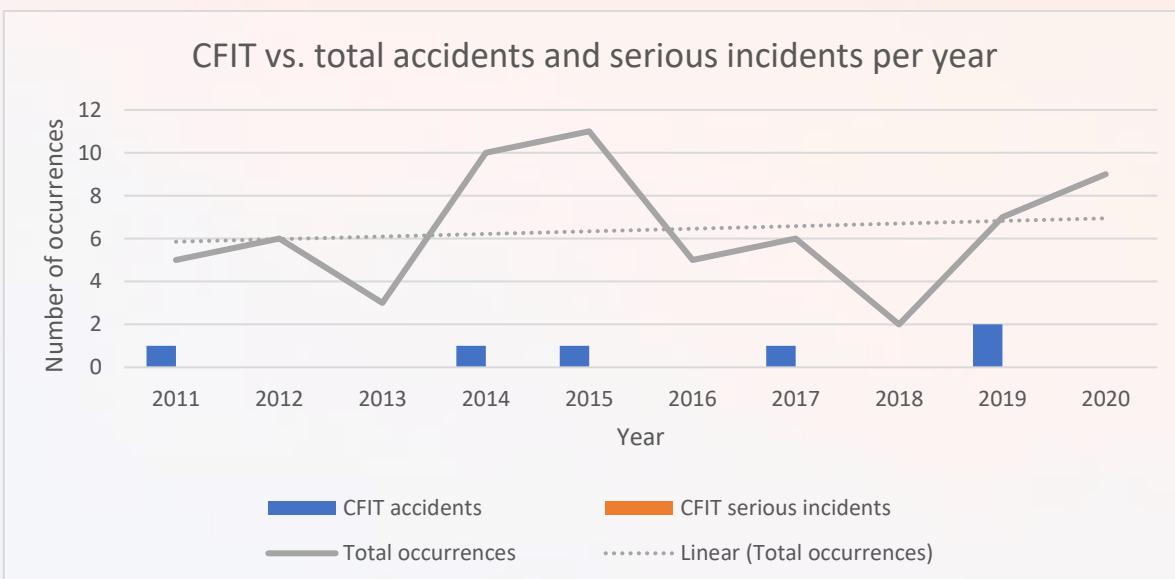


Figure 11. CFIT vs. total accidents and serious incidents (2011-2020).

It was observed that three CFIT occurrences involved helicopters and the remaining three airplanes and that five out of the six accidents resulted in fatal injuries for the occupants of the aircraft.

Common elements identified in the six CFIT accidents were that all of them occurred during daytime, when pilots transitioned from visual meteorological conditions (VMC) to instrument meteorological conditions (IMC) due to weather encounter, mostly unforeseen.

Five of the six flights in which CFIT accidents occurred were conducted under visual flight rules (VFR) but they were continued into deteriorating weather, in which maintaining visual references was obstructed due to clouds and low visibility. In most of the cases, it was identified that aircraft descended in a controlled manner, probably due to the attempts of the flight crew to regain visual references, until reaching heights in which they found obstacles in their trajectories or directly impacted the surface.

2. Loss of Control In-flight (LOC-I)

Loss of Control In-flight includes events in which the aircraft is rendered uncontrollable for reasons other than systems or components failure and suffers a deviation from the intended flightpath inflight.

For the time period between 2011 and 2020, a total of five accidents and no serious incidents were classified as LOC-I, as seen in the following figure.

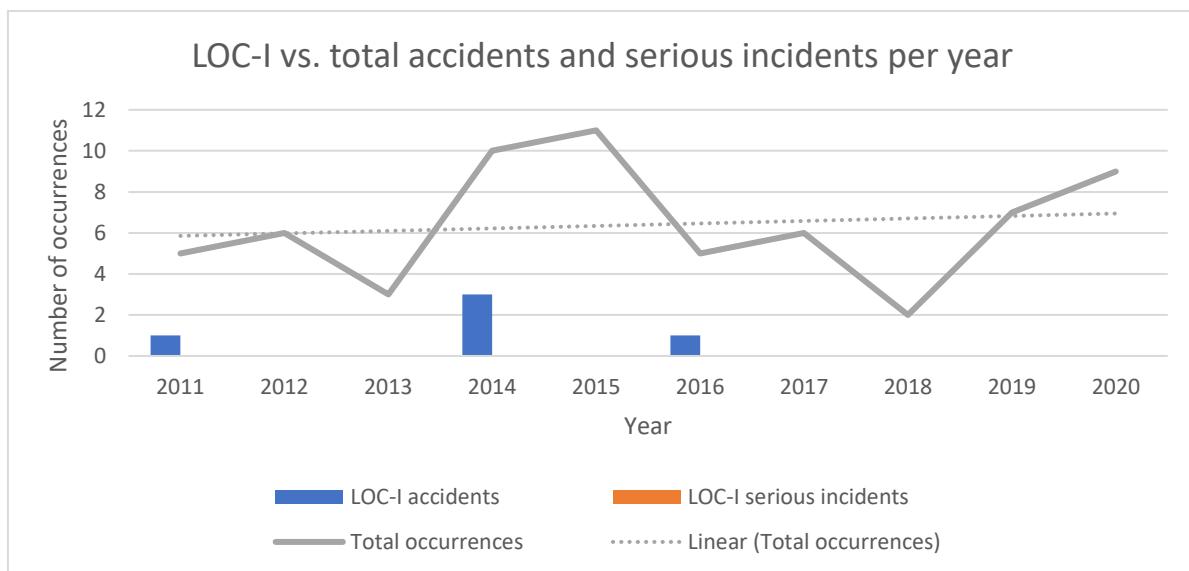


Figure 12. LOC-I vs. total accidents and serious incidents (2011-2020).

In one of the five LOC-I accidents of the period, the occupants of the aircraft resulted fatally injured. Minor injuries were reported for the four remaining occurrences classified under this category.

In the cases recorded during the period it was observed that a number of different circumstances were identified in the different sequences of events, including executing go-arounds during final approach, responding to in-flight emergencies or visual illusions due to airstrip and surrounding terrain configuration.

In high demand situations, especially when they are not anticipated, the intrinsic complexity of the task could cause a flight crew to focus its attention on certain stimuli, and not maintain the parameters required to continue with the anticipated flight path under control which, combined with

factors such as low altitude and low airspeed, could lead aircraft to critical conditions, exceeding their aerodynamic capabilities under circumstances where regaining control becomes impossible.

3. Mid-air Collision (MAC)

Occurrences classified under Mid-air Collision category include all events in which there was a genuine loss of separation while both aircraft are airborne.

According to AIC ECCAIRS database, a total of five serious incidents and no accidents met the criteria for MAC category for the time period of interest.

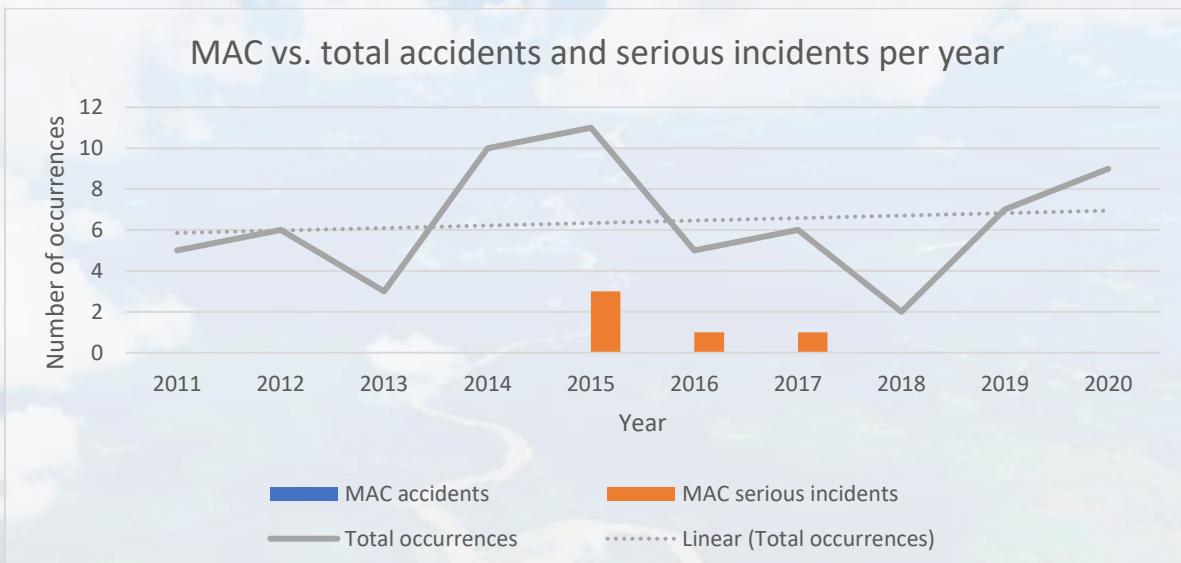


Figure 13. MAC vs. total accidents and serious incidents (2011-2020).

In line with Annex 13 to the Convention on International Civil Aviation, typical examples of occurrences that could be classified under MAC category include aircraft collisions in-flight, near collisions requiring an avoidance manoeuvre to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate.

Even when the MAC occurrences recorded for the time period of interest took place in various phases of flight and flight rules, the most recurrent factors identified were related to loss of situational awareness by flight crews and/or by air traffic controllers, leading to inadequate clearances, incorrect readbacks or erroneous assumptions with regard to aircraft in-flight trajectories, leading to loss of separation that in most cases required evasive manoeuvres.

It was also noticed that in two of the cases there were Traffic Collision Avoidance System – Resolution Advisory (TCAS-RA) alerts triggered, and in both cases flight crews reacted accordingly, performing the necessary actions and manoeuvres to avoid collisions.

4. Runway Safety (RS)

According to the Asia-Pacific Regional Safety Plan 2020-2022, Runway Safety (RS) at the regional level includes Runway Excursion (RE), Runway Incursion (RI) and Abnormal Runway Contact (ARC).

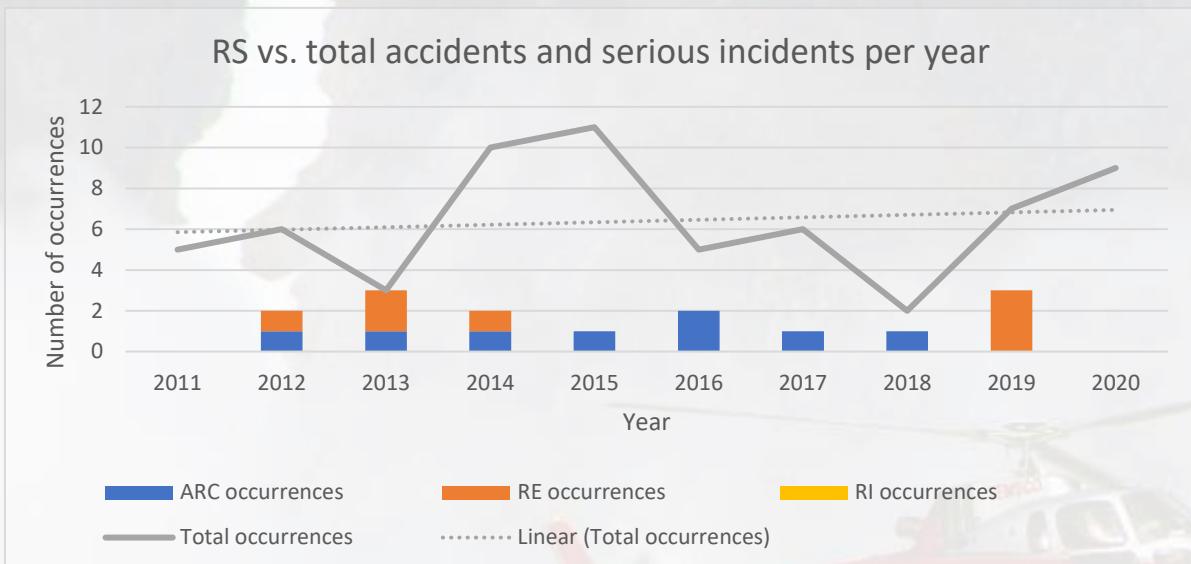


Figure 14. RS vs. total accidents and serious incidents (2011-2020).

The following sections address the specific categories included in Runway Safety.

4.1. Abnormal Runway Contact (ARC)

ARC refers to occurrences in which an aircraft has an abnormal contact with the runway or landing surface, such as hard/heavy landings, long/fast landings, off center landings, crabbed landings, nose wheel first touchdown, tail strikes, and wingtip/nacelle strikes.

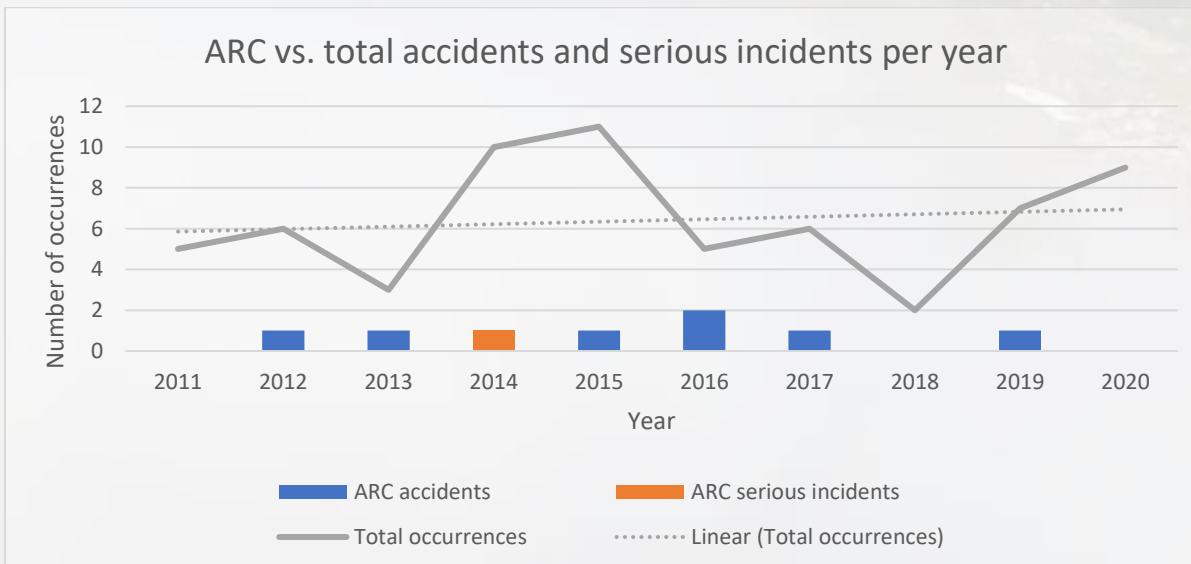


Figure 15. ARC vs. total accidents and serious incidents (2011-2020).

Over the last 10-year period, ARC was identified in seven accidents and one serious incident, all of them occurred during landing and involving different types of aircraft including single-engine and twin-engine airplanes, and a helicopter.

ARC occurrences during the period mainly were the results of bounced and hard landings, in most of the cases related to elements of unstable approaches including steeper angles of approach and high airspeeds. Weather contribution was also found in two cases, due to turbulence, downdraughts and tailwind. Most of the occurrences happened while operating in airstrips.

4.2. Runway Excursion (RE)

Runway Excursion category includes all occurrences in which there was a veer off or overrun off a runway or airstrip surface, during take-off or landing.

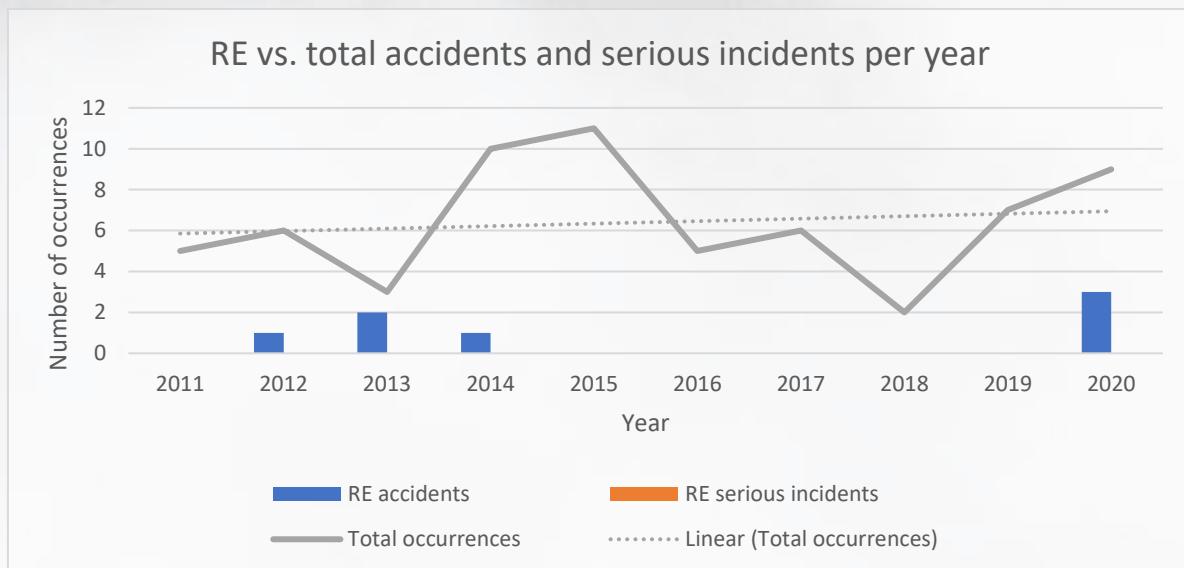


Figure 16. RE vs. total accidents and serious incidents (2011-2020).

Over the last 10-year period, a total of seven accidents were classified as runway excursions. Five of them occurred during landing whereas the other two occurred during take-off.

In the runway excursions occurred during landing, common elements usually observed were related to aircraft control and technique during approach and landing. Unstable approaches, especially in challenging environments like most of the airstrips in Papua New Guinea, increase the workload for the flight crew and usually lead to enter the landing phase with excess of energy, off centred or beyond the intended aiming point.

Under such circumstances, managing threats and errors resulting from the operation in short and challenging airstrips becomes even more complex and, if the attention of the flight crew diverts to factors other than maintaining effective control of the aircraft and timely and adequately reacting during that critical phase to apply the necessary braking action and reverse thrust if available, it can easily lead to undesired states in which directional control can be lost resulting in an excursion in a matter of seconds.

In the cases of runway excursions occurred during take-off, some of the elements observed could be related to timely identify and adequately react to maintain the intended take-off trajectory and

parameters of the aircraft. As take-off progresses, a delay in the identification and response to when the manoeuvre might get compromised, can result in the aircraft to have increased its energy to a point in which it becomes impossible to stop it in the remaining of the runway or airstrip.

4.3. Runway Incursion (RI)

Runway Incursion refers to any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and take-off of aircraft.

No accidents or serious incidents were identified during the period. However, being a HRC of interest to ICAO, it is monitored by the AIC.

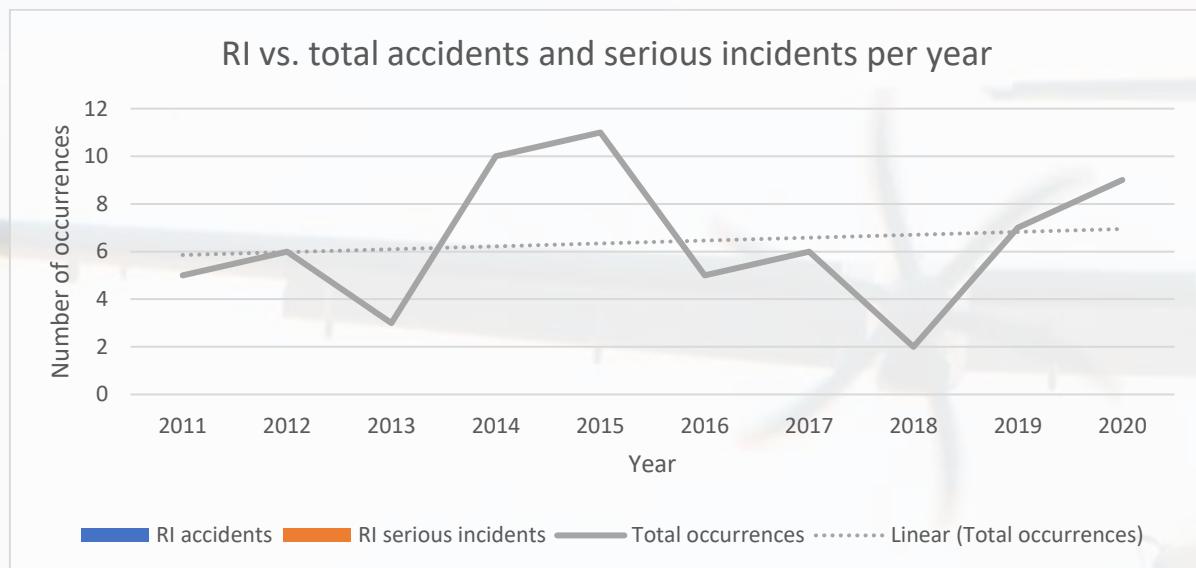


Figure 17. RI vs. total accidents and serious incidents (2011-2020).

Other risk categories of interest

Besides the analysis of the five HRCs, AIC ECCAIRS data showed other categories of interest including system/component failure or malfunction – non powerplant (SCF-NP), powerplant failure or malfunction (SCF-PP) and aerodrome (ADRM) which will be addressed in the following sections:

1. Aerodrome (ADRM)

Over the last 10-year period, ADRM category has been identified in 7 accidents and 2 serious incidents, mainly associated to operation into airstrips.

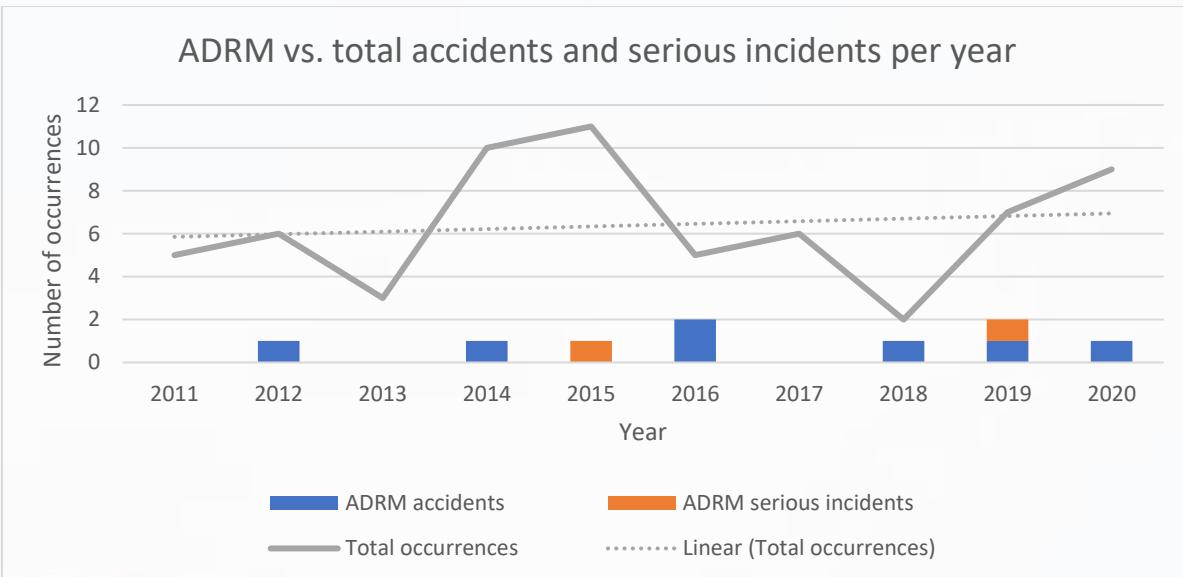


Figure 18. ADRM vs. total accidents and serious incidents (2011-2020).

Papua New Guinea offers challenging conditions for connecting distant locations through air. Many airstrips are located in areas in which only a short field with a steep slope is available. In addition, the operation into airstrips can be affected due to different factors including rapid weather changes and complex geographical environments.

Some of the most relevant factors identified in the ADRM occurrences of the last 10-year period include those related to the condition of the strips and their surroundings, such as obstacles in the approach path, softened strip surfaces due to rain, the presence of anthills and holes made by wildlife or the general deterioration of the strip condition due to lack of adequate maintenance over time.

2. System/component failure or malfunction – non powerplant (SCF-NP)

Over the time period between 2011 and 2020, SCF-NP was identified in two accidents and seven serious incidents.

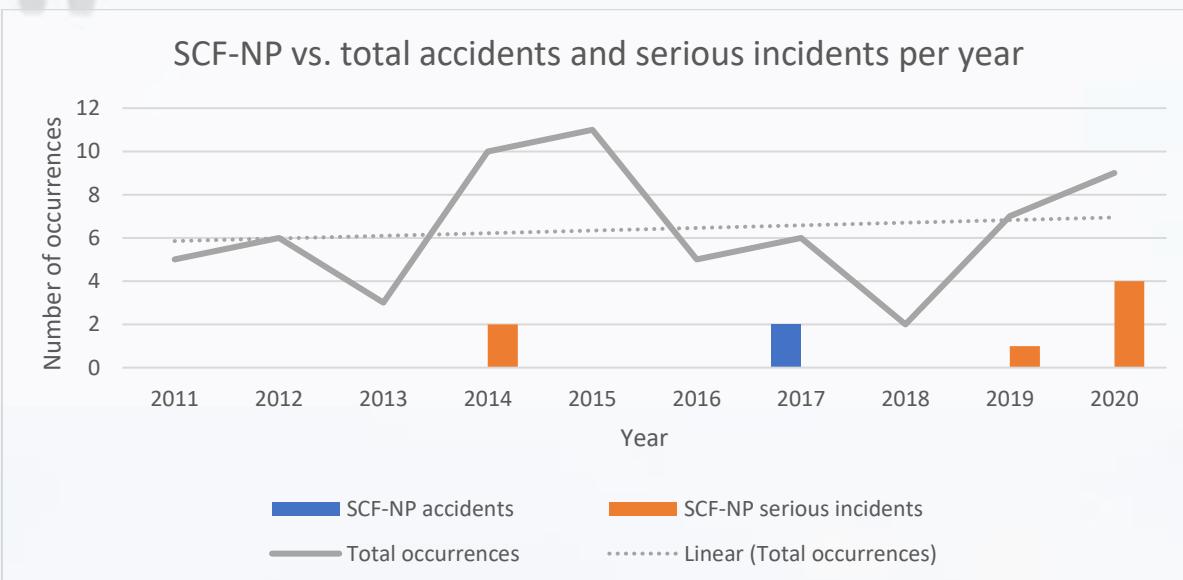


Figure 19. SCF-NP vs. total accidents and serious incidents (2011-2020).

A number of different systems or components were identified to have failed or malfunctioned in the context of the SCF-NP occurrences that took place in the time period, including landing gear components, tyres, fire warning systems, hydraulic systems, and cabin pressurisation systems. Except for one accident in which the landing gear failed receiving substantial damage during landing, all the rest of the aircraft were managed by the flight crew to land in a safe manner, therefore, no injuries were reported as a result of SCF-NP related occurrences.

However, the investigations conducted by the AIC revealed that, in some cases, flight crews did not fully adhere to the procedures in accordance with the applicable checklists or did not perform all the required actions in the correct sequence. Circumstances like those, although not contributing to the SCF-NP occurrences of the period of interest, decrease the safety margins in which the operations are performed and, under slightly different circumstances, can contribute to increase the potential risk of more severe consequences.

Additionally, it was also identified that pre- and post-occurrence maintenance practices for fault isolation and troubleshooting in some cases did not follow adequate processes, and remedial actions were limited to exchange of components. By not identifying clearly the underlying causes, in some of the cases malfunctions became intermittent, and ended compromising safety in-flight.

3. Powerplant failure or malfunction (SCF-PP)

Over the last 10 years, six accidents and four serious incidents were found to be related to SCF-PP, all of them during the first half of the period.

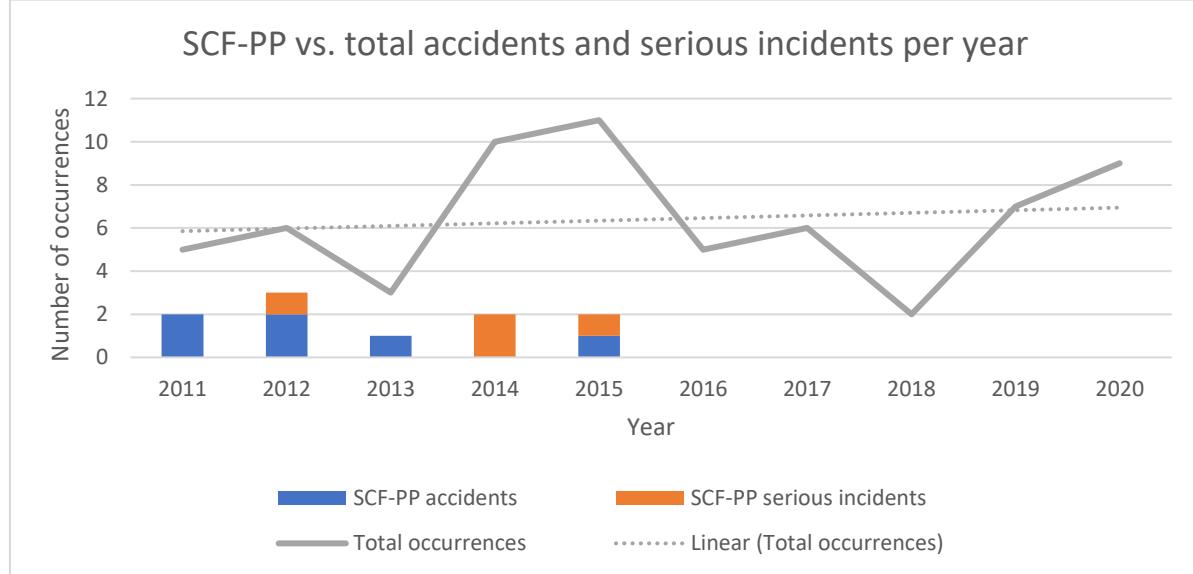


Figure 20. SCF-PP vs. total accidents and serious incidents (2011-2020).

Factors identified in SCF-PP included failures induced by flight crews, presence of foreign material in fuel lines, restriction of fuel flow due to kinks in a fuel line, fatigue and corrosion. Maintenance related findings were common for most of the cases, including inadequate practices for fault isolation, troubleshooting and return to service. It was also observed in some of the cases that maintenance documentation and records was nonexistent or inadequate, not allowing traceability of maintenance activities.

Implementation of Safety Actions based on AIC Safety Recommendations

Annex 13 to the Convention on International Civil Aviation defines Safety Recommendation as *a proposal of an accident investigation authority based on information derived from an investigation, made with the intention of preventing accidents or incidents and which in no case has the purpose of creating a presumption of blame or liability for an accident or incident. In addition to safety recommendations arising from accident and incident investigations, safety recommendations may result from diverse sources, including safety studies.*

Section 220 (4) (c) of the PNG Civil Aviation Act 2000 (as amended) establishes that the AIC has as one of its functions *to prepare and publish findings and recommendations, if any, in respect of any such inquiries and investigation.* As a result of the investigations conducted by the AIC over the last 10 years, a total of 109 Safety Recommendations had been issued.

In accordance with Annex 13 to the Convention, the AIC provides a timeframe of 90 days to the recipients of the Safety Recommendations to explain and provide evidence about the safety actions adopted or planned to address the underlying risk factors identified by the AIC.

To the date of this report, 28 Safety Recommendations remain active¹². In most of those cases the recipients have not informed to AIC the courses of action adopted or planned to address the safety deficiencies, exceeding the 90-days timeframe. The following chart shows the status of Safety Recommendations to the date of this report.

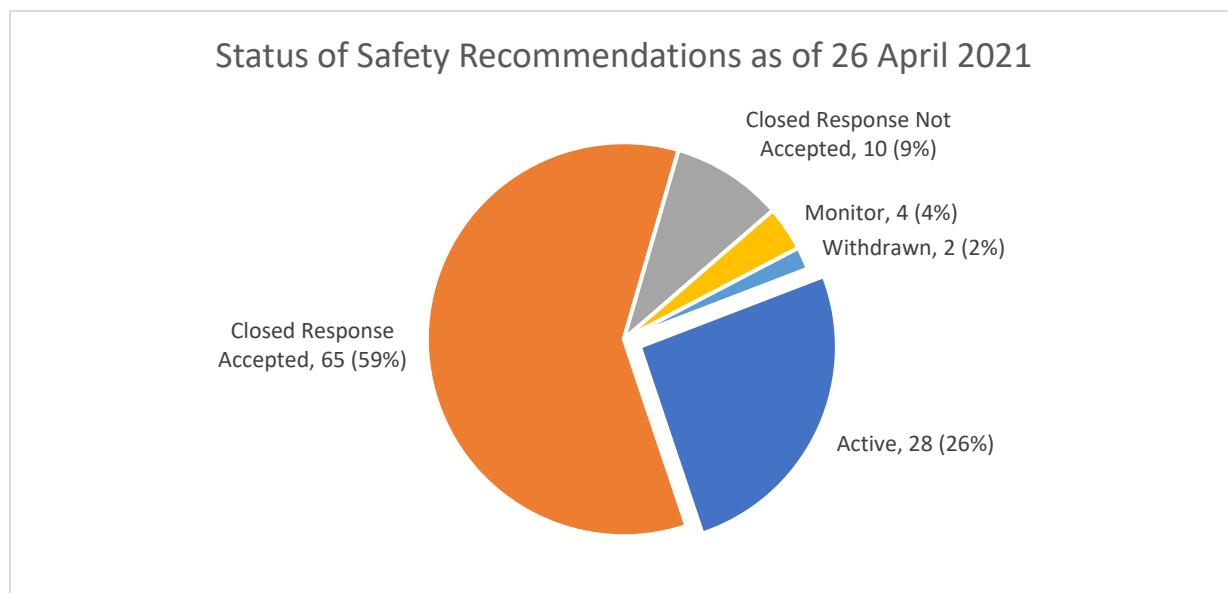


Figure 21. Status of AIC Safety Recommendations as of 26 April 2021

The AIC considers that if no effective safety action is adopted to act on a Safety Recommendation, the underlying risk factors identified in the aviation system will remain and may jeopardise aviation safety in the future. Therefore, it is paramount that recipients of Safety Recommendations adopt the necessary actions to improve safety, for the ultimate benefit of PNG and its citizens.

¹² Information about the methodology used by the AIC to assign rating and status to Safety Recommendations can be found on <https://www.aic.gov.pg/index.php/about-recommendations>

Conclusion

General

Improving aviation safety is a task that demands efforts from all the participants in the aviation system including State authorities, service providers and stakeholders. Therefore, harmonising priorities and encompassing efforts to address them in a joint manner, in line with the principles for safety management of the International Civil Aviation Organization, are key to develop a strong foundation to support the safe and sustainable growth of the aviation industry for the benefit of the operators and users of the transport system in the State and across the Region, contributing to the development of the State.

As a result of this Aviation Safety Report 2011-2020, a number of areas of interest has been identified. The AIC strongly believes that addressing them in a joint manner between the different actors of the aviation system will effectively contribute to the ultimate goal of protecting the lives of PNG citizens and the travelling public in general by reducing risks of accidents and serious incidents.

Aviation authorities, industry and stakeholders are encouraged to use the findings presented in this report and especially the areas of interest presented in the following paragraphs, in conjunction with their own safety data to develop, implement and improve strategies to continuously enhance safety in the aviation system of Papua New Guinea, and are invited to contribute to future versions of this Aviation Safety Report by providing safety data of relevance for the State and the Region.

Areas of interest

Compliance with international standards

Even when the AIC has been legally established as an independent agency and its role, mandate, functions and relationships are clearly established in the legislation, improvement of the level of effective implementation of the international standards for accident and serious incident investigation, necessary for the AIC to perform its functions, exceeds the organisation and requires the involvement of different levels of the State and its authorities, to ensure that the necessary capacity is developed and resources are effectively allocated to meet the international requirements and, by doing so, to preserve aviation safety as a matter of national importance for PNG.

In the same manner, the AIC will continue to contribute to the enhancement of the capacities for accident and serious incident investigation and the development of data-driven strategies for safety management, by promoting the implementation of agreements and understanding between the States, the industry and stakeholders, to make the aviation system safer especially in PNG and across the Asia and Pacific Regions, for the benefit of the travelling public.

Risk categories in PNG

The AIC will continue to closely monitor the High-risk Categories identified by the International Civil Aviation Organization and by the Asia-Pacific Regional Aviation Safety Group, as well as those arising from the analysis of data from accident and serious incident investigations and other relevant sources for Papua New Guinea. Therefore, especial attention will continue to be given to the behaviour of the following risk categories:

1. Aerodrome (ADRM).
2. Controlled flight into or towards terrain (CFIT).
3. Loss of control in-flight (LOC-I).
4. Mid-air collision (MAC).
5. Runway safety (RS) inclusive of:
 - a. Abnormal runway contact (ARC).
 - b. Runway excursion (RE).
 - c. Runway incursion (RI).
6. System/component failure or malfunction – non powerplant (SCF-NP).
7. Powerplant failure or malfunction (SCF-PP).

Safety recommendations

Safety recommendations are issued as a result of the functions of the AIC, when underlying conditions identified effectively or potentially compromise safety.

The AIC has identified that 26% of the Safety Recommendations issued has not been effectively addressed by the intended parties and, in most of the cases, no response has been provided to the AIC about planned or implemented risk mitigation strategies or safety actions.

The effect of not addressing the Safety Recommendations issued by the AIC is that the underlying deficiencies and unsafe conditions will remain in the system and can contribute to accidents and serious incidents in the future.

The AIC will continue to strive for safety actions to be effectively implemented as a result of Safety Recommendations, for the benefit of the State and its citizens.

