

**61ST CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGION**

*Kuala Lumpur, Malaysia
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AGENDA ITEM 3: AVIATION SAFETY

**STRENGTHENING SAFETY CULTURE THROUGH
STRATEGIC ENGAGEMENT ON SYSTEM/COMPONENT
FAILURE (NON-POWERPLANT) RISK REDUCTION**

(Presented by Malaysia)

INFORMATION PAPER

SUMMARY

This paper highlights Malaysia's collaborative engagement with Approved Maintenance Organisations (AMOs) to address the risk of System/Component Failure or Malfunction – Non-Powerplant (SCF-NP). Aligned with Action Items 60/4 and 60/3 of the 60th DGCA Conference, this initiative promotes a positive safety culture and structured information exchange, strengthening oversight to continuously reduce SCF-NP risks within the maintenance domain.

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1. INTRODUCTION

1.1 The 60th Conference of Directors General of Civil Aviation, Asia and Pacific Regions (Sendai, Japan, 28 July – 1 August 2025) endorsed, among others, Action Item 60/3 and Action Item 60/4 under Agenda Item 3 (Aviation Safety). Action Item 60/3 encouraged States to participate in the Regional Data Sharing Initiative, recognising the importance of sharing data to identify regional safety risks. Action Item 60/4 acknowledged Positive Safety Culture as a safety enabler in all applicable areas and encouraged States to implement Positive Safety Culture reporting and to share experiences and best practices, including planned and regular engagement with representative organisations of personnel, operators, and manufacturers.

1.2 Aligned with these regional initiatives, the ICAO Global Aviation Safety Plan (GASP) 2026–2028 identified System/Component Failure or Malfunction – Non-Powerplant (SCF-NP) as one of the “other global risks of occurrences,” given its prominent share of accidents and serious incidents across ICAO regions. Malaysia is concurrently developing the Malaysia Aviation Safety Plan (MASP) 2026–2028 to align national safety priorities with the GASP.

1.3 The Flight Safety Foundation’s Airworthiness Needs Analysis Study (Asia Pacific Centre for Aviation Safety, February 2025) found that SCF-NP averaged 25.4 accidents and serious incidents globally per year (five-year rolling average) between 2017 and 2023, with 22 events recorded in 2023 alone. Within the Asia and Pacific Region, SCF-NP is the second-highest non-fatal accident and serious incident occurrence category, accounting for approximately 14% of all such occurrences in the region and averaging 10.0 events per year over the same period – the highest average among all ICAO regions. Cabin pressurisation issues (48%) and hydraulic/landing gear failures (34%) are the leading contributors, and inadequate maintenance practices have been identified as a contributing factor in 28% of investigated occurrences.

1.4 Driven by these regional risk trends, this paper shares Malaysia’s proactive experience in convening a strategic engagement session with Approved Maintenance Organizations (AMOs) dedicated to SCF-NP risk reduction. This initiative serves as a practical example of Positive Safety Culture implementation responsive to Action Item 60/4, while simultaneously functioning as a vital domestic foundation that supports the broader intent of Action Item 60/3.

2. DISCUSSION

2.1 On 12 February 2026, Malaysia convened a strategic engagement session with 20 strategically selected AMOs, representing a diverse cross section of approval scopes and operational capabilities to discuss and address safety risks associated with System/Component Failure or Malfunction – Non-powerplant (SCF-NP). The session pursued five objectives:

- a) to brief AMOs on the GASP and the proposed MASP 2026–2028;
- b) to deliberate on the establishment and refinement of Safety Performance Indicators (SPIs) and Safety Performance Targets (SPTs) applicable to AMOs;
- c) to discuss potential Safety Enhancement Initiatives (SEIs) supporting the strategic objectives of both GASP and MASP;
- d) to facilitate the structured exchange of safety information between the authority and AMOs; and
- e) to obtain industry feedback on challenges associated with safety performance monitoring.

2.2 Particular emphasis was placed on SCF-NP, given its prominent share of the most frequent types of accidents and serious incidents across ICAO regions. The discussion underscored the need for enhanced monitoring mechanisms, a strengthened reporting culture, and targeted mitigation strategies within the maintenance domain.

2.3 The engagement also presented the “Civil Aviation Authority of Malaysia (CAAM) Aviation Reporting System” (CAREs) used by industry to submit occurrence and safety reports to the authority, enabling more efficient safety data collection and supporting risk-based safety oversight.

2.4 The session focused on structured discussions among AMOs on proposed safety enhancement initiatives to reduce SCF-NP risks, including the refinement of relevant SPIs and SPTs. AMOs were given the opportunity to propose practical safety enhancement measures, share operational perspectives and challenges, and exchange views on effective risk monitoring methodologies related to SCF-NP. Malaysia observed a strong level of industry commitment and received constructive, substantive proposals.

2.5 Further to the engagement session, Malaysia received several proposals and comments from AMOs concerning proposed Safety Performance Indicators (SPIs) and Safety Performance Targets (SPTs) to support the SCF-NP risk reduction objective, aligned with the Safety Enhancement Initiatives (SEI) outlined in the draft MASP 2026–2028. After due consideration of the proposals and feedback received, Malaysia formally adopted four (4) SPIs and associated SPT frameworks, summarised in Table 1.

Table 1 – SPIs and SPT Frameworks Adopted in Support of SCF-NP Risk Reduction

SPI	Title	Description	Calculation Method	Reporting Frequency
SPI 1	Rate of Quality Escape per Maintenance Release	Evaluates the effectiveness of an AMO’s quality and safety control barriers before aircraft return to service or product release.	Number of quality escapes ÷ Number of maintenance releases	Monthly
SPI 2	Rate of Incidents during Maintenance per Maintenance Man-Hours	Evaluates the effectiveness of operational controls, identifies emerging risk trends, and supports risk-based decision-making within the AMO’s SMS.	Number of incidents ÷ Maintenance man-hours	Monthly
SPI 3	Effective Implementation (EI)	Measures an organisation’s oversight capability and degree of compliance with CAAM regulatory or quality system requirements, expressed as a percentage.	(Number of compliant items ÷ Total items audited) × 100	Yearly
SPI 4	Rate of Human Factors (HF)-Related Incidents during Maintenance per HF and SMS Training Hours	Evaluates the effectiveness of Human Factors and SMS training as a safety risk control, supporting evidence-based, data-driven continuous improvement of the AMO’s SMS.	Number of HF-related incidents ÷ Total HF and SMS training hours	Yearly

2.6 For all four SPIs, the associated SPT is to be determined by each AMO based on its own operational suitability. SPI data is required to be submitted to the authority monthly for SPI 1 (Rate of Quality Escape per Maintenance Release) and SPI 2 (Rate of Incidents during Maintenance

per Maintenance Man-Hours), and yearly for SPI 3 (Effective Implementation) and SPI 4 (Rate of Human Factors-Related Incidents during Maintenance per Human Factors and SMS Training).

2.7 Through this engagement, a substantial volume of safety data has been collected, with ongoing submissions continuously received from all the AMOs. Initial monthly submissions from January through May 2026 have yielded a low baseline average rate of 0.124% for SPI 1 and 0.004% for SPI 2. While these initial figures reflect a low baseline, they confirm that operational safety controls are functioning effectively and establish a reliable benchmark for long-term safety performance monitoring and trend analysis under the MASP 2026-2028 framework.

2.8 The engagement directly exemplifies implementation of Action Item 60/4, constituting planned and regular engagement with a representative organisation of maintenance operators, coupled with structured sharing of experience and best practice on positive safety culture and reporting. The associated SPI/SPT development and CAREs reporting infrastructure further lays a domestic foundation that can, over time, support broader participation in regional safety data sharing under the spirit of Action Item 60/3.

2.9 Malaysia anticipates continued industry cooperation through future engagement series to further elevate aviation safety standards in Malaysia, in alignment with global safety objectives, and intends to share outcomes of this initiative with other Member States as they progress.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to note the information contained in this paper.

3.2 Encourage other States to share their journey and experiences in meeting the aspirations of the GASP 2026–2028, particularly in relation to the continuing reduction of safety risks associated with SCF-NP.

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