FLIGHT SAFETY FOUNDATION

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Asia Pacific Centre for Aviation Safety (AP-CAS)

Airworthiness Needs Analysis Study

Report Highlights

28 FEBRUARY 2025

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1 Introduction

This report presents the results of an analysis conducted to identify the underlying issues associated with the high number of System Component Failure or Malfunction – Non-Powerplant (SCF-NP) and Powerplant (SCF-PP) occurrences in the Asia Pacific region. To support this study, additional data gathering tools were developed, and existing tools were enhanced to help identify contributing factors to these risk occurrence categories. The study included engagements with a cross-section of airlines, maintenance, repair, and overhaul (MRO) organizations, and regulators from various States of Design to supplement and validate the findings. This process was intended to determine causal factors and highlight areas for further focus.

In January 2023, Flight Safety Foundation, through its newly formed Asia Pacific Centre for Aviation Safety (AP-CAS), initiated a comprehensive regional safety assessment. This analysis identified top risk occurrence categories, validated through workshops involving States and industry stakeholders. The findings indicated that the highest risk categories aligned with the International Civil Aviation Organization (ICAO) Global Aviation Safety Plan (GASP) 2023-2025 and the APAC Regional Aviation Safety Plan (APAC-RASP). However, the assessment also highlighted emerging risks, including SCF-NP and SCF-PP, which were not previously identified in these ICAO plans.

The combination of SCF-NP and SCF-PP occurrences accounted for the highest number of non-fatal accidents and serious incidents in the region between 2017 and 2023, comprising approximately one-fourth of all occurrences during this period. While these events are often survivable when pilots take appropriate actions, they underscore the importance of training and operational preparedness. The global rise in SCF-NP occurrences over the past five years is reflected in the draft Global Aviation Safety Plan (GASP) 2026-2028, which will be submitted to the ICAO Assembly in 2025 for approval.

Recognizing the significance of these issues, the Regional Aviation Safety Group Asia and Pacific Region (RASG-APAC/13) meeting held in January 2024, encouraged Flight Safety Foundation to conduct further analysis of SCF-NP and SCF-PP occurrences and determine the underlying factors contributing to these failures and malfunctions. This study seeks to enhance aviation safety by identifying key factors associated with these incidents, as reported by State accident investigation authorities. Data sources included ICAO Universal Safety Oversight Audit Program (USOAP) results, the Foundation's Aviation Safety Network (ASN) accident and serious incident reports, ICAO's Online Airworthiness Information Network, and additional insights from safety partners.

The study aims to identify systemic factors contributing to SCF-NP and SCF-PP, including maintenance practices, instructions for continued airworthiness, skilled workforce shortages, training of maintenance personnel, and the flow of continuing airworthiness information. Findings from this analysis will make recommendations for proactive risk mitigation strategies and the next steps to improve safety across the region.

2 Acknowledgements

This study would not have been possible without the invaluable assistance of numerous organizations and dedicated individuals who contributed their insights. We extend our deepest gratitude to our partners, including the Association of Asia Pacific Airlines (AAPA), the International Air Transport Association (IATA), the European Union Aviation Safety Agency (EASA), the Federal Aviation Administration (FAA), the International Coordinating Council of Aerospace Industries Associations (ICCAIA), and the International Civil Aviation Organization (ICAO) Secretariat, along with its member States. Their contributions at every stage of the project were instrumental in developing this report.

3 Findings and Recommendations

In January 2024, Flight Safety Foundation, through its Asia Pacific Centre for Aviation Safety (AP-CAS), initiated a comprehensive regional airworthiness needs analysis. This study aimed to identify underlying issues contributing to System Component Failures or Malfunction—Non-Powerplant (SCF-NP) and System Component Failures or Malfunction—Powerplant (SCF-PP) in the Asia Pacific region. Additionally, the study assessed the effectiveness of the flow of continuing airworthiness information among regulatory authorities, air operators, and maintenance organizations.

Key Findings

SCF-NP– APAC Region

- SCF-NP accounted for a significant proportion of non-fatal accidents and serious incidents, with cabin pressure system failures (51 percent), hydraulic and landing gear failures (31 percent), and electrical failures (7 percent) being the most common issues.
- Inadequate maintenance practices were identified as contributing factors in 24 percent of these occurrences, often preventable through adherence to manufacturers' recommended scheduled maintenance and OEM bulletins.
- Forty-nine percent of APAC States have low Effective Implementation (EI) (as defined by the ICAO Universal Safety Oversight Audit Programme Doc. 9735) scores in key airworthiness oversight areas, including technical personnel qualifications, certification and approvals, surveillance obligations, and resolution of safety concerns.
- These results indicate areas requiring increased safety oversight to address systemic issues such as defect rectification and control, minimum equipment list (MEL) compliance, recurring defects, root cause analyses, and maintenance program approvals. Furthermore, shortcomings in regulatory surveillance,

including MEL approvals and monitoring of reliability programs, contribute to recurring issues that may impact operational safety.

SCF-PP– APAC Region

- Turbine blade failures (41 percent) and other critical component failures (32 percent) were the leading critical component failures of SCF-PP incidents.
- Inadequate maintenance practices were identified as contributing factors in 35 percent of investigated SCF-PP events, and 41 percent of these events were coordinated with engine manufacturers for corrective actions.
- Despite a decline in global SCF-PP events, the APAC region continues to report the highest number of occurrences, averaging nine per year.
- Fifty six percent of APAC States have low Effective Implementation (EI) scores in key airworthiness oversight areas, including technical personnel qualifications, certification and approvals, surveillance obligations, and resolution of safety concerns.
- Survey data conducted with the support from Association of Asia Pacific Airlines (AAPA) members highlighted persistent challenges in engine component failures, parts shortages, and operational disruptions, with 70 percent of respondents experiencing significant aircraft downtime due to component unavailability.

Flow of Continuing Airworthiness Information

- ICAO developed Circular 95 on Continuing Airworthiness of Aircraft in Service in 1985. The document aimed to include the contact details for updated information on the State of aircraft registry continuing airworthiness information. This was to facilitate the exchange of airworthiness information between the State of Design, State of Manufacture, and State of Registry. Additionally, it provided guidance on establishing databases for reporting and analyzing faults and defects, aiming to harmonize how States manage and exchange airworthiness information. However, this circular has not been maintained and updated over time.
- To address the challenge of keeping the Circular 95 information up to date, on 29 October 2014, a web-based version of the document was launched to provide an online means for ICAO Member States to update their individual information in a timely manner, as needed. The Online Airworthiness Information Network platform contains information for States of Registry and States of Operator to ensure the continuing airworthiness of aircraft. It was created to facilitate sharing continuing airworthiness information between the State of Design, the State of Manufacture, and the State of Registry and to assist States to meet their continuing airworthiness responsibilities. Only 12 percent of the States in the APAC region have updated their information in the Online Airworthiness Information Network at least once since 2014.

- The Online Airworthiness Information Network remains underutilized, with only 12 percent of APAC regulators consistently updating their information since its launch in 2014.
- Outdated or missing contact details from the State of Registry for continuing airworthiness matters hinder effective communication and coordination between the State of Design, State of Registry, and operators.
- Gaps in regulatory oversight impact fault defect reporting and root cause analyses and may limit the ability of regulators to monitor and mitigate airworthiness concerns effectively.

Recommendations

General

Enhancing State Regulator Awareness of Airworthiness Obligations:

State regulators should ensure that their airworthiness inspectorate staff receive training focused on their regulatory responsibilities in alignment with ICAO Annex 8 – Airworthiness of Aircraft obligations. This training should emphasize:

1. Continuing Airworthiness Responsibilities – Strengthening inspectors' understanding of their role in ensuring compliance with international requirements for aircraft maintenance, associated parts and components, defect management, and MEL approvals.
2. Service Difficulty Reporting (SDR) and Oversight – Enhancing regulatory capability to assess and act on SDR data to identify safety trends, recurring defects, and systemic reliability issues affecting aircraft airworthiness.
3. Component Failures and Risk-Based Surveillance – Improving awareness of SCF-NP and SCF-PP component failures, including their impact on operations, parts availability challenges, and necessary regulatory interventions.

SCF-NP and SCF-PP:

4. APAC regulators identifying SCF-NP and SCF-PP events among their air operators should enhance safety oversight to address systemic issues, including defect rectification and control, MEL compliance, recurring defects, root cause analyses, and maintenance program approvals.
5. APAC regulators with low EI scores or with an increase in reported SCF-NP and SCF-PP events should provide specialized training for their inspectors, focusing on defect rectification and control, MEL compliance, recurring defects, root cause analyses, and maintenance program approvals.
6. ICAO Regional Aviation Safety Group (RASG) – Asia and Pacific Region (APAC) should consider recognizing SCF-NP as well as SCF-PP as additional occurrence categories of importance in its APAC Regional Aviation Safety Plan (RASP) and

develop safety enhancement initiatives (SEIs) including the SEI Outputs to help reduce aviation risk.

Flow of Continuing Airworthiness Information

7. ICAO should reassess the Online Airworthiness Information Network usability and accessibility by: Conducting a user experience review to identify challenges States have faced in entering and retrieving information. Provide technical assistance and a streamlined interface to encourage broader participation. Modernize and simplify the online Airworthiness Information Network making it more user-friendly and widely adopted. Encourage States to adopt electronic systems for airworthiness reporting and provide technical assistance where necessary. Develop targeted training and guidance materials to help States understand the importance and use of the Online Airworthiness Information Network. Conduct regional workshops and webinars to ensure regulatory personnel are aware of the Online Airworthiness Information Networks benefits and functionalities.
8. Operators and MROs in collaboration with their aviation regulators should adopt protocols to ensure consistency in reporting. Training programs focused on SDR completion and root cause analysis are essential to enhance the quality of submissions.
9. Foster continuous feedback between operators, MROs, and regulators to improve fault detection and resolution processes. Operators and MROs should create internal systems to analyze and address recurring issues, ensuring that data shared with regulators and OEMs is comprehensive and actionable.
10. State regulators should actively update and validate contact details in the AIN, ensuring reliable communication channels for airworthiness reporting. Establish systems to monitor and manage fault defect reporting from operators and MROs.
11. Regulators should strengthen regulatory safety oversight by prioritizing the integration of SDR reviews into their State Safety Program (SSP) frameworks. This involves analyzing collected data to identify trends, resolve recurring issues, and implement risk management strategies.

4 Conclusions

The study underscores the urgent need for regulatory enhancements in SCF-NP and SCF-PP oversight, improved coordination between States and air operators, and a revitalized approach to continuing airworthiness information sharing. Strengthening engagement with ICAO's airworthiness reporting tools and implementing structured training for regulators and operators will be critical in ensuring a more effective and proactive approach to airworthiness management in the Asia Pacific region.

Appendix A – System Component Failure or Malfunction - Non Powerplant

SYSTEM COMPONENT FAILURE OR MALFUNCTION NON POWERPLANT

FACT SHEET APAC REGION 2017-2023

1.0 Analysis

1.1 System / Component Failure or Malfunction -Non-Powerplant (SCF-NP) is ranked the second highest accident/serious incident (non-fatal) occurrence category in the APAC region after runway excursions and accounts for 14 percent of all accidents and serious incidents in the region.

1.2 The ASN database shows there were 8 SCF-NP events in the APAC region in 2023 and 9 in 2022, which is consistent with the average number of SCF-NP events year-over-year from 2017-2023. Even during the period of the pandemic, SCF-NP events averaged nine each year during which much of the commercial aviation industry was shut down.

1.3 During the reporting period all SCF-NP events were non-fatal and 9 percent were classified as accidents. Interestingly, half of the SCF-NP events in 2023 were classified as accidents, however no accident report, or preliminary reports have been filed so far as they are still in the investigation process. Seventy-two percent of all SCF-NP events in the region occurred on jet aircraft, the rest were on turboprop aircraft. Approximately 60 percent of all SCF-NP events occurred during the en-route phase of flight and 17 percent occurred during the landing phase and ground and take off phases respectively.

1.4 Over the seven-year period, cabin pressure system failures have been the leading SCF-NP. Forty-eight percent of all reported incidents were the result of pressure system failures followed by 34 percent hydraulic and landing gear system failures and 9 percent electrical system failures. Five events were the result of structural or corrosion related failures. Twenty-eight percent of all SCF-NPs can be

attributed to poor maintenance practices or could have been prevented by adhering to manufacturers recommended scheduled maintenance as well as OEM bulletins. Thirty-seven percent of all SCF-NP events, accidents or serious incidents, were investigated during this reporting period. All events that were investigated included recommendations including consultation with the OEM.

1.5 Accidents and serious incidents in the APAC region resulting from hydraulic and landing gear system failures were mainly caused by:

- Wear and tear on the wheels, tires, axles, and other parts including corrosion resulting in failure of components.
- Leaking hydraulic fluid
- Damaged or malfunctioning hydraulics
- Malfunctions in the locking mechanisms
- Jamming of the wheels

1.6 When comparing to the global accident and serious incident results in 2023, there were 22 SCF-NP events, which is below the 25.4 per year on a five-year rolling average seen during 2017-2023. The APAC region averages 10.0 SCF-NP accidents/serious incidents per year for the same time period, making it the highest region with SCF-NP events. The comparison of the 5-year average for each ICAO region for SCF-NP events is the following:

2.0 ICAO Global Aviation Safety Plan (GASP)

2.1 The GASP has not highlighted SCF-NP as a global risk and therefore is not reflected in the latest version of the GASP.

2.2 The Global Aviation Safety Roadmap serves as an action plan to assist the APAC aviation community in developing regional aviation safety plans (RASPs) and national aviation safety plans (NASPs) by outlining safety enhancement initiatives (SEIs) associated with the global high-risk categories of occurrences (HRCs). Since SCF-NP is not reflected as an HRC, no guidance is given to the regions or States in the form of actions that can be considered for the RASP and NASPs.

3.0 APAC Regional Aviation Safety Plan (RASP)

3.1 The RASP recognizes that SCF-NP has contributed to accidents and serious incidents in the APAC region that resulted in substantial damage to aircraft, but no fatal accidents. As a result, SCF-NP was not identified as a regional HRC.

4.0 National Aviation Safety Plans (NASP)

Fifteen APAC States have published national aviation safety plans. No State has reflected SCF-NP as a national operational risk.

5.0 **Precursors /contributory Factors and actions that can be taken to eliminate or mitigate system component failures (non powerplant).**

5.1 Precursors and contributing factors: While poor aircraft maintenance practices can certainly contribute to SCF-NP, it is not the only reason. Aircraft maintenance is a critical aspect of aviation safety and reliability, and inadequate maintenance practices can lead to a higher risk of failures. However, it is essential to recognize that various factors can contribute to SCF-NP.

- **Environmental conditions**: Exposure to harsh environmental factors, such as extreme temperatures, humidity, or corrosive substances, can accelerate component degradation and failure.
- **Deterioration due to ageing components:** Components naturally degrade over time due to wear and tear, leading to reduced performance and eventual failure. The age of an aircraft fleet is also a factor.
- **Repair issues**: Compatibility issues between components or improper repairs can cause failures in the system. This can occur from unapproved modification or repairs made to in an aircraft.
- **Mechanical overload and stress**: Components can fail if subjected to excessive loads, stress, or vibration beyond their designed limits.
- **Improper handling and shipping of parts**: Mishandling during installation, maintenance, or repairs can damage components and lead to failures as well as damage caused by shipping.
- **Human performance including human factors issues**: Errors made by maintenance personnel or operators during maintenance or operation can result in component failures.
- **Lack of training**: Insufficient training of maintenance personnel may lead to improper maintenance practices, increasing the risk of failures.
- **Maintenance programs:** Being approved by State of Registry but not adhering to a manufacturer's recommended maintenance schedule and / or Chapter 5 airworthiness limitations may impact the airworthiness of the aircraft. Additionally, the maintenance program intervals may not be adjusted to reflect the environment, role and utilization rate of the aircraft.
- **Improper implementation of reliability programs and condition monitoring.**
- **Damage:** Accidental damage and/or environmental damage.
- **Inadequate maintenance practices:** If components are not inspected thoroughly and regularly, potential issues may go undetected, leading to unexpected failures.
- **Inadequate oversight**: Inability to properly oversee operations due to poor training, operation procedure, and/or maintenance.

- **Major component degradation** as a result of fatigue, fretting, wear, corrosion, or creep, depending on the component or system operation.
- Suspected unapproved parts (SUPS)

5.2 Actions:

- Approve operator maintenance programs taking into consideration changes to the maintenance programme to reflect operator experience, environment of operation, utilization rate.
- Approve operator maintenance programs to include when applicable, condition monitoring or condition based maintenance (CBM), based on predictive maintenance.
- Establish the requirements for, and ensure oversight of defect control and deviations from the approved minimum equipment list.
- Training and Human Factors: Train operators and maintenance personnel on proper procedures, handling, and troubleshooting techniques.
- Establish the requirements for training of operators and maintenance personnel on human factors, environmental protections, root cause analysis, software and firmware updates, and supplier quality assurance. Train operators and maintenance personnel on proper procedures, handling, and troubleshooting techniques.
- Perform thorough root cause analysis/study to understand the underlying reasons and implement corrective actions.
- Facilitate the sharing of continuing airworthiness information between State of Design, State of Manufacture, and State of Registry and complete the necessary information on the ICAO Online Airworthiness Information Network (formerly ICAO Circular 95)
- Oversight of supplier's quality assurance programs

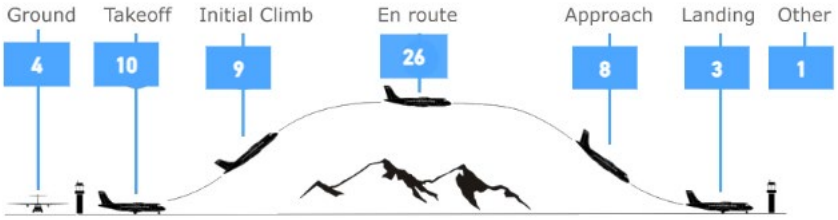
SYSTEM COMPONENT FAILURE OR MALFUNCTION POWERPLANT

FACT SHEET APAC REGION 2017-2023

1.0 Analysis

1.1 SCF-PP is ranked the third highest accident/serious incident (non-fatal) occurrence category in the APAC region after runway excursions and SCF-NP and accounts for 11percent of all accidents and serious incidents in the region.

1.2 The Aviation Safety Network (ASN) database shows there were four SCF-PP events in the APAC region in 2023 and seven in 2022, which is below the average number of SCF-PP events year-over-year from 2017-2023.



1.3 During the reporting period all SCF-PP events were non-fatal and only two events were classified as accidents. sixty-nine percent of all SCF-PP events in the region occurred on jet aircraft, the rest were on turboprop aircraft. Forty-four percent of all SCF-PP events occurred during the en-route phase of flight and 19percent occurred during the take-off phase.

1.4 Over the seven-year period, turbine blade failures have been the leading critical component failure accounting for 41 percent of all reported events followed by 32 percent for other component failures such as propellor shaft failures, pumps, gears, bearings etc. Sixty-seven percent of all SCF-PP accidents or serious incidents were investigated or were in the process of being investigated during this reporting period. Forty-one percent of the events involved coordination with the engine manufacturers. Thirty-five percent of all SCF-PP events that were investigated, it was determined that poor maintenance practices were a contributing factor to the accident or serious incident.

1.5 According to accident and serious incident investigation reports, maintenance practices that did contribute to accidents and serious incidents in the APAC region included:

- Lack of adherence to the MRO checklist.
- Inadequate technical record keeping.
- Incomplete inspections performed.
- Additional borescope inspections recommended that were not performed.
- Poor maintenance
- The engine improperly returned to service.
- Not adhering to OEM procedures.
- Improper maintenance or non-adherence to recommended maintenance practices.
- Did not hold the necessary approval to sign the maintenance release.
- Engine not in compliance with OEM service bulletins.
- Mis assembly during previous shop visit.

1.6 When comparing to the global accident and serious incident results in 2023, there were 12 SCF-PP events, which is below the 21.0 per year on a five-year rolling average seen during 2017-2023. The APAC region averages nine SCF-PP accidents/serious incidents per year for the same time period, making it the highest region with SCF-PP events. The comparison of the 5-year average for each ICAO region for SCF-PP events is the following:

2.0 ICAO Global Aviation Safety Plan (GASP)

2.1 The GASP has not highlighted SCF-PP as a global risk and therefore is not reflected in the latest version of the GASP.

2.2 The Global Aviation Safety Roadmap serves as an action plan to assist the APAC aviation community in developing the Regional Aviation Safety Plan (RASP) and national aviation safety plans (NASPs) by outlining safety enhancement initiatives (SEIs) associated with the high-risk occurrence categories (HRCs). Since SCF-PP is not reflected as an HRC, no guidance is given to the regions or States in the form of actions that can be considered for the RASP and NASPs.

3.0 APAC Regional Aviation Safety Plan (RASP)

3.1 SCF-PP has not been identified as an accident occurrence category nor as a regional HRC in the APAC RASP 2023-2025.

4.0 National Aviation Safety Plans (NASPs)

Fifteen APAC States have published NASPs. No State has reflected SCF-PP as a national operational risk.

5.0 Precursors /contributory factors and actions that can be taken to eliminate or mitigate SCF-PP.

5.1 Precursors and contributing factors: While inadequate aircraft maintenance practices can certainly contribute to SCF-PP, it is not the only reason. Aircraft maintenance is a critical aspect of aviation safety and reliability, and inadequate maintenance practices can lead to a higher risk of failures. However, it is essential to recognize that various factors can contribute to SCF-PP.

- **Environmental conditions**: Exposure to harsh environmental factors, such as extreme temperatures, humidity, or corrosive substances, can accelerate component degradation and failure.
- **Deterioration due to ageing components:** Components naturally degrade over time due to wear and tear, leading to reduced performance and eventual failure. The age of an aircraft fleet is also a factor.
- **Repair issues**: Compatibility issues between components or improper repairs can cause failures in the system. This can occur from unapproved modification or repairs made to an aircraft.
- **Mechanical overload and stress**: Components can fail if subjected to excessive loads, stress, or vibration beyond their designed limits.
- **Improper handling and shipping of parts**: Mishandling during installation, maintenance, or repairs can damage components and lead to failures as well as damage caused by shipping.
- **Human performance including human factors issues**: Errors made by maintenance personnel or operators during maintenance or operation can result in component failures.
- **Lack of training**: Insufficient training of maintenance personnel may lead to improper maintenance practices, increasing the risk of failures.
- **Maintenance programs:** Being approved by State of Registry but not adhering to a manufacturer's recommended maintenance schedule and / or Chapter 5 airworthiness limitations may impact the airworthiness of the aircraft. Additionally, the maintenance program intervals may not be adjusted to reflect the environment, role and utilization rate of the aircraft.
- **Improper implementation of reliability programs and condition monitoring.**
- **Damage:** Accidental damage and/or environmental damage .
- **Inadequate maintenance practices:** If components are not inspected thoroughly and regularly, potential issues may go undetected, leading to unexpected failures.
- **Inadequate oversight**: Inability to properly oversee operations due to poor training, operation procedure, and/or maintenance.
- **Major component degradation** as a result of fatigue, fretting, wear, corrosion, or creep, depending on the component or system operation.

- Suspected unapproved parts (SUPS)

5.2 Actions:

- Approve operator maintenance programs taking into consideration changes to the maintenance programme to reflect operator experience, environment of operation, utilization rate.
- Approve operator maintenance programs to include when applicable, condition monitoring or condition-based maintenance, based on predictive maintenance.
- Establish the requirements for, and ensure oversight of defect control and deviations from the approved MEL
- Training and human factors: Train operators and maintenance personnel on proper procedures, handling, and troubleshooting techniques.
- Establish the requirements for training of operators and maintenance personnel on human factors, environmental protection, root cause analysis, software and firmware updates, and supplier quality assurance. Train operators and maintenance personnel on proper procedures, handling, and troubleshooting techniques.
- Perform thorough root cause analysis/study to understand the underlying reasons and implement corrective actions
- Facilitate the sharing of continuing airworthiness information between State of Design, State of Manufacture, and State of Registry and complete the necessary information on ICAO Online Airworthiness Information Network (formerly ICAO Circular 95)
- Oversight of supplier's quality assurance programs

Appendix C – Flow of Continuing Airworthiness of Aircraft

Flow of Continuing Airworthiness of Aircraft

FACT SHEET APAC REGION

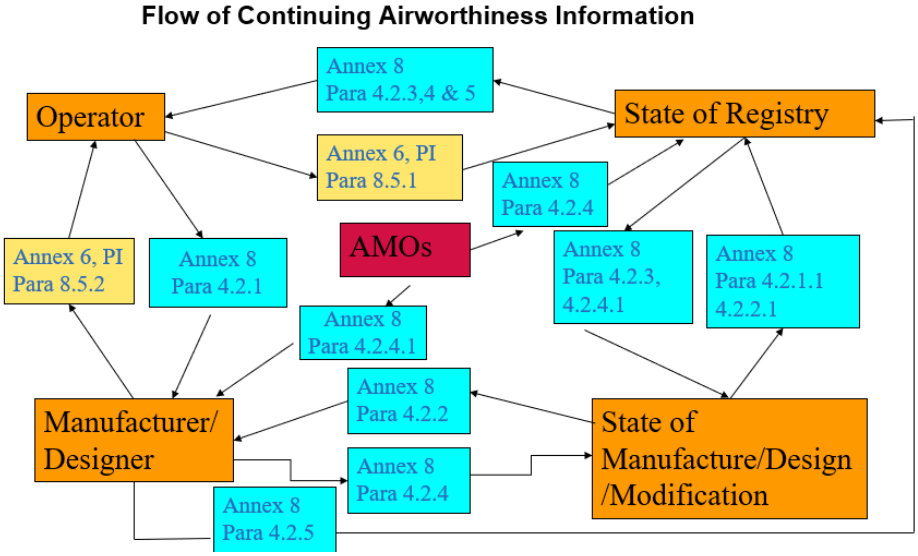
1.0 Background

1.1 The Continuing Airworthiness of Aircraft in Service Circular 95 contains useful information for States of Registry and States of Operator to ensure the continuing airworthiness of aircraft, particularly when an aircraft is transferred from one Registry to another and when issuing the Certificate of Airworthiness to an aircraft. It was created to facilitate sharing continuing airworthiness information between the State of Design, the State of Manufacture, and the State of Registry.

1.2 The enhanced/ online version of Circular 95, called the Online Airworthiness Information Network, was introduced in 2014 to assist States to meet their continuing airworthiness responsibilities and facilitate the import and export as well as the exchange of aircraft for lease, charter or interchange and to facilitate the operation of aircraft in international air navigation. The online version replaces and expands on what was contained in ICAO Circular 95.

1.3 A large number of States operate aircraft that have been manufactured and/or certificated in another State. To continue to maintain aircraft at a safe level of airworthiness it is necessary that the State of Registry regularly receive all continuing airworthiness information relating to aircraft on its register. Such information pertaining to the continuing airworthiness of aircraft and their equipment includes ADs issued by the State of Design or Manufacture and Service Bulletins (SBs) issued by the manufacturer.

2.0 Reporting requirements



2.1 Annex 8 provides that the State of Registry, when it first enters on its register an aircraft of a particular type for which it is not the State of Design, advises the State of Design that it has entered such an aircraft on its register. States should establish direct contact with the authorities responsible for continuing airworthiness of aircraft and their equipment and agree upon the method of communication for the required information.

2.2 As reflected in the chart above, Annex 8 and supporting guidance material in the ICAO Airworthiness Manual, Doc 9760 establishes reporting requirements for the State of Design, State of Manufacturer, State of Registry as well as a requirement for all States to establish a reporting system for its air operators, approved maintenance organizations, organizations responsible for type design, manufacturing as well as organizations responsible for modifications.

2.3 ICAO Annex 6 as well as ICAO Doc 9760 requires air operators to report on faults, malfunctions and defect reporting and other significant maintenance and operational information by the operator to the type design organization as well as to the State of Registry.

2.4 Only twelve percent of the States in the APAC region have updated the Online Airworthiness Information Network platform at least once since 2014. When the Web platform was first launched in 2014, it was initially populated by ICAO with input received by States through State Letter. At that time, 45 percent of the APAC States were reflected with a focal point responsible for continuing airworthiness matters including an email address for contact. Today, only 22 percent of the original forty-five percent providing email contacts are valid. Therefore, only nine States in the APAC region currently have valid email contact information on the Online Airworthiness Information Network.

2.5 During its operational life, aircraft may experience faults, malfunctions, defects and other occurrences, which cause or might cause adverse effects on the continuing airworthiness of aircraft. States are required to establish systems where information on such faults, malfunctions and defects, are transmitted to the organization responsible for the type design, reported to the State's authority and transmitted to the State of Design for appropriate action. Based on the analysis of the Cir 95 platform, thirty five percent of the APAC States have some form of system in place, however, only twenty five percent have an online system for reporting, with correct emails and valid links.