

CAMO Risks 2025 - 2026

CAP 3287

Published by the Civil Aviation Authority, 2026

Civil Aviation Authority
Aviation House
Beehive Ring Road
Crawley
West Sussex
RH6 0YR

You can copy and use this text but please ensure you always use the most up to date version and use it in context so as not to be misleading, and credit the CAA.

First published 2025
Second edition

Enquiries regarding the content of this publication should be addressed to: content@caa.co.uk

The latest version of this document is available in electronic format at: www.caa.co.uk

Contents

Contents	3
Executive Summary	7
Revision history and effective page	8
1. Introduction	9
How the Risk Review is produced	9
Why this Risk Review was issued	9
2. Risks, Objectives and Safety Performance Indicators (SPI's)	10
Risks	10
Objectives	11
Safety Performance Indicators (SPIs)	11
3. Risks in CAMO	11
Top 10 Risks	11
Top 5 Organisation Risks	13
Additional Risks/Considerations identified from Questionnaire	14
Promotion	14
1. Skilled Labour Shortage	15
2. Global Supply Chain Health	17
3. Absence of a bilateral arrangement with EU	20
4. Regulator (UK CAA / EASA / 3rd Country NAA)	23
5. Sub-Contractor Management & Control	25
6. OEM/TCH Support	27
7. Commercial Pressure	29
8. Missed maintenance task / Poor Forecasting	32
9. Inadequate Process & Procedures	34
10. Poor Communication between Maintenance, Flight Ops, Ground Ops	36
11. A/C introduction	38
12. Component Robbery	40
13. Contracted P145 AMO's inadequate root cause analysis of findings impacting how findings can be closed / Lack of SMS in Part 145	44
14. Single Point dependencies within Airworthiness	47

15. Inconsistent / inadequate CAA oversight	49
16. Ageing Aircraft	52
17. Human Performance Limitation/Human Error	55
18. Management of change	58
19. Contracted Activities	61
20. Incorrect application of the MEL	63
21. MRO demand spike	65
22. Unrecorded work	67
23. Cyber Security and the reliance on software	69
24. Modifications	74
25. Nominated Person(s) – qualification and competency	76
26. Access to data	78
27. Changes to Operations (Routes)	81
28. Incorrect assessment of defect In-Adequate Defect Control / Task management	83
29. Manpower Job Description / Competence	85
30. Roles and responsibilities between CAMO and groups not sufficiently defined	87
31. IT systems (access and tracking)	90
32. Poor Competence Assessment / Training	93
33. Safety culture and ability to deliver positive change	95
34. Incorrectly evaluated AD or SB	97
35. Missing records	99
36. Speed of growth of organisation	101
37. Technical incidents	103
38. Dependency on third party providers, unregulated within the Civil Aviation Authority, for consumables, rotables and major assemblies.	105
39. Diverse Fleet	108
40. Incorrect assessment of the airworthiness status of the aircraft	111
41. Major Component Failure	113
42. Unqualified staff working without appropriate supervision	115
43. Use of unapproved parts, leading to operation of unsafe aircraft	117
44. Alternative Regulatory requirements for nominated persons not being considered outside of a degree or license.	120

45. AMO's working to different regulatory standards	121
46. Delay in application of OEM recommendations (SB, SIL, ...)	124
47. Introduction of Part ML and Part CAO creating significant confusion between the owner/operator and CAMO	127
48. Shifts / Handover	130
49. Use of erroneous / expired data	132
50. New approvals (e.g. ETOPS, RVSM, etc)	134
Emerging Risks	136
Analysis of Risk Data	140
4. Mandatory Occurrence Reporting	145
5. Safety Performance Indicators (SPI's)	149
Overview of Survey Results	149
Comparison with CAP 3114 (CAMO Risks 2024/2025) Risk Priorities	150
Interpretation of SPI Selection Trends	151
Key Issues	151
6. Themes identified from internal safety reports, risk assessments or management of change activity	153
Overview of Survey Results	153
Comparison with CAP 3114 Risk Priorities	153
Interpretation of Safety Reporting Trends	154
Key Issues	155
7. Risk Register & Hazard Log Review	156
Overview of Survey Results	156
Assessment Against Regulatory Expectations	157
Alignment with CAP3114 (CAMO Risks 2024/2025) SMS Expectations	157
Interpretation of Variability in Review Frequency	158
Key Issues	159
Summary	160
Risks	160
SPI's	161
Themes identified from internal safety reports, risk assessments or management of change activity	161

Risk Register and Hazard Log Review	162
APPENDIX A - ABBREVIATIONS	163
APPENDIX B – SURVEY QUESTIONS	164
APPENDIX C – SURVEY RESULTS	169
APPENDIX D – RISK SUMMARY	181

Executive Summary

The CAA CAMO Safety Review 2025/2026 provides a comprehensive review of the safety risks affecting the CAMO community during this period. This reflects our commitment to aviation safety and the industry's collaborative efforts in upholding the highest standards of safety.

Despite the positive safety performance in most domains, it is important to be alert to the fact that past performance offers no guarantee of a safe future. We must focus our risk management efforts to ensure a safe, secure and resilient aviation system is maintained. There has seldom been a time when the industry has faced such a broad range of operational risks that require our efforts and attention.

Revision history and effective page

First issued July 2026

1. Introduction

How the Risk Review is produced

The data presented in this safety review is derived from a questionnaire issued by the CAA to UK-approved Continuing Airworthiness Management Organisations (CAMOs) as part of the 2025–2026 CAMO risk survey.

The questionnaire was designed to capture both continuity and change within the industry risk landscape by asking organisations to assess risks identified in the 2024–2025 survey, identify their current top five risks, and highlight any emerging risks that may warrant future elevation. In addition, organisations were asked to provide details of the safety performance indicators in use, identify recurring themes arising from internal safety reporting, risk assessments, or management of change activities, and outline the frequency with which risk registers or hazard logs are reviewed.

The questionnaire also gathered contextual information on the nature of each organisation (Standalone CAMO, Air Operator, or Licensed Air Carrier) and the scope of its operations (UK, European, or Worldwide), enabling analysis of risk trends across different organisational and operational profiles. A full list of the survey questions is provided in Appendix B.

This publication follows a format consistent with the 2024/2025 edition (CAP 3114). The CAA intends to adopt a structure for future editions that supports annual updates within a single, evolving document. This approach will remove the need for multiple similar publications and instead provide a 'live' resource, enabling clear presentation of trend analysis derived from previous surveys.

Why this Risk Review was issued

This risk review provides an analysis of the response data and presents this information to help the reader identify the most prevalent risks affecting the CAMO community. It is important to note that the risks outlined in this document are collated and presented from an organisational perspective.

The intention of this risk review is to raise awareness of the risks affecting the CAMO community with the hope that it may help organisations to identify risks that had not yet been considered as part of their risk management system.

This report has been presented to assist organisations in identifying associated objectives and Safety Performance Indicators (SPI's) to enhance the effectiveness of their risk management system. It should be noted that mitigation strategies, safety objectives and SPI's are based on a generalisation of the risk, and if adopted should be tailored to the

organisations nature of operation and complexity. Not all risks identified in this report are applicable to all organisations with a CAMO approval.

The CAA has also used this data to update its risks and associated objectives and SPI's. This risk review also gives the CAA a chance to show how it uses MOR data to track and manage specific SPI's.

2. Risks, Objectives and Safety Performance Indicators (SPI's)

The relationship between risks, safety objectives, and Safety Performance Indicators (SPIs) is fundamental to the effective operation of a Safety Management System. Clear alignment should exist between the Safety Policy, identified risks, defined safety objectives, and the SPIs used to measure performance.

The Safety Policy sets the organisation's overall commitment to safety and establishes the strategic direction, endorsed by the Accountable Manager. From this policy, risks are identified through hazard identification and risk assessment processes. These risks then inform the development of safety objectives, which define what the organisation aims to achieve in order to manage and reduce its safety exposure.

SPIs are the measurable outputs used to monitor progress against these objectives. To be effective, SPIs should be meaningful, proportionate, and aligned to the underlying risk, providing insight into both current performance and emerging trends. Care should be taken to ensure that indicators promote positive safety behaviours and do not inadvertently drive underreporting, short-term compliance-focused actions, or the closure of issues without fully understanding root causes.

When effectively aligned, this framework supports a proactive, risk-based approach to safety management, enabling organisations to monitor performance, identify emerging issues, and continuously improve safety outcomes.

Risks

A hazard is any condition, object, or activity with the potential to cause harm. Risk is the combination of the likelihood that a hazard will lead to an occurrence and the severity of the resulting consequences. It therefore reflects both the probability of an event and the potential impact on safety.

In an aviation context, hazards may arise from a range of sources, including technical failures, human performance limitations, organisational factors, or environmental conditions. The identification and assessment of these hazards and associated risks form

a fundamental part of a Safety Management System (SMS), enabling organisations to understand their safety exposure and implement appropriate mitigation measures.

Objectives

Objectives are specific, measurable goals set by an organisation to enhance safety. Safety Objectives form the basis for the organisations safety performance and monitoring and are an effective tool to improve the overall effectiveness of the management system. For example, an objective might be to ensure that all procedures are kept up to date.

Safety Performance Indicators (SPIs)

Safety Performance Indicators (SPIs) are measurable metrics used to monitor the effectiveness of safety objectives and provide insight into how well an organisation is managing its identified risks and achieving its safety goals. When appropriately designed, SPIs support a data-driven understanding of safety performance and emerging trends.

Care should be taken to ensure that SPIs do not drive unintended or negative behaviours, such as underreporting, superficial compliance, or a focus on meeting targets rather than addressing underlying risks. For example, a target-driven SPI such as reviewing a fixed number of procedures per month may encourage quantity over quality if not suitably balanced.

The use of SPIs does not always require the setting of specific numerical targets; however, indicators should be regularly monitored to ensure that performance is trending in the desired direction. In general, this includes improvement in leading indicators (e.g. increased reporting or engagement) and reduction in lagging indicators (e.g. errors or occurrences), providing assurance that safety performance is improving over time.

3. Risks in CAMO

The risk questionnaire focussed on the identification of 3 key risk areas:

1. To pick 10 risks out of the 50 risks identified from the 2024/2025 survey that resonate most with the organisation.
2. These risks were further grouped to help identify the organisations Top 5 risks?
3. To identify any additional risks that should be promoted.

Top 10 Risks

The questionnaire asked organisations to identify the top 10 risks most relevant to their operations. To support this, organisations were provided with a list of 50 known risks identified from the 2024/2025 survey, from which they were invited to make their selection:

- Skilled Labour Shortage

- Global Supply Chain Health
- Regulator (UK CAA / EASA / 3rd Country NAA)
- Poor Communication between Maintenance, Flight Ops, Ground Ops
- Missed maintenance task / Poor Forecasting
- A/C introduction
- OEM/TCH Support
- Sub-Contractor Management & Control
- Inadequate Process & Procedures
- Unrecorded work
- MRO demand spike
- Poor Competence Assessment / Training
- Incorrect assessment of the airworthiness status of the aircraft
- Incorrect application of the MEL
- Incorrectly evaluated AD or SB
- Incorrect assessment of defect In-Adequate Defect Control / Task management
- Use of unapproved parts, leading to operation of unsafe aircraft
- Changes to Operations (Routes)
- Nominated Person(s) – qualification and competency
- Safety culture and ability to deliver positive change
- Unqualified staff working without appropriate supervision
- Delay in application of OEM recommendations (SB, SIL, ...)
- Roles and responsibilities between CAMO and groups not sufficiently defined
- Manpower Job Description / Competence
- Shifts / Handover
- New approvals (e.g. ETOPS, RVSM, etc)
- Contracted Activities
- Commercial Pressure
- Major Component Failure
- IT systems(access and tracking)
- Human Performance Limitation/Human Error
- Diverse Fleet
- Missing records
- Access to data
- Single Point dependencies within Airworthiness
- Speed of growth of organisation
- Technical incidents
- Modifications
- Component Robbery
- Use of erroneous / expired data
- Management of change
- Ageing Aircraft
- Cyber Security and the reliance on software
- Absence of a bilateral arrangement with EU

- Dependency on third party providers, unregulated within the Civil Aviation Authority, for consumables, rotables and major assemblies.
- Introduction of Part ML and Part CAO creating significant confusion between the owner/operator and CAMO
- Contracted P145 AMO's inadequate root cause analysis of findings impacting how findings can be closed / Lack of SMS in Part
- AMO's working to different regulatory standards
- Inconsistent / inadequate CAA oversight
- Alternative Regulatory requirements for nominated persons not being considered outside of a degree or license.

Top 5 Organisation Risks

The questionnaire also asked organisations to identify their current top 5 risks from the following list:

- Skilled Labour shortage
- Global Supply chain health
- OEM/TCH Support
- Poor Communication between Maintenance, Flight Ops, Ground Ops
- Unrecorded work
- MRO demand spike
- A/C introduction
- Missed maintenance task / Poor Forecasting
- Incorrectly evaluated AD or SB
- Sub-Contractor Management & Control
- Poor Competence Assessment / Training
- Incorrect assessment of defect In-Adequate Defect Control / Task management Inadequate Process & Procedures
- Unqualified staff working without appropriate supervision
- Incorrect assessment of the airworthiness status of the aircraft
- Use of unapproved parts, leading to operation of unsafe aircraft
- Changes to Operations (Routes)
- Regulator (UK CAA / EASA / 3rd Country NAA
- Roles and responsibilities between CAMO and groups not sufficiently defined
- Incorrect application of the MEL
- Nominated Person(s) – qualification and competency
- Safety culture and ability to deliver positive change
- Manpower Job Description / Competence
- New approvals (e.g. ETOPS, RVSM etc)

Additional Risks/Considerations identified from Questionnaire

The questionnaire also asked organisations to identify any emerging risks not captured in earlier sections. The risks highlighted by respondents are broadly consistent with the principal themes identified throughout this review, while also providing additional insight into growing structural pressures—particularly in relation to workforce capability, supply chain resilience, third-party oversight, and organisational capacity.

Promotion

The intent of this report is to raise awareness and promote risks within the industry. These risks have been included within this report. Tables showing raw data from the questionnaire can be found in 'Appendix C' of this report and are split into the following groups:

- All Organisations
- Standalone (Non-AOC) Organisations
- Organisations Managing AOC Aircraft
- Licensed Air Carrier Organisations
- UK Based Operations
- European Based Operations
- Worldwide Based Operations
- Rotary Wing (all)
- Fixed Wing (all)
- Top 5 Risks (all)
- Top SPI's (All)
- Top Safety Risk Reports / Risk Assessment Items

The following sections of this report provide background information, key risk elements, identified mitigation strategies, example safety objectives and example safety performance indicators (SPI's) for these risks.

The risks are listed in order of most common to least common amongst 'all organisations' participating in this survey.

Appendix C includes the top 50 risks in a concise presentable 'table' format.

1. Skilled Labour Shortage

Key Risks

The shortage of skilled technicians is resulting in delays to maintenance schedules, leading to extended aircraft groundings and disruption to flight operations. This, in turn, increases workloads for existing personnel, contributing to fatigue, reduced efficiency, and a higher likelihood of error, with potential implications for maintenance quality and overall safety. Delays in the approval and certification of new aircraft and components are also evident, partly due to limitations in experienced personnel available to support required maintenance and documentation activities.

The quality of maintenance and inspections may be adversely affected where work is undertaken by less experienced or overburdened staff, increasing the risk of undetected defects and potential safety occurrences. Elevated workload and fatigue further exacerbate this risk, contributing to higher error rates and potential impacts on airworthiness.

Operational disruption and inefficiency can also result in increased costs, including higher maintenance expenditure and potential revenue loss associated with grounded aircraft. In response, CAMO organisations may be required to invest significantly in recruitment and training, placing additional pressure on financial resources.

Persistent delays and safety concerns may erode client confidence and damage organisational reputation, potentially leading to loss of business. In addition, maintenance-related incidents or compliance failures may attract negative attention, further impacting stakeholder trust and the organisation's public profile.

Mitigation Strategies

To address the challenges posed by a shortage of skilled technicians, several strategies can be implemented:

To attract new talent, it is essential to implement competitive recruitment strategies that offer attractive salaries and benefits. Additionally, investing in continuous training and development programs will help upskill existing staff, ensuring they remain competent and effective in their roles.

Developing long-term workforce planning strategies is crucial for anticipating future labour needs and proactively addressing potential shortages. Collaborating with educational institutions can create clear pathways for students to enter the aviation maintenance field, ensuring a steady influx of qualified personnel.

Promoting a healthy work-life balance is vital for reducing employee fatigue and improving job satisfaction. Creating a supportive work environment will encourage employee retention and reduce turnover rates, contributing to a more stable and efficient workforce.

Example Safety Objectives

1. **Enhance Training Programs:** Develop comprehensive training programs to upskill existing staff and ensure new hires are adequately trained.
2. **Improve Recruitment Processes:** Implement strategies to attract and retain skilled personnel, such as competitive salaries, benefits, and career development opportunities.
3. **Increase Automation:** Invest in technology and automation to reduce dependency on manual labour and improve efficiency.
4. **Strengthen Safety Culture:** Foster a strong safety culture where all employees are encouraged to report safety concerns and participate in safety initiatives.

Example Safety Performance Indicators (SPI's)

1. **Training Completion Rates:** Measure the percentage of staff who complete required training programs within a specified timeframe.
2. **Human Resource data :** Track the turnover rates of skilled personnel to identify trends and address retention issues, number of sickness days and hours of overtime worked and differences between planned and actual resource
3. **Incident Reports:** Monitor the number and severity of safety incidents reported, particularly those related to human factors, human performance or training related.
4. **Audit Findings:** Evaluate the number of non-compliances or findings from internal and external audits related to workforce competency and training.

2. Global Supply Chain Health

Key Risks

Difficulties in obtaining essential components, combined with ongoing skilled labour shortages, have contributed to supply chain disruption, production slowdowns, and an ageing fleet profile. These challenges are being driven by several interrelated factors:

1. Geopolitical Environment

The global geopolitical environment has added significant complexity to aviation supply chains. Sanctions against Russia, Brexit-related regulatory changes, and the effects of the COVID-19 pandemic have disrupted international trade and logistics.

The UK's withdrawal from the EU has introduced limitations on the use of EASA-certified components. While bilateral agreements permit the installation of new EASA-approved products on UK-registered aircraft, a substantial pool of previously maintained EASA-certified components is no longer eligible for use. Similar constraints apply to components maintained by US repair stations holding both FAA and EASA approvals.

Wider geopolitical tensions have also disrupted global supply routes and access to critical components, requiring organisations to navigate increasing uncertainty to maintain continuity. In particular, ongoing instability in the Middle East has introduced additional risk to critical logistics corridors and air transport routes, contributing to delays, increased transportation costs, and reduced predictability in the movement of aircraft parts and materials.

In parallel, the pandemic significantly affected production capacity, logistics networks, and workforce availability. The subsequent recovery in aviation demand has outpaced the ability of suppliers to scale output, creating further pressure on the supply chain. In addition, workforce reductions during the pandemic have resulted in a loss of experienced personnel, with many not returning to the sector.

2. Supplier Performance and Reliability

Variability in supplier performance continues to impact the timely availability of parts and components. Delays in delivery can disrupt maintenance schedules, reduce aircraft availability, and increase operational inefficiencies.

3. Demand Pressures

Fluctuations and rapid increases in demand can result in supply shortages or imbalances,

further constraining the availability of critical components and affecting maintenance planning.

4. Compounding Factors

Reliability challenges associated with next-generation aircraft have led many operators to extend the service life of older aircraft. This reduces the number of aircraft entering teardown cycles, limiting the availability of used serviceable material (USM) and further constraining supply, thereby compounding existing pressures on the supply chain.

Mitigation Strategies

The UK CAA has been supporting industry where Global Supply Chain issues have been prevalent. RIE's and exemptions have been issued to allow longer interval for deferred defects. The CAA continues to collaborate in bilateral and/or working arrangements with other NAA's.

CAMO's should establish robust supplier evaluation and monitoring processes, including predictive analytics to identify potential issues early. Implementing advanced demand planning tools and maintaining buffer stocks can help manage these fluctuations. Investing in training and development programs for staff and exploring automation options can alleviate some of these pressures. Diversifying the supplier base and sourcing from multiple regions can reduce dependency on any single geopolitical area. Developing contingency plans and maintaining strategic reserves of critical components can help mitigate these risks.

Example Safety Objectives

1. Enhance Supply Chain Transparency: Ensure all suppliers and subcontractors are compliant with regulatory requirements and maintain transparent operations.
2. Improve Supplier Quality Control: Ensure effective quality control measures are present for all parts and components purchased.
3. Strengthen Supplier Relationships: Develop collaborative relationships with suppliers to ensure effective communication and resolution of potential issues.
4. Mitigate Supply Chain Disruptions: Ensure contingency plans are in place to address potential disruptions in the supply chain, ensuring continuity of operations.

Example Safety Performance Indicators (SPI's)

1. Supplier Audit Compliance Rate: Measure the percentage of completed supplier audience and risk scoring within your organisations risk register.

2. Defect Rate of Supplied Parts: Track the number of defective parts received from suppliers using reliability data. (Fail on Fit?)
3. Supplier Performance Ratings: Evaluate suppliers based on criticality to your organisation, the risk profile of the supplier and your oversight of the provided services or goods

3. Absence of a bilateral arrangement with EU

Key Risks

The Trade and Cooperation Agreement (TCA) between the EU and the UK includes provisions for aviation safety, primarily covering the approval of design and production of civil aeronautical products. However, the absence of equivalent arrangements for continuing airworthiness introduces additional complexity for Part-CAMO approved organisations. Without mutual recognition, obtaining certifications and approvals from EASA-approved organisations can become more time-consuming and administratively burdensome, potentially creating operational inefficiencies and delays.

Increased compliance costs represent a significant challenge. Organisations may be required to maintain parallel certification or approval processes with both the UK Civil Aviation Authority (CAA) and EASA, resulting in duplication of effort. This can lead to higher administrative overheads, increased operational costs, and the diversion of resources from core safety and operational activities, placing pressure on financial performance.

Market access restrictions may also impact organisational growth and competitiveness. The absence of mutual recognition can limit the ability of UK-based organisations to operate seamlessly within the European market, reducing business opportunities and constraining the development of partnerships with EU-based entities. This may affect long-term strategic positioning and expansion plans.

Operational complexity is further increased by the need to comply with two distinct regulatory frameworks. Managing dual compliance requirements can introduce inefficiencies, increase the potential for misinterpretation, and place additional demands on organisational resources.

Finally, ongoing legal and regulatory uncertainty creates further challenges. Navigating two evolving regulatory regimes may complicate decision-making and increase the risk of non-compliance, particularly where guidance or interpretation differs between authorities. This environment of uncertainty can impact organisational stability, planning, and overall safety assurance.

Mitigation strategies

Establishing robust internal compliance programs is crucial for ensuring adherence to both UK CAA and EASA regulations. This involves regular training for staff to keep them updated on the latest regulatory requirements. Additionally, conducting internal audits helps identify and address any compliance gaps, ensuring that the organisation remains compliant and prepared for external audits.

Forming strategic partnerships with other CAMOs or maintenance organisations that have EASA approvals can be highly beneficial. These partnerships can facilitate access to the European market, allowing the organisation to leverage the approvals and certifications of their partners. This collaboration can also help share the burden of compliance costs and operational challenges, making it easier to navigate the regulatory landscape.

Creating dedicated compliance teams focused on managing the certification and approval processes for both regulatory bodies can streamline operations. These teams can ensure that all necessary documentation is prepared and submitted accurately and promptly, reducing delays and improving the efficiency of the certification process. By having specialised teams, the organisation can better manage the complexities of dual compliance.

Investing in technology and automation tools can significantly enhance the management of compliance and certification processes. Software for tracking regulatory changes, managing documentation, and ensuring timely submission of applications and reports can improve efficiency and reduce the risk of errors. Automation can also help maintain consistency and accuracy in compliance efforts, freeing up resources for other critical tasks.

Legal and regulatory experts are essential for navigating the complexities of dual compliance. These experts can provide valuable guidance on best practices, help interpret regulatory requirements and ensure that the organisation remains compliant with both UK and EASA standards. Their expertise can help mitigate risks and avoid potential legal issues, ensuring smooth operations.

Developing comprehensive risk management and contingency plans is vital for addressing potential operational disruptions. Identifying critical areas of operation that may be affected by regulatory changes and establishing protocols to maintain continuity and safety standards can help mitigate risks. These plans ensure that the organisation is prepared for any eventualities and can continue to operate effectively despite regulatory challenges.

Example Safety Objectives

1. Enhance Regulatory Compliance: Ensure full compliance with both UK CAA and EASA regulations through continuous monitoring and improvement of internal processes.
2. Improve Staff Training and Competency: Regularly update and enhance training programs to ensure all staff are knowledgeable about the latest regulatory requirements and best practices.

3. **Strengthen Partnerships:** Develop and maintain strategic partnerships with other CAMOs and maintenance organisations to facilitate mutual support and resource sharing.
4. **Increase Operational Efficiency:** Implement technology and automation to streamline compliance and certification processes, reducing delays and errors.
5. **Maintain High Safety Standards:** Ensure consistent adherence to safety and airworthiness standards through rigorous internal audits and risk management practices.
6. **Enhance Risk Management:** Develop comprehensive risk management and contingency plans to address potential operational disruptions and ensure business continuity.

Example Safety Performance Indicators (SPI's)

1. **Regulatory Compliance Rate:** Measure the percentage of compliance with UK CAA and EASA regulations through internal audits and external inspections.
2. **Training Completion Rate:** Track the percentage of staff who have completed required training programs within specified timeframes.
3. **Partnership Effectiveness:** Assess the number and quality of strategic partnerships and their impact on operational efficiency and market access.
4. **Certification Processing Time:** Monitor the average time taken to obtain necessary certifications and approvals from both regulatory bodies.
5. **Incident and Accident Rates:** Track the number of safety incidents and accidents, aiming for a reduction over time.
6. **Audit Findings and Corrective Actions:** Measure the number of audit findings and the effectiveness of corrective actions implemented to address them.
7. **Risk Management Effectiveness:** Evaluate the effectiveness of risk management plans through regular testing and review of contingency protocols.

4. Regulator (UK CAA / EASA / 3rd Country NAA)

Key Risks

Regular audits and inspections by regulatory authorities may identify deficiencies in compliance. Addressing these findings often requires immediate corrective action, which can place additional strain on organisational resources and impact operational efficiency. In more serious cases, non-compliance may result in enforcement action, including suspension or revocation of CAMO approval, with associated reputational damage and financial impact.

Frequent regulatory updates and changing requirements can also present ongoing challenges in maintaining compliance. CAMO organisations must ensure that robust systems are in place to demonstrate continuous compliance in order to exercise the privileges of their approval. In addition, delays in regulatory review or approval of organisational changes by the CAA may affect operational flexibility and efficiency.

Ambiguities within regulatory requirements can lead to differing interpretations between organisations and regulators, increasing the risk of inconsistency and potential non-compliance.

Furthermore, high-profile incidents or accidents may result in the introduction of urgent regulatory directives. Implementing such measures at short notice can be resource-intensive and operationally challenging. Maintaining awareness of industry developments and anticipating potential regulatory changes remains essential, although this can be difficult within a rapidly evolving regulatory environment.

Mitigation Strategies

CAMO's are required to conduct internal audits and risk assessments to ensure ongoing compliance. Regulatory misinterpretations can result in non-compliances. Improving communication with regulators and seeking clarifications can help mitigate this risk. It is the organisations responsibility to ensure regulatory changes are captured. CAMO's should also ensure staff are trained in accordance with local procedures that are written in compliance with the regulation.

The CAA continue to measure SLA's and develop adaptable processes to ensure organisation changes are accepted or approved in a timely manner. Regulatory changes should be advertised through a Skywise. Any regulatory changes in progress can be reviewed in advance on the [consultations](#) page.

Example Safety Objectives

1. Ensure compliance: with all UK applicable regulations. Enhance Communication: Foster open and transparent communication channels with the UK CAA to ensure timely and accurate information exchange.
2. Continuous Improvement: Implement a continuous improvement process for safety management systems to addressing non-compliances with effective root cause analysis and strive for best practise.
3. Training and Awareness: Provide regular training and awareness programs for nominated persons on regulatory requirements and best practices.

Example Safety Performance Indicators (SPI's)

1. Audit Findings: Track the number and severity of audit findings from the UK CAA. Monitor for a reduction in the number of findings over time.
2. Compliance Rate: Measure the percentage of compliance with regulatory requirements during internal audits.
3. Response Time: Set a manageable target for responding to / addressing and close out findings or recommendations from the UK CAA, that could be communicated at Safety Review Board level

5. Sub-Contractor Management & Control

Key Risks

Poor coordination between CAMOs and their contracted organisations can lead to delays in maintenance activities, impacting aircraft availability and operational efficiency.

Ineffective sub-contractor management can also result in increased maintenance costs due to rework, delays, and inefficiencies. CAMO organisations may be required to allocate additional resources to address deficiencies arising from sub-contracted activities. Such disruptions can lead to loss of revenue through grounded aircraft and delayed operations, placing pressure on financial performance.

Variability in the quality and safety standards of sub-contractors may affect the reliability of maintenance outcomes. This can erode client confidence and satisfaction, potentially leading to loss of business. Furthermore, safety occurrences or instances of regulatory non-compliance associated with sub-contracted work may attract negative attention, adversely affecting the organisation's reputation and stakeholder trust.

Mitigation Strategies

Implementing selection criteria ensures that only qualified and reliable sub-contractors are chosen. Scheduled formal performance audits help identify and address any issues promptly, maintaining high standards of work and reliability.

Developing standardised procedures and guidelines for sub-contractors ensures consistency in maintenance practices and quality. Providing training programs on regulatory requirements and safety standards enhances the competency and compliance of sub-contractors.

Establishing clear communication channels between CAMO's and sub-contractors facilitates effective coordination and information exchange. Regular meetings and updates ensure alignment on maintenance schedules and requirements, promoting smooth operations.

The regulation requires the contracting CAMO to conduct regular audits and inspections of sub-contracted work ensures compliance with quality and safety standards.

Example Safety Objectives

1. **Ensure Compliance:** Ensure all subcontractors comply with the relevant regulatory requirements and internal safety standards.
2. **Enhance Communication:** Improve communication channels between the operator and subcontractors to ensure timely and accurate information exchange.
3. **Risk Mitigation:** Identify and mitigate risks associated with subcontractor activities through regular audits and assessments.
4. **Training and Competence:** Ensure subcontractors are adequately trained and competent to perform their tasks safely.
5. **Continuous Improvement:** Foster a culture of continuous improvement in safety performance among subcontractors.

Example Safety Performance Indicators (SPI's)

1. **Incident Reporting:** Number of safety incidents reported by subcontractors per task
2. **Training Completion:** Ensure all subcontractors have completed the required safety training prior to conducting any work.
3. **Audit Findings:** Number of non-conformities identified during pre-contract audits

6. OEM/TCH Support

Key Risks

Inadequate or delayed technical support from Type Certificate (TC) holders can lead to significant operational disruption for CAMO organisations. Timely access to technical expertise and guidance is essential for resolving complex maintenance issues, and delays in receiving this support may result in extended aircraft downtime and reduced operational efficiency. Limited or delayed access to critical technical data, such as maintenance manuals and service bulletins, can further hinder maintenance activities and affect overall performance.

Under UK Regulation 1321/2014, CAMO organisations are required to ensure compliance with all applicable airworthiness requirements. Insufficient support from TC holders can make it more challenging to meet these obligations, increasing the risk of non-compliance and associated findings. In particular, gaps in technical data or guidance may affect the accuracy of maintenance planning, execution, and record-keeping, reducing the organisation's ability to demonstrate compliance during audits.

Operational disruption and extended aircraft downtime can also lead to increased maintenance costs. CAMO organisations may need to allocate additional internal resources to resolve technical issues independently, placing further strain on budgets. In parallel, delayed maintenance activities may result in loss of revenue from grounded aircraft and disrupted operations, impacting overall financial performance.

Inadequate support from TC holders may also affect the quality and reliability of maintenance outcomes. This can erode client confidence and satisfaction, potentially leading to loss of business. Furthermore, safety occurrences or regulatory non-compliance linked to insufficient technical support may attract negative attention, adversely impacting organisational reputation and stakeholder trust.

Mitigation Strategies

Establishing regular communication channels with TC holders ensures timely access to technical support and updates. Encouraging collaborative problem-solving between CAMO's and TC holders helps address maintenance issues more effectively, fostering a cooperative environment for resolving challenges.

Providing training for maintenance personnel on the effective use of technical data and resources from TC holders enhances maintenance practices. Implementing ongoing competency frameworks ensures that maintenance personnel remain up-to-date with the latest technical information and best practices, maintaining high standards of proficiency.

Developing contingency plans for scenarios where TC holder support is inadequate ensures continuity of operations. These plans provide a framework for CAMO's to follow in case of support shortfalls, minimizing disruptions and maintaining efficiency.

By combining enhanced communication, comprehensive training, and contingency planning, CAMO's can effectively manage the challenges associated with TC holder support. This integrated approach ensures that maintenance operations remain safe and compliant with regulatory standards.

Example Safety Objectives

1. Maintain a communication channel with OEM/TCH to ensure timely access to technical support and updates.
2. Regularly update and train maintenance personnel on the latest OEM/TCH procedures and technical information and data sources..
3. Ensure comprehensive documentation of all communications and technical support received from OEM/TCH.

Example Safety Performance Indicators (SPI's)

1. Response Time from OEM/TCH: Measure the average response time from OEM/TCH for technical support requests
Compliance with OEM/TCH Recommendations: Track the percentage of maintenance actions completed in accordance with OEM/TCH recommendations
Training Completion Rate: Monitor the percentage of maintenance personnel who have completed the latest OEM/TCH training modules and ensure 100% of relevant personnel complete training within a suitable timeframe.

7. Commercial Pressure

Key Risks

Commercial pressure within the aviation industry arises from a combination of financial constraints, operational demands, and market competition. Cost pressures, including the need to reduce expenditure and improve efficiency, may influence maintenance and airworthiness activities. At the same time, operational demands, such as high aircraft utilisation and rapid turnaround requirements, can place pressure on CAMO organisations to expedite processes.

Competitive market conditions may further incentivise cost-saving measures, which, if not properly managed, can challenge the consistent application of safety standards.

One of the primary risks associated with commercial pressure is the potential compromise of safety standards. Under sustained pressure, there is a risk that organisations may deviate from established procedures, resulting in incomplete maintenance, overlooked defects, or reduced scrutiny. Maintaining strict adherence to approved processes is essential to ensuring continued airworthiness and minimising safety risk.

Commercial pressures may also contribute to increased workload and fatigue, which are recognised contributors to human error. Elevated workload combined with constrained timelines can reduce attention to detail and increase the likelihood of mistakes during maintenance or airworthiness decision-making. Effective workload management and adequate rest provisions are therefore critical to maintaining performance and safety standards.

In addition, there is a risk that procedural shortcuts may be taken to meet commercial objectives. This may include the omission of required checks or the inappropriate use of parts, undermining the integrity of maintenance processes and increasing safety exposure. Certifying staff may also experience pressure to release aircraft to service within constrained timelines, even where all required actions have not been fully completed.

It is essential that CAMO organisations maintain a strong safety culture and provide appropriate support and protection for personnel, ensuring that commercial considerations do not override compliance with regulatory requirements or established safety processes. Sustaining this balance is critical to preserving both airworthiness and organisational integrity.

Mitigation Strategies

Fostering a robust safety culture is essential for ensuring that employees prioritize safety over commercial interests. This involves creating an environment where safety is the top priority, supported by regular training and clear communication of safety policies. When employees feel empowered to prioritize safety, they are more likely to adhere to established protocols and procedures, reducing the risk of accidents and incidents.

Adequate staffing levels are crucial for managing workloads effectively and minimizing fatigue-related errors. Ensuring that there are enough staff members to handle the workload helps prevent employee burnout and fatigue, which are significant contributors to human error. By maintaining sufficient staffing levels, organisations can enhance overall safety and operational efficiency.

Transparent reporting mechanisms are vital for encouraging employees to report safety concerns without fear of retribution. Establishing a system where employees can freely report issues ensures that potential safety risks are identified and addressed promptly. This transparency fosters a culture of accountability and continuous improvement, ultimately enhancing safety standards.

Regular audits and inspections are necessary to ensure compliance with safety standards and identify areas for improvement. Conducting both internal and external audits helps organisations maintain high safety standards and address any deficiencies. These audits provide valuable insights into the effectiveness of safety protocols and highlight areas that may require additional attention or resources.

Engaging with stakeholders, including regulators, is essential to ensure that commercial pressures do not compromise safety standards. By maintaining open communication and collaboration with stakeholders, organisations can align their safety practices with regulatory requirements and industry best practices. This engagement helps balance commercial interests with the imperative of maintaining the highest safety standards.

Example Safety Objectives

1. **Promote a Safety Culture:** Foster an environment where safety is prioritized over commercial gains.
2. **Risk Management:** Implement robust risk assessment and mitigation strategies to identify and manage commercial pressure risks.
3. **Training and Awareness:** Ensure all staff are trained to recognize and manage commercial pressure.
4. **Reporting Systems:** Encourage transparent reporting of safety concerns without fear of retribution.

Example Safety Performance Indicators (SPI's)

1. Incident Reporting Rate: Track the number of safety-related incidents reported, aiming for an increase in reporting as a sign of a healthy safety culture.
2. Training Completion Rate: Measure the percentage of staff who have completed safety training programs.
3. Risk Assessment Compliance: Monitor the frequency and quality of risk assessments conducted.
4. Safety Audits: Regularly audit operations to ensure compliance with safety regulations and identify areas for improvement.

8. Missed maintenance task / Poor Forecasting

Key Risks

Missed maintenance tasks can result in unexpected aircraft groundings, disrupting flight schedules and causing operational delays. These disruptions may have a cascading effect across the fleet, reducing overall availability and operational efficiency. In addition, missed tasks increase the risk of undetected defects and potential failures, with direct implications for aircraft airworthiness and safety.

Ineffective forecasting further exacerbates these challenges by leading to inefficient allocation of resources, including maintenance personnel and spare parts. This can delay maintenance activities, extend turnaround times, and reduce preparedness for planned maintenance inputs. As a result, aircraft reliability may be compromised, increasing the likelihood of in-service issues and operational disruption.

Unplanned maintenance arising from missed or deferred tasks can also drive increased costs, including emergency repairs and expedited procurement of parts. Combined with operational delays and reduced aircraft availability, this can lead to loss of revenue and negatively impact overall financial performance.

Mitigation Strategies

Implementing systems to track and schedule maintenance tasks can help ensure that no tasks are missed and that all maintenance activities are completed on time. Use of data analytics and predictive maintenance techniques can improve forecasting accuracy and help anticipate maintenance needs more effectively.

Conducting regular audits and inspections may identify any missed maintenance tasks and will ensure compliance with regulatory requirements.

Implementing integrated planning systems that combine maintenance, operations, and supply chain data can enhance forecasting accuracy and resource allocation.

Providing continuous training for maintenance personnel to ensure task specific competency

Example Safety Objectives

1. Enhance Maintenance Scheduling Accuracy: Ensure that all maintenance tasks are scheduled accurately and completed on time.

2. Improve Forecasting Methods: Develop and implement accurate forecasting methods to predict maintenance needs.
3. Reduce Maintenance Task Overruns: Minimise the number of maintenance tasks that exceed their scheduled timeframes.
4. Increase Compliance with Maintenance Protocols: Ensure 100% compliance with all maintenance protocols and procedures.

Example Safety Performance indicators (SPI's)

1. On-Time Maintenance Completion Rate: Measure the percentage of maintenance tasks completed on or before the scheduled date.
2. Maintenance Task Overrun Rate: Monitor the number of maintenance tasks that exceed their scheduled timeframes.
3. Number of Missed Maintenance Tasks: Track the number of maintenance tasks that were missed or not performed as scheduled.

9. Inadequate Process & Procedures

Key Risks

Inadequate processes can result in disorganised maintenance planning, leading to missed or delayed maintenance tasks. Such inefficiencies may cause operational disruption, extended aircraft downtime, and reduced overall operational performance. Poorly defined or inconsistent procedures can also lead to ineffective allocation of resources, including maintenance personnel and spare parts, increasing turnaround times and limiting efficiency.

A lack of standardised and clearly documented processes increases the risk of inconsistent maintenance practices, which can contribute to safety occurrences. Clear procedures are essential to ensure that maintenance activities are performed correctly, consistently, and in accordance with approved data. Where processes are unclear or insufficiently defined, there is an increased risk of confusion, error, and compromised airworthiness.

Under UK Regulation 1321/2014, CAMO organisations are required to comply with defined airworthiness standards. Inadequate processes may lead to non-compliance, increasing the likelihood of regulatory findings and enforcement action. In particular, weaknesses in documentation and record-keeping processes can result in incomplete or inaccurate records, affecting the organisation's ability to demonstrate compliance during audit activities.

Operational inefficiencies and process-related errors may also drive increased costs. CAMO organisations may need to allocate additional resources to rectify issues arising from inadequate procedures, while disruption to operations can lead to loss of revenue from grounded aircraft and delayed services.

Inconsistent quality and safety outcomes resulting from inadequate processes may undermine the reliability of maintenance services. This can erode client confidence and satisfaction, potentially leading to loss of business.

Furthermore, safety occurrences or regulatory non-compliance linked to process weaknesses may attract negative attention, adversely affecting organisational reputation and stakeholder trust.

Mitigation Strategies

Implementing standardised operating procedures (SOPs) ensures consistency in maintenance practices and improves overall efficiency. Comprehensive documentation of

all processes and procedures helps maintain compliance with regulatory requirements and provides a clear audit trail, ensuring transparency and accountability.

Providing regular training programs for maintenance personnel on standardised procedures and best practices enhances their competency and reduces the risk of errors. Ongoing competency assessments ensure that maintenance personnel remain proficient in their roles and adhere to established procedures, maintaining high standards of performance.

Establishing clear communication channels between all departments involved in maintenance activities facilitates effective coordination and information exchange. Regular meetings and updates help ensure alignment on maintenance schedules and requirements, promoting smooth and efficient operations.

Conducting regular audits and inspections of maintenance processes helps identify and address any issues promptly. Implementing continuous improvement programs refines processes and procedures over time, enhancing overall efficiency and compliance, and fostering a culture of ongoing development and excellence.

Example Safety Objectives

1. **Process Compliance:** Ensure all operational processes and procedures comply with regulatory requirements, local procedures and industry best practices.
2. **Improve Training and Competency:** Regularly update and enhance training programs to ensure staff competency in following established procedures.
3. **Increase Reporting and Feedback:** Foster a culture of safety where employees are encouraged to report procedural deviations and provide feedback for continuous improvement.
4. **Reduce Human Error:** Implement measures to minimise human error through better process design and automation where feasible.

Example Safety Performance Indicators (SPI's)

1. **Compliance Rate:** Percentage of processes and procedures that are fully compliant with regulatory requirements.
2. **Training Completion Rate:** Percentage of staff who have completed required training within specified timeframes.
3. **Incident Reporting Rate:** Number of reported incidents related to procedural deviations per 1,000 flight hours.
4. **Audit Findings:** Number of findings from internal and external audits related to process and procedural inadequacies.
5. **Error Rate:** Number of human errors identified in operational processes per 1,000 flight hours.

10. Poor Communication between Maintenance, Flight Ops, Ground Ops

Key Risks

Poor communication between CAMO, maintenance, and operational teams can lead to misaligned maintenance schedules, resulting in delays and disruption to flight operations. For example, where maintenance teams are not provided with accurate or timely flight schedules, required inspections and repairs may not be completed as planned, leading to aircraft groundings and reduced operational availability. Ineffective coordination with ground operations can also contribute to extended turnaround times, further impacting efficiency.

Communication breakdowns may result in incomplete or incorrect maintenance actions. If maintenance personnel do not receive accurate and comprehensive defect information from flight crews, critical issues may be overlooked or misinterpreted, potentially compromising aircraft safety and airworthiness.

Poor communication is also a significant contributor to human error. Misinterpretation of instructions, lack of clarity, or incomplete information can lead to mistakes during maintenance or airworthiness decision-making, increasing overall safety risk.

In addition, ongoing operational inefficiencies, safety occurrences, or instances of regulatory non-compliance arising from communication failures may erode client confidence and damage the organisation's reputation, potentially resulting in loss of business and reduced stakeholder trust.

Mitigation Strategies

Implementing standardised communication protocols across maintenance, flight operations, and ground operations can ensure that all parties have access to accurate and timely information. Conducting regular briefings and debriefings can help ensure that all teams are aligned and aware of any issues that need to be addressed.

Providing training on effective communication skills can help reduce misunderstandings and improve information exchange between teams. Leveraging technology, such as integrated communication systems and real-time data sharing platforms, can enhance the accuracy and efficiency of communication.

Ensuring that all maintenance tasks and communications are accurately documented can help maintain compliance with regulatory requirements and provide a clear audit trail.

Centralised Information Systems: Implementing centralised information systems can ensure that all relevant information is accessible to all teams, reducing the risk of miscommunication.

Example Safety Objectives

1. Enhance Communication Protocols: Implement standardised communication methods across all departments to ensure clarity and consistency.
2. Increase Training and Awareness: Conduct regular forums with Maintenance, Flight Ops, and Ground Ops personnel to foster relationships and enhance communication.
3. Improve Reporting Systems: Develop a robust reporting system that encourages the reporting of communication issues without fear of retribution.
4. Foster a Safety Culture: Promote a culture where safety and communication are prioritised, and all staff feel responsible for maintaining high communication standards.

Example Safety Performance Indicators (SPI's)

1. Incident Reports Involving Communication: Monitor the number of incidents where poor communication was identified as a contributing factor.
2. Feedback from Staff Surveys: Conduct regular surveys to gather feedback from staff on the effectiveness of communication and identify areas for improvement.

11. A/C introduction

Key Risks

The integration of new aircraft into existing fleets can present significant challenges, requiring adjustments to maintenance programmes, training provision, and operational procedures. These changes may result in short-term operational disruption as organisations adapt to new aircraft types and associated requirements.

Ensuring compliance with UK Regulation 1321/2014 and other applicable airworthiness requirements for new aircraft can also be complex. This includes meeting certification obligations and maintaining accurate records of maintenance, modifications, and configuration control. The introduction of new aircraft typically requires enhanced documentation and robust record-keeping processes, and any deficiencies in these areas may lead to regulatory non-compliance and potential operational limitations.

Mitigation Strategies

Developing detailed integration plans and management of change processes that outline the steps and timelines for introducing new aircraft can help manage the transition smoothly. Encouraging cross-functional collaboration between maintenance, flight operations, and ground operations teams facilitates effective communication and coordination during the integration process.

Implementing tailored training programs specific to the new aircraft ensures that all personnel are adequately prepared. Regular competency assessments and refresher training help maintain high standards of proficiency and safety, ensuring that staff remain up-to-date with the latest procedures and systems.

Implementing proactive measures to identify and address potential technical issues with new aircraft helps maintain safety and reliability. Providing human factors training reduces the risk of human error and enhances overall safety during the transition period, ensuring that all personnel are aware of the best practices and potential pitfalls.

Utilising centralised documentation systems ensures that all records related to new aircraft are accurately maintained and easily accessible. Conducting regular audits of maintenance and operational procedures helps ensure ongoing compliance with regulatory requirements, preventing lapses that could lead to non-compliance and potential limitations.

Example Safety Objectives

1. **Ensure Comprehensive Training:** All relevant personnel should receive thorough training on the new aircraft type, including its systems, operations, and maintenance procedures.
2. **Maintain High Standards of Maintenance:** Implement maintenance schedules and checks to ensure the new aircraft type remains in optimal condition.
3. **Enhance Communication and Reporting:** Foster a culture of open communication and prompt reporting of issue or anomalies related to the new aircraft type.
4. **Conduct Regular Safety Audits:** Perform frequent safety audits to identify and mitigate potential risks associated with the new aircraft type.
5. **Implement Robust Management of Change:** Develop and maintain a comprehensive management of change tailored to the new aircraft type.

Example Safety Performance Indicators (SPI's)

1. **Training Completion Rate:** Measure the percentage of personnel who have completed the required training for the new aircraft type.
2. **Maintenance Compliance Rate:** Track adherence to the maintenance schedules and procedures for the new aircraft type.
3. **Incident Reporting Rate:** Monitor the number of incidents reported related to the new aircraft type
4. **Audit Findings:** Track the number and severity of findings from safety audits.
5. **Risk Mitigation Effectiveness:** Evaluate the effectiveness of risk mitigation measures implemented for the new aircraft type.

12. Component Robbery

Key Risks

Ensuring accurate documentation and full traceability of all components is essential to maintaining airworthiness standards. Without complete and reliable records, it becomes difficult to verify component history and confirm compliance with regulatory requirements. This lack of traceability can introduce significant operational and safety risks, as well as potential regulatory exposure.

Component movements that do not adhere to approved maintenance procedures may result in non-compliance with regulatory standards. It is therefore essential that all component transfers, installations, and removals are conducted in accordance with approved processes to ensure continued airworthiness and system integrity.

Unauthorised or inadequately documented component movements can compromise safety. The installation of unapproved, incompatible, or incorrectly configured parts may lead to system failures or degraded aircraft performance. Ensuring that all component changes are properly authorised, controlled, and documented is critical to maintaining aircraft safety and reliability.

Effective inventory management is a key control in ensuring component traceability. Weak inventory processes may result in the loss, misplacement, or misidentification of components, leading to operational inefficiencies and increased costs. Robust inventory controls support accurate tracking, availability, and accountability of all parts throughout their lifecycle.

The movement of components between aircraft also introduces risks related to loss, theft, or fraud. Implementing appropriate security controls, along with regular audits and reconciliation processes, helps mitigate these risks and protect organisational assets.

Frequent or unexplained component movements may attract regulatory scrutiny. Maintaining transparency, ensuring all movements are justified, and adhering to regulatory requirements are essential to preserving organisational credibility and approval status, as well as maintaining stakeholder confidence.

Mitigation strategies

Implementing robust documentation practices is essential for accurately recording all component movements. This involves maintaining detailed logs and using digital tracking systems to monitor the history and status of each component. Such practices help ensure

traceability and compliance with airworthiness standards, reducing the risk of errors and enhancing overall operational efficiency.

Ensuring that all component movements follow approved maintenance procedures is crucial for regulatory compliance. Regular training for staff on regulatory requirements and maintenance protocols can help achieve this. Additionally, periodic audits can identify and rectify any deviations from standard procedures, ensuring that all maintenance activities are performed correctly and safely.

Developing a comprehensive Safety Management System (SMS) is vital for identifying and mitigating potential safety risks associated with component movements. An effective SMS includes hazard identification, risk assessment, and mitigation strategies. Regular safety audits and reviews help ensure the system's effectiveness, maintaining high safety standards and preventing accidents.

Advanced inventory management systems are crucial for accurately tracking components and preventing loss or misplacement. Technologies such as barcode scanning, RFID, and real-time inventory tracking can ensure that all components are accounted for and easily accessible when needed. Effective inventory management reduces operational inefficiencies and helps maintain a smooth workflow.

To prevent fraud and theft, organisations should implement robust security measures. This includes controlled access to storage areas, surveillance systems, and regular security audits. Fostering a culture of accountability and transparency among staff can also deter fraudulent activities, protecting the organisation's assets and maintaining trust.

Maintaining transparency in all component movements and ensuring compliance with regulatory requirements is essential for upholding the organisation's credibility. Detailed records, regular internal audits, and cooperation with regulatory authorities during inspections are key practices. Clear communication and thorough documentation help avoid regulatory scrutiny and ensure the organisation's continued approval and reputation.

Example Safety Objectives

1. **Comprehensive Documentation and Traceability:** Establish a robust documentation system to ensure all component movements are accurately recorded. This includes maintaining detailed logs and using digital tracking systems to monitor the history and status of each component. This objective aims to enhance traceability and ensure compliance with airworthiness standards.
2. **Adherence to Maintenance Procedures:** Implement strict adherence to approved maintenance procedures for all component movements. Regular training for staff on regulatory requirements and maintenance protocols is essential. Additionally,

- conducting periodic audits can help identify and rectify any deviations from standard procedures, ensuring all maintenance activities are performed correctly and safely.
3. **Safety Management System (SMS):** Develop a comprehensive SMS that includes hazard identification, risk assessment, and mitigation strategies. This system should focus on identifying potential safety risks associated with component movements and implementing measures to mitigate these risks. Regular safety audits and reviews help ensure the effectiveness of the SMS.
 4. **Advanced Inventory Management:** Implement advanced inventory management systems to accurately track components and prevent loss or misplacement. Technologies such as barcode scanning, RFID, and real-time inventory tracking can ensure that all components are accounted for and easily accessible when needed. Effective inventory management reduces operational inefficiencies and helps maintain a smooth workflow.
 5. **Enhanced Security Measures:** Introduce robust security measures to prevent fraud and theft. This includes controlled access to storage areas, surveillance systems, and regular security audits. Fostering a culture of accountability and transparency among staff can also deter fraudulent activities, protecting the organisation's assets.
 6. **Regulatory Compliance and Transparency:** Maintain transparency in all component movements and ensure compliance with regulatory requirements. This can be achieved by keeping detailed records, conducting regular internal audits, and cooperating with regulatory authorities during inspections. Clear communication and thorough documentation help avoid regulatory scrutiny and ensure the organisation's continued approval and reputation.

Example Safety Performance Indicators (SPI's)

1. **Component Traceability Compliance Rate:** This SPI measures the percentage of components with complete and accurate documentation. A high compliance rate indicates effective traceability practices, ensuring that all component movements are properly recorded and traceable.
2. **Maintenance Procedure Adherence Rate:** This indicator tracks the adherence to approved maintenance procedures during component movements. It measures the percentage of component transfers that follow the prescribed protocols, helping to ensure regulatory compliance and safety.
3. **Incident Reports Related to Component Movements:** Monitoring the number of incident reports related to component movements can help identify trends and areas for improvement. This SPI includes reports of unauthorized movements, documentation errors, and safety incidents.
4. **Inventory Discrepancy Rate:** This SPI measures the frequency of discrepancies in inventory records, such as missing or misplaced components. A low discrepancy

rate indicates effective inventory management and reduces the risk of operational inefficiencies.

5. Security Breach Incidents: Tracking the number of security breaches related to component movements helps assess the effectiveness of security measures. This SPI includes incidents of fraud, theft, and unauthorized access to storage areas.
6. Regulatory Audit Findings: This indicator measures the number and severity of findings from regulatory audits related to component movements. A low number of findings suggests strong compliance with regulatory requirements and effective internal controls.

13. Contracted P145 AMO's inadequate root cause analysis of findings impacting how findings can be closed / Lack of SMS in Part 145

Key Risks

A notable shift within the current risk profile is the increased prominence of contracted Part 145 RCA and SMS effectiveness, reflecting growing concern regarding the quality of corrective action and the visibility of systemic risks across contracted maintenance providers.

The effectiveness of root cause analysis (RCA) within contracted Part 145 organisations is critical to ensuring that safety issues are fully understood and appropriately mitigated. Where RCA is ineffective, findings may be addressed at a superficial level, with immediate causes corrected while underlying systemic issues remain unaddressed. This increases the likelihood of recurrence and weakens overall safety assurance.

Where Safety Management Systems (SMS) are not fully embedded within Part 145 organisations, there is a risk that maintenance activities remain reactive, with a focus on closing findings rather than identifying underlying hazards and emerging risks. This limits the ability to detect trends, weak signals, and systemic failures within maintenance processes.

Poor-quality RCA from contracted AMOs can directly affect a CAMO's ability to effectively manage and close findings, particularly where corrective actions are insufficiently robust or lack supporting evidence. This may lead to prolonged open findings, repeat occurrences, and increased regulatory scrutiny.

A lack of integration between CAMO and contracted Part 145 SMS frameworks can also create gaps in safety information flow, reducing visibility of hazards and limiting the effectiveness of oversight. This risk is amplified where CAMOs rely heavily on multiple subcontracted maintenance providers.

Inconsistencies in RCA standards across different AMOs may result in variable safety performance, making it difficult to ensure a consistent and effective approach to risk management. This variability increases oversight burden and may obscure systemic issues across the supply chain.

Ultimately, ineffective RCA and immature SMS implementation can contribute to increased operational risk, including maintenance errors, repeat defects, and incorrect airworthiness decisions, areas consistently identified as key safety concerns within CAP3114.

Mitigation Strategies

Ensuring that all contracted Part 145 organisations implement a fully compliant and effective SMS is essential. This includes verifying that the SMS is not only documented but actively used for hazard identification, occurrence investigation, and continuous improvement.

Establishing clear expectations for root cause analysis quality within contracts and oversight processes is critical. CAMOs should define minimum RCA standards, including requirements for identifying contributing factors, human factors considerations, and systemic causes rather than focusing solely on immediate errors.

Regular oversight audits of contracted AMOs should assess the effectiveness of RCA processes and SMS implementation. This should include sampling of closed findings to ensure that corrective actions are appropriate, effective, and sustainable.

Developing collaborative safety relationships between CAMO and AMO is important to improve information sharing and alignment. Joint safety reviews, shared occurrence data, and integrated safety meetings can enhance understanding of risks across organisations.

Providing guidance and training on effective root cause analysis can help drive improvements in RCA quality. This may include the use of recognised methodologies such as Human Factors Analysis, MEDA, or similar structured approaches.

Implementing performance monitoring of contracted organisations, including tracking repeat findings and RCA effectiveness, can help identify underperforming providers and support targeted corrective action or escalation.

Ensuring that management of change processes are applied when introducing or changing AMO contracts is also essential. This ensures that risks associated with new providers, changes in capability, or increased reliance on contractors are effectively assessed and controlled.

Example Safety Objectives

1. **Improve Root Cause Analysis Quality.** Ensure all contracted Part 145 organisations provide robust, evidence-based root cause analysis for safety findings, addressing underlying systemic causes and not just immediate errors.
2. **Enhance SMS Integration Across Organisations.** Strengthen alignment between CAMO and AMO safety management systems through improved communication, shared safety data, and coordinated safety activities.
3. **Reduce Repeat Findings.** Minimise the recurrence of findings within contracted AMOs by ensuring corrective actions are effective, sustainable, and validated.
4. **Strengthen Oversight of Contracted Maintenance.** Implement a risk-based oversight programme focusing on RCA effectiveness, SMS maturity, and safety performance of contracted AMOs.

5. Promote Proactive Risk Management within AMOs. Encourage the use of SMS within Part 145 organisations to identify hazards early and implement preventative measures.
6. Standardise RCA Expectations Across Providers. Develop consistent RCA standards and expectations for all contracted AMOs to ensure uniform safety performance.

Example safety Performance Indicators (SPI's)

1. Repeat Findings Rate (Part 145 AMOs). Measures the number of repeat findings identified during audits of contracted AMOs. A high rate indicates ineffective root cause analysis or corrective actions.
2. Root Cause Analysis Quality Score. Assesses the quality of RCA reports based on predefined criteria (e.g. identification of systemic causes, human factors, and corrective actions).
3. Time to Close Findings (Corrective Action Effectiveness). Measures the time taken to close findings raised against Part 145 organisations, including validation of corrective actions.
4. Findings Re-open Rate. Tracks the number of findings that require reopening due to ineffective or incomplete corrective actions.
5. SMS Implementation Maturity (Part 145). Evaluates the maturity and effectiveness of SMS within contracted AMOs, based on audit results and oversight assessments.
6. Occurrence Reporting Rate from AMOs. Measures the volume and quality of occurrence reports received from contracted organisations, indicating engagement with proactive safety reporting.
7. Trend Analysis of Maintenance-Related Incidents. Monitors trends in maintenance errors, defects, or technical incidents linked to contracted AMOs to identify systemic issues.
8. Oversight Audit Findings per AMO. Tracks the number and severity of audit findings raised against individual contracted AMOs to identify performance trends.

14. Single Point dependencies within Airworthiness

Key Risks

Single point dependencies within a Continuing Airworthiness Management Organisation (CAMO) can create significant operational vulnerability. Reliance on a single individual for critical functions—such as airworthiness reviews or maintenance planning, may result in delays or disruption where that individual is unavailable due to absence or departure. Such disruptions can impact timely decision-making and, in certain cases, compromise the continued airworthiness of aircraft. Similarly, dependence on a single IT system for managing airworthiness data and records introduces risk; system failure or loss of access may lead to data unavailability, maintenance delays, and challenges in demonstrating compliance during audits.

Single point dependencies also increase compliance risk. Where key responsibilities, such as monitoring and implementing airworthiness directives, are concentrated in one individual, any loss of availability may result in delays in implementing mandatory requirements, increasing the likelihood of non-compliance.

From a safety perspective, concentration of critical tasks increases exposure to human error, particularly where workload is high or independent verification is limited. A lack of redundancy in both personnel and systems reduces organisational resilience and the ability to respond effectively to unexpected issues. This may ultimately impact the reliability of airworthiness processes and increase overall safety risk.

Mitigation Strategies

Implementing cross-training programs within a CAMO ensures that multiple individuals are capable of performing critical tasks. This reduces reliance on any single person and ensures continuity in operations, even if someone is unavailable. Additionally, developing succession plans helps identify and prepare potential replacements for key roles, ensuring that the organisation is not left vulnerable due to unexpected personnel changes.

Investing in redundant IT systems and data backup solutions is crucial for maintaining continuity in case of system failures. Regularly testing backup systems verifies their effectiveness and ensures that data can be recovered when needed. Implementing robust cyber security measures is also essential to protect critical systems from cyber threats, safeguarding the organisation's data and operations.

Standardising airworthiness processes and thoroughly documenting them ensures that tasks can be performed consistently by different individuals, reducing the risk of errors. Maintaining comprehensive records of all airworthiness activities facilitates audits and

demonstrates compliance with regulatory requirements, providing a clear and consistent trail of the organisation's practices.

Conducting regular internal audits and risk assessments helps identify and address single point dependencies, using the findings to improve processes and enhance organisational resilience. Engaging external auditors provides an independent assessment of the organisation's airworthiness management practices, offering valuable insights and ensuring that the organisation remains compliant and prepared for any challenges.

Example Safety Objectives

1. **Enhance Redundancy:** Ensure that critical systems have redundant components to prevent single points of failure.
2. **Improve Maintenance Procedures:** Develop and implement robust maintenance procedures to identify and rectify potential single point failures.
3. **Training and Competency:** Ensure all personnel involved in airworthiness tasks are adequately trained and competent to handle single point dependencies.
4. **Regular Audits and Inspections:** Conduct regular audits and inspections to identify and address single point dependencies.
5. **Risk Assessment and Management:** Continuously assess and manage risks associated with single point dependencies through a structured risk management process.

Example Safety Performance Indicators (SPI's)

1. **Number of Identified Single Point Failures:** Track the number of single point failures identified during inspections and audits.
2. **Redundancy Implementation Rate:** Measure the rate at which redundant systems are implemented to mitigate single point dependencies.
3. **Training Completion Rate:** Monitor the percentage of personnel who have completed training on managing single point dependencies.
4. **Maintenance Compliance Rate:** Track compliance with maintenance procedures designed to address single point dependencies.
5. **Incident Reports:** Monitor the number of incidents related to single point failures and analyse trends to identify areas for improvement.

15. Inconsistent / inadequate CAA oversight

Key Risks

Effective oversight is essential to maintaining high standards of safety and ensuring compliance with applicable airworthiness requirements. Within a Part-CAMO approved organisation, responsibility for compliance rests with the Continuing Airworthiness Manager, supported by the organisation's compliance monitoring system. In addition, oversight is provided externally by the regulator, creating a layered assurance framework.

Where oversight is ineffective, there is a risk that non-compliance with continuing airworthiness management requirements may go undetected, particularly if internal compliance monitoring processes are also insufficient or ineffective.

Inconsistency in the application or interpretation of regulatory requirements may also disrupt operations, particularly where expectations between the organisation and regulator are not aligned. This can lead to inefficiencies, uncertainty in compliance obligations, and potential impacts on operational performance.

Addressing regulatory findings may place additional demands on organisational resources, particularly where a high volume of findings is identified. This can divert attention from core operational activities and impact overall efficiency.

Furthermore, declining airworthiness standards may go unnoticed where oversight mechanisms lack robustness or where there are deficiencies in the competence of key personnel. Reduced effectiveness in compliance monitoring can affect the reliability and performance of the organisation, increasing both operational and safety risk.

Maintaining effective, consistent, and competent oversight—both internally and through regulatory engagement—is therefore critical to ensuring continued airworthiness, operational stability, and overall safety performance.

Mitigation strategies

Conducting robust internal audits is crucial for ensuring compliance with regulatory requirements. Regular and thorough audits help identify and rectify issues before they escalate, maintaining high standards of safety and operational efficiency. This proactive approach ensures that any potential non-compliance is addressed promptly, preventing larger problems down the line.

Investing in continuous training and development for staff is essential to maintain high standards of competence. Regular training keeps employees updated on regulatory changes and best practices, ensuring they are well-equipped to handle their responsibilities. This ongoing education fosters a culture of excellence and adaptability within the organisation.

Implementing a strong Compliance Monitoring System is vital for monitoring and managing 'quality' across all operations. A robust compliance Monitoring System includes clear procedures and documentation practices, ensuring consistency and reliability in maintenance and management activities. This systematic approach helps maintain high standards and improves overall performance.

Maintaining open and proactive communication with the Civil Aviation Authority (CAA) is key to ensuring regulatory alignment. Regularly seeking feedback and clarification on regulatory requirements helps the organisation stay updated and compliant. This engagement fosters a collaborative relationship with the CAA, facilitating smoother operations and regulatory adherence.

Developing a comprehensive risk management framework is essential for identifying, assessing, and mitigating potential risks. Regular risk assessments and updating mitigation strategies as needed help the organisation stay prepared for any eventualities. This proactive risk management approach enhances the organisation's resilience and operational stability.

Engaging independent third-party auditors to review compliance and operational practices provides an external perspective. These audits can help identify areas for improvement that may not be apparent internally. Third-party audits add an extra layer of scrutiny, ensuring that the organisation maintains high standards of compliance and operational excellence.

Establishing robust feedback mechanisms is crucial for capturing and addressing concerns from staff and stakeholders. These mechanisms help in the early identification of issues and foster a culture of continuous improvement. By actively seeking and acting on feedback, the organisation can enhance its processes and maintain high standards of performance and safety.

Example Safety Objectives

1. Enhance Internal Oversight: Strengthen the organisation's internal audit and compliance processes to ensure adherence to safety standards, regardless of external oversight quality.
2. Improve Communication Channels: Establish robust communication channels with the CAA to promptly address any discrepancies or concerns.
3. Increase Training and Competency: Ensure that all personnel involved in continuing airworthiness are adequately trained and competent to identify and manage risks independently.
4. Develop Contingency Plans: Create and regularly update contingency plans to address potential gaps in oversight.

Example Safety Performance Indicators (SPI's)

1. Audit Findings: Track the number and severity of findings from internal audits compared to external audits.
2. Training Completion Rates: Monitor the percentage of personnel who have completed required training and competency assessments.
3. Communication Effectiveness: Measure the response time and resolution rate of issues communicated to the CAA.
4. Incident Reports: Analyse the frequency and nature of incidents related to oversight issues, aiming for a reduction over time.
5. Compliance Rates: Track compliance rates with internal and external regulations, aiming for 100% compliance.

16. Ageing Aircraft

Key Risks

Managing ageing aircraft presents a range of critical risks that must be effectively controlled to ensure continued airworthiness. One of the primary concerns is structural fatigue, which arises from repeated stress cycles on aircraft structures and can lead to cracking or structural failure over time. Mitigation requires the implementation of enhanced inspection regimes and targeted maintenance programmes.

A related risk is widespread fatigue damage (WFD), where multiple fatigue cracks develop and interact, potentially compromising overall structural integrity. The detection of WFD requires specialised inspection techniques, supported by appropriate training and equipment. Early identification and management are essential to maintaining safety and preventing structural failure.

Corrosion also represents a significant risk in ageing aircraft. Environmental factors, such as humidity and exposure to contaminants, can accelerate the deterioration of metallic components. Effective corrosion prevention and control programmes, supported by regular inspections and appropriately trained personnel, are essential to identify and mitigate this risk.

Modifications and repairs introduce additional fatigue considerations. Changes to the aircraft structure may create new stress concentrations, increasing the risk of fatigue in modified areas. It is therefore essential that all repairs and alterations are thoroughly assessed, in coordination with design approval holders, and incorporated into updated maintenance programmes to ensure structural integrity is maintained.

The continued operation of aircraft with undetected or inadequately managed fatigue damage presents a significant safety risk. Failure to identify and address fatigue cracking in a timely manner may lead to structural failure. Robust monitoring, inspection, and defect management processes are therefore critical to ensuring that any fatigue-related issues are promptly identified, assessed, and mitigated.

Through the implementation of comprehensive maintenance programmes, effective inspection strategies, and adherence to regulatory requirements, CAMO organisations can manage the risks associated with ageing aircraft and ensure continued airworthiness and operational safety.

Mitigation Strategies

To mitigate the risks associated with structural fatigue in ageing aircraft, it is essential to implement rigorous inspection and maintenance programs. These programs should

include non-destructive testing (NDT) techniques to detect and address fatigue-related issues early. By identifying potential problems before they become critical, CAMO's can prevent catastrophic failures and ensure the continued airworthiness of the aircraft.

For widespread fatigue damage (WFD), developing and applying specific inspection techniques for early identification is crucial. This involves providing specialized training and equipment to maintenance personnel to handle WFD detection and repair effectively. Early detection and management of WFD help maintain the structural integrity of the aircraft and reduce operational risks. Corrosion mitigation requires conducting regular inspections and applying preventive measures such as protective coatings and corrosion inhibitors. Ensuring that maintenance personnel are trained to identify and mitigate corrosion effectively is vital. These measures help prevent the deterioration of metal components and maintain the aircraft's structural integrity.

Addressing the fatigue of changes and repairs involves thoroughly evaluating all modifications and repairs for potential fatigue issues. CAMO's must collaborate with design approval holders to ensure that maintenance programs are updated and effective in addressing these issues. This proactive approach helps prevent new stress points from compromising the aircraft's safety. Finally, to manage the risk of continued operation with unsafe levels of fatigue cracking, stringent monitoring and inspection protocols must be implemented. Regular NDT inspections are essential to ensure that any fatigue cracking is promptly identified and repaired. By maintaining rigorous inspection standards, CAMO's can ensure the continued airworthiness and safety of ageing aircraft.

Example Safety Objectives

1. **Ensure Structural Integrity:** Regularly inspect and maintain the structural components of ageing aircraft to prevent failures.
2. **Maintain System Reliability:** Ensure that all systems, especially those critical to flight safety, are regularly tested and maintained in accordance with the AMP
3. **Enhance Maintenance Programs:** Develop and implement enhanced maintenance programs tailored to the specific needs of ageing aircraft.
4. **Improve Data Collection and Analysis:** Collect and analyse data on the performance and maintenance of ageing aircraft to identify trends and potential issues.
5. **Training and Awareness:** Provide ongoing training for maintenance personnel on the specific challenges and requirements of maintaining ageing aircraft.

Example Safety Performance Indicators (SPI's)

1. **Inspection Compliance Rate:** Percentage of scheduled inspections completed on time.

2. Defect Reporting Rate: Number of defects reported per flight hour.
3. Maintenance Error Rate: Number of maintenance errors per maintenance hour.
4. Component Failure Rate: Frequency of component failures per flight hour.
5. Training Completion Rate: Percentage of maintenance personnel who have completed training on ageing aircraft maintenance.

17. Human Performance Limitation/Human Error

Key Risks

Human performance limitations refer to the inherent physical and cognitive constraints that influence an individual's ability to perform tasks effectively. These limitations may be affected by factors such as fatigue, stress, workload, and environmental conditions. Within a CAMO environment, these constraints can impact maintenance planning, documentation accuracy, and airworthiness decision-making.

Human error is an inherent aspect of human activity, including continuing airworthiness management. Errors may occur at various stages of a process, including planning, execution, communication, and documentation. Understanding the nature and causes of these errors is essential to reducing their likelihood and mitigating their impact.

Human error can generally be categorised as follows:

- Skill-based errors – Occur during routine or familiar tasks, often as a result of lapses in attention or memory. These errors typically arise when tasks are performed with a high degree of automation and reduced conscious focus.
- Decision errors – Result from incorrect judgments or choices, often made under conditions of uncertainty, time pressure, or incomplete information. These errors can affect the effectiveness of maintenance planning and operational decisions.
- Perceptual errors – Arise from the misinterpretation of information or sensory input, potentially leading to incorrect conclusions or actions, particularly where accurate interpretation is critical to safety.

From a human performance perspective, factors such as prolonged working hours, insufficient rest, and high workload can significantly impair cognitive function and decision-making. Fatigue and stress reduce attention to detail and increase the likelihood of error, while excessive workload may lead to missed steps or procedural shortcuts.

Environmental conditions, including poor lighting, excessive noise, and unsuitable working environments, can further degrade performance by increasing distraction and reducing overall effectiveness. These factors may compound the effects of fatigue and workload, further increasing safety risk.

From a human error perspective, weaknesses in documentation and communication remain key contributors to safety risk. Errors in recording maintenance activities may result in incomplete or inaccurate records, reducing traceability and the ability to demonstrate compliance. Similarly, ineffective communication between personnel can lead to misunderstandings, incorrect assumptions, and errors in task execution.

Inadequate training or competence development may further increase exposure to risk. Personnel who are not sufficiently trained may be less capable of managing complex or unexpected situations, leading to errors that could affect the safety and reliability of maintenance outcomes.

Effective management of human performance requires a systematic approach that recognises both individual limitations and organisational factors, ensuring that processes, training, and working environments are designed to support safe and consistent performance.

Mitigation Strategies

To address the risks associated with human performance limitations and human error, CAMO's should encompass a variety of strategies aimed at mitigating these risks and enhancing overall safety and efficiency.

One crucial strategy is fatigue management. CAMO's should implement policies that ensure personnel have adequate rest periods and monitor fatigue levels regularly. This helps prevent cognitive impairments that can lead to mistakes in maintenance scheduling and oversight.

Stress reduction is another important aspect. Providing support resources and promoting a healthy work-life balance can significantly reduce stress levels among personnel. Lower stress levels contribute to better attention to detail and fewer errors in task execution.

Workload management is essential to prevent personnel from becoming overwhelmed. Ensuring balanced workloads and providing additional resources during peak periods can help maintain high standards of performance and safety. This approach minimises the risk of shortcuts and missed steps in critical procedures.

Ergonomic improvements can optimise the working environment, reducing distractions and enhancing comfort. By addressing factors such as lighting, noise, and workspace design, CAMO's can create conditions that support better focus and effectiveness among personnel.

Regular training programs are vital for keeping personnel updated on best practices and new regulations. Offering training and refresher courses ensures that staff are well-prepared to handle complex or unexpected situations, reducing the risk of errors.

Encouraging a culture of open error reporting and analysis is also crucial. Implementing error reporting systems helps identify root causes of mistakes and allows for the implementation of corrective actions. This proactive approach fosters continuous improvement and enhances safety.

Finally, establishing clear communication channels and protocols is essential for accurate information exchange. Effective communication ensures that all team members are on the same page, reducing the likelihood of misunderstandings and errors in task execution.

Example Safety Objectives

1. **Enhance Training Programs:** Ensure all personnel receive comprehensive training on human factors, error management, and fatigue risk management.
2. **Improve Reporting Systems:** Foster a non-punitive reporting culture to encourage the reporting of human errors and near-misses.
3. **Optimize Work Schedules:** Implement work schedules that minimise fatigue and consider human performance limitations.
4. **Strengthen Communication:** Enhance communication protocols to reduce misunderstandings and errors during operations.
5. **Regular Audits and Assessments:** Conduct regular audits and assessments to identify potential human performance issues and implement corrective actions.

Example Safety Performance Indicators (SPI's)

1. **Error Reporting Rate:** Track the number of human error reports submitted over a specific period.
2. **Training Completion Rate:** Measure the percentage of personnel who have completed human factors and error management training.
3. **Fatigue-Related Incidents:** Monitor the number of incidents where fatigue was identified as a contributing factor.
4. **Shift Compliance Rate:** Assess compliance with optimized work schedules designed to reduce fatigue.
5. **Communication-Related Errors:** Track the number of errors attributed to communication breakdowns.

18. Management of change

Key Risks

Changes to organisational structures, processes, or ways of working can introduce new human factors risks, including increased workload, unclear responsibilities, and reduced role clarity. These changes may affect individual performance and safety outcomes, particularly where personnel are required to adapt quickly to new demands. Providing appropriate training, support, and clear communication during periods of transition is essential to mitigate these risks and maintain safety performance.

The introduction of new technologies, procedures, or organisational changes may also increase operational complexity. More complex systems and processes can be more difficult to manage and understand, increasing the likelihood of error and safety occurrences. Simplifying processes where possible, alongside providing comprehensive training and clear guidance, can help reduce this complexity and support safe and effective operations.

Failure to adequately assess the likelihood and severity of hazards may result in insufficient or ineffective mitigation measures, leaving the organisation exposed to avoidable risks. A structured and regularly reviewed risk assessment process is therefore essential to ensure that hazards are properly identified, evaluated, and controlled.

Unclear accountability for risk acceptance and decision-making can further increase exposure, potentially leading to delayed or inappropriate responses to identified risks. Establishing clearly defined roles, responsibilities, and authority for risk management decisions is essential to ensure timely and effective action.

In addition, strengthening internal investigation processes and implementing robust monitoring and measurement of safety performance enables organisations to identify trends, detect emerging risks, and address underlying causes. This supports continuous improvement, reduces the likelihood of recurrence, and enhances overall safety performance.

Mitigation Strategies

To mitigate human factors risks, organisations should focus on providing adequate training and support to employees during transitions. Clear communication about changes and their impact on roles and responsibilities is essential to help employees adapt more effectively. By ensuring that employees understand the changes and receive the necessary support, organisations can maintain high levels of performance and safety.

Simplifying processes and providing comprehensive training on new technologies and procedures can help reduce operational complexity. Regular reviews and updates to procedures ensure they remain effective and manageable. This approach helps employees navigate new systems and processes more easily, reducing the likelihood of errors and safety incidents.

Implementing a thorough risk analysis process that considers both the probability and severity of potential hazards is crucial for effective risk management. Regular reviews and updates to the risk analysis process can improve its effectiveness, ensuring that sufficient risk mitigation measures are in place. This proactive approach helps organisations identify and address potential hazards before they become significant issues.

Establishing clear decision-making authority and responsibilities for risk management is vital for timely and appropriate responses to identified risks. Clear documentation and communication of these roles can prevent ambiguities, ensuring that the right people are making informed decisions about risk tolerability. This clarity helps organisations respond more effectively to risks and maintain safety standards.

Expanding the scope of internal investigations to include underlying causes of incidents can help prevent repeated safety issues. Comprehensive investigations can identify root causes and inform effective corrective actions. Additionally, implementing robust monitoring and measurement systems for safety performance can help organisations identify trends and areas needing improvement. Regular reviews and updates to performance measurement processes enhance their effectiveness, contributing to continuous safety improvement.

Example Safety Objectives

1. **Ensure Comprehensive Risk Assessment:** Conduct thorough risk assessments for all changes to identify potential hazards and mitigate risks.
2. **Maintain Compliance with Regulations:** Ensure all changes comply with relevant regulations and standards.
3. **Enhance Communication and Training:** Improve communication and training related to changes to ensure all personnel are aware and prepared.
4. **Minimise Disruptions:** Implement changes in a manner that minimises operational disruptions and maintains safety.

Example Safety Performance Indicators (SPI's)

1. **Number of Risk Assessments Conducted:** Track the number of risk assessments completed for changes.

2. Training Completion Rate: Monitor the percentage of personnel who have completed training related to the changes.
3. Incident and Near-Miss Reports: Track the number of incidents and near-misses related to changes.
4. Change Implementation Time: Measure the time taken to implement changes and compare it to planned timelines.

19. Contracted Activities

Key Risks

CAMO organisations must ensure that all contracted organisations comply with applicable regulatory requirements and standards in order to maintain compliance with UK Regulation (EU) No. 1321/2014. Failure of contracted organisations to meet these obligations may expose the CAMO to regulatory findings, operational limitations, or, in severe cases, approval action. It is therefore essential that all contracted maintenance providers hold valid approvals appropriate to the scope of work, supported by regular verification of certification status and capability.

Variability in the quality of maintenance and airworthiness management outcomes may arise across contracted organisations. To manage this risk, CAMOs must implement robust oversight and quality assurance processes, ensuring consistency in standards and performance. Effective communication and coordination between the CAMO and its contracted providers are critical to preventing misunderstandings, errors, and delays in the execution of maintenance activities.

CAMO organisations are responsible for identifying and managing hazards associated with contracted activities, including those arising from complex arrangements involving multiple providers. This requires the application of appropriate risk assessment and mitigation strategies to ensure continued airworthiness and safety performance. Contracted organisations must also operate occurrence reporting processes that are aligned with the CAMO's SMS and regulatory requirements, enabling effective information sharing and risk visibility.

Contracted activities may also introduce financial and commercial risks, including additional costs arising from delays, rework, or unplanned maintenance. These risks require careful contract management, clear definition of responsibilities, and effective performance monitoring. In addition, determining liability in the event of an incident or occurrence can be complex when multiple organisations are involved. Clearly defined contractual arrangements, supported by appropriate insurance and governance frameworks, are therefore essential to manage legal and financial exposure.

Mitigation Strategies

Developing comprehensive contracts is essential to clearly define the roles, responsibilities, and expectations of all parties involved. These contracts should include clauses for regular audits, performance reviews, and compliance checks to ensure ongoing adherence to agreed standards and regulatory requirements.

Implementing a robust oversight framework is crucial for monitoring the performance and compliance of contracted organisations. Regular audits and inspections should be

conducted to ensure that all activities meet regulatory requirements and maintain high-quality standards.

Establishing clear communication channels and protocols is vital for effective coordination between the CAMO and contracted organisations. Utilizing technology solutions, such as integrated management systems, can facilitate real-time information sharing and collaboration, improving overall efficiency and reducing the risk of errors.

Conducting thorough risk assessments for all contracted activities is necessary to identify potential risks and develop appropriate mitigation plans. Ensuring that all contractors have effective safety management systems in place and are committed to continuous improvement is essential for maintaining a high level of safety and compliance.

Example Safety Objectives

1. **Ensure Compliance:** Verify that all contracted activities comply with UK Regulation 1321/2014 and other relevant aviation safety regulations.
2. **Hazard Identification:** Implement a robust system for identifying and assessing hazards associated with contracted activities.
3. **Risk Management:** Develop and maintain a comprehensive risk management framework to address risks arising from contracted activities.
4. **Communication and Reporting:** Establish clear communication channels and reporting mechanisms between the operator and contracted organisations.
5. **Continuous Monitoring:** Regularly monitor and audit contracted activities to ensure ongoing compliance and safety performance.

Example Safety Performance Indicators (SPI's)

1. **Compliance Rate:** Percentage of contracted activities that meet regulatory requirements during audits.
2. **Incident Reporting:** Number of safety incidents reported by contracted organisations within a specified period.
3. **Risk Assessment Completion:** Percentage of contracted activities that have undergone a formal risk assessment.
4. **Corrective Actions:** Number of corrective actions implemented following safety audits or incident investigations.
5. **Training and Competency:** Percentage of personnel involved in contracted activities who have completed required safety training.

20. Incorrect application of the MEL

Key Risks

Incorrect application of the Minimum Equipment List (MEL) can result in aircraft being dispatched with inoperative equipment that is critical to safe operation, increasing the risk of safety occurrences. In addition, failure to apply the MEL correctly may lead to non-compliance with applicable airworthiness requirements, potentially creating unsafe operating conditions.

Misapplication of the MEL can also contribute to operational inefficiencies. For example, dispatching an aircraft with defects that should have been rectified may lead to subsequent delays, flight cancellations, or unplanned maintenance. Incorrect use of the MEL may also result in inappropriate deferral of defects, increasing the risk of compounded technical issues and longer-term operational disruption.

There are also financial implications associated with incorrect MEL application. Deferred or poorly managed defects may lead to increased maintenance costs, including additional rectification work and operational disruption. Furthermore, non-compliance with MEL requirements may expose the organisation to regulatory findings, potential enforcement action, and associated financial and reputational impact.

Mitigation Strategies

To mitigate the risks associated with incorrect MEL (Minimum Equipment List) application, CAMO's should focus on comprehensive training and education. Ensuring that all personnel involved in MEL application are adequately trained and understanding the importance of correct MEL usage is crucial for maintaining safety and compliance.

Regular audits and reviews of MEL applications are essential to identify and correct any discrepancies or misapplications. These audits help ensure that MEL procedures are being followed correctly and consistently, reducing the risk of operational and regulatory issues.

Developing and maintaining clear procedures and documentation for MEL application is vital for ensuring consistency and compliance. Clear guidelines help personnel understand and adhere to MEL requirements, promoting a standardised approach to MEL usage across the organisation.

Example Safety Objectives

1. **Ensure Compliance:** Ensure 100% compliance with MEL procedures across all operations.
2. **Training and Awareness:** Training programs cover the understanding and correct application of the MEL.
3. **Error Reduction:** Reduce the number of MEL-related errors by a specified percentage within a set timeframe.
4. **Continuous Monitoring:** Implement continuous monitoring and auditing processes to identify and rectify MEL application errors promptly.

Example Safety Performance Indicators (SPI's)

1. **MEL Compliance Rate:** Measure the percentage of flights that fully comply with MEL items..
2. **Training Completion Rate:** Ensure that all relevant personnel have completed MEL training programs within a specified timeframe.
3. **Error Reporting Rate:** Monitor the number of reported MEL application errors per xx flight hours or xx sectors.
4. **Audit Findings:** Record the number of findings related to MEL application during internal and external audits.
5. **Corrective Action Closure Rate:** Measure the percentage of corrective actions related to MEL errors that are closed within the specified timeframe.

21. MRO demand spike

Key Risks

MRO (Maintenance, Repair, and Overhaul) demand spikes can occur due to various factors. Increased aircraft utilisation from a surge in air travel necessitates more frequent maintenance. Fleet expansion by airlines requires additional MRO services to maintain new aircraft. Regulatory changes or updates can prompt a sudden increase in maintenance requirements. Unforeseen events such as natural disasters, geopolitical tensions, or pandemics can disrupt normal operations and create sudden MRO demand. A sudden spike in demand can strain the availability of qualified maintenance personnel, leading to potential delays and compromised maintenance quality. Additionally, increased demand can lead to shortages of essential parts and materials, affecting the timely completion of maintenance tasks.

CAMO's may face capacity issues, with existing facilities unable to handle the increased workload, resulting in longer turnaround times and potential backlogs. The supply chain for parts and materials can become strained, leading to delays and increased costs, further complicating the maintenance process.

Higher demand can drive up the costs of labour, parts, and materials, leading to increased operational expenses and impacting profitability. Delays in maintenance can result in delayed payments from clients, affecting the cash flow and financial stability of CAMO's, making it difficult to manage finances effectively during demand spikes.

Ensuring compliance with the regulation during demand spikes can be challenging, as CAMO's must maintain high standards despite increased pressure, or the risk of regulator action. Overworked personnel and rushed maintenance processes can lead to errors, compromising the safety and airworthiness of aircraft, posing significant safety concerns.

Mitigation Strategies

A robust planning system will help avoid an MRO demand spike by ensuring maintenance is ordered in advance and allowing use of permitted variations if required. Diversifying contracted maintenance organisations and suppliers helps maintain strategic stockpiles of critical parts and materials which are essential for supply chain resilience and MRO demand spike. This approach helps mitigate risks associated with disruptions and ensures the availability of necessary components for maintenance activities.

Expanding facilities and leveraging technology can significantly improve efficiency and handle increased workloads. By optimising space and incorporating advanced tools and systems, organisations can streamline operations and reduce turnaround times, even during peak periods.

Strengthening internal audit and compliance functions is key to ensuring adherence to regulatory requirements, even during demand spikes. By maintaining rigorous oversight and regular audits, organisations can uphold high standards of safety and compliance, avoiding potential approval limitations and maintaining their reputation.

Example Safety Objectives

1. Efficiently forecast maintenance activities to avoid aircraft flying out of check.
2. Maintain Quality of Maintenance: Ensure that the maintenance activities conducted is aligned to the expectations defined at contract level.
3. Minimise Safe and efficient turnarounds; ensuring through audits and inspections that turn arounds are conducted in a safe and compliant manner. Enhance Communication and Coordination: Improve communication and coordination among different departments to manage the increased workload efficiently.

Example Safety Performance Indicators (SPI's)

1. Staffing Levels: The ratio of available qualified personnel against the scheduled/forecasted work during demand spikes.
2. Maintenance Quality: Track the number of maintenance errors or incidents reported during periods of high demand.
3. Turnaround Time: Monitor the average turnaround time for aircraft during demand spikes and compare it to standard periods.
4. Communication Efficiency: Assess the frequency and effectiveness of communication between departments during high-demand periods.

22. Unrecorded work

Key Risks

Unrecorded work can result in incomplete and unreliable maintenance records, making it difficult to track maintenance history, plan future activities, and confirm that all required tasks have been completed. This lack of traceability may lead to inefficiencies, including duplicated inspections or repairs, increased aircraft downtime, and operational disruption. From a safety perspective, undocumented repairs or modifications increase the risk of undetected defects and potential safety occurrences. Accurate and complete documentation is essential to ensure that maintenance is performed correctly, consistently, and in accordance with approved data. Where records are incomplete or absent, there is an increased risk of error, confusion, and compromised airworthiness.

Under applicable regulatory requirements, CAMO organisations are required to maintain comprehensive records of maintenance activities. Unrecorded work may therefore result in non-compliance, increasing the likelihood of regulatory findings and potential enforcement action. Inadequate documentation can also limit the organisation's ability to demonstrate compliance during audits.

Operational inefficiencies arising from unrecorded work may lead to increased costs, as additional resources are required to rectify documentation gaps or repeat maintenance tasks. Disruption to operations may also result in loss of revenue due to grounded aircraft or delayed services.

Inconsistent standards arising from poor documentation practices can affect the reliability of maintenance outcomes, eroding client confidence and trust. Furthermore, safety occurrences or regulatory non-compliance linked to unrecorded work may attract negative attention, adversely impacting the organisation's reputation and stakeholder confidence.

Mitigation Strategies

Implementing automated maintenance tracking systems ensures that all maintenance tasks are accurately recorded and no work goes unrecorded. Developing comprehensive documentation procedures helps maintain compliance with regulatory requirements and provides a clear audit trail, ensuring transparency and accountability.

Providing regular training programs for maintenance personnel on the importance of accurate record-keeping and best practices enhances their competency and reduces the risk of unrecorded work. Ongoing competency assessments ensure that maintenance personnel remain proficient in their roles and adhere to established documentation procedures, maintaining high standards of performance.

Establishing clear communication channels between all departments involved in maintenance activities facilitates effective coordination and information exchange. Regular meetings and updates help ensure alignment on maintenance schedules and requirements, promoting smooth and efficient operations.

Conducting regular audits and inspections of maintenance records helps identify and address any issues promptly. Implementing continuous improvement programs refines documentation processes and procedures over time, enhancing overall efficiency and compliance, and fostering a culture of ongoing development and excellence.

Example Safety Objectives

1. Enhance Record-Keeping Accuracy: All maintenance activities are accurately recorded and documented.
2. Improve Staff Training: Ensure that staff are trained with regard to records
3. Ensure that the audit schedule is covers the scope of 'unrecorded work'.
4. Strengthen Reporting Mechanisms: Implement a reporting systems for staff to report unrecorded work without fear of reprisal.
5. Promote a Safety Culture: Foster a culture where safety and compliance are prioritized

Example Safety Performance Indicators (SPI's)

1. Number of Unrecorded Work Incidents: Track the number of unrecorded work incidents identified during quarters of the year
2. Training Completion Rate: Measure the percentage of staff who have completed training on record-keeping and compliance.
3. Reporting Rate: Track the number of reports submitted regarding unrecorded work.
4. Corrective Action Implementation Time: Measure the average time taken to implement corrective actions for identified unrecorded work incidents.

23. Cyber Security and the reliance on software

Key Risks (Cyber security)

A security breach in critical aviation systems and data, including aircraft maintenance records and operational information, can result in significant impact on operations, suppliers and safety. Such incidents may expose critical data, potentially leading to legal implications, regulatory action, loss of stakeholder confidence, and potentially serious safety consequences. Ensuring the confidentiality, integrity, and availability of safety-critical information is therefore essential to maintaining airworthiness and organisational trust.

Outdated or unpatched software presents a significant vulnerability, providing opportunities for cyber exploitation. Failure to address known vulnerabilities is one example that could lead to a compromise in the integrity of critical systems, disrupt operations, and introduce safety risks where systems supporting airworthiness management are affected.

Supply chain exposure represents a further risk, as third-party providers, software vendors, and subcontractors all act as entry points for cyber threats. Compromise within the supply chain can have cascading effects across the organisation, highlighting the importance of robust third-party assurance and cyber security requirements for contracted providers.

Cyber security threats can lead to operational disruption, including system outages, loss of data, and delays to maintenance planning or execution. These disruptions may result in increased costs, reduced aircraft availability, and potential impacts on safety where access to accurate and timely information is affected.

The UK CAA's regulatory approach to aviation cyber security is currently set out in 'CAP1753: CAA Cyber security oversight process for aviation', which sets out strategic expectations for managing cyber risk, alongside binding obligations under the Network and Information Systems (NIS) Regulations for certain operators as well as the Single Consolidated Directive for organisations directed under the NASP (National Aviation Security Programme).

The UK CAA is also working to produce guidance for Information Security Risk Management to be built into an existing management system, or implemented as a standalone approach

Key Risks (reliance on Software)

Dependence on software for critical functions means that any software failure can have severe operational impacts. When software fails, it can disrupt essential processes, leading to significant delays, financial losses, and potential safety risks. The reliability of software is crucial to maintaining smooth and efficient operations.

Regular updates and maintenance are essential to ensure software reliability and security. However, these updates can also introduce new vulnerabilities if not managed properly. It is a delicate balance between keeping software up-to-date and ensuring that new updates do not compromise the system's integrity.

Integrating different software systems can lead to interoperability issues, which can affect the efficiency and safety of operations. Compatibility problems between various software components can cause malfunctions, data inconsistencies, and operational inefficiencies. Ensuring seamless integration is vital for maintaining operational effectiveness.

Ensuring that all software complies with regulatory requirements can be complex and resource-intensive. Compliance challenges arise from the need to adhere to various standards and regulations, which can vary by region and industry. Organisations must invest significant resources to ensure that their software meets all necessary compliance requirements.

Mitigation Strategies (Cyber security)

Conducting regular security audits is essential to identify and address vulnerabilities in systems and networks. These audits help organisations stay ahead of potential threats by continuously monitoring and improving their security posture. By proactively finding and fixing weaknesses, companies can better protect their sensitive data and critical infrastructure.

Implementing cyber security awareness training for employees is crucial. These programs ensure that all staff members are aware of potential threats and best practices for mitigating them. Initial measures are easy to implement and educated employees are the first line of defence in preventing cyberattacks, as they can recognise and respond to suspicious activities more effectively.

Developing and maintaining an incident response plan is vital for quickly addressing and mitigating the impact of any cyber incidents. A well-prepared plan allows organisations to respond swiftly and efficiently to breaches, minimising damage and recovery time. Regularly updating and testing the plan ensures it remains effective in the face of evolving threats.

Enforcing strict access controls is necessary to limit access to sensitive data and systems to authorized personnel only. By implementing robust authentication and authorisation mechanisms, organisations can prevent unauthorised access and reduce the risk of data breaches. Access controls help ensure that only those with a legitimate need can interact with critical information.

Using encryption to protect sensitive data both in transit and at rest is an important fundamental security measure. Encryption ensures that even if data is intercepted or accessed without authorization, it remains unreadable and secure. This practice is essential for safeguarding confidential information and maintaining data integrity.

Establishing robust vendor management practices is important to ensure third-party providers adhere to the same security standards. By carefully vetting and monitoring vendors, organisations can mitigate risks associated with supply chain attacks. Ensuring that partners follow stringent security protocols helps protect the entire ecosystem from potential vulnerabilities.

Mitigation strategies (Reliance on Software)

Ensuring all software is regularly updated and patched is crucial for protecting against known vulnerabilities. Regular updates help address security flaws and improve the overall functionality of the software, reducing the risk of exploitation by cybercriminals. Staying current with patches is a fundamental practice for maintaining a secure and resilient system.

Implementing redundancy and backup systems is essential for ensuring continuity of operations in case of software failure. These systems provide a safety net, allowing organisations to quickly recover and maintain critical functions even when primary systems fail. Redundancy and backups are key components of a robust disaster recovery plan.

Conducting thorough interoperability testing when integrating new software is vital to ensure compatibility and minimise disruptions. This testing helps identify and resolve any issues that may arise from the interaction between different software components, ensuring smooth and efficient operations. Proper interoperability testing is crucial for maintaining system stability and performance.

Regularly monitoring and ensuring compliance with regulatory requirements and best practice for all software used is necessary. Compliance monitoring helps organisations adhere to industry standards and regulations, ensuring that their software meets all necessary criteria. This practice is essential for maintaining trust and credibility with stakeholders.

Performing regular risk assessments to identify potential software-related risks and develop mitigation strategies is a proactive approach to cybersecurity. These assessments help organisations understand their risk landscape and prioritize actions to address

vulnerabilities. By continuously evaluating and mitigating risks, companies can enhance their overall security posture and resilience.

Example safety Objectives (Cyber Security)

1. Enhance Data Protection: Implement measures to ensure the confidentiality, integrity, and availability of sensitive data, reducing the risk of data breaches.
2. Strengthen System Security: Regularly update and patch all systems to protect against vulnerabilities and potential cyberattacks.
3. Improve Incident Response: Develop and maintain a robust incident response plan to quickly address and mitigate the impact of cyber incidents.
4. Increase Employee Awareness: Conduct regular cybersecurity training and awareness programs for all employees to recognize and respond to potential threats.
5. Secure Supply Chain: Establish stringent security requirements for third-party vendors and regularly audit their compliance.

Example safety Objectives (Reliance on Software)

1. Ensure Software Reliability: Implement regular testing and maintenance schedules to ensure the reliability and functionality of all critical software systems.
2. Enhance Redundancy: Develop and maintain backup systems to ensure operational continuity in case of software failures.
3. Improve Interoperability: Conduct thorough interoperability testing for all integrated software systems to ensure seamless operation.
4. Maintain Regulatory Compliance: Regularly review and update software to ensure compliance with all relevant regulatory requirements.
5. Perform Risk Assessments: Conduct regular risk assessments to identify potential software-related risks and develop appropriate mitigation strategies.

Example Safety Performance Indicators (SPI's)(Cyber Security)

1. Number of Data Breaches: Track the number of data breaches over a specific period to measure the effectiveness of data protection measures.
2. System Vulnerability Rate: Monitor the number of identified and mitigated system vulnerabilities to assess the robustness of system security.
3. Incident Response Time: Measure the average time taken to respond to and mitigate cybersecurity incidents.
4. Employee Training Completion Rate: Track the percentage of employees who have completed cybersecurity training programs.
5. Third-Party Compliance Rate: Monitor the compliance rate of third-party vendors with the organisation's cybersecurity standards.

Example Safety Performance Indicators (SPI's)(Reliance on Software)

1. Software Downtime: Measure the total downtime of critical software systems to assess their reliability.
2. Frequency of Software Updates: Track the frequency and timeliness of software updates and patches.
3. Backup System Availability: Monitor the availability and readiness of backup systems to ensure operational continuity.
4. Interoperability Issues: Track the number of interoperability issues identified and resolved during software integration.
5. Regulatory Compliance Rate: Measure the compliance rate of software systems with relevant regulatory requirements.

24. Modifications

Key Risks

Technical risks associated with aircraft modifications primarily relate to the potential for incorrect implementation and compatibility issues. Errors during the modification process, often arising from insufficient technical understanding or inadequate oversight, can introduce significant safety hazards. In addition, new modifications may not be fully compatible with existing systems, which can result in degraded performance, system conflicts, or unintended consequences affecting aircraft safety and reliability.

Regulatory compliance represents a further critical risk. All modifications must meet applicable regulatory requirements, and failure to do so may result in non-compliance, findings, or operational limitations. Accurate and complete documentation is essential to demonstrate compliance; deficiencies in records, including incomplete or incorrect entries, may create challenges during audits and undermine the organisation's ability to validate airworthiness.

Operational risks are also inherent in modification activities. The embodiment of modifications may require aircraft downtime, potentially leading to operational disruption and reduced availability. In addition, inefficient allocation of resources during the modification process may place pressure on wider maintenance activities and impact overall organisational performance.

Decision-making risks are particularly significant, especially in relation to risk assessment and the application of appropriate technical judgement, as required under CAMO.A.315(b)(4). Inadequate risk assessment processes may fail to identify potential hazards associated with modifications, leading to unforeseen issues during or after implementation. Decisions made without sufficient expertise or supporting data may further compromise the safety and effectiveness of the modification, highlighting the importance of robust governance, competent personnel, and structured decision-making processes.

Mitigation Strategies

Enhanced training and competence are vital for ensuring that staff remain current with the latest technical knowledge and regulatory requirements. Regular training programs help keep employees updated, while certification and continuous professional development maintain high standards of competence. This approach ensures that the workforce is well-equipped to handle modifications effectively and safely.

Robust documentation and compliance checks are essential for maintaining regulatory adherence. Implementing stringent documentation practices ensures that all modifications are well-documented and compliant with regulations. Regular internal audits help identify

and rectify any compliance issues promptly, thereby safeguarding the organisation's approval status and avoiding potential limitations.

Effective resource management is crucial for minimising downtime and ensuring smooth operations. Efficient planning and allocation of resources help in reducing operational disruptions. Utilising project management tools allows for better oversight of modification processes and resource utilisation, ensuring that the organisation's capabilities are not strained and that maintenance activities are carried out efficiently.

Improved decision-making processes are fundamental to the success of modifications. Establishing clear decision-making frameworks that include thorough risk assessments and expert consultations ensures that decisions are well-informed, safe and clearly proceduralised. Encouraging a culture of safety and continuous improvement within the organisation fosters an environment where best practices are followed, and risks are effectively managed.

Example Safety Objectives

1. **Ensure Compliance:** Ensure all modifications comply with regulatory requirements and standards.
2. **Risk Mitigation:** Identify and mitigate risks associated with modifications to maintain airworthiness.
3. **Continuous Monitoring:** Implement continuous monitoring of modifications to detect and address any emerging safety issues.
4. **Training and Awareness:** Provide comprehensive training to personnel on the implications of modifications and associated risks.
5. **Documentation and Reporting:** Maintain thorough documentation and reporting of all modifications and their impacts on safety.

Example Safety Performance Indicators (SPI's)

1. **Modification Compliance Rate:** Percentage of modifications that meet regulatory compliance on the first inspection.
2. **Incident Rate Post-Modification:** Number of incidents or safety reports related to modifications per 1,000 flight hours.
3. **Modification Approval Time:** Average time taken to approve modifications, indicating efficiency and thoroughness of the review process.
4. **Training Completion Rate:** Percentage of relevant personnel who have completed training on modification-related risks.
5. **Audit Findings:** Number of findings from internal and external audits related to modifications.

25. Nominated Person(s) – qualification and competency

Key Risks

Inadequate training and experience among nominated persons present a significant risk to effective airworthiness management. Without sufficient knowledge and understanding, individuals may struggle with the complexity of regulatory requirements and operational processes, potentially leading to ineffective oversight, incorrect maintenance decisions, and non-compliance with airworthiness standards. Such deficiencies can directly impact aircraft safety.

A lack of awareness of current regulatory requirements and changes further increases this risk. Personnel who are not fully informed of evolving standards may fail to implement necessary updates, resulting in non-compliance, regulatory findings, and potential approval action.

Decision-making capability is also a critical factor. Inadequate competence or experience may lead to poor judgement in the assessment of airworthiness issues or in the management of safety concerns, increasing the likelihood of inappropriate actions and potential safety occurrences. This may also expose the organisation to reputational and legal risk.

The absence of continuous professional development can further reduce organisational resilience. Without ongoing training and development, nominated persons may become outdated in their knowledge and less able to respond effectively to changes in technology, regulation, or operational practice. This can limit the organisation's ability to maintain high safety standards and adapt to an evolving aviation environment.

Mitigation Strategies

Implementing comprehensive training programs is essential to ensure that all nominated persons are well-equipped with the necessary knowledge and skills. This includes both initial and recurrent training to maintain high standards of competency in airworthiness management.

Regular competency assessments should be conducted to evaluate the skills and knowledge of personnel. These assessments help identify areas for improvement and ensure that the team remains capable of handling their responsibilities effectively.

Staying updated with regulations is crucial for compliance and operational efficiency. Nominated persons should regularly participate in workshops, seminars, and continuous

education programs to stay informed about regulatory changes and industry best practices.

Encouraging professional development within the organisation fosters a culture of continuous learning. This approach helps personnel stay abreast of the latest advancements in airworthiness management, ensuring the organisation can adapt to new technologies and methodologies.

Example Safety Objectives

1. **Ensure Competency:** Verify that all Nominated Persons meet the required qualifications and competency levels.
2. **Continuous Training:** Implement ongoing training programs to maintain and enhance the skills of Nominated Persons.
3. **Compliance Monitoring:** Regularly audit and review the qualifications and performance of Nominated Persons to ensure compliance with regulatory requirements.
4. **Risk Mitigation:** Identify and mitigate any risks associated with the competency of Nominated Persons through proactive measures.

Example Safety Performance Indicators (SPI's)

1. **Training Completion Rate:** Percentage of Nominated Persons who have completed mandatory training within a specified period.
2. **Audit Findings:** Number of non-compliances or findings related to the qualifications and competency of Nominated Persons identified during audits.
3. **Incident Reports:** Number of incidents or safety reports linked to the performance of Nominated Persons.
4. **Competency Assessments:** Results of periodic competency assessments, including pass rates and areas needing improvement.
5. **Feedback Mechanism:** Number of feedback reports from staff and stakeholders regarding the performance and competency of Nominated Persons.

26. Access to data

Key Risks

Unauthorised access to sensitive data can result in significant data breaches, compromising the confidentiality and integrity of critical airworthiness information. Such breaches may lead to the loss, manipulation, or unauthorised disclosure of data, with potential impacts on maintenance decision-making, regulatory compliance, and operational safety. Cyber threats, including malicious attacks, further increase the risk of system disruption and data loss, reinforcing the need for robust cybersecurity controls within CAMO organisations.

Data integrity issues present an additional risk. Corrupted, inaccurate, or incomplete data can lead to incorrect maintenance decisions, potentially affecting aircraft safety and airworthiness. Reliable data is fundamental to effective continuing airworthiness management; therefore, regular validation, audit processes, and robust data governance arrangements are essential to ensure the accuracy and completeness of information.

Compliance risk is also a key consideration. Failure to adequately control data access and management processes may result in non-compliance with Regulation (EU) No. 1321/2014, exposing the organisation to regulatory findings, potential limitations on approval, and reputational damage. Effective internal assurance, including routine audits and compliance monitoring, is necessary to maintain regulatory compliance and demonstrate effective control of safety-critical data.

Operational disruption may arise from data access issues or system failures. System downtime can delay maintenance planning and execution, while inadequate access controls increase the risk of human error, including accidental deletion or modification of critical data. The implementation of resilient IT systems, including redundancy and backup arrangements, is essential to maintain continuity of operations.

In addition, personnel awareness and training in data management and cyber security practices are critical to reducing human-related risks. A combination of robust technical controls, effective governance, and a strong safety culture is therefore essential to ensure the protection, reliability, and availability of data supporting continuing airworthiness activities.

Mitigation Strategies

Implementing robust cyber security measures is essential for protecting sensitive data within a CAMO. This involves using advanced encryption and authentication methods to safeguard data from unauthorised access. Additionally, regularly updating and patching

systems helps prevent vulnerabilities that could be exploited by cyber attackers. These steps are crucial in maintaining the security and integrity of critical information.

Ensuring data integrity and accuracy is another key aspect of effective data management. Conducting regular data audits and validation checks helps identify and rectify any inaccuracies or inconsistencies in the data. Implementing automated data collection and management systems can significantly reduce human error, ensuring that the data used for maintenance decisions is accurate and reliable. This is vital for maintaining the safety and airworthiness of aircraft.

Enhancing compliance and audit readiness involves establishing comprehensive data management protocols that align with Regulation 1321/2014. Regular internal audits are necessary to ensure that these protocols are being followed and that the organisation remains compliant with regulatory requirements. This proactive approach helps prevent non-compliance issues and ensures that the organisation is always prepared for external audits.

Developing contingency plans is crucial for ensuring operational continuity in the event of data access issues or other disruptions. Implementing redundant systems and backup protocols can help maintain operations even if primary systems fail. Additionally, training staff on data management best practices and cyber security awareness is essential to minimise the risk of human errors and ensure that everyone in the organisation is equipped to handle data securely and effectively.

Example Safety Objectives

1. **Ensure Data Integrity:** Maintain the accuracy, completeness, and reliability of maintenance data.
2. **Enhance Data Accessibility:** Ensure that all relevant personnel have timely and secure access to necessary maintenance data.
3. **Improve Data Security:** Protect maintenance data from unauthorized access, tampering, and breaches.
4. **Regular Data Audits:** Conduct periodic audits to verify the integrity and accessibility of maintenance data.
5. **Training and Awareness:** Provide regular training to staff on the importance of maintenance data and how to handle it securely.

Example Safety Performance Indicators (SPI's)

1. **Data Access Incidents:** Number of incidents where maintenance data was not accessible when needed.
2. **Data Integrity Errors:** Number of errors found in maintenance data during audits.

3. Unauthorized Access Attempts: Number of attempts to access maintenance data by unauthorized personnel.
4. Training Completion Rate: Percentage of staff who have completed training on maintenance data handling.
5. Audit Findings: Number of findings from data audits that indicate non-compliance with data handling procedures.

27. Changes to Operations (Routes)

Key Risks

Operational changes can have a significant impact on CAMO organisations by altering maintenance demands and reliability requirements. Changes in operating environments may expose aircraft to varying conditions, such as extreme temperatures, humidity, or corrosive environments, which can accelerate component degradation. In addition, variations in flight duration, utilisation, and frequency can increase stress on aircraft systems, requiring adjustments to maintenance programmes to ensure continued airworthiness and prevent unforeseen failures.

Operational changes may also introduce logistical challenges, particularly in ensuring the availability of appropriate parts, tools, and support equipment across different operating locations. This can be more complex in remote or less-supported destinations. CAMO organisations must also ensure that maintenance providers at new locations are appropriately approved, competent, and capable of delivering work in accordance with regulatory requirements.

Regulatory compliance becomes increasingly complex where operations extend across multiple jurisdictions. CAMO organisations may need to consider additional local aviation requirements, which may differ from UK standards, and ensure alignment with all applicable regulations. Operational changes also necessitate timely updates to maintenance programmes, records, and documentation to ensure continued compliance and accurate reporting.

Effective planning, coordination, and oversight are therefore essential to managing the risks associated with operational change, ensuring that maintenance, compliance, and safety performance are maintained across all operational environments.

Mitigation Strategies

Ensuring maintenance contracts are in place; and maintenance personnel are trained and competent to handle the specific challenges of new routes is crucial. This may require additional training programs and certifications to equip the staff with the necessary skills and knowledge.

CAMO's must conduct comprehensive safety risk assessments for new routes to identify potential hazards and implement mitigation strategies. This includes evaluating airport facilities, and emergency response plans to ensure safe operations.

Example Safety Objectives

1. **Minimise Operational Disruptions:** Ensure that changes to routes do not lead to significant operational disruptions.
2. **Ensure suitable provision for line maintenance. Maintain High Safety Standards:** Ensure that safety standards are maintained or during and after the implementation of new routes.
3. **Improve Communication and Coordination:** Enhance communication and coordination between different departments to manage route changes effectively.
4. **Monitor and Evaluate Route Changes:** Continuously monitor and evaluate the impact of route changes on safety and operational efficiency.

Example Safety Performance Indicators (SPI's)

1. **Number of Route-Related Incidents:** Track the number of incidents or near-misses related to new routes.
2. **Safety Audit Results:** Conduct regular safety audits and track the findings related to new routes.
3. **Feedback from Pilots and Crew:** Collect and analyse feedback from pilots and crew regarding the new routes to identify any safety concerns relating specifically to engineering support.

28. Incorrect assessment of defect In-Adequate Defect Control / Task management

Key Risks

Incorrect assessment of defects can result in issues being undetected or inadequately managed, posing significant safety risks. Defects that are initially considered minor may escalate into more serious failures if not accurately identified and appropriately addressed. In addition, misjudging the severity of defects can lead to unplanned aircraft downtime, disrupting operations, impacting flight schedules, and affecting customer confidence. Failure to correctly assess defects may also result in non-compliance with regulatory requirements.

Ineffective defect and task management is often linked to human factors, including fatigue, insufficient training, and communication breakdowns. These contributors may lead to missed inspections, inappropriate repairs, or inconsistent maintenance practices, increasing the likelihood of error. Failure to follow approved procedures or fully address identified defects can allow issues to deteriorate over time, increasing both safety risk and maintenance burden. Clear and effective communication between personnel is critical to ensuring tasks are correctly understood and executed.

Persistent deficiencies in defect assessment and management can have wider organisational impacts. Inefficiencies may lead to increased maintenance costs due to repeat repairs, extended downtime, and operational disruption. In addition, recurring issues or regulatory non-compliance may attract scrutiny, affecting the organisation's approval status and reputation.

Ultimately, effective defect management is fundamental to maintaining airworthiness and operational safety. Weaknesses in this area increase the risk of incidents or accidents, with the potential for significant safety, legal, and financial consequences.

Mitigation Strategies

Ensure that all personnel involved in defect assessment and task management receive thorough training on the latest regulatory requirements and best practices. Regular training updates help maintain high standards of competency and awareness of any changes in regulations or industry standards.

Implement comprehensive quality assurance and audit systems to regularly review and verify defect assessments and task management processes. These systems help identify any discrepancies or errors early, allowing for prompt corrective actions and ensuring consistent and reliable maintenance practices.

Develop and maintain clear, standardised procedures for defect assessment and task management. Detailed documentation ensures consistency and provides a clear audit trail, making it easier to track and verify compliance with regulatory requirements.

Establish clear communication channels between all departments involved in defect assessment and task management. Regular meetings and updates ensure that everyone is aligned on the latest requirements and any changes in procedures, promoting a coordinated approach to defect management.

Engage with regulatory bodies to stay informed about regulatory changes and best practices. Regular interaction with these bodies ensures that CAMO's are up-to-date with the latest requirements and can implement any necessary changes promptly.

Example Safety Objectives

1. **Enhance Defect Reporting Accuracy:** Improve the accuracy and completeness of defect reporting by implementing standardised reporting procedures.
2. **Improve Defect Assessment Processes:** Develop and implement procedures and associated training for defect assessment, ensuring that all defects are correctly identified, categorized, and addressed in a timely manner.
3. **Strengthen Task Management:** Ensure that all maintenance tasks are properly planned, executed, and documented, with clear accountability and oversight.
4. **Increase Staff Competency:** Provide ongoing training and development programs to enhance the skills and knowledge of maintenance staff, focusing on defect identification and management.
5. **Enhance Communication and Coordination:** Improve communication and coordination between different departments involved in defect management to ensure a cohesive approach to safety.

Example Safety Performance Indicators (SPI's)

1. **Defect Reporting Rate:** Measure the number of defects reported per flight hour or maintenance hour to monitor the effectiveness of defect reporting procedures.
2. **Defect Recurrence Rate:** Monitor the recurrence rate of previously rectified defects to assess the effectiveness of defect management and rectification processes.
3. **Training Completion Rate:** Measure the percentage of maintenance personnel who have completed required training programs on defect assessment and management.
4. **Audit Findings:** Track the number and severity of findings from internal and external audits related to defect management and task execution.

29. Manpower Job Description / Competence

Key Risks

Ineffective recruitment and selection processes can have a significant impact on CAMO performance. Poorly defined job descriptions may result in the appointment of individuals who lack the necessary skills, qualifications, and experience for critical roles. This can lead to gaps in competence, increasing the risk of errors, ineffective oversight, and non-compliance with airworthiness requirements, with potential implications for safety.

Inadequate performance management is a further risk where roles and responsibilities are not clearly defined. Job descriptions provide the foundation for performance assessment; without this clarity, it becomes difficult to evaluate whether individuals are meeting expectations. This may result in inconsistent performance monitoring, reduced accountability, and limited ability to identify and address areas requiring improvement.

Legal and compliance risks may also arise from unclear or inaccurate role definitions. Ambiguity in responsibilities can lead to disputes and increase the likelihood of non-compliance with Regulation (EU) No. 1321/2014, potentially resulting in regulatory findings, operational limitations, or impacts on approval status.

A lack of clarity in roles and responsibilities can also affect employee engagement and organisational culture. Where individuals do not fully understand their responsibilities, this may lead to reduced motivation, disengagement, and increased staff turnover, all of which can affect the organisation's ability to maintain consistent airworthiness standards.

Operational inefficiencies may arise where responsibilities are misaligned or poorly defined. This can result in duplication of effort, overlooked tasks, and delays in maintenance or airworthiness activities, ultimately affecting operational performance and increasing safety risk.

Job descriptions also play a critical role in supporting training and competence development. Without clearly defined roles, it becomes difficult to identify training needs and implement effective development programmes. This may lead to gaps in competence and reduced effectiveness in carrying out airworthiness functions, with potential implications for safety and compliance.

Mitigation Strategies

Ensure that job descriptions are detailed and accurately reflect the roles and responsibilities required for each position. This helps in recruiting candidates with the necessary skills, qualifications, and experience, reducing the risk of hiring unqualified personnel. Periodically review and update job descriptions to reflect any changes in regulatory requirements, organisational needs, or industry best practices. This ensures that job roles remain relevant and aligned with current standards.

Provide comprehensive training and development programs to ensure that all personnel understand their roles and responsibilities. Regular training sessions help maintain high levels of competency and compliance with regulatory requirements. Use job descriptions as benchmarks for evaluating employee performance. Regular performance assessments help identify areas for improvement and ensure that employees are meeting their responsibilities effectively.

Develop clear communication protocols to facilitate the exchange of information between the CAMO, maintenance organisations, and regulatory bodies. Effective communication helps prevent misunderstandings and ensures that all parties are aligned on job roles and responsibilities. Perform regular internal and external audits to ensure compliance with regulatory requirements and to identify any gaps in job role definitions. Audits help maintain accountability and provide opportunities for continuous improvement.

Example Safety Objectives

1. **Ensure Competence of Personnel:** Regularly assess and verify the competence of all personnel involved in maintenance and airworthiness tasks.
2. **Standardize Job Descriptions:** Develop and maintain standardised job descriptions that clearly outline the required qualifications, skills, and responsibilities for each role.
3. **Continuous Training and Development:** Implement ongoing training programs to keep personnel updated with the latest regulations, technologies, and best practices.
4. **Effective Communication:** Foster a culture of open communication to ensure that any issues related to job descriptions or competence are promptly addressed.

Example Safety Performance Indicators (SPI's)

1. **Training Completion Rate:** Percentage of personnel who have completed mandatory training within the specified timeframe.
2. **Competence Assessment Scores:** Average scores from regular competence assessments or audits.
3. **Incident Reports Related to Human Factors:** Number of incidents or near-misses attributed to human factors, tracked over time.
4. **Job Description Compliance:** Percentage of job descriptions reviewed and updated annually to reflect current requirements and standards.
5. **Employee Feedback:** Regular surveys to gauge employee satisfaction and confidence in their roles and responsibilities.

30. Roles and responsibilities between CAMO and groups not sufficiently defined

Key Risks

A Continuing Airworthiness Management Organisation (CAMO) is responsible for a range of critical functions, including the development and control of maintenance programmes, ensuring compliance with Airworthiness Directives and Service Bulletins, coordinating defect rectification, and maintaining accurate aircraft records. These responsibilities are fundamental to ensuring the continued airworthiness and safe operation of aircraft.

Poorly defined roles and responsibilities within a CAMO can lead to communication breakdowns, both internally and with external stakeholders such as maintenance organisations, operators, and regulatory authorities. Ineffective communication may result in misunderstandings in maintenance planning and execution—for example, misalignment of maintenance schedules, potentially leading to missed inspections, delayed rectification, and increased safety risk.

A lack of clear accountability further increases risk exposure. Where responsibilities are not clearly defined, it becomes difficult to assign ownership of critical tasks, increasing the likelihood of omissions or errors. For example, uncertainty over responsibility for maintenance records may result in incomplete or inaccurate documentation, leading to non-compliance with regulatory requirements.

Operational inefficiencies may also arise from ambiguity in roles and responsibilities. Duplication of effort or gaps in task ownership can lead to delays in maintenance activities and reduced organisational effectiveness. In some cases, assumptions made between the CAMO and contracted organisations may result in essential tasks being overlooked entirely.

Unclear delineation of responsibilities also presents a significant regulatory risk. Failure to clearly define and manage responsibilities may lead to non-compliance with applicable airworthiness requirements, potentially resulting in regulatory findings, operational limitations, or, in severe cases, loss of CAMO approval. Inadequate oversight of contracted activities further increases this risk.

Ultimately, the most critical consequence of poorly defined roles and responsibilities is the potential impact on safety. Ineffective coordination or oversight may lead to incomplete maintenance actions or failure to implement mandatory airworthiness requirements. Ensuring clearly defined roles, robust governance, and effective communication is therefore essential to maintaining safety, compliance, and operational integrity.

Mitigation Strategies

Clear documentation is essential for defining the roles and responsibilities of all parties involved in continuing airworthiness management. Developing comprehensive documentation ensures that everyone understands their specific duties and the importance of their tasks, which helps maintain high standards of safety and compliance.

Regular training sessions are crucial to reinforce the understanding of roles and responsibilities among personnel. These sessions help ensure that all staff members are aware of their specific tasks and the significance of their contributions to overall airworthiness management.

Establishing effective communication channels is vital for facilitating clear and timely information exchange between the CAMO, maintenance organisations, and regulatory bodies. Robust communication protocols help prevent misunderstandings and ensure that all parties are aligned and informed about critical updates and requirements.

Regular internal and external audits are necessary to ensure compliance with regulatory requirements and to identify any gaps in role definitions. These audits help maintain accountability and provide opportunities for continuous improvement in airworthiness management practices.

Collaborative planning sessions with all stakeholders are important for ensuring alignment and clarity in responsibilities. Engaging in these sessions helps build a cohesive approach to airworthiness management, fostering cooperation and shared understanding among all parties involved.

Example Safety Objectives

1. Clear Role Definition: Ensure all roles and responsibilities between CAMO and other groups are clearly defined and documented.
2. Effective Communication: Establish robust communication channels between CAMO and other groups to ensure seamless information flow.
3. Regular Training: Implement regular training programs to ensure all personnel are aware of their roles and responsibilities.
4. Compliance Monitoring: Regularly monitor compliance with defined roles and responsibilities to identify and address any deviations.

Example Safety Performance Indicators (SPI's)

1. Role Clarity Index: Measure the percentage of personnel who can accurately describe their roles and responsibilities.
2. Communication Effectiveness: Track the number of communication breakdowns or misunderstandings reported between CAMO and other groups.
3. Training Completion Rate: Monitor the percentage of personnel who have completed role-specific training within a defined period.
4. Compliance Audit Findings: Count the number of non-compliances related to role definitions identified during audits.

31. IT systems (access and tracking)

Key Risks

A Continuing Airworthiness Management Organisation (CAMO) is responsible for a range of critical functions, including the development and control of maintenance programmes, ensuring compliance with Airworthiness Directives and Service Bulletins, coordinating defect rectification, and maintaining accurate aircraft records. These responsibilities are fundamental to ensuring the continued airworthiness and safe operation of aircraft.

Poorly defined roles and responsibilities within a CAMO can lead to communication breakdowns, both internally and with external stakeholders such as maintenance organisations, operators, and regulatory authorities. Ineffective communication may result in misunderstandings in maintenance planning and execution—for example, misalignment of maintenance schedules—potentially leading to missed inspections, delayed rectification, and increased safety risk.

A lack of clear accountability further increases risk exposure. Where responsibilities are not clearly defined, it becomes difficult to assign ownership of critical tasks, increasing the likelihood of omissions or errors. For example, uncertainty over responsibility for maintenance records may result in incomplete or inaccurate documentation, leading to non-compliance with regulatory requirements.

Operational inefficiencies may also arise from ambiguity in roles and responsibilities. Duplication of effort or gaps in task ownership can lead to delays in maintenance activities and reduced organisational effectiveness. In some cases, assumptions made between the CAMO and contracted organisations may result in essential tasks being overlooked entirely.

Unclear delineation of responsibilities also presents a significant regulatory risk. Failure to clearly define and manage responsibilities may lead to non-compliance with applicable airworthiness requirements, potentially resulting in regulatory findings, operational limitations, or, in severe cases, loss of CAMO approval. Inadequate oversight of contracted activities further increases this risk.

Ultimately, the most critical consequence of poorly defined roles and responsibilities is the potential impact on safety. Ineffective coordination or oversight may lead to incomplete maintenance actions or failure to implement mandatory airworthiness requirements. Ensuring clearly defined roles, robust governance, and effective communication is therefore essential to maintaining safety, compliance, and operational integrity.

Mitigation Strategies

Implementing advanced cybersecurity measures, such as firewalls, encryption, and intrusion detection systems, is one way to protect against unauthorised access and cyber attacks. Regularly updating and patching IT systems helps address vulnerabilities and ensures that the latest security protocols are in place.

Establishing strict access controls ensures that only authorized personnel have access to sensitive data and systems. Implementing multi-factor authentication and conducting regular access reviews further enhance security by verifying the identity of users and monitoring access patterns.

Accurate and reliable data management practices are essential for maintaining data integrity and supporting effective airworthiness management. Regularly backing up data and implementing disaster recovery plans help minimise the impact of IT system failures, ensuring that critical information is preserved and can be quickly restored.

Conducting regular IT system audits helps identify and address potential vulnerabilities, ensuring compliance with regulatory requirements. Providing ongoing training for staff on cyber security best practices and the importance of data security fosters a culture of vigilance and preparedness within the organisation.

Example Safety Objectives

1. Ensure Data Integrity and Confidentiality: Protect sensitive information from unauthorized access and ensure data accuracy.
2. Enhance System Availability and Reliability: Minimise downtime and ensure continuous availability of critical IT systems.
3. Improve Incident Detection and Response: Develop robust mechanisms for detecting and responding to security incidents promptly.
4. Compliance with Regulatory Requirements: Ensure all IT systems comply with relevant regulations and standards.
5. User Access Control: Implement strict access controls to ensure only authorized personnel can access critical systems.

Example Safety Performance Indicators (SPI's)

1. Number of Unauthorized Access Attempts: Track and reduce the number of unauthorized access attempts to IT systems.
2. System Downtime: Measure and minimise the total downtime of critical IT systems.

3. Incident Response Time: Monitor the average time taken to detect and respond to security incidents.
4. Compliance Audit Results: Regularly audit IT systems for compliance and track the number of non-compliance issues identified and resolved.
5. User Access Reviews: Conduct periodic reviews of user access rights and track the number of access rights adjusted or revoked.

32. Poor Competence Assessment / Training

Key Risks

Inadequate competency assessment processes can result in personnel undertaking critical tasks without the necessary skills, knowledge, or experience. This increases the likelihood of human error, potentially leading to maintenance omissions, incorrect task execution, and compromised airworthiness. In addition, insufficiently assessed personnel may fail to meet regulatory requirements, increasing the risk of non-compliance with CAA regulations.

Deficiencies in competence management can also affect operational performance. Personnel lacking the appropriate capability may be less efficient, leading to delays, rework, and increased operational costs. Poorly targeted competency assessments may also result in ineffective allocation of training resources, diverting effort from critical development areas and reducing overall organisational efficiency.

From a reputational perspective, incidents or compliance failures linked to inadequate competence can erode trust among clients, regulators, and other stakeholders. Repeated deficiencies may impact the organisation's standing within the market, reducing competitiveness and potentially leading to loss of business.

Inadequate or insufficient training further compounds these risks, creating skill gaps that may affect the quality of maintenance and airworthiness management activities. Without continuous professional development, personnel may not remain up to date with evolving regulatory requirements, technologies, and best practices, increasing reliance on outdated processes and elevating safety risk.

Increased error rates associated with poor training and competence can reduce operational effectiveness and drive additional costs through rectification and rework. These inefficiencies place further strain on organisational resources and may impact overall performance.

Finally, inadequately trained or assessed personnel are more likely to breach regulatory requirements, potentially leading to adverse audit findings, enforcement action, or limitations on approval. Robust competence assessment and training frameworks are therefore essential to maintaining compliance, supporting safe operations, and ensuring organisational resilience.

Mitigation Strategies

Implement frameworks to evaluate both technical skills and regulatory knowledge, ensuring personnel meet industry standards. Regularly review and update assessment criteria to stay aligned with regulatory changes and industry best practice.

Develop ongoing training programs that cover the latest industry best practise, regulatory updates, and technological advancements. Use a mix of theoretical and practical training methods to ensure comprehensive skill development and keep personnel proficient.

Establish monitoring systems to track the effectiveness of training programs and competency assessments. Conduct audits and feedback sessions to identify areas for improvement and ensure continuous compliance with industry standards and regulations.

Example Safety Objectives

1. Enhance Training Programs: Ensure all training programs are comprehensive, up-to-date, and tailored to the specific needs of the personnel.
2. Improve Competence Assessment: Develop assessment methods to accurately evaluate the competence of staff.
3. Increase Training Frequency: Implement regular refresher courses and continuous professional development opportunities.
4. Standardize Training Procedures: Ensure consistency in training delivery across the organisation.
5. Promote a Safety Culture: Encourage a culture where continuous learning and safety are prioritized.

Example Safety Performance Indicators (SPI's)

1. Training Completion Rate: Percentage of staff who have completed mandatory training within the specified timeframe.
2. Assessment Pass Rate: Percentage of personnel passing competence assessments on the first attempt.
3. Number of audit finding responses relating to training or lack of.
4. Incident Reports Related to Training: Number of incidents or near-misses attributed to inadequate training or competence.
5. Feedback Scores: Average scores from training feedback surveys, indicating the perceived quality and effectiveness of training programs.
6. Audit Findings: Number of non-conformities related to training and competence identified during internal and external audits.

33. Safety culture and ability to deliver positive change

Key Risks

A positive safety culture within CAMO organisations is fundamental to maintaining compliance, effective risk management, and operational performance. Key risks include underreporting of safety issues, which may result in critical hazards remaining unidentified, and inadequate training, which can reduce awareness and understanding of safety procedures. A lack of visible management commitment can further weaken safety culture, limiting the prioritisation of safety initiatives and reducing overall engagement with the Safety Management System.

The impact of a weak safety culture can be significant. Reduced reporting and engagement may limit an organisation's ability to identify and manage risk effectively, increasing the likelihood of safety occurrences. In addition, non-compliance with UK Regulation 1321/2014 may lead to regulatory findings, potential limitations on approval, and reputational damage. Poor safety culture may also affect employee engagement and morale, reducing productivity and organisational resilience.

The ability to effectively manage change is closely linked to organisational safety culture. CAMO organisations must be capable of adapting to evolving regulatory requirements, operational demands, and technological developments. However, change management introduces risks, including resistance to change, insufficient resources, and ineffective communication. Personnel may be reluctant to adopt new processes or systems without clear understanding and support, while resource constraints can limit the successful implementation of required changes.

Poorly managed change can have adverse consequences for safety and operational performance. Delayed or ineffective implementation of changes may impact compliance and reduce efficiency, while inadequate integration of new processes or systems can introduce additional risk. Ensuring structured change management processes, supported by clear communication, appropriate resourcing, and strong leadership, is therefore essential to maintaining safety, compliance, and organisational effectiveness.

Mitigation Strategies

Establish a non-punitive reporting system where employees feel safe to report hazards and safety concerns. This can help identify and address critical safety issues promptly, enhancing overall safety culture.

Provide thorough initial and recurrent training programs to ensure all personnel are well-versed in safety protocols and regulatory requirements. Regular competency assessments can help identify areas for improvement and ensure ongoing compliance.

Demonstrate strong commitment from management towards safety initiatives. This includes allocating necessary resources, setting clear safety goals, and actively participating in safety programs. Management's involvement is crucial for prioritising and sustaining a robust safety culture.

Develop a structured change management process that includes clear communication, adequate resources, and employee involvement. Address resistance to change by involving employees in the planning and implementation stages, and provide training to help them adapt to new processes and technologies.

Example Safety Objectives

1. **Enhance Safety Culture:** Foster a proactive safety culture where all employees feel responsible for safety and are encouraged to report hazards without fear of retribution.
2. **Improve Communication:** Ensure clear and effective communication channels for safety-related information across all levels of the organisation.
3. **Training and Development:** Provide continuous safety training and development programs to enhance employees' knowledge and skills.
4. **Risk Management:** Implement robust risk management processes to identify, assess, and mitigate safety risks.
5. **Continuous Improvement:** Establish a continuous improvement process for safety management systems (SMS) to adapt to new challenges and changes.

Example Safety Performance Indicators (SPI's)

1. **Safety Reporting Rate:** Measure the number of safety reports submitted by employees. A higher reporting rate can indicate a positive safety culture.
2. **Training Completion Rate:** Track the percentage of employees who complete mandatory safety training within a specified period.
3. **Incident and Accident Rates:** Monitor the number of incidents and accidents per flight hour or per number of flights.
4. **Safety Audits and Inspections:** Conduct regular safety audits and inspections, and track the number of findings and corrective actions implemented.
5. **Employee Safety Surveys:** Use surveys to gauge employees' perceptions of the safety culture and identify areas for improvement.

34. Incorrectly evaluated AD or SB

Key Risks

Incorrect evaluation of Airworthiness Directives (ADs) and Service Bulletins (SBs) can result in the failure to identify and address critical safety actions. This may lead to undetected defects or system vulnerabilities, increasing the risk of safety occurrences and potentially compromising the safety of aircraft, passengers, and crew.

Compliance with applicable ADs and relevant SBs is a fundamental regulatory obligation for CAMO organisations. Inadequate or incorrect evaluation may lead to non-compliance with applicable requirements, exposing the organisation to regulatory findings, increased oversight, and potential operational limitations. Failure to demonstrate appropriate assessment and implementation may also impact the organisation's approval status and overall regulatory standing.

Operational impacts may also arise where ADs or SBs are not correctly assessed or embodied. Missed or delayed actions can result in unexpected aircraft groundings, maintenance delays, and disruption to flight operations, affecting aircraft availability and organisational performance.

Financial consequences may follow, as failure to implement required actions in a timely manner can lead to escalated defects requiring more complex and costly repairs. In addition, operational disruption and reduced fleet availability may result in loss of revenue and increased maintenance expenditure.

There are also potential legal and reputational implications. In the event of an incident or occurrence linked to non-compliance with ADs or SBs, the CAMO and operator may be subject to investigation, enforcement action, or litigation. Such outcomes can lead to significant financial liability and long-term damage to organisational reputation and stakeholder confidence.

Mitigation Strategies

Ensure that all personnel involved in the evaluation of ADs and SBs receive thorough training on the latest regulatory requirements and evaluation techniques. Regular training updates help maintain high standards of competency and awareness of any changes in regulations or best practices.

Implement comprehensive quality assurance and audit systems to regularly review and verify the evaluation processes of ADs and SBs. These systems help identify any discrepancies or errors early, allowing for prompt corrective actions.

Develop and maintain clear, standardised procedures for evaluating ADs and SBs. Detailed documentation ensures consistency and provides a clear audit trail, making it easier to track and verify compliance with regulatory requirements.

Establish clear communication channels between all departments involved in the evaluation process. Regular meetings and updates ensure that everyone is aligned on the latest requirements and any changes in procedures, promoting a coordinated approach to AD and SB evaluation.

Engage with regulatory bodies to stay informed about regulatory changes and best practices. Regular interaction with these bodies ensures that CAMO's are up-to-date with the latest requirements and can implement any necessary changes promptly.

Example Safety Objectives

1. **Ensure Accurate Evaluation:** Implement procedures to ensure all ADs and SBs are accurately evaluated and correctly interpreted.
2. **Enhance Training:** Provide comprehensive training for relevant personnel involved in the evaluation process to minimise errors.
3. **Improve Communication:** Establish clear communication channels between departments to ensure that all relevant information is shared and understood.
4. **Regular Audits:** Conduct regular audits to verify compliance with ADs and SBs and to identify any discrepancies early.

Example Safety Performance Indicators (SPI's)

1. **Evaluation Accuracy Rate:** Measure the percentage of ADs and SBs evaluated correctly on the first attempt.
2. **Training Completion Rate:** Track the percentage of applicable personnel who have completed the required training on AD and SB evaluation.
3. **Communication Effectiveness:** Monitor the number of communication-related issues reported during the evaluation process.
4. **Audit Findings:** Record the number of discrepancies found during audits related to AD and SB evaluations.

35. Missing records

Key Risks

Missing or incomplete records can result in an inadequate understanding of an aircraft's maintenance history, increasing the risk that required inspections or maintenance tasks are overlooked. This lack of visibility may also result in previously identified defects or deferred actions going unnoticed, potentially leading to in-service failures and compromising aircraft safety.

Under UK Regulation 1321/2014, CAMO organisations are required to maintain comprehensive and accurate records of all maintenance activities. Incomplete or missing records may therefore result in non-compliance, requiring additional time and resources to investigate, reconstruct, and rectify documentation deficiencies.

Operational impacts may also arise, as missing records often necessitate additional inspections, verification activities, or precautionary maintenance actions to confirm airworthiness. This can increase aircraft downtime, disrupt maintenance planning, and reduce overall operational efficiency. Accurate documentation is fundamental to effective scheduling and resource allocation, and its absence may lead to further inefficiencies.

The need for additional maintenance actions, coupled with potential grounding of aircraft, can result in increased operational costs. Furthermore, non-compliance or safety concerns associated with incomplete records may damage organisational reputation, erode client confidence, and lead to loss of business.

Mitigation Strategies

Utilising digital record-keeping systems ensures that all maintenance activities are accurately documented and easily retrievable. Regular backups of records are essential to prevent data loss, ensuring that information remains intact and accessible.

Conducting internal audits helps ensure that all records are complete and up-to-date. Implementing a system for regular inspections verifies the accuracy and completeness of maintenance records, helping to maintain high standards of documentation.

Providing regular training to staff on the importance of accurate record-keeping and the potential risks associated with missing records is crucial. Fostering a culture of accountability and attention to detail within the organisation further supports the integrity of record-keeping practices.

Maintaining open communication with regulatory bodies helps organisations stay updated on any changes in record-keeping requirements. Seeking guidance and support from

these bodies ensures compliance with all relevant regulations, promoting a proactive approach to record management.

Example Safety Objectives

1. **Ensure Complete and Accurate Record-Keeping:** Aim to maintain 100% accuracy and completeness in all maintenance and operational records.
2. **Enhance Record Management Systems:** Implement robust digital record-keeping systems to minimise the risk of data loss or errors.
3. **Regular Audits and Reviews:** Conduct periodic audits and reviews of records to identify and rectify discrepancies promptly.
4. **Training and Awareness:** Provide comprehensive training to staff on the importance of accurate record-keeping and the procedures to follow.

Example Safety Performance Indicators (SPI's)

1. **Record Accuracy Rate:** Measure the percentage of records that are accurate and complete. Aim for a target of 99% or higher.
2. **Audit Findings:** Track the number of discrepancies or issues identified during audits. A decreasing trend would indicate improvement.
3. **Training Completion Rate:** Monitor the percentage of staff who have completed record-keeping training. Aim for 100% completion.
4. **Incident Reports Related to Missing Records:** Track the number of incidents or safety reports that cite missing records as a contributing factor. Aim for zero incidents.

36. Speed of growth of organisation

Key Risks

Rapid organisational growth can introduce significant resource management challenges within CAMO organisations. Expansion may outpace the availability of suitably qualified personnel, leading to understaffing or the recruitment of individuals without the necessary experience or competence. This can increase the risk of non-compliance and negatively impact safety performance. From a financial perspective, insufficient planning may limit investment in critical infrastructure, training, and technology, further compounding these risks.

Operational efficiency may also be affected during periods of rapid growth. The integration of new processes, systems, or aircraft types can introduce complexity and potential misalignment with established procedures. Without effective coordination and standardisation, this may result in inefficiencies, inconsistencies in performance, and increased exposure to safety risk.

Regulatory compliance becomes more challenging as organisational scale increases. Higher volumes of documentation and activity can increase the likelihood of errors or omissions, while maintaining up-to-date awareness of regulatory changes across an expanding operation may become more difficult. This can lead to gaps in compliance if not effectively managed.

Risk management processes may also be strained during rapid expansion. If Safety Management Systems (SMS) are not scaled appropriately, there is a risk that hazards are not fully identified, assessed, or controlled. In particular, ineffective management of change, such as the introduction of new aircraft, expansion into new operating environments, or increased use of subcontractors—can introduce additional safety and compliance risks.

Effective planning, resource allocation, and robust management of change processes are therefore essential to ensure that growth is sustainable and does not compromise safety, compliance, or operational performance.

Mitigation Strategies

To mitigate resource management risks, organisations should implement comprehensive training programs for new hires and ensure adequate staffing levels to maintain compliance and safety standards. Additionally, developing robust financial plans is essential to ensure sufficient investment in infrastructure, training, and technology, which supports sustainable growth.

For operational efficiency, establishing clear procedures for integrating new processes and systems is crucial to ensure alignment with regulatory requirements. Implementing robust quality control measures and conducting regular audits can help maintain high standards and compliance, even as the organisation grows.

To address regulatory compliance risks, developing efficient documentation systems is vital to ensure accurate, up-to-date, and easily accessible records. Staying informed about regulatory changes and promptly implementing procedures to adapt to these changes can help maintain compliance and avoid potential issues.

Effective risk management involves regularly reviewing and updating the Safety Management System (SMS) to identify and mitigate risks. Careful planning and execution of changes, such as new aircraft types or expanded operations, through thorough risk assessments and safety audits, can ensure continued compliance and safety.

Example Safety Objectives

1. **Maintain Compliance:** Ensure that all new operations and expansions comply with existing safety regulations and standards.
2. **Enhance Training Programs:** Develop and implement comprehensive training programs for new and existing staff to maintain high safety standards.
3. **Strengthen Safety Culture:** Promote a strong safety culture across the organisation, emphasizing the importance of safety in all operations.
4. **Improve Communication:** Establish clear communication channels to ensure that safety information is effectively disseminated throughout the organisation.
5. **Monitor and Review:** Regularly monitor and review safety performance to identify areas for improvement and ensure continuous compliance.

Example Safety Performance Indicators (SPI's)

1. **Incident and Accident Rates:** Track the number of incidents and accidents per operational hour or flight.
2. **Compliance Audits:** Measure the number of compliance audits conducted and the percentage of findings closed within a specified timeframe.
3. **Training Completion Rates:** Monitor the percentage of staff who have completed mandatory safety training programs.
4. **Safety Reports:** Track the number of safety reports submitted by staff and the time taken to address reported issues.
5. **Employee Feedback:** Measure employee satisfaction with safety procedures through regular surveys and feedback mechanisms.

37. Technical incidents

Key Risks

Technical incidents can have a significant impact on the operations of a Continuing Airworthiness Management Organisation (CAMO). Such events often result in unplanned maintenance, aircraft grounding, and disruption to flight schedules. The need for immediate corrective action can place considerable pressure on organisational resources and reduce the efficiency of fleet management. Repeated occurrences may also erode operator and customer confidence in the organisation's ability to effectively manage airworthiness.

From a regulatory perspective, technical incidents may trigger increased scrutiny from the competent authority. CAMO organisations must be able to demonstrate effective processes for the identification, reporting, investigation, and resolution of such events, in line with regulatory and Safety Management System (SMS) requirements.

In terms of safety performance, technical incidents often highlight underlying weaknesses in maintenance practices, procedures, or oversight. If not effectively investigated and addressed, these vulnerabilities may persist, increasing the likelihood of recurrence and elevating overall safety risk. Robust root cause analysis and the implementation of effective corrective actions are therefore essential to strengthen safety performance and organisational resilience.

Technical incidents can also have a significant financial impact. Costs associated with unplanned maintenance, extended aircraft downtime, and operational disruption may place pressure on organisational resources. In more serious cases, incidents may lead to legal liabilities, compensation claims, and reputational damage.

Effective management of technical incidents, through timely reporting, thorough investigation, and proactive mitigation, is therefore critical to maintaining safety, compliance, and operational performance within CAMO organisations.

Mitigation Strategies

To enhance operational efficiency, it is crucial to implement robust maintenance planning and scheduling. This minimises the impact of unplanned maintenance activities and ensures smoother operations. Developing contingency plans is also essential to manage aircraft grounding and flight schedule disruptions effectively. Additionally, fostering a culture of continuous improvement can significantly enhance the reliability of maintenance practices, ensuring that the organisation remains proactive in addressing potential issues.

Regulatory compliance is another critical area. Establishing comprehensive processes for identifying, reporting, and rectifying technical issues is vital. Regular internal audits help ensure that the organisation remains compliant with regulatory requirements. Proactively

engaging with regulatory authorities to address any findings of non-compliance can prevent potential limitations and maintain the organisation's approval status.

Safety management is paramount in maintaining airworthiness standards. Implementing a strong safety management system (SMS) allows for effective monitoring, reporting, and addressing of safety concerns. Thorough investigations of technical incidents help identify root causes and implement corrective actions. Promoting a safety culture that encourages reporting and learning from technical issues is essential for continuous improvement in safety performance.

Financial management is also crucial in mitigating the impact of technical incidents. Allocating resources for unplanned maintenance and regulatory compliance helps manage financial risks. Developing insurance and legal strategies can effectively handle liabilities and compensation claims. Investing in training and development enhances the skills and knowledge of maintenance personnel, ensuring that the organisation is well-equipped to handle technical challenges.

Example Safety Objectives

1. **Reduce Technical Incident Rate:** Aim to decrease the number of technical incidents per flight hour by a specific percentage over a defined period.
2. **Enhance Maintenance Procedures:** Improve the effectiveness and efficiency of maintenance procedures to prevent technical failures.
3. **Increase Reporting and Analysis:** Encourage comprehensive reporting and analysis of technical incidents to identify root causes and implement corrective actions.
4. **Improve Training Programs:** Enhance training programs for maintenance personnel to ensure they are well-equipped to handle technical issues.

Example Safety Performance Indicators (SPI's)

1. **Incident Rate:** Number of technical incidents per 1,000 flight hours.
2. **Maintenance Error Rate:** Number of maintenance errors reported per month.
3. **Compliance Rate:** Percentage of maintenance tasks completed on time and in accordance with regulatory requirements.
4. **Training Completion Rate:** Percentage of maintenance personnel who have completed required training programs within a specified timeframe.
5. **Corrective Action Implementation:** Percentage of identified corrective actions from incident investigations that are implemented within the target timeframe.

38. Dependency on third party providers, unregulated within the Civil Aviation Authority, for consumables, rotatables and major assemblies.

Key Risks

The use of unregulated providers introduces a range of risks that may affect safety, compliance, and operational performance. Such providers may not consistently meet the quality standards required within the aviation sector, increasing the risk of substandard parts or services being utilised. This can compromise airworthiness and lead to non-compliance with regulatory requirements.

Reliance on third-party providers may also introduce operational risk. Failures in supplier performance, including delays in the delivery of parts or services, can disrupt maintenance activities and impact aircraft availability, leading to operational inefficiencies across the fleet.

Effective documentation and traceability are critical to maintaining regulatory compliance and ensuring the integrity of maintenance activities. Unregulated providers may not maintain adequate records, making it difficult to verify the origin, status, and airworthiness of components. This lack of traceability can complicate audits and increase the risk of regulatory findings.

The involvement of third-party providers can also introduce cybersecurity risks, particularly where access to IT systems or sensitive data is required. Weak controls or poor security practices within the supply chain may create vulnerabilities, increasing the risk of data breaches, system compromise, and operational disruption.

There is also an increased compliance risk where providers are not fully aligned with aviation regulatory requirements. Lack of awareness or inconsistent application of regulatory standards may expose the CAMO organisation to non-compliance, potentially leading to enforcement action, operational limitations, or impacts on approval status.

In addition, the use of unregulated providers may result in increased costs. Additional oversight, inspection, and corrective actions may be required to manage quality and compliance risks, placing further strain on organisational resources and financial performance.

Robust supplier selection, oversight, and contractual controls are therefore essential to ensure that all providers operate to appropriate standards, maintaining safety, compliance, and operational integrity.

Mitigation strategies

Implementing a rigorous vetting process for selecting third-party providers is crucial. This involves conducting thorough audits to ensure providers meet the required quality and regulatory standards. Regular audits and inspections help maintain ongoing compliance and quality assurance, ensuring that all parts and services meet the necessary safety requirements.

Establishing clear and comprehensive contractual agreements with third-party providers is essential. These contracts should outline quality standards, delivery timelines, documentation requirements, and compliance with aviation regulations. Including penalty clauses for non-compliance can serve as an effective deterrent, ensuring providers adhere to agreed-upon standards and timelines.

Investing in advanced traceability systems is vital to ensure all parts and components can be tracked throughout their lifecycle. This includes maintaining detailed records of part origins, maintenance history, and compliance documentation. Such systems facilitate easier audits and regulatory compliance, ensuring that all parts used in aircraft maintenance are properly documented and traceable.

Developing and integrating a robust Safety Management System that includes third-party oversight is important. This system should identify potential hazards, assess risks, and implement mitigation measures. Regular safety reviews and risk assessments help identify and address issues proactively, ensuring that safety standards are maintained across all operations.

Strengthening cybersecurity protocols to protect sensitive data and IT systems is crucial. This includes implementing secure communication channels, conducting regular security audits, and ensuring third-party providers adhere to stringent cybersecurity standards. Training staff on cybersecurity best practices is also essential to protect against potential cyber threats and vulnerabilities.

Establishing a continuous monitoring system to track the performance of third-party providers is important. Collecting feedback from internal teams and conducting regular performance reviews help identify potential issues early. This ongoing evaluation ensures providers maintain high standards and allows for timely corrective actions if any issues arise.

Example Safety Objectives

1. **Ensure Quality and Compliance:** Establish and maintain rigorous quality control processes to ensure all third-party providers meet the required standards. This includes regular audits and inspections to verify compliance with aviation regulations and quality requirements.

2. **Maintain Supply Chain Reliability:** Develop strategies to ensure the reliability and timeliness of parts and components delivery. This includes establishing contingency plans and maintaining a diverse supplier base to mitigate the impact of supply chain disruptions.
3. **Enhance Traceability and Documentation:** Implement advanced traceability systems to ensure all parts and components are properly documented and traceable throughout their lifecycle. This objective aims to facilitate easier audits and ensure regulatory compliance.
4. **Strengthen Cybersecurity Measures:** Enhance cybersecurity protocols to protect sensitive data and IT systems. This includes implementing secure communication channels, conducting regular security audits, and ensuring third-party providers adhere to stringent cybersecurity standards.
5. **Ensure Regulatory Compliance:** Maintain strict adherence to aviation regulations by ensuring all third-party providers understand and comply with relevant standards. This includes regular training and updates on regulatory requirements for both internal staff and third-party providers.
6. **Manage Financial Risks:** Implement financial oversight measures to manage the costs associated with third-party providers. This includes monitoring the financial impact of substandard parts or services and ensuring cost-effective procurement practices.

Example Safety Performance Indicators (SPI's)

1. **Percentage of third-party providers passing initial and follow-up audits:** This SPI measures the effectiveness of the vetting and auditing process, ensuring providers meet quality and regulatory standards.
2. **On-time delivery rate of critical parts and components:** This helps monitor the reliability of third-party suppliers and identify potential supply chain disruptions early.
3. **Percentage of parts with complete and accurate traceability records:** Ensuring proper documentation and traceability of parts is crucial for regulatory compliance and safety.
4. **Number of cybersecurity incidents reported and resolved:** This assesses the effectiveness of cybersecurity protocols and the organisation's ability to respond to potential threats.
5. **Number of non-compliance issues identified during regulatory audits:** This SPI tracks adherence to aviation regulations and helps identify areas needing improvement.
6. **Cost of rectification due to substandard parts or services:** This measures the financial impact of relying on unregulated providers and helps assess the effectiveness of mitigation strategies.

39. Diverse Fleet

Key Risks

Managing a diverse fleet presents a range of operational and technical challenges due to the varying maintenance requirements, schedules, and procedures associated with different aircraft types.

This complexity increases the likelihood of scheduling conflicts or overlooked maintenance tasks, potentially leading to non-compliance with regulatory requirements. Effective planning, coordination, and standardisation of processes are essential to ensure that all maintenance activities are completed in a timely and compliant manner.

Each aircraft type requires specific technical knowledge, skills, and competence to support effective maintenance and airworthiness management. Ensuring that personnel are appropriately trained, authorised, and experienced across multiple aircraft types can be resource-intensive. Without adequate competence, the likelihood of maintenance errors increases, potentially affecting aircraft safety and reliability.

A diverse fleet also places increased demands on inventory management. The need to manage a wide range of spare parts and components can introduce inefficiencies if not properly controlled, leading to delays, increased costs, and the risk of using incorrect or non-compliant parts. Robust inventory management systems and processes are therefore essential to ensure traceability, availability, and effective control of components.

Regulatory compliance is further complicated by differing requirements across aircraft types, including varying airworthiness directives, maintenance programmes, and certification considerations. Managing these requirements can be resource-intensive and increases the risk of oversight or error if not effectively controlled.

In addition, maintaining accurate and up-to-date records for a diverse fleet requires the management of large volumes of data. Weak data management practices may result in incomplete or inaccurate records, affecting the organisation's ability to demonstrate compliance and maintain clear visibility of airworthiness status.

The overall complexity associated with managing a diverse fleet can also increase exposure to human error. Without standardised procedures, effective training, and strong oversight, this complexity may lead to inconsistencies in maintenance and airworthiness management. Implementing structured processes, appropriate training programmes, and robust governance is therefore essential to maintain safety, compliance, and operational effectiveness across all aircraft types.

Mitigation Strategies

Implementing standardised maintenance procedures and checklists for different aircraft types helps reduce complexity and ensures consistency across the fleet. This approach minimises the risk of errors and ensures that all maintenance tasks are performed correctly and efficiently, regardless of the aircraft type.

Developing and maintaining comprehensive training programs is essential to ensure that all staff are adequately trained and certified for the aircraft types they manage. These programs help staff acquire the necessary technical knowledge and skills, reducing the likelihood of maintenance errors and enhancing overall safety.

Utilising advanced inventory management systems allows for efficient tracking and management of spare parts and components. These systems help ensure that the right parts are available when needed, reducing maintenance delays and operational costs, and preventing the use of incorrect or non-compliant parts. Implementing robust data management practices is crucial for maintaining accurate and up-to-date records for all aircraft types. Effective data management ensures that all maintenance records are complete and accessible, supporting compliance with regulatory requirements and facilitating the tracking of the airworthiness status of each aircraft.

Conducting regular audits and inspections is necessary to ensure compliance with regulatory requirements and identify areas for improvement. These activities help maintain high standards of safety and airworthiness, allowing the organisation to address any issues promptly and effectively.

Example Safety Objectives

1. **Standardization of Procedures:** Ensure that maintenance and operational procedures are standardised across all fleet types to minimise variability and potential errors.
2. **Training and Competency:** Implement comprehensive training programs to ensure that all personnel are competent in handling the specific requirements of each aircraft type in the diverse fleet.
3. **Enhanced Communication:** Foster effective communication channels between different departments and teams to ensure that information related to the diverse fleet is accurately and promptly shared.

Example Safety Performance Indicators (SPI's)

1. Incident and Accident Rates: Track the number of incidents and accidents per aircraft type to identify trends and areas needing improvement.
2. Maintenance Error Rates: Monitor the frequency of maintenance errors across different aircraft types to ensure that standardization efforts are effective.
3. Training Completion Rates: Measure the percentage of personnel who have completed required training for each aircraft type to ensure compliance and competency.
4. Communication Effectiveness: Assess the effectiveness of communication through surveys or feedback mechanisms to ensure that critical information is being shared appropriately.

40. Incorrect assessment of the airworthiness status of the aircraft

Key Risks

Incorrect airworthiness assessments can lead to undetected defects or maintenance deficiencies, increasing the risk of in-service failures and safety occurrences. Ensuring the accurate assessment of airworthiness is fundamental to protecting passengers, crew, and aircraft, and any misjudgement in this process may result in hazardous operating conditions.

Operational impacts may also arise where airworthiness status is incorrectly assessed. Misjudgements can lead to unplanned maintenance requirements, increased aircraft downtime, and disruption to flight operations. These inefficiencies may result in delays, cancellations, and reduced reliability, ultimately affecting organisational performance and customer confidence.

From a regulatory perspective, CAMO organisations are required to demonstrate compliance with applicable airworthiness requirements. Incorrect assessments may result in non-compliance, leading to regulatory findings, increased oversight, and potential limitations on approval. Persistent deficiencies in this area may also affect the organisation's ability to maintain its approval and operate effectively.

There are also financial implications associated with incorrect assessments. Unplanned maintenance, corrective actions, and operational disruption can lead to increased costs. In more serious cases, incidents linked to incorrect airworthiness decisions may expose the organisation to legal liabilities, compensation claims, and increased insurance premiums, placing further strain on financial resources.

Effective airworthiness assessment processes, supported by robust procedures, competent personnel, and appropriate oversight, are therefore essential to maintaining safety, regulatory compliance, and operational resilience.

Mitigation Strategies

Regular training programs for personnel are essential to ensure they are up-to-date with the latest airworthiness assessment techniques and regulatory requirements. This continuous education helps maintain high standards of proficiency and compliance.

Implementing comprehensive quality assurance and audit systems allows for regular review and verification of airworthiness assessments. These systems help identify and address any discrepancies, ensuring consistent and reliable maintenance practices.

Maintaining detailed and accurate records of all assessments and maintenance activities is crucial for traceability and accountability. Proper documentation supports regulatory compliance and provides a clear audit trail.

Engaging with the UK CAA and other regulatory bodies keeps organisations informed about regulatory changes and best practices in airworthiness management. This collaboration ensures that CAMO's stay aligned with industry standards and maintain their approval status.

Example Safety Objectives

1. Enhance Training Programs: Ensure all personnel involved in airworthiness assessments receive comprehensive and regular training.
2. Improve Documentation and Procedures: Standardize and regularly update documentation and procedures related to airworthiness assessments.
3. Increase Oversight and Audits: Conduct frequent internal audits and oversight to ensure compliance with airworthiness standards.
4. Implement Advanced Monitoring Tools: Use advanced software and tools to monitor and assess the airworthiness status accurately.
5. Foster a Safety Culture: Promote a culture where safety and accurate reporting are prioritized and encouraged.

Example Safety Performance Indicators (SPI's)

1. Training Completion Rate: Percentage of personnel who have completed required airworthiness training within a specified period.
2. Audit Findings: Number of non-compliances or findings related to airworthiness assessments identified during internal audits.
3. Documentation Accuracy: Number of errors or discrepancies found in airworthiness documentation.
4. Incident Reports: Number of incidents or near-misses related to incorrect airworthiness assessments.
5. Corrective Action Implementation: Percentage of corrective actions implemented within the stipulated time frame following an audit or incident.

41. Major Component Failure

Key Risks

Major component failures, including those involving engines or critical structural elements, represent a significant safety risk. Such failures have the potential to compromise aircraft airworthiness and, in extreme cases, may lead to serious incidents or accidents, placing passengers, crew, and assets at risk.

From an operational perspective, major component failures frequently result in aircraft grounding, causing disruption to flight schedules and reduced fleet availability. The investigation, rectification, and reintroduction of affected aircraft into service can place considerable demands on resources and impact overall operational efficiency.

Regulatory compliance is also affected, as CAMO organisations are required to ensure that all airworthiness issues are addressed promptly and effectively. Failure to manage major component failures in accordance with regulatory requirements may lead to findings, increased oversight, or potential limitations on approval. Repeated failures may also attract additional scrutiny from the competent authority.

The financial impact of such failures can be significant. Costs associated with repair or replacement of major components are often substantial, and prolonged aircraft downtime may result in loss of revenue. In addition, recurring failures may lead to increased insurance premiums and further financial pressure on the organisation.

Finally, repeated or high-profile component failures can adversely affect stakeholder confidence. Loss of trust from operators, regulators, and customers may damage organisational reputation and impact future business opportunities.

Effective monitoring of component reliability, supported by robust maintenance programmes and proactive risk management, is therefore essential to minimise the likelihood and impact of major component failures and to maintain safety, compliance, and operational performance.

Mitigation Strategies

Implementing a robust predictive maintenance/reliability program is essential for identifying potential component failures before they occur. This involves regularly updating maintenance procedures and schedules based on the latest data and manufacturer recommendations to ensure optimal performance and safety.

Providing ongoing training for maintenance personnel is crucial to equip them with the latest knowledge and skills needed to handle major component issues. Regular drills and simulations help prepare the team for potential component failure scenarios, ensuring they can respond effectively.

Use of advanced monitoring systems allows for real-time tracking of the performance and condition of major components. Establishing a comprehensive reporting system to document and analyse component failures and maintenance actions helps in identifying trends and improving maintenance practices.

Working closely with component manufacturers is vital to understand failure modes and implement design improvements. Participating in industry forums and working groups facilitates the sharing of knowledge and best practices, contributing to overall safety and efficiency.

Example Safety Objectives

1. **Minimise Component Failures:** Aim to reduce the frequency of major component failures through rigorous maintenance and inspection protocols.
2. **Enhance Detection and Response:** Improve the ability to detect potential failures early and respond promptly to prevent escalation.
3. **Ensure Compliance:** Maintain strict adherence to all regulatory requirements and industry best practices for component maintenance and replacement.
4. **Continuous Improvement:** Implement a continuous improvement process to regularly review and enhance maintenance procedures based on data and feedback.

Example Safety Performance Indicators (SPI's)

1. **Failure Rate:** Track the number of major component failures per flight hour or cycle.
2. **Inspection Findings:** Monitor the number and severity of findings during routine inspections.
3. **Maintenance Delays:** Measure the frequency and duration of maintenance delays caused by component issues.
4. **Incident Reports:** Record and analyse the number of incidents related to component failures.
5. **Compliance Audits:** Track the results of internal and external audits to ensure compliance with regulatory standards.

42. Unqualified staff working without appropriate supervision

Key Risks

The use of unqualified personnel within CAMO organisations presents a significant safety risk. Individuals lacking the necessary qualifications, competence, or experience are more likely to make errors in maintenance planning, inspections, and airworthiness decision-making. This increases the likelihood of undetected defects and may compromise the safety and reliability of aircraft systems. In addition, unqualified personnel may be less able to identify and effectively manage hazards, further increasing overall safety exposure.

Regulatory compliance is also at risk where personnel do not meet the required standards. UK Regulation 1321/2014 mandates defined competence and qualification requirements, and failure to meet these obligations may result in regulatory findings, increased oversight, or limitations on approval. Inadequate competence may also lead to errors in documentation and record-keeping, further increasing the risk of non-compliance.

Operational efficiency may be adversely affected where personnel lack the necessary skills and experience. Tasks may take longer to complete, leading to delays in maintenance activities and increased aircraft downtime. In addition, supervisory resources may be diverted to provide additional oversight, reducing the organisation's overall efficiency and effectiveness.

The financial impact of employing unqualified personnel can also be significant. Increased error rates may result in rework, additional training requirements, and higher operational costs. Furthermore, safety occurrences or compliance failures may lead to fines, enforcement action, or increased insurance premiums, placing additional strain on organisational resources.

Ensuring that personnel are appropriately qualified, competent, and supported through ongoing training and oversight is therefore essential to maintaining safety, compliance, and operational performance within CAMO organisations.

Mitigation Strategies

Appropriate supervision is essential for ensuring staff competence. Supervisors play a crucial role in providing adequate training and development opportunities, enabling staff to perform their tasks competently. Regular monitoring and assessment of staff performance help identify areas where additional support or training is needed, ensuring continuous improvement in skills and knowledge.

Maintaining high safety standards within the organisation is another critical aspect of effective supervision. Supervisors are responsible for identifying and managing risks appropriately, which helps uphold safety protocols. They also ensure that all activities comply with regulatory requirements, reducing the risk of non-compliance and associated approval limitations.

Enhancing operational efficiency is a key benefit of proper supervision. By allocating resources effectively, supervisors ensure that tasks are completed efficiently and effectively. They also identify opportunities for process improvements, contributing to the overall operational efficiency and effectiveness of the organisation.

Example Safety Objectives

1. **Ensure Compliance:** Achieve 100% compliance with training and certification requirements for all staff.
2. **Enhance Supervision:** Implement a robust supervision framework to ensure all unqualified staff are appropriately supervised.
3. **Continuous Improvement:** Establish a continuous improvement program to regularly review and update training and supervision protocols.

Example Safety Performance Indicators (SPI's)

1. **Training Completion Rate:** Measure the percentage of staff who have completed required training and certification programs.
2. **Supervision Ratio:** Track the ratio of qualified supervisors to unqualified staff to ensure adequate supervision levels.
3. **Incident Reports:** Monitor the number of incidents or near-misses involving unqualified staff to identify areas for improvement.
4. **Audit Findings:** Record the number of non-compliance findings related to staff qualifications and supervision during internal and external audits.
5. **Feedback Mechanism:** Collect and analyse feedback from staff regarding the effectiveness of training and supervision programs.

43. Use of unapproved parts, leading to operation of unsafe aircraft

Key Risks

The use of unapproved parts presents a significant risk to aircraft safety and airworthiness. Such components may not meet the required quality and certification standards, increasing the likelihood of premature failure, system malfunction, or degraded performance. This can compromise the integrity of the aircraft and, in severe cases, lead to safety occurrences. In addition, the use of unapproved parts may result in aircraft being grounded or subject to operational restrictions.

From a regulatory perspective, the use of unapproved parts constitutes non-compliance with Regulation (EU) No. 1321/2014. Such non-compliance may lead to regulatory findings, increased oversight, and potential limitations on the CAMO's approval status. Organisations associated with the use of unapproved parts may also be subject to enhanced scrutiny, including more frequent audits and inspections.

There are also significant financial implications. The identification and replacement of unapproved parts can result in substantial costs, including procurement, labour, and aircraft downtime. In addition, any incidents linked to such components may lead to liability claims and increased insurance premiums, further impacting financial performance. The reputational impact can be equally severe. The use of unapproved parts may erode confidence among clients, operators, and regulatory authorities, damaging trust and organisational credibility. Negative publicity and loss of confidence may adversely affect the CAMO's market position and future business opportunities.

Robust component control, verification processes, and supply chain assurance are therefore essential to ensure that only approved parts are used, maintaining safety, compliance, and operational integrity.

Mitigation Strategies

Implementing rigorous procurement processes ensures that all parts are sourced from approved suppliers with proper documentation and traceability. This helps maintain the integrity of the supply chain and ensures that only high-quality, approved parts are used in maintenance activities. The UK CAA recently released CAP 3037 to provide additional guidance on receiving parts.

Strengthening quality control measures is essential to detect and prevent the use of unapproved parts. This includes conducting regular audits, inspections, and testing of

parts to ensure they meet the required standards and specifications, thereby maintaining the safety and reliability of aircraft.

Providing ongoing training for staff on the importance of using approved parts and the risks associated with unapproved components is crucial. This education helps personnel understand the potential consequences of using unapproved parts and reinforces the importance of adhering to procurement and quality control procedures.

Working closely with regulatory bodies helps organisations stay updated on the latest regulations and best practices for maintaining airworthiness. This collaboration ensures that CAMO's are aware of any changes in regulatory requirements and can implement necessary adjustments promptly to remain compliant.

By continuously reviewing and improving procurement processes, quality control measures, and training programs, organisations can enhance their overall maintenance practices. This proactive approach helps mitigate risks associated with unapproved parts and ensures the highest standards of safety and compliance are maintained.

Example Safety Objectives

1. **Ensure Compliance with Approved Parts Regulations:** All parts used in aircraft maintenance and operations must be sourced from approved suppliers and comply with regulatory standards form 1.
2. **Enhance Training and Awareness:** Established training programs for maintenance personnel on the identification and handling of approved parts.
3. **Strengthen Inspection and Verification Processes:** Implement rigorous inspection and verification processes to ensure all parts are approved and meet safety standards.
4. **Improve Reporting and Tracking Systems:** Develop systems for reporting and tracking the use of parts, ensuring traceability and accountability.
5. **Foster a Safety Culture:** Promote a culture of safety where all staff are encouraged to report any concerns about parts and maintenance practices without fear of retribution.

Example Safety Performance Indicators (SPI's)

1. Number of Training Sessions Conducted: Track the number of training sessions conducted for maintenance personnel on the identification and use of approved parts.
2. Incidents of Unapproved Parts Usage: Monitor and report the number of incidents where unapproved parts were identified in use.
3. Audit Compliance Rate: Measure the compliance rate of internal and external audits regarding the use of approved parts.
4. Reporting Rate of Safety Concerns: Track the rate at which safety concerns related to parts are reported by staff.

44. Alternative Regulatory requirements for nominated persons not being considered outside of a degree or license.

The Alternative Means of Compliance (AltMoC) process under UK Regulation 1321/2014 enables organisations to demonstrate compliance with regulatory requirements using methods that differ from the Acceptable Means of Compliance (AMC) published by the Civil Aviation Authority (CAA), while still achieving an equivalent level of safety. This approach can be particularly relevant to CAMO.A.305(c), which sets out the requirements for nominated persons within Continuing Airworthiness Management Organisations (CAMOs), including the need for appropriate knowledge, experience, and competence in continuing airworthiness management.

The AltMoC process provides organisations with flexibility to tailor compliance approaches to their specific operational context. This can allow CAMOs to develop solutions that better reflect their organisational structure, complexity, and scope of operations, while still meeting regulatory intent. In the context of CAMO.A.305(c), this may support more effective approaches to demonstrating competence, experience, and suitability of nominated personnel, beyond the prescriptive guidance contained within the AMC. By enabling alternative approaches, the AltMoC process can also encourage innovation and the adoption of best practices, particularly where existing AMCs may not fully address new operational models, technologies, or organisational arrangements. In some cases, this may support more efficient processes and reduce unnecessary administrative burden where equivalent outcomes can be clearly demonstrated.

The use of AltMoC may also support a more targeted and proportionate approach to compliance, allowing organisations to address specific risks or operational challenges in a structured and justified manner. However, this requires robust justification, clear documentation, and effective engagement with the CAA to demonstrate that the proposed alternative achieves an equivalent level of safety.

Once approved by the CAA, an AltMoC carries the same regulatory validity as compliance with the standard AMC, enabling organisations to operate within the regulatory framework while benefiting from a tailored and risk-based approach to compliance.

45. AMO's working to different regulatory standards

Key Risks

Where a CAMO contracts a Part 145 maintenance organisation operating under a different regulatory framework, there is an increased risk of non-compliance with UK regulatory requirements. Differences in regulatory scope, approval standards, and applicable procedures may introduce complexity in ensuring consistent adherence to UK airworthiness requirements.

Variations in maintenance practices and quality control processes between regulatory frameworks can also impact the consistency of maintenance outcomes. Without appropriate oversight, these differences may lead to variability in quality standards, potentially affecting the safety and airworthiness of aircraft. Ensuring consistent application of approved procedures and quality assurance processes is therefore essential. Differences in documentation standards may result in incomplete, inconsistent, or non-compliant records. This can complicate audit processes and make it more challenging to demonstrate that maintenance activities have been carried out in accordance with applicable requirements. Robust documentation controls and validation processes are critical to maintaining traceability and compliance.

Variations in regulatory terminology and interpretation may also create communication challenges between the CAMO and the contracted organisation. Misunderstandings arising from these differences can affect the clarity of instructions, the execution of maintenance activities, and the overall effectiveness of coordination. Clear communication protocols and defined interfaces are therefore essential.

Discrepancies in regulatory application can further complicate the allocation of responsibility and accountability, particularly in the event of maintenance-related occurrences. Without clearly defined roles, responsibilities, and contractual arrangements, the management of such events may be delayed or ineffective. Establishing clear governance, accountability, and oversight arrangements is therefore critical to ensuring timely resolution and maintaining compliance.

Mitigation strategies

To mitigate the risks associated with contracting a Part 145 MRO organisation operating under different regulatory standards, a CAMO should establish clear and detailed contracts. These contracts should outline the specific regulatory requirements and standards that must be adhered to, ensuring both parties are fully aware of their obligations.

Conducting thorough audits is another crucial strategy. Regular audits of the Part 145 organisation can help identify any discrepancies or non-compliance issues early on. This proactive approach allows the CAMO to address potential problems before they escalate, ensuring ongoing compliance with UK regulations.

Maintaining open communication channels is essential for effective collaboration. Regular meetings and updates between the CAMO and the Part 145 organisation can help clarify any misunderstandings and ensure that both parties are aligned in their maintenance practices and quality control procedures.

Providing training and support to the Part 145 organisation can also be beneficial. By offering guidance on UK regulatory standards and best practices, the CAMO can help the MRO organisation improve its compliance and quality control measures, reducing the risk of non-compliance and safety issues.

Finally, establishing clear roles and responsibilities is vital for accountability. By defining who is responsible for each aspect of the maintenance process, the CAMO can ensure that any issues are promptly addressed and resolved, minimizing the impact of any discrepancies in regulatory adherence.

Example Safety Objectives

1. **Ensure Compliance:** The Part-CAMO must ensure that the contracted Part 145 organisation complies with all applicable airworthiness requirements and standards, even if they differ from the Part-CAMO's regulatory framework.
2. **Maintain Airworthiness:** The primary objective is to maintain the airworthiness of the aircraft by ensuring that all maintenance activities are performed correctly and in accordance with the approved maintenance program.
3. **Risk Management:** Implement a robust risk management process to identify, assess, and mitigate any risks associated with the maintenance activities performed by the Part 145 organisation.
4. **Quality Assurance:** Establish and maintain a quality assurance system to monitor and evaluate the performance of the contracted Part 145 organisation.

Example Safety Performance Indicators (SPI's)

1. **Compliance Rate:** Measure the rate of compliance with regulatory requirements and maintenance standards by the Part 145 organisation.
2. **Incident/Accident Rate:** Track the number of incidents or accidents related to maintenance activities performed by the Part 145 organisation.

3. Audit Findings: Monitor the number and severity of findings from audits and inspections of the Part 145 organisation.
4. Timeliness of Maintenance: Measure the adherence to scheduled maintenance timelines and the timely completion of maintenance tasks.
5. Defect Rectification: Track the rate and effectiveness of defect rectification by the Part 145 organisation.

46. Delay in application of OEM recommendations (SB, SIL, ...)

Key Risks

Delays in implementing OEM recommendations can significantly impact aircraft safety. These recommendations often address known or emerging technical issues which, if not actioned in a timely manner, may lead to system degradation, component failure, or increased risk of safety occurrences. Prompt consideration and embodiment of OEM guidance is therefore essential to maintaining airworthiness and ensuring safe operations.

From a regulatory perspective, failure to appropriately evaluate and implement relevant OEM recommendations may lead to non-compliance with applicable airworthiness requirements, exposing the organisation to regulatory findings and increased oversight.

Operational impacts may also arise, as unaddressed recommendations can result in unexpected technical issues and unplanned maintenance, leading to aircraft downtime, disruption to flight schedules, and reduced operational efficiency.

Delaying recommended actions may also lead to increased maintenance costs over time. Issues that could have been addressed at an early stage may escalate, requiring more extensive repairs, greater resource input, and longer periods out of service.

There are also reputational considerations. Persistent delays in addressing OEM recommendations may erode confidence among operators, regulators, and other stakeholders, potentially impacting business opportunities and long-term organisational credibility.

In addition, non-compliance or delayed implementation may influence insurance conditions, potentially leading to increased premiums or limitations in coverage where recommended mitigations have not been applied. Effective evaluation, prioritisation, and timely implementation of OEM recommendations are therefore essential to maintaining safety, compliance, operational efficiency, and organisational resilience.

Mitigation strategies

Establishing a robust system for monitoring OEM recommendations and planning their implementation is crucial. This involves setting up alerts for new Service Bulletins (SBs) and Service Information Letters (SILs) and promptly integrating them into the maintenance schedule. Proactive monitoring ensures that no critical updates are missed and that they are addressed in a timely manner.

Adequate resource allocation is essential to avoid delays in implementing OEM recommendations. This means ensuring that there are sufficient personnel and financial budgets dedicated to addressing these recommendations. Proper resource management helps in mitigating the risk of delays due to constraints and ensures that necessary actions are taken without unnecessary postponements.

Regular training sessions for maintenance staff are vital to ensure they understand the importance of timely implementation of OEM recommendations. These sessions can include workshops on best practices for managing and prioritizing these recommendations. Continuous education helps in maintaining a high level of awareness and competence among the staff, which is crucial for effective compliance.

Implementing a risk assessment process allows for the evaluation of the potential impact of delaying specific OEM recommendations. By prioritizing actions based on the severity of the risks identified, critical safety-related recommendations can be addressed first. This approach ensures that the most urgent issues are resolved promptly, reducing the overall risk to the aircraft's airworthiness.

Maintaining open communication channels with OEMs is important for seeking clarifications and support when needed. This collaboration helps in understanding the urgency and technical details of the recommendations, facilitating quicker implementation. Effective communication with OEMs can also provide additional insights and assistance in addressing complex issues.

Conducting regular internal audits and reviews is essential to ensure compliance with OEM recommendations and to identify any delays or gaps in the process. These audits help in continuously improving procedures and preventing future delays. By regularly reviewing and refining the implementation process, a Part CAMO organisation can maintain high standards of airworthiness and regulatory compliance.

Example Safety Objectives

1. **Timely Implementation:** Ensure that all OEM recommendations are implemented within the specified time frame.
2. **Compliance Monitoring:** Regularly monitor and audit compliance with OEM recommendations.
3. **Risk Mitigation:** Develop and implement risk mitigation strategies for any delays in applying OEM recommendations.
4. **Training and Awareness:** Enhance staff training and awareness regarding the importance of timely implementation of OEM recommendations.

Example Safety Performance Indicators (SPI's)

1. Implementation Rate: Measure the percentage of OEM recommendations implemented within the specified time frame.
2. Audit Findings: Track the number of audit findings related to delays in implementing OEM recommendations.
3. Risk Assessment: Monitor the number of risk assessments conducted for delayed OEM recommendations and the effectiveness of mitigation measures.
4. Training Completion: Measure the percentage of staff who have completed training on the importance of timely implementation of OEM recommendations.

47. Introduction of Part ML and Part CAO creating significant confusion between the owner/operator and CAMO

Key Risks

The coexistence of multiple regulatory frameworks, including Part-ML, Part-M, Part-CAMO, and Part-CAO, can introduce complexity and potential confusion within CAMO operations. Each framework has distinct requirements, scopes, and responsibilities, which may lead to differing interpretations and misunderstandings between the CAMO and the owner or operator.

Ensuring compliance across these regulatory frameworks presents a significant challenge. Organisations must maintain accurate documentation, implement appropriate procedures, and ensure personnel are knowledgeable in the applicable requirements for each regulatory regime. Failure to clearly distinguish between these frameworks can increase the risk of non-compliance.

Differences in scope and applicability may also lead to communication challenges. Effective and consistent communication between the CAMO, operators, and other stakeholders is essential to ensure that requirements are clearly understood and correctly applied across all activities.

Operational complexity is further increased when managing different regulatory requirements simultaneously. Activities such as maintenance planning, airworthiness reviews, and compliance monitoring may require different approaches depending on the applicable framework, increasing administrative burden and the potential for error. Competence and training are critical in managing this complexity. Personnel must be appropriately trained and remain up to date with regulatory developments to ensure correct application of requirements. Ongoing professional development is essential to maintain awareness and capability.

Failure to comply with any of the applicable regulatory frameworks may result in operational disruption, including aircraft grounding, regulatory findings, or limitations on approval. Robust compliance monitoring and quality assurance systems are therefore essential to ensure consistent adherence to all applicable requirements

Mitigation strategies

An Appendix 1 contract (applicable to Part-M or Part-ML as appropriate), should define the obligations of the signatories in relation to the continuing airworthiness of the aircraft, ensuring all parties understand their responsibilities.

A compliance monitoring system should ensure that regulatory requirements are integrated into business processes, employees understand their responsibilities, and operations are regularly reviewed for compliance. This system should include regular audits, risk assessments, and corrective actions to promptly address any compliance issues.

Enhance Staff Training and Competency: Regular and ongoing training programs are crucial to keep staff updated on the latest regulatory requirements and best practices. This includes specific training on regulations such as Part-ML, Part-M, Part-CAMO, and Part-CAO, as well as general compliance and safety procedures.

Foster Clear and Consistent Communication: Establishing robust communication channels between the owner/operator and the CAMO is essential to avoid misunderstandings and ensure all parties are aware of their responsibilities. Regular meetings, clear documentation, and transparent reporting can help maintain alignment and clarity.

Conduct Regular Internal Audits and Reviews: Regular internal audits can help identify potential compliance gaps and areas for improvement. These audits should be thorough and cover all aspects of the regulations to ensure comprehensive compliance.

Develop a Strong Safety Culture: Promoting a culture of safety and compliance within the organisation can encourage proactive identification and resolution of potential issues. This includes encouraging open communication, rewarding compliance, and ensuring that safety and compliance are prioritized at all levels of the organisation.

Example Safety Objectives

1. **Enhance Regulatory Compliance Understanding:** Ensure all staff are fully trained and understand the requirements of Part-ML, Part-M, Part-CAMO, and Part-CAO.
2. **Improve Communication Channels:** Establish clear and consistent communication channels between the owner/operator and the CAMO.
3. **Streamline Compliance Processes:** Implement a unified compliance management system to streamline processes and reduce administrative burden.
4. **Increase Safety Reporting:** Encourage proactive safety reporting to identify and address potential compliance issues early.
5. **Conduct Regular Audits and Reviews:** Perform regular internal audits to ensure compliance with all regulatory requirements.
6. **Promote a Safety Culture:** Foster a culture of safety and compliance within the organisation.

Example Safety Performance Indicators (SPI's)

1. Training Completion Rate: Measure the percentage of staff who have completed training on Part-ML, Part-M, Part-CAMO, and Part-CAO within the last year.
2. Communication Effectiveness: Track the number of communication-related incidents or misunderstandings reported between the owner/operator and the CAMO.
3. Compliance: Review the number of findings caused by breach of Appendix 1 contract arrangements.

48. Shifts / Handover

Key Risks

Ineffective shift handovers can result in the loss of critical information regarding the status of aircraft maintenance and airworthiness. This may lead to incomplete, delayed, or incorrect maintenance actions, potentially compromising aircraft safety. Ensuring that all relevant information is accurately communicated during handover is therefore essential to maintaining safe and consistent operations.

Poor communication during handovers increases the likelihood of error. Where key details relating to ongoing tasks, defects, or operational constraints are not effectively transferred, incoming personnel may make decisions based on incomplete or inaccurate information. This can result in misjudgement and maintenance discrepancies, increasing overall safety risk.

Operational inefficiencies may also arise from ineffective handover processes. Where incoming personnel are not fully briefed, additional time may be required to confirm task status or gather missing information, leading to delays in maintenance completion and reduced aircraft availability. Efficient and structured handovers are therefore critical to maintaining operational continuity.

From a regulatory perspective, inadequate handovers may contribute to gaps in documentation and record-keeping, increasing the risk of non-compliance with UK Regulation 1321/2014. Accurate and continuous information flow is essential to demonstrate effective control of maintenance activities and ongoing compliance with airworthiness requirements.

Ultimately, ineffective handovers can create latent safety hazards if critical information is not transferred between shifts. Establishing standardised handover procedures, supported by clear communication protocols and appropriate oversight, is essential to ensure that all safety-critical information is captured, communicated, and acted upon.

Mitigation Strategies

Implementing standardised procedures for shift handovers is crucial to ensure consistency and completeness in the transfer of information. These procedures help maintain a structured approach, reducing the risk of important details being overlooked during the handover process.

Using both written and verbal communication is essential for conveying critical information. Written logs provide a reference for the incoming shift, ensuring that all necessary details

are documented and can be reviewed as needed. Verbal communication complements this by allowing for immediate clarification and discussion of any issues.

Regular training and awareness programs are vital to emphasise the importance of effective handovers. Staff should be educated on the potential risks associated with poor communication and the impact it can have on safety and operational efficiency. Continuous training helps reinforce best practices and keeps everyone aligned.

Utilizing technology, such as digital handover tools, can streamline the handover process and ensure accurate information transfer. These tools can help automate documentation, reduce errors, and provide a reliable platform for tracking and reviewing handover information, enhancing overall efficiency and safety.

Example Safety Objectives

1. Enhance Communication: Ensure that all shift handovers include comprehensive and clear communication of critical information.
2. Standardize Procedures: Develop and implement standardised handover procedures to minimise the risk of information loss.
3. Training and Competency: Provide regular training to staff on effective handover techniques and the importance of accurate information transfer.
4. Error Reduction: Implement measures to reduce the likelihood of errors during shift handovers.

Example Safety Performance Indicators (SPI's)

1. Handover Quality Audits: Regular audits of handover processes to assess the quality and completeness of information transferred.
2. Incident Reports: Track and analyse incidents related to shift handovers to identify trends and areas for improvement.
3. Training Completion Rates: Monitor the percentage of staff who have completed handover training programs.
4. Feedback Mechanisms: Collect and review feedback from staff on the handover process to identify potential improvements.
5. Error Rates: Measure the number of errors or near-misses attributed to handover issues.

49. Use of erroneous / expired data

Key Risks

Erroneous or inaccurate data can have a significant impact on aircraft safety by leading to incorrect maintenance planning and execution. Inaccurate information may result in maintenance tasks being carried out too early or too late, increasing the risk of component failure, degraded performance, or safety occurrences. In addition, unreliable data can affect component tracking, potentially leading to the inadvertent use of unapproved, expired, or incorrectly configured parts, thereby compromising airworthiness.

From an operational perspective, poor data quality may lead to both unnecessary maintenance activities and the omission of critical tasks. This can increase aircraft downtime, disrupt operational schedules, and reduce overall fleet efficiency. Ineffective data may also result in the misallocation of resources, including personnel and materials, further impacting productivity and performance.

There are also financial implications associated with the use of incorrect data. Inefficiencies such as duplicated work, unnecessary inspections, and unplanned maintenance can increase operational costs. In more serious cases, incidents resulting from data-related errors may expose the organisation to liability claims and financial penalties, placing additional strain on resources.

Maintaining high standards of data integrity, supported by robust data management, validation processes, and governance controls, is therefore essential to ensure accurate decision-making, maintain compliance, and protect the safety and reliability of aircraft operations.

Mitigation Strategies

Implementing robust data verification and validation processes is crucial to ensure the accuracy and integrity of data used in maintenance activities. These processes help in identifying and correcting errors before they can impact the safety and efficiency of aircraft operations. By maintaining high data quality standards, CAMO's can significantly reduce the risks associated with erroneous data.

Regular training for personnel on accurate data entry and management is essential. This training should emphasize the importance of data accuracy and the potential risks associated with erroneous data. Raising awareness among staff about these risks can foster a culture of diligence and attention to detail, further minimizing the chances of data-related issues.

Advanced technologies such as blockchain and AI can be utilized to enhance data accuracy and traceability. Blockchain provides a secure and transparent way to manage data, while AI can help in real-time error detection and correction. These technologies can significantly improve the reliability of data used in maintenance activities, ensuring better compliance and operational efficiency.

Conducting regular internal audits and reviews is vital to identify and rectify any discrepancies in data management processes. These audits ensure that the organisation remains compliant with regulatory requirements and maintains high standards of data integrity. Regular reviews also provide an opportunity to continuously improve data management practices and address any emerging issues promptly.

Example Safety Objectives

1. **Data Integrity Assurance:** Ensure all operational data is accurate, up-to-date, and validated before use.
2. **Regular Data Audits:** Conduct periodic audits to identify and rectify any instances of erroneous or expired data.
3. **Training and Awareness:** Implement regular training programs to ensure staff are aware of the importance of data integrity and the procedures for maintaining it.
4. **Robust Data Management Systems:** Develop and maintain systems that automatically flag and prevent the use of outdated or incorrect data.

Example Safety Performance Indicators (SPI's)

1. **Data Error Rate:** Measure the number of data errors identified during audits relative to the total data entries.
2. **Audit Compliance Rate:** Track the percentage of scheduled data audits completed on time.
3. **Training Completion Rate:** Monitor the percentage of staff who have completed data integrity training within a specified period.
4. **Incident Reports:** Count the number of incidents or near-misses attributed to erroneous or expired data.
5. **System Alerts:** Record the number of alerts generated by data management systems indicating potential data issues.

50. New approvals (e.g. ETOPS, RVSM, etc)

Key Risks

Managing operations under Part-SPA approvals introduces additional complexity for CAMO organisations due to the specific requirements associated with specialised operations such as Extended Range Twin Operations (ETOPS), Low Visibility Operations (LVO), and Performance-Based Navigation (PBN). These approvals often require enhanced maintenance programmes, additional monitoring, and bespoke procedures, which can increase both operational demands and associated costs.

Ensuring compliance with these requirements can be challenging, particularly as regulatory expectations continue to evolve. CAMO organisations must maintain up-to-date knowledge of applicable regulations and ensure that all procedures, documentation, and oversight arrangements meet the required standards for each approval type. Personnel competence is a critical factor in managing Part-SPA operations. Organisations must ensure that staff involved in the management and support of these activities are appropriately trained, qualified, and experienced. This may require additional training programmes and competency assessments to ensure that personnel fully understand the specific requirements and risks associated with these operations.

Accurate and comprehensive documentation is also essential. CAMO organisations must maintain detailed records related to Part-SPA approvals, including maintenance, training, and operational requirements. These records must be readily available for review to demonstrate ongoing compliance and support regulatory oversight.

Effective planning, competent personnel, and robust documentation processes are therefore key to managing the complexity associated with Part-SPA approvals, ensuring safety, compliance, and operational effectiveness.

Mitigation Strategies

Provide thorough training programs to ensure that all personnel involved in the management and operation of aircraft under Part SPA approvals are adequately trained and competent. This includes specific training for operations such as ETOPS, LVO, and PBN.

Develop and maintain comprehensive documentation to ensure all procedures and records meet regulatory requirements. This includes meticulous record-keeping for all activities related to Part SPA approvals, ensuring that documentation is accurate and readily available for inspection.

Conduct regular internal and external audits to ensure compliance with regulatory requirements. These audits help identify any gaps in procedures or documentation and provide opportunities for continuous improvement.

Effective Communication and Coordination: Establish clear communication channels and protocols to facilitate effective information exchange between the CAMO, maintenance organisations, and regulatory bodies. This ensures that all parties are aligned and informed about the specific requirements and updates related to Part SPA approvals.

Example Safety Objectives

1. **Ensure Compliance:** Maintain full compliance with all regulatory requirements under Part SPA.
2. **Risk Mitigation:** Identify and mitigate potential risks associated with new operational approvals.
3. **Continuous Improvement:** Foster a culture of continuous safety improvement within the organisation.
4. **Training and Competency:** Ensure all personnel are adequately trained and competent in new operational procedures.
5. **Incident Reduction:** Aim to reduce the number of incidents and near-misses related to new operational approvals.

Example Safety Performance Indicators (SPI's)

1. **Compliance Rate:** Percentage of compliance with Part SPA requirements during audits and inspections.
2. **Risk Assessment Completion:** Number of risk assessments completed for new operational approvals within a specified timeframe.
3. **Training Completion Rate:** Percentage of personnel who have completed required training for new operational procedures.
4. **Incident Reporting:** Number of incidents and near-misses reported related to new operational approvals.
5. **Corrective Actions:** Percentage of corrective actions implemented within the target timeframe following identified non-compliances or incidents.

Emerging Risks

The emerging risks identified through the survey are broadly consistent with the principal themes observed throughout this review, while also providing further insight into increasing structural pressures. In particular, these risks highlight growing challenges related to workforce capability, supply chain resilience, third-party oversight, and overall organisational capacity.

1. Supply Chain Fragility and Availability of UK-Certified Parts

Respondents consistently highlighted increasing challenges in sourcing approved parts, particularly life-limited components and UK CAA Form 1 certified material. Concerns focused on delays, shortages, and a growing reliance on non-UK supply chains, with direct impacts on maintenance scheduling, forecasting accuracy, and overall operational reliability.

2. Skilled Labour and Experience Shortages (Including Regulatory Barriers)

Beyond general labour shortages, respondents identified a number of underlying structural factors exacerbating the issue, including:

- Limited pathways for the rapid validation of UK Part-66 licences issued under EASA;
- Inefficient conversion processes for ex-military engineers;
- Declining entry rates into training programmes at school-leaver level; and
- The loss of experienced CAMO 'back-office' personnel through retirement, with insufficient succession planning to replace them.

Collectively, these challenges were frequently characterised as an 'experience and competence gap', rather than solely a shortage in overall headcount.

3. Third-Party MRO and Contractor Oversight (UK and Overseas)

A significant proportion of responses identified increasing airworthiness risk associated with outsourced maintenance activities, including:

- Base maintenance conducted at third-party or overseas MROs;
- Limited regulatory oversight of non-UK approved Part 145 organisations;
- The use of non-licensed personnel without appropriate supervision; and
- Reduced CAMO influence where independent contractors are engaged during maintenance checks or aircraft transitions.

Several respondents highlighted that their highest-ranked risks are increasingly driven by external maintenance providers, rather than internal CAMO activities, reflecting a growing reliance on—and exposure to—the wider maintenance supply chain.

4. Aircraft Complexity, Obsolescence and Documentation Control

Respondents highlighted increasing complexity associated with a number of technical and operational factors, including:

- The continued operation of ageing or end-of-life aircraft;
- Obsolescence of aircraft types and critical components;
- Growing volumes and interdependencies of Instructions for Continued Airworthiness (ICA), particularly arising from modifications and Supplemental Type Certificates (STCs); and
- The risk of configuration or applicability errors during maintenance programme development and set-up.

Collectively, these factors were reported to increase workload and cognitive demand within CAMO technical functions, thereby elevating the potential for error and reducing overall efficiency.

5. Data Quality and Engineering Systems Integrity

Multiple organisations identified emerging risks associated with data quality and integrity, including:

- Poor-quality or inaccurate data within engineering and asset management systems;
- Human error during data entry processes; and
- Inaccurate forecasting of life-limited components and maintenance requirements.

These issues were highlighted as an increasing concern, particularly as organisations become more reliant on digital systems to support maintenance planning, decision-making, and regulatory compliance.

6. Commercial Pressure, Growth and Inadequate Management of Change

Respondents highlighted that rapid organisational growth, combined with commercial pressures to meet contractual commitments, can introduce a range of risks, including:

- Inadequate management of change activities;
- Insufficient identification and capture of emerging hazards; and
- Decision-making that may adversely affect safety or airworthiness.

These risks were frequently linked to underlying capacity constraints and limited organisational resources, which can reduce resilience and increase exposure to safety and compliance challenges.

7. Regulatory Complexity and Awareness

Several responses highlighted emerging risks associated with:

- Increased complexity arising from multiple approval bases (e.g. Part-CAMO, BCAR, and associated supplements);
- Inconsistent application and interpretation of evolving regulatory requirements; and
- The potential for over-regulation or misapplication of specific requirements (for example, Part 21 applicability to rotary wing operations).

A lack of regulatory awareness and the risk of interpretation drift were identified as key contributing factors, potentially leading to inconsistency, inefficiency, and increased compliance risk.

8. Aircraft Transition, Redelivery and Lessor Influence

Specific risks were identified in relation to:

- Aircraft transition, end-of-life (EOL) management, and redelivery activities;
- Perceived commercial pressure from lessors to prioritise cost and schedule over airworthiness considerations; and
- Limited accountability among certain third-party providers, such as paint shops or other unregulated organisations, contributing to airworthiness-related work.

Respondents also highlighted gaps in the alignment of responsibilities between CAMOs, MROs, Design Organisations (DOAs), and lessors, which may lead to ambiguity in ownership, reduced oversight effectiveness, and increased risk to airworthiness.

9. Maintenance Documentation Quality and Return Timeliness

Emerging issues were identified in relation to:

- Delays in the return and availability of maintenance records;
- Incorrect or inconsistent approval references (e.g. EASA versus UK CAA);
- Variability in the quality of defect reporting and subsequent analysis; and
- Challenges in tracking planned versus completed maintenance activities performed by third parties.

Collectively, these issues highlight weaknesses in documentation control, data integrity, and oversight of contracted maintenance activities, with potential implications for compliance, traceability, and effective airworthiness management.

10. Perceived Lack of Regulatory Feedback on Occurrence Reporting

A small number of respondents expressed concern that occurrence reporting systems (e.g. ECCAIRS) lack visible feedback and follow-up mechanisms, leading to a perception that reported issues are not fully analysed or addressed at a systemic level.

Analysis of Risk Data

This analysis of both the “top 10/selection” responses and the “top 5 risks” identified by organisations are compared with the conclusions from the previous year’s CAP3114 risk review to identify trends, emerging risks, and changes in the risk landscape affecting the CAMO community.

Overview of Current Risk Landscapes

The 2025/2026 survey results demonstrate a continued concentration of risk around resource constraints, external dependencies, and regulatory complexity, alongside several notable shifts compared to the previous year. Collectively, these changes indicate a maturing CAMO risk landscape, moving beyond task-level concerns toward an increased focus on system-level dependencies and assurance challenges.

The highest-ranked risk across all organisations remains ‘Skilled Labour Shortage’, selected by 66.7% of respondents, showing no change from the previous year. This reinforces that workforce-related challenges continue to pose a significant and persistent threat to the effective management of continuing airworthiness. As highlighted in CAP3114, labour shortages are closely associated with increased workload, fatigue, and a heightened likelihood of maintenance error, all of which remain key contributors to safety risk.

‘Global Supply Chain Health’ remains the second most significant risk, identified by 59.5% of organisations. This reflects the continued fragility of global supply chains and aligns with CAP3114’s recognition of supplier reliability, parts availability, and geopolitical disruption as critical risk drivers.

A notable development in the current results is the rise of the ‘Absence of a bilateral arrangement with the EU’ as the third highest risk (54.8%), having not ranked among the top-tier risks in the previous review. This shift highlights increasing concern regarding regulatory divergence and the operational complexity arising from post-Brexit arrangements. While CAP3114 previously identified this as an emerging issue, the current data indicates that it is now becoming a mainstream and widely recognised risk across the CAMO community.

Changes in Ranking of Core Risks

In contrast to the previous year, several traditionally high-ranking risks have reduced in prominence, although they remain significant.

The ‘Regulator (UK CAA / EASA / 3rd Country NAA)’ risk, which featured among the top five in the previous review, has decreased to 35.7% in the current dataset. While still

relevant, this reduction may indicate that organisations are adapting to established regulatory frameworks, or that focus has shifted towards more specific regulatory challenges, such as bilateral arrangements and variations in oversight. This risk also aligns with concerns around inconsistent or insufficient CAA oversight. Over the past year, the CAA has continued to strengthen its standardisation processes and procedures, while working more closely with other approval domains, such as Air Operations, to promote a more coordinated and consistent approach to oversight. This work is still ongoing.

Similarly, 'Poor Communication between Maintenance, Flight Operations, and Ground Operations' and 'Missed Maintenance Tasks / Poor Forecasting' have both declined in relative ranking, identified by 26.2% and 31.0% of organisations respectively. This does not necessarily suggest that these risks have diminished in absolute terms, but rather that other risks have increased in relative importance. CAP3114 continues to recognise both communication breakdowns and forecasting inefficiencies as key contributors to operational risk, indicating that these areas remain important despite their lower ranking.

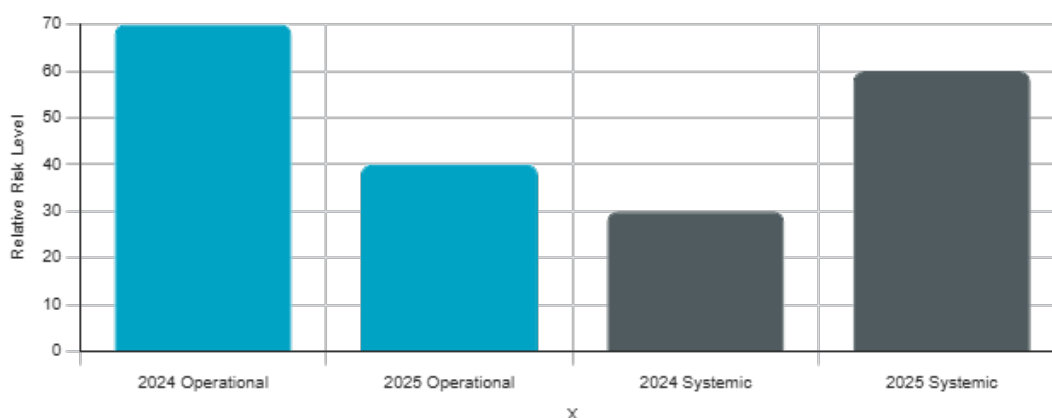


Figure 1: Shift from operational to systemic risks

Figure 1 illustrates the transition in the CAMO risk profile between 2024 and 2025 for operational and systemic risks.

Operational risk refers to the risk of failure arising from day-to-day activities, processes, and task execution within the CAMO environment. It is typically associated with discrete events or errors at the working level, such as missed maintenance tasks, incorrect data entry, or deviations from established procedures. These risks are usually localised, have identifiable causes, and can generally be mitigated through improvements in procedures, training, supervision, and compliance monitoring.

Systemic risk, by contrast, arises from broader, interconnected factors that affect the performance and resilience of the CAMO system as a whole. These risks are often embedded in organisational structures, external dependencies, and industry-wide conditions, such as supply chain disruption, workforce shortages, or limitations in governance and safety management maturity. Unlike operational risks, systemic risks are less visible, develop over time, and can propagate across multiple functions and

organisations, making them more complex to identify and manage and requiring a coordinated, system-level response rather than isolated corrective actions.

Operational risks have reduced from a previously higher baseline, while systemic risks have increased and now represent the dominant risk category. This indicates a shift away from discrete, task-level operational issues toward broader, interconnected organisational and systemic challenges.

This transition reflects increasing exposure to external and structural risk drivers, including supply chain constraints, workforce capability pressures, and interdependencies across the aviation system. While improvements in processes and oversight may have reduced the prevalence of day-to-day operational errors, the overall risk landscape is now more influenced by factors that are less controllable at the individual CAMO level and require system-wide resilience and coordination.

The CAA will continue to monitor this change in risk profile through future surveys to see if the trend continues. This will help confirm whether systemic risks are becoming a long-term feature priority of the CAMO environment or if the shift is temporary. By tracking this over time, the CAA can adjust its focus and take action where needed to ensure risks are being managed effectively.

Emergence of New and Expanding Risk Areas

The survey highlights several risks that have increased in prominence or newly emerged since the previous review.

Sub-contractor Management & Control (35.7%) and OEM/TCH Support (33.3%) have both grown in importance, reflecting an increasing reliance on third-party organisations and the corresponding need for robust oversight. This trend is closely linked to ongoing supply chain disruption and the expanding use of outsourced maintenance activities.

Commercial Pressure (31.0%) has also emerged as a significant risk, indicating a growing tension between operational demands and the maintenance of safety standards. This aligns with CAP3114, which identifies commercial drivers as a contributing factor to human performance limitations and potential procedural deviation.

A number of additional systemic risks have also gained visibility, including:

- Inconsistent or inadequate CAA oversight;
- Contracted Part 145 AMO deficiencies;
- Single-point dependencies within airworthiness functions;
- Weaknesses in the management of change;
- Ageing aircraft; and
- Human performance limitations and error.

While individually these risks may rank lower, collectively they indicate a broader shift towards recognition of organisational and system-level vulnerabilities, rather than purely

operational or technical risks. This reflects an evolving understanding within the CAMO community of the importance of systemic risk management and integrated safety assurance.

Top 5 CAMO Risks (Organisation Perspective)

When considering the 'Top 5 risks' identified by organisations, a slightly different prioritisation emerges, reflecting more immediate operational concerns.

'Skilled Labour Shortage' remains the most frequently selected risk in this category (57.1%), reinforcing its position as the dominant and persistent challenge across the sector.

'Global Supply Chain Health' (38.1%) and 'Missed Maintenance Tasks / Poor Forecasting' (31.0%) also feature prominently, highlighting the continued importance of effective planning, resource availability, and maintenance delivery.

'Sub-contractor Management & Control' (28.6%) and 'OEM/TCH Support' (26.2%) complete the top five, underlining the sector's increasing reliance on external organisations and the associated challenges in maintaining effective oversight and consistency.

Notably, regulatory risk does not feature within the top tier in this category, suggesting that organisations currently perceive operational and resource-driven risks as more immediate and pressing than broader regulatory challenges.

Differences Across Operation Types

The data continues to demonstrate variation in risk perception depending on the nature and scope of operations.

For Licensed Air Carrier CAMOs and organisations managing worldwide operations, risks such as global supply chain health, sub-contractor management, and commercial pressure are more prominent. This reflects their greater exposure to international operations, higher aircraft utilisation, and increased reliance on complex, multi-layered supply chains.

The absence of a bilateral arrangement with the EU is also more pronounced for organisations operating across Europe and wider international environments, reinforcing the operational impact of regulatory divergence in cross-border operations.

In contrast, Standalone CAMOs continue to place greater emphasis on process-driven risks, including inadequate procedures, unrecorded work, and regulatory oversight. This is consistent with findings from previous reviews and reflects a lower exposure to global

supply chain pressures, alongside a greater reliance on the effectiveness of internal processes and controls.

Differences between fixed-wing and rotary-wing operations also remain evident, although overall trends are broadly aligned, with both sectors primarily influenced by workforce availability and supply chain conditions.

Alignment with CAP3114 (CAMO Risks 2024/2025)

The survey results continue to demonstrate strong alignment with the overarching themes identified in CAP 3114, particularly in relation to:

- The persistence of human factors and workforce constraints as key risk drivers;
- Ongoing pressures arising from global supply chain instability;
- Increasing complexity associated with regulatory frameworks and reliance on third-party providers; and
- Continued challenges in maintenance planning and execution.

However, the findings also indicate a clear evolution in the risk landscape. While CAP3114 previously identified risks such as cyber security, increasing reliance on digital systems, and regulatory divergence as emerging concerns, the 2025 results suggest that these risks are now gaining traction and becoming more widely recognised across the sector.

Further insight into how risk profiles vary according to the nature and operational scope of continuing airworthiness management organisations can be found in the detailed tables provided in Appendix B.

4. Mandatory Occurrence Reporting

The purpose of mandatory occurrence reporting in relation to UK Regulation (EU) No 376/2014 is to enhance aviation safety by ensuring that all significant safety-related occurrences are reported, analysed, and followed up on. The regulation aims to:

1. Improve safety by collecting and analysing data on incidents and accidents. The regulation helps identify safety risks and prevent future occurrences.
2. Promote a safety culture by encouraging a culture where safety issues are reported without fear of punishment, fostering an environment of openness and continuous improvement.
3. Ensure consistency by establishing a standardised system for reporting and analysing occurrences, ensuring that all organisations follow similar procedures.
4. Maintain high safety standards in civil aviation and for building public confidence in air travel.

Continuing Airworthiness Management Organisations (CAMOs) have specific responsibilities for reporting mandatory occurrences. These responsibilities include:

1. Implementing an Occurrence Reporting System: CAMOs must establish a system that meets the requirements of UK Regulation (EU) No 376/2014 and ensure that all relevant safety occurrences are reported promptly.
2. Reporting to Competent Authorities: CAMOs are required to report occurrences to the competent authorities within the specified timeframes. This helps in the timely identification and mitigation of safety risks.
3. Internal Safety Reporting: CAMOs must have an internal safety reporting scheme as part of their management system. This scheme should encourage the reporting of safety issues without fear of retribution.
4. Analysis and Follow-up: CAMOs are responsible for analysing reported occurrences and taking appropriate follow-up actions to address any identified safety issue.

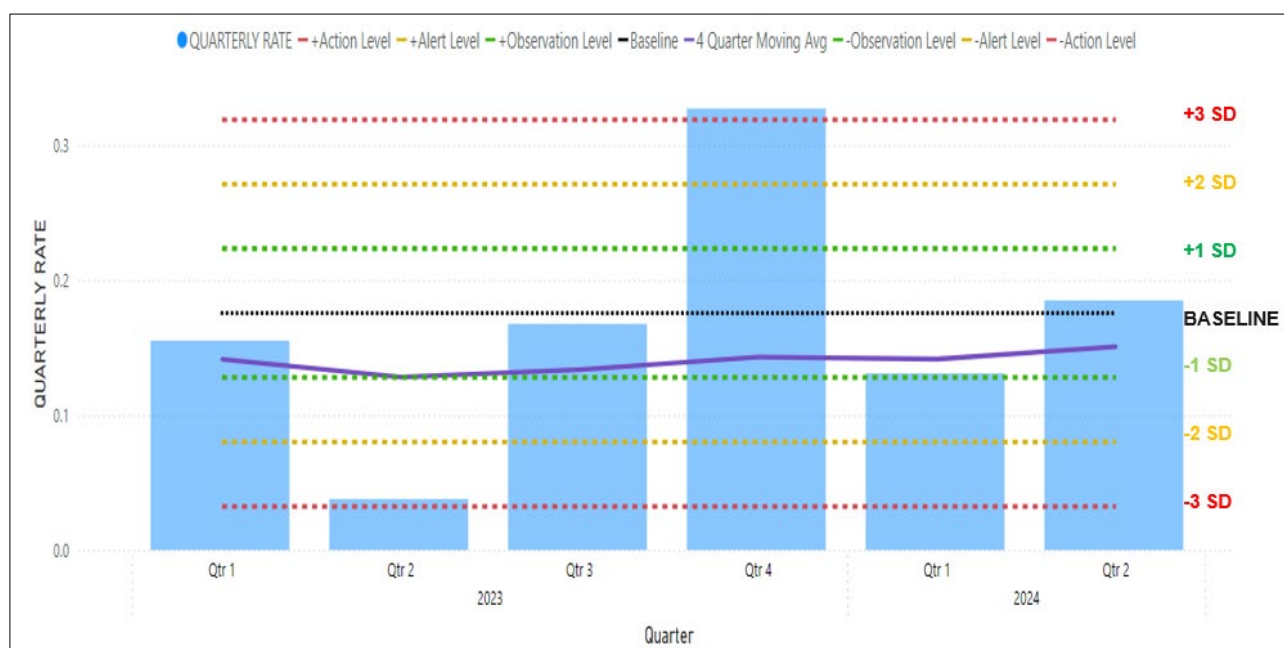
The UK CAA has several key responsibilities regarding mandatory occurrence reports:

1. Ensuring that a system is in place for the collection, storage, and analysis of occurrence reports. This system should be accessible to all relevant stakeholders.
2. Analysing the data collected from occurrence reports to identify safety trends and potential risks. They must also ensure that appropriate follow-up actions are taken to mitigate identified risks.
3. Protect the confidentiality of the information contained in occurrence reports. This includes ensuring that the data is used solely for safety purposes and that the identity of individuals reporting occurrences is protected.
4. Share relevant safety information with other national and international aviation authorities to promote a coordinated approach to aviation safety.

5. Oversee the compliance of aviation organisations with the mandatory occurrence reporting requirements. This includes conducting audits and inspections to ensure that organisations are fulfilling their reporting obligations.

These responsibilities are designed to enhance aviation safety by ensuring that safety-related occurrences are systematically reported, analysed, and addressed.

Analysis of the data by the CAA involves setting SPI's, alert and action levels. The following graph represents a typical SPI (Bogus parts):



The graph shows the rates and alert levels for all of the data associated with it for fixed wing and rotary wing. The standard deviations are calculated around the baseline value which is simply an average of a 12-month period. The up and down line is the 12-month rolling average which in this case is displayed in quarters. The blue vertical bars are simply the quarter value.

In the following example, an SPI's for aircraft empennage structure (fixed wing, ATA 5500) shows that an alert level was reached in Q1 of December 2024 before decreasing:



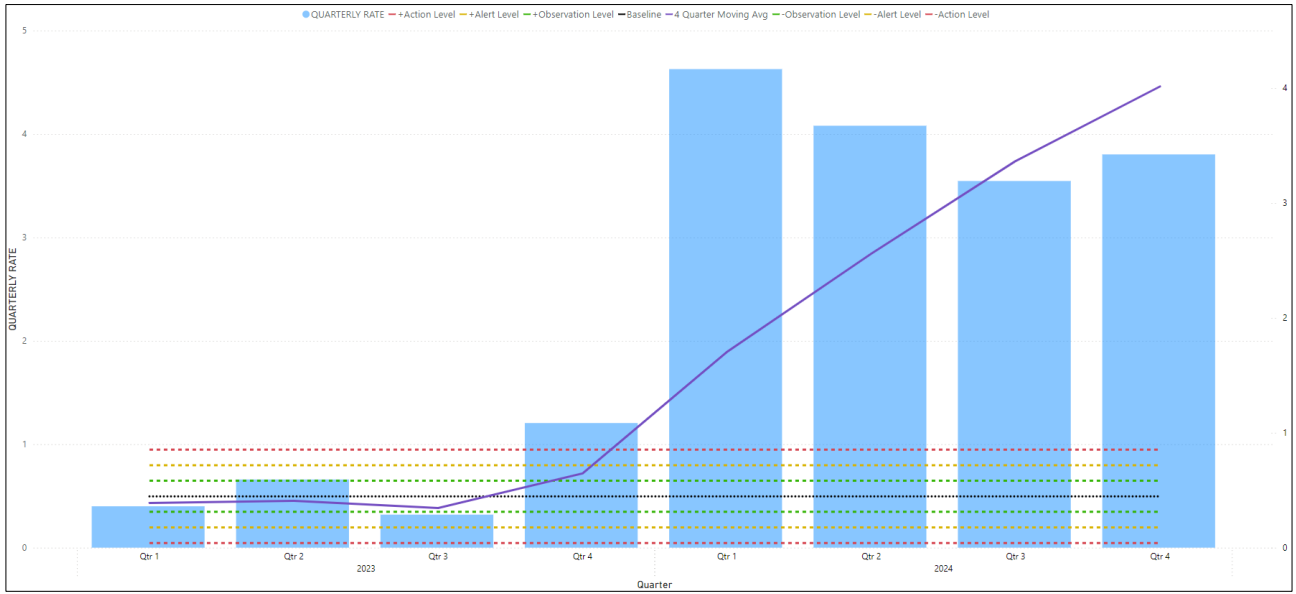
The data also shows a decreasing trend for 2024, therefore reducing the concern. In investigating the MOR's, the CAA identified that there was an increase in the number of contact incidents between airframes and ground equipment.

As a result, the CAA issued a recommendation for associated organisations to take the following action:

- Confirmation that 'damage due to contact with ground equipment' is a risk identified within the organisations Hazard and Risk management system.
- Organisations operating around aircraft with ground equipment should take necessary steps to raise awareness of this increasing trend with their employees to help reduce this issue.
- Organisations operating around aircraft with ground equipment have:
 - Robust initial and re-current training programs that identify steps to mitigate damage due to contact with ground equipment.
 - Regular inspections of ramp equipment to ensure 'safety bump stops' are serviceable.

Similarly, MOR data can be used to verify actions have been taken. Towards the end of 2023, the CAA promoted the reporting of parts which failed prior to reaching the life limits set by the manufacture.

The following SPI demonstrates the effectiveness of this promotion, and also explains why the alert level was reached and exceeded so drastically:



5. Safety Performance Indicators (SPI's)

The risk questionnaire was also used to identify the Safety Performance Indicators (SPIs) currently in use across organisations and to assess the extent to which these indicators align with both the prevailing risk landscape and the SPI guidance set out in CAP3114, the CAA CAMO Safety Review 2024/2025.

CAP3114 defines the relationship between safety policy, safety objectives, and SPIs, emphasising that SPIs should be directly linked to the risks faced by the organisation and used to measure the effectiveness of associated mitigation strategies. It further highlights that SPIs should be meaningful, measurable, and capable of promoting positive safety behaviours, with an appropriate balance between leading and lagging indicators.

The purpose of this section is to evaluate the level of alignment between industry risk awareness and SPI implementation, identify areas of strength and opportunity within current practices, and draw conclusions regarding the maturity of safety performance monitoring across the CAMO community.

Overview of Survey Results

The survey results demonstrate that occurrence reporting (both internal and external) remains the most widely monitored Safety Performance Indicator (SPI), selected by 90.5% of responding organisations. This is followed by maintenance errors, maintenance findings and recurring issues, technical incidents, and deferred defect management, each of which is measured by more than half of respondents.

Mid-level adoption is observed in areas such as maintenance programme efficiency, airworthiness directive compliance, and component reliability analysis. In contrast, lower uptake is evident for maintenance schedule compliance and fleet availability. The least monitored SPIs relate to communication and coordination effectiveness, parts supply chain compliance, and scheduled maintenance workload balance, each selected by fewer than 20% of organisations.

Overall, the results indicate a strong concentration of SPIs in areas traditionally associated with compliance monitoring, incident reporting, and maintenance quality performance. This suggests a continued reliance on lagging indicators, which may limit the ability of CAMO organisations to proactively identify emerging risks and support more forward-looking safety management.

Comparison with CAP 3114 (CAMO Risks 2024/2025) Risk Priorities

CAP3114 identified a broad range of risks affecting CAMO organisations, with particular emphasis on maintenance errors, technical incidents, regulatory compliance, defect management, communication breakdowns, supply chain disruption, and workforce-related pressures such as skilled labour shortages.

The survey results demonstrate a high degree of alignment with several of these priority risks. In particular, the widespread use of SPIs related to occurrence reporting, maintenance errors, technical incidents, and defect management indicates that organisations are actively monitoring risks associated with operational safety events and compliance performance. This reflects the presence of established processes for capturing safety data through occurrence reporting systems and quality assurance mechanisms, consistent with regulatory expectations.

However, while SPIs are widely used, they are not always clearly aligned with the highest-ranked risks. For example, key risk areas such as supply chain disruption and human factors are not consistently mapped to specific performance indicators. In addition, despite the recognised importance of effective root cause analysis (RCA), there is limited use of SPIs relating to RCA quality, repeat findings, or the effectiveness of corrective actions. This suggests a gap in assurance, particularly in relation to the oversight of contracted maintenance activities.

The analysis also identifies areas where alignment is only partial. SPIs relating to airworthiness directive compliance, maintenance programme efficiency, and component reliability analysis are present but not widely adopted. CAP3114 highlights the importance of these areas in supporting forecasting, planning accuracy, and the identification of emerging technical risks, indicating that greater emphasis on these indicators could enhance predictive safety management capability.

More significantly, the survey highlights a clear misalignment in relation to several high-priority systemic risks identified in CAP3114. Risks such as poor communication between operational functions, global supply chain instability, and workforce pressures associated with skilled labour shortages are all emphasised within the CAP3114 framework. However, corresponding SPIs—such as communication effectiveness, supply chain performance, and workload balance—remain among the least utilised by respondents.

This disparity suggests that, while these risks are recognised at an industry level, they are not yet being consistently translated into measurable performance indicators within organisational SMS frameworks. As a result, organisations may be limited in their ability to proactively monitor and manage these systemic risk drivers.

Interpretation of SPI Selection Trends

The results indicate a strong reliance on lagging indicators across the CAMO community. The most widely adopted SPIs are those that measure outcomes after events have occurred, such as occurrence reports, maintenance errors, and audit findings. This trend aligns with established regulatory requirements, particularly Mandatory Occurrence Reporting (MOR), which remains a central mechanism for safety data collection and oversight within the UK aviation system.

While these indicators provide valuable insight into historical safety performance, CAP3114 emphasises the importance of incorporating leading indicators to identify precursor conditions and emerging risks. The relatively low adoption of indicators related to workload management, communication effectiveness, and supply chain performance suggests that organisations may have limited capability to proactively detect and mitigate systemic risk factors before they manifest as safety events. As a result, there remains limited visibility of the underlying drivers of safety outcomes, including workload, communication breakdowns, and organisational pressures.

The persistence of repeat maintenance-related issues may further indicate limitations in the effectiveness of root cause analysis and corrective action processes within maintenance organisations. This highlights a potential gap in assurance, particularly in relation to the identification and management of systemic causes rather than immediate failures.

Overall, the findings suggest that many organisations continue to operate predominantly compliance-driven SPI frameworks. While this supports regulatory adherence and provides assurance of baseline safety performance, it may not fully capture the broader operational and organisational factors influencing safety outcomes. CAP3114 highlights the need for SPIs to be risk-based, proportionate, and aligned to the organisation's risk profile, supporting continuous improvement rather than solely demonstrating compliance.

Key Issues

The survey indicates that CAMO organisations have reached a consistent level of maturity in the use of SPIs related to compliance monitoring, occurrence reporting, and maintenance error tracking. These areas are well established and demonstrate strong alignment with both regulatory requirements and key operational risks. However, this also suggests that safety performance monitoring remains largely reactive in nature, reflecting a reliance on indicators that capture outcomes rather than anticipate risk, consistent with developing SMS maturity across parts of the sector.

The analysis also highlights several areas for further development. There is a notable under-representation of SPIs relating to human factors, organisational performance, and external dependencies, including supply chain resilience. In addition, indicators that

support predictive risk management—such as workload balance and forecasting accuracy—are not widely implemented.

The absence of these indicators suggests that many organisations are not yet fully capturing or monitoring the broader systemic risks identified in CAP3114, particularly those associated with human performance, communication effectiveness, and operational resilience. This highlights an opportunity to strengthen SPI frameworks to better support proactive, risk-based safety management and improve overall system-level assurance.

6. Themes identified from internal safety reports, risk assessments or management of change activity

The questionnaire asked whether specific maintenance and airworthiness themes have been identified through internal safety reporting, risk assessments, or management of change activities.

The purpose of this analysis is to assess how observed safety themes within organisations compare to the broader risk landscape outlined in CAP3114, and to determine whether internal reporting activity reflects the key risks facing the industry. CAP3114 emphasises that effective Safety Management Systems (SMS) rely on the identification of hazards through internal reporting and proactive risk management, with observed themes providing a critical input into the development of safety objectives and SPIs

Overview of Survey Results

The survey results show that maintenance errors and maintenance overruns are the most frequently reported themes, each identified by 61.9% of responding organisations. These are followed by incorrect maintenance actions by engineers (54.8%) and incomplete maintenance (50.0%), indicating that a significant proportion of reported issues relate directly to maintenance task execution and completion.

A second tier of commonly reported issues includes foreign object debris following maintenance and incorrect application of the Minimum Equipment List (MEL), both reported by 47.6% of organisations. Incorrect release of aircraft and life-limited parts or component management issues are also notable, each affecting over 40% of respondents. Lower frequency themes include incomplete logbooks, unrecorded work, and incorrect implementation of Airworthiness Directive (ADD) items, though these still represent a significant proportion of organisations, indicating persistent challenges in documentation accuracy and regulatory compliance.

Overall, the results demonstrate a strong concentration of internally reported themes in areas related to maintenance execution, procedural compliance, and documentation integrity.

Comparison with CAP 3114 Risk Priorities

CAP3114 identifies a range of risks associated with CAMO operations, including human performance limitations, inadequate processes and procedures, unrecorded work, incorrect application of the MEL, incorrect evaluation of maintenance requirements, and deficiencies in defect control and task management.

The survey results demonstrate strong alignment with these risk areas. The high frequency of maintenance errors, incorrect maintenance actions, and incomplete maintenance directly supports CAP3114's identification of human error and competence-related factors as key contributors to safety exposure. Similarly, the reporting of maintenance overruns highlights risks associated with planning inefficiencies, workload pressures, and ineffective forecasting.

Themes such as incorrect MEL application, incorrect aircraft release, and issues in life-limited parts management further reinforce CAP3114 risks relating to regulatory compliance and the accurate assessment of airworthiness status. These areas represent critical safety concerns due to their direct impact on the continued airworthiness and operational safety of aircraft.

The occurrence of unrecorded work and incomplete logbooks is also consistent with CAP3114's identification of documentation and record-keeping deficiencies as persistent risk areas. Such issues affect traceability, audit readiness, and the ability to demonstrate continued airworthiness.

Overall, the survey confirms that themes emerging from internal safety reporting processes are closely aligned with industry-level risk identification, demonstrating that CAP3114 accurately reflects the operational challenges faced by CAMO organisations.

Interpretation of Safety Reporting Trends

The results indicate that internal safety reporting within CAMO organisations is largely focused on front-line operational issues, particularly those arising during the execution of maintenance activities. The concentration of themes around maintenance errors, incorrect actions, and incomplete tasks highlights that human performance and procedural adherence remain key drivers of safety occurrences.

The prominence of maintenance overruns is particularly noteworthy, as this theme is closely linked to broader systemic risks, including resource constraints, workload pressures, and planning inefficiencies. CAP3114 identifies skilled labour shortages and forecasting challenges as key risk areas, and the frequency of overruns may represent a direct manifestation of these underlying conditions within organisations.

Documentation-related issues, including incomplete logbooks and unrecorded work, further highlight challenges in maintaining accurate and complete records. These issues are often associated with process weaknesses, communication breakdowns, and time pressures, all of which are recognised within CAP3114 as contributing factors to safety risk.

The reporting of incorrect MEL application and incorrect release of aircraft highlights the continued risk associated with decision-making processes and the application of regulatory

procedures. These themes suggest that, despite established frameworks and training, errors persist in areas requiring careful interpretation and professional judgement.

Key Issues

The analysis demonstrates that CAMO organisations are actively identifying and reporting a range of safety issues through their SMS processes, with a strong emphasis on maintenance execution and compliance-related themes. This indicates a functioning reporting culture and an awareness of operational risks at the organisational level.

The findings also confirm that many of the most frequently reported themes correspond directly to high-priority risks identified in CAP3114, particularly those relating to human factors, maintenance processes, and documentation integrity. This alignment suggests that internal reporting mechanisms are successfully capturing relevant safety issues.

However, the results also indicate that reported themes are largely concentrated on observable operational outcomes, with less explicit visibility of underlying systemic drivers such as communication effectiveness, workload balance, or organisational pressures. While these factors are recognised within CAP3114, they are not directly reflected in the reported themes, suggesting that they may be contributing indirectly to the issues observed.

7. Risk Register & Hazard Log Review

The survey questioned the frequency at which organisations review their risk register or hazard log. The aim of this question was to assess the level of alignment with the requirements of UK Regulation No. 1321/2014 and the expectations outlined within CAP3114, particularly in relation to continuous safety risk management and SMS effectiveness. It should however be noted that frequency alone does not ensure effectiveness; the quality of hazard identification, risk assessment, and follow-up action is equally critical. Less frequent reviews indicate a more static, compliance-based approach, rather than the dynamic, continuously updated risk management approach envisaged by CAP3114.

Under Part-CAMO requirements, organisations are expected to maintain a functional Safety Management System (SMS), including the identification, assessment, and ongoing monitoring of safety risks. This inherently requires that risk registers and hazard logs are reviewed regularly and proportionately to operational risk, ensuring that safety data remains current and actionable.

CAP3114 further reinforced that effective SMS implementation depends on the timely review of hazards, risk controls, and mitigation effectiveness, supporting a shift from reactive to proactive safety management.

Overview of Survey Results

The survey results demonstrate a range of review frequencies across the CAMO community, with three primary approaches identified:

- Quarterly reviews – the most commonly reported frequency
- Bi-annual reviews – a smaller but notable proportion
- Annual reviews – representing a minority of organisations

The data indicates that quarterly review cycles are dominant across the sample, with a significant proportion of organisations confirming that their risk register is reviewed at least every three months.

A secondary group of organisations undertake bi-annual reviews, suggesting a more moderate review cycle.

A smaller number of respondents indicated that risk registers are reviewed annually, representing the least frequent approach.

Assessment Against Regulatory Expectations

UK Regulation No. 1321/2014 does not prescribe a fixed interval for risk register review; however, it requires organisations to maintain an effective and active Safety Management System (SMS), including:

- Continuous hazard identification;
- Ongoing risk assessment;
- Monitoring of mitigation effectiveness; and
- Effective management of change.

Within this framework, the frequency of risk register review should be proportionate to the size, complexity, and risk exposure of the organisation.

In this context, organisations undertaking quarterly reviews demonstrate strong alignment with regulatory intent, as this frequency supports the continuous monitoring and timely updating of risk information. Quarterly review cycles enable organisations to respond to emerging risks effectively, particularly those identified in CAP3114, such as labour shortages, supply chain instability, and increasing operational pressures.

Organisations conducting bi-annual reviews may still meet regulatory expectations, provided that additional triggers for review are embedded within their processes.

These may include:

- Significant safety occurrences or reportable events;
- Changes in organisational structure or operational scope; and
- Findings arising from audits or regulatory inspections.

In the absence of such triggers, a six-month review cycle may increase the risk of delayed identification or mitigation of emerging hazards.

The use of annual review cycles presents a greater concern, particularly within dynamic operational environments. Annual reviews alone are unlikely to support effective continuous risk management, given the pace of change highlighted in CAP3114, including evolving regulatory requirements, supply chain variability, and workforce-related challenges. In such cases, there is a risk that hazard logs and risk registers may become outdated, reducing their effectiveness as active safety management tools.

Alignment with CAP3114 (CAMO Risks 2024/2025) SMS Expectations

CAP3114 emphasised that risk management should be dynamic, data-driven, and responsive to emerging threats, with safety performance continuously monitored through SPIs and internal reporting systems.

The prevalence of quarterly review cycles aligns well with these principles, supporting:

- Regular reassessment of identified risks
- Integration of occurrence reporting data
- Monitoring of mitigation effectiveness
- Timely escalation of emerging issues

This is particularly relevant given the survey findings in other areas, which highlight ongoing challenges such as maintenance errors, supply chain pressures, and subcontractor management. A quarterly review cycle enables organisations to adapt their risk profiles in response to these pressures.

The presence of bi-annual and annual review cycles suggests variability in SMS maturity across the CAMO community. Organisations with less frequent review cycles may be operating a more static risk management approach, which is primarily driven by periodic compliance activities rather than continuous safety insight.

CAP3114 advocates for the use of leading indicators and proactive risk identification, both of which require more frequent interaction with the risk register than an annual cycle would typically provide.

Interpretation of Variability in Review Frequency

The variation in review frequency reflects differing levels of SMS maturity, organisational complexity, and operational exposure.

Organisations conducting quarterly reviews are likely to demonstrate more mature SMS frameworks, with structured processes to integrate safety data, SPI outputs, and management of change activities into their risk assessment processes. This approach is consistent with organisations operating complex fleets, international operations, or AOC environments, where risk profiles change more rapidly.

Organisations operating on a bi-annual cycle may represent a transitional level of SMS maturity, where formal review processes exist but may not yet be fully embedded within day-to-day operational decision-making. In these cases, effectiveness will depend on whether additional mechanisms exist to capture and act on risk information between review points.

Those relying on annual reviews appear to adopt a more compliance-based approach, potentially aligned with annual safety reviews or audit cycles rather than continuous risk monitoring. While this may satisfy basic oversight requirements in low-complexity environments, it is not fully aligned with the proactive safety management philosophy promoted in CAP3114.

Key Issues

The analysis identifies several key observations:

- Quarterly review cycles are the prevailing practice, indicating that many CAMO organisations recognise the need for regular and structured risk monitoring.
- Bi-annual reviews are present but may require supplementary processes to ensure continued compliance with SMS expectations.
- Annual review cycles are limited but represent a potential area of concern, particularly where no interim review mechanisms are in place.
- There is a clear variation in SMS maturity across the community, reflected in the differing approaches to risk register management.

However, it is important to reiterate that UK Regulation No. 1321/2014 does not specify how often a risk register must be reviewed; instead, it requires organisations to review it at a frequency appropriate to their size, complexity, and level of risk exposure.

Summary

Risks

The CAMO risk landscape is increasingly characterised by external dependency and systemic assurance challenges, rather than purely internal operational risks.

The 2025 CAMO survey confirms that the risk environment remains heavily influenced by resource constraints and external dependencies, with 'Skilled Labour Shortage' and 'Global Supply Chain Health' continuing to dominate across all organisation types.

The most notable change from the previous year is the increased prominence of regulatory divergence and broader systemic risks, including the absence of a bilateral arrangement with the EU, growing reliance on subcontracted activities, and the emergence of commercial and organisational pressures. Where oversight of contracted maintenance is significant, ineffective root cause analysis may result in hazards not being fully identified or captured within the CAMO risk register.

While traditional operational risks such as communication and forecasting remain relevant, their relative decline in ranking suggests a broadening of the risk landscape, with increased recognition of more complex, interconnected system-level risks.

In conclusion, the CAMO community is demonstrating a growing awareness of strategic and systemic risk factors, in line with CAP3114 expectations. The key challenge moving forward will be to ensure these emerging risks are not only recognised, but are effectively embedded within organisational risk management frameworks, safety objectives, and SPI development to support a more proactive, integrated, and resilient approach to safety management.

The increasing prominence of contracted Part 145 RCA and SMS effectiveness highlights a critical assurance gap in the oversight of outsourced maintenance activities.

To address these challenges and strengthen safety assurance, the following areas should be prioritised:

- Improve leading SPI usage
- Strengthen RCA expectations across AMOs
- Move toward dynamic, integrated SMS

SPI's

The survey results indicate that the CAMO community demonstrates a solid foundation in safety performance monitoring, particularly in areas related to compliance, audit, and occurrence reporting. This reflects the effective implementation of core SMS principles and regulatory requirements under Regulation (EU) No. 1321/2014.

However, the findings also highlight a clear opportunity for further development. The current SPI landscape remains heavily weighted toward lagging indicators and does not fully reflect the breadth of risks identified in CAP3114. In particular, there is a noticeable gap between recognised industry risk priorities and the SPIs used to monitor those risks at an organisational level.

To enhance the effectiveness of SMS frameworks, organisations should adopt a more balanced approach to SPI selection, incorporating a greater proportion of leading indicators that address human factors, communication, supply chain performance, and workload management. This would support a shift from reactive, compliance-based monitoring toward a more proactive and risk-based approach to safety management.

In conclusion, while current practices demonstrate strong compliance and reporting maturity, the continued evolution of SPI frameworks in line with CAP3114 guidance will be essential to drive further improvements in safety performance and organisational resilience across the CAMO sector.

Themes identified from internal safety reports, risk assessments or management of change activity

The survey results demonstrate that internal safety reporting within Part-CAMO organisations is effectively identifying key operational risks, particularly those related to maintenance execution, human performance, and regulatory compliance. The strong alignment with CAP3114 confirms that industry-level risk assessments are broadly representative of the challenges encountered in practice.

However, the concentration of reported themes around maintenance errors and procedural issues suggests that organisations continue to operate largely in a reactive mode, focusing on the outcomes of safety events rather than the underlying conditions that contribute to them.

To further enhance safety performance, there is an opportunity for organisations to strengthen their risk assessment and reporting processes to better capture systemic and latent factors, including workload pressures, communication breakdowns, and planning inefficiencies. This would support a more comprehensive understanding of risk and enable a more proactive and forward-looking approach to safety management.

In conclusion, while the CAMO community demonstrates effective identification of immediate operational hazards, continued evolution toward a more systemic and

predictive approach to safety management—consistent with CAP3114 and the findings of this report—will be essential to sustaining and improving safety outcomes.

Risk Register and Hazard Log Review

The survey results indicate that the majority of CAMO organisations operate risk register review processes that are broadly aligned with regulatory intent, particularly where quarterly reviews are undertaken.

However, variation in review frequency highlights inconsistencies in the application of SMS principles, with some organisations adopting less frequent review cycles that may not fully support continuous risk management.

In line with CAP3114, risk registers are expected to function as live documents, informed by ongoing safety reporting, SPI monitoring, and management of change activities. Organisations relying on annual or infrequent review cycles may therefore not fully capture the dynamic nature of current industry risks.

In conclusion, while the overall picture reflects good baseline compliance, there remains an opportunity for further development across the CAMO sector to ensure that risk register reviews are sufficiently frequent, proactive, and embedded within operational decision-making. This should be applied at a level appropriate to organisational size, complexity, and risk exposure, thereby enhancing the effectiveness and resilience of Safety Management Systems.

APPENDIX A - ABBREVIATIONS

Abbreviations

AltMoC	Alternative Means of Compliance
AMO	Approved Maintenance Organisation
CAA	Civil Aviation Authority
CAMO	Continuing Airworthiness Management Organisation
EASA	European Aviation Safety Agency
ETOPS	Extended Range Twin Operations
FAA	Federal Aviation Administration
LVO	Low Visibility Operations
MOR	Mandatory Occurrence Reporting
OEM	Original Equipment Manufacturer
RVSM	Reduced Vertical Separation Minima
SB	Service Bulletin
SIL	Service Information Letter
SLA	Service Level Agreement
SMS	Safety Management Systems
(Part) SPA	Specific Approvals
SPI	Safety Performance Indicators

APPENDIX B – SURVEY QUESTIONS

1) What type of Operation is your CAMO?

(SELECTION 1 OF 3)

- ☐ Standalone CAMO
- ☐ Standalone CAMO managing AOC (aircraft)
- ☐ Licensed Air Carrier CAMO

2) What type of aircraft are managed within your fleet?

(SELECTION 1 OF 3)

- ☐ Fixed wing
- ☐ Rotary
- ☐ Both

3) What is the area of operation of your fleet?

(SELECTION 1 OF 3)

- ☐ UK
- ☐ Europe
- ☐ Worldwide

4) Are you the CAM or Safety Manager?

(SELECTION 1 OF 3)

- ☐ CAM
- ☐ Safety Manager
- ☐ Neither of these positions

5) Which of the following previously identified risks in the 2024 review resonate the most with your organisation? *(SELECTION OF 10)*

- ☐ Skilled Labour Shortage
- ☐ Global Supply Chain Health
- ☐ Regulator (UK CAA / EASA / 3rd Country NAA)
- ☐ Poor Communication between Maintenance, Flight Ops, Ground Ops
- ☐ Missed maintenance task / Poor Forecasting
- ☐ A/C introduction
- ☐ OEM/TCH Support
- ☐ Sub-Contractor Management & Control
- ☐ Inadequate Process & Procedures
- ☐ Unrecorded work
- ☐ MRO demand spike

- Poor Competence Assessment / Training
- Incorrect assessment of the airworthiness status of the aircraft
- Incorrect application of the MEL
- Incorrectly evaluated AD or SB
- Incorrect assessment of defect In-Adequate Defect Control / Task management
- Use of unapproved parts, leading to operation of unsafe aircraft
- Changes to Operations (Routes)
- Nominated Person(s) – qualification and competency
- Safety culture and ability to deliver positive change
- Unqualified staff working without appropriate supervision
- Delay in application of OEM recommendations (SB, SIL, ...)
- Roles and responsibilities between CAMO and groups not sufficiently defined
- Manpower Job Description / Competence
- Shifts / Handover
- New approvals (e.g. ETOPS, RVSM, etc)
- Contracted Activities
- Commercial Pressure
- Major Component Failure
- IT systems(access and tracking)
- Human Performance Limitation/Human Error
- Diverse Fleet
- Missing records
- Access to data
- Single Point dependencies within Airworthiness
- Speed of growth of organisation
- Technical incidents
- Modifications
- Component Robbery
- Use of erroneous / expired data
- Management of change

- Ageing Aircraft
- Cyber Security and the reliance on software
- Absence of a bilateral arrangement with EU
- Dependency on third party providers, unregulated within the Civil Aviation Authority, for consumables, rotables and major assemblies.
- Introduction of Part ML and Part CAO creating significant confusion between the owner/operator and CAMO
- Contracted P145 AMO's inadequate root cause analysis of findings impacting how findings can be closed / Lack of SMS in Part
- AMO's working to different regulatory standards
- Inconsistent / inadequate CAA oversight
- Alternative Regulatory requirements for nominated persons not being considered outside of a degree or license.

6) Out of the following, what do you perceive as your top 5 CAMO related risks?

(SELECTION OF 5)

- Skilled Labour shortage
- Global Supply chain health
- OEM/TCH Support
- Poor Communication between Maintenance, Flight Ops, Ground Ops
- Unrecorded work
- MRO demand spike
- A/C introduction
- Missed maintenance task / Poor Forecasting
- Incorrectly evaluated AD or SB
- Sub-Contractor Management & Control
- Poor Competence Assessment / Training
- Incorrect assessment of defect In-Adequate Defect Control / Task management Inadequate Process & Procedures
- Unqualified staff working without appropriate supervision
- Incorrect assessment of the airworthiness status of the aircraft
- Use of unapproved parts, leading to operation of unsafe aircraft
- Changes to Operations (Routes)
- Regulator (UK CAA / EASA / 3rd Country NAA
- Roles and responsibilities between CAMO and groups not sufficiently defined
- Incorrect application of the MEL
- Nominated Person(s) – qualification and competency
- Safety culture and ability to deliver positive change

- Manpower Job Description / Competence
- New approvals (e.g. ETOPS, RVSM etc)

7) Are there any emerging risks not listed that your organisation has identified?

(FREE TEXT BOX)

8) Which of the following Safety Performance Indicators are measured within your organisation?

(MULTI SELECTION)

- Deferred Defects Management
- Maintenance Findings & Recurring Issues
- Maintenance Schedule Compliance
- Technical Incidents
- Maintenance Errors
- Airworthiness Directives (AD) Compliance
- Communication & Coordination Efficiency
- Component Reliability Analysis
- Maintenance Program Efficiency
- Parts Supply Chain Compliance
- Fleet Availability Rate
- Occurrence Reporting (Internal & External)
- Scheduled Maintenance Workload Balance

9) Have any of the following themes been the subject of internal safety reports or identified during risk assessment or management of change activity?

(MULTI SELECTION)

- Foreign Objective Debris specifically post maintenance
- Incomplete Maintenance
- Life limited parts/component management
- Incorrect MEL application
- Incomplete logbooks
- ADD items not being carried out correctly
- Incorrect maintenance actions by engineers
- Incorrect release of aircraft
- Maintenance Errors
- Maintenance Overruns
- Unrecord works

10) How often is your risk register/hazard log reviewed?

(SELECTION 1 OF 3)

- Quarterly
- Bi-annually
- Annually

11) Do you have any feedback from the last Annual Safety Review?

APPENDIX C – SURVEY RESULTS

Top Risks (All Organisations)

Risk	% selected	Variance from 24/25
Skilled Labour Shortage	66.7	Same
Global Supply Chain Health	59.5	Same
Absence of a bilateral arrangement with EU	54.8	New
Regulator (UK CAA / EASA / 3rd Country NAA)	35.7	↓
Sub-Contractor Management & Control	35.7	↑
OEM/TCH Support	33.3	↑
Commercial Pressure	31.0	New
Missed maintenance task / Poor Forecasting	31.0	↓
Inadequate Process & Procedures	26.2	↓
Poor Communication between Maintenance, Flight Ops, Ground Ops	26.2	↓
A/C introduction	23.8	↓
Component Robbery	23.8	New
Contracted P145 AMO's inadequate root cause analysis of findings impacting how	23.8	New
Single Point dependencies within Airworthiness	23.8	New
Inconsistent / inadequate CAA oversight	21.4	New
Ageing Aircraft	19.0	New
Human Performance Limitation/Human Error	19.0	New
Management of change	19.0	New
Contracted Activities	16.7	New
Incorrect application of the MEL	16.7	↓
MRO demand spike	16.7	↓
Unrecorded work	16.7	↓
Cyber Security and the reliance on software	14.3	New
Modifications	14.3	New
Nominated Person(s) – qualification and competency	14.3	↓
Access to data	11.9	New
Changes to Operations (Routes)	11.9	↓
Incorrect assessment of defect In-Adequate Defect Control / Task management	11.9	↓
Manpower Job Description / Competence	11.9	↓
Roles and responsibilities between CAMO and groups not sufficiently defined	11.9	↓
IT systems(access and tracking)	9.5	New
Poor Competence Assessment / Training	9.5	↓
Safety culture and ability to deliver positive change	9.5	↓
Findings can be closed / Lack of SMS in Part	7.1	New
Incorrectly evaluated AD or SB	7.1	↓

Missing records	7.1	New
Speed of growth of organisation	7.1	New
Technical incidents	7.1	New
Dependency on third party providers, unregulated within the Civil Aviation Authority,	4.8	New
Diverse Fleet	4.8	New
For consumables, rotables and major assemblies.	4.8	New
Incorrect assessment of the airworthiness status of the aircraft	4.8	↓
Major Component Failure	4.8	New
Unqualified staff working without appropriate supervision	4.8	↓
Use of unapproved parts, leading to operation of unsafe aircraft	4.8	↓
Alternative Regulatory requirements for nominated persons not being considered outside of a degree or license.	2.4	New
AMO's working to different regulatory standards	2.4	New
Delay in application of OEM recommendations (SB, SIL, ...)	2.4	New
Introduction of Part ML and Part CAO creating significant confusion between the owner/operator and CAMO	2.4	New
Shifts / Handover	2.4	↓
Use of erroneous / expired data	2.4	New
New approvals (e.g. ETOPS, RVSM, etc)	0.0	↓

Top Risks (Standalone (Non-AOC) Organisations)

Risk	% selected	Variance from 24/25
Skilled Labour Shortage	70.0	Same
Regulator (UK CAA / EASA / 3rd Country NAA)	60.0	↑
Inadequate Process & Procedures	50.0	↓
Absence of a bilateral arrangement with EU	40.0	New
Component Robbery	40.0	New
Inconsistent / inadequate CAA oversight	40.0	New
Missed maintenance task / Poor Forecasting	40.0	↑
Commercial Pressure	30.0	New
Nominated Person(s) – qualification and competency	30.0	↑
Contracted P145 AMO's inadequate root cause analysis	20.0	New
Global Supply Chain Health	20.0	↑
Human Performance Limitation/Human Error	20.0	New
Incorrect application of the MEL	20.0	↑
Incorrect assessment of defect In-Adequate Defect Control / Task management	20.0	↑
Management of change	20.0	New
MRO demand spike	20.0	↓
OEM/TCH Support	20.0	↓

Poor Competence Assessment / Training	20.0	↓
Single Point dependencies within Airworthiness	20.0	New
Technical incidents	20.0	New
Unrecorded work	20.0	↓
A/C introduction	10.0	↓
Ageing Aircraft	10.0	New
Contracted Activities	10.0	New
Incorrect assessment of the airworthiness status of the aircraft	10.0	↓
Introduction of Part ML and Part CAO creating significant confusion between the owner/operator and CAMO	10.0	New
IT systems(access and tracking)	10.0	New
Major Component Failure	10.0	New
Manpower Job Description / Competence	10.0	↓
Missing records	10.0	New
Modifications	10.0	New
Poor Communication between Maintenance, Flight Ops, Ground Ops	10.0	↓
Roles and responsibilities between CAMO and groups not sufficiently defined	10.0	↓
Sub-Contractor Management & Control	10.0	↓
Unqualified staff working without appropriate supervision	10.0	↓

Top Risks (Organisations Managing AOC Aircraft)

Risk	% selected	Variance from 24/25
Global Supply Chain Health	70.0	↑
Skilled Labour Shortage	60.0	↓
Absence of a bilateral arrangement with EU	50.0	New
A/C introduction	40.0	Same
Unrecorded work	40.0	↑
Access to data	30.0	New
Ageing Aircraft	30.0	New
Component Robbery	30.0	New
Contracted P145 AMO's inadequate root cause analysis	30.0	New
Cyber Security and the reliance on software	30.0	New
Inconsistent / inadequate CAA oversight	30.0	New
Management of change	30.0	New
OEM/TCH Support	30.0	↓
Sub-Contractor Management & Control	30.0	↓
Changes to Operations (Routes)	20.0	↓
Commercial Pressure	20.0	New
Contracted Activities	20.0	New
Human Performance Limitation/Human Error	20.0	New
Inadequate Process & Procedures	20.0	↓

Incorrect assessment of defect In-Adequate Defect Control / Task management	20.0	↓
Missed maintenance task / Poor Forecasting	20.0	↓
Poor Communication between Maintenance, Flight Ops, Ground Ops	20.0	↓
Regulator (UK CAA / EASA / 3rd Country NAA)	20.0	↓
Single Point dependencies within Airworthiness	20.0	New
Speed of growth of organisation	20.0	New
Alternative Regulatory requirements for nominated persons not being considered outside of a degree or license.	10.0	New
Delay in application of OEM recommendations (SB, SIL, ...)	10.0	New
Dependency on third party providers, unregulated within the Civil Aviation Authority, for consumables, rotatables and major assemblies.	10.0	New
Incorrect application of the MEL	10.0	↓
Incorrect assessment of the airworthiness status of the aircraft	10.0	↓
IT systems(access and tracking)	10.0	New
Manpower Job Description / Competence	10.0	↓
Missing records	10.0	New
Modifications	10.0	New
MRO demand spike	10.0	↓
Nominated Person(s) – qualification and competency	10.0	↓
Poor Competence Assessment / Training	10.0	↓
Roles and responsibilities between CAMO and groups not sufficiently defined	10.0	↓
Technical incidents	10.0	New
Use of unapproved parts, leading to operation of unsafe aircraft	10.0	↓

Top Risks (Licensed Air Carrier Organisations)

Risk	% selected	Variance from 24/25
Global Supply Chain Health	72.7	↑
Skilled Labour Shortage	68.2	↓
Absence of a bilateral arrangement with EU	63.6	New
Sub-Contractor Management & Control	50.0	↑
OEM/TCH Support	40.9	↑
Commercial Pressure	36.4	New
Poor Communication between Maintenance, Flight Ops, Ground Ops	36.4	↓
Missed maintenance task / Poor Forecasting	31.8	↓
Regulator (UK CAA / EASA / 3rd Country NAA)	31.8	↓
Single Point dependencies within Airworthiness	27.3	New
A/C introduction	22.7	↑
Contracted P145 AMO's inadequate root cause analysis	22.7	New
Ageing Aircraft	18.2	New

Contracted Activities	18.2	New
Human Performance Limitation/Human Error	18.2	New
Inadequate Process & Procedures	18.2	↑
Incorrect application of the MEL	18.2	↓
Modifications	18.2	New
MRO demand spike	18.2	↓
Safety culture and ability to deliver positive change	18.2	↓
Changes to Operations (Routes)	13.6	↓
Component Robbery	13.6	New
Cyber Security and the reliance on software	13.6	New
Incorrectly evaluated AD or SB	13.6	↓
Management of change	13.6	New
Manpower Job Description / Competence	13.6	↓
Roles and responsibilities between CAMO and groups not sufficiently defined	13.6	↓
Access to data	9.1	New
Diverse Fleet	9.1	New
Inconsistent / inadequate CAA oversight	9.1	New
IT systems(access and tracking)	9.1	New
Nominated Person(s) – qualification and competency	9.1	↓
AMO's working to different regulatory standards	4.5	New
Dependency on third party providers, unregulated within the Civil Aviation Authority, for consumables, rotables and major assemblies.	4.5	New
Incorrect assessment of defect In-Adequate Defect Control / Task management	4.5	↓
Major Component Failure	4.5	New
Missing records	4.5	New
Poor Competence Assessment / Training	4.5	↓
Shifts / Handover	4.5	↓
Speed of growth of organisation	4.5	New
Unqualified staff working without appropriate supervision	4.5	↓
Unrecorded work	4.5	↓
Use of erroneous / expired data	4.5	New
Use of unapproved parts, leading to operation of unsafe aircraft	4.5	↓

Top Risks (UK Based Operations)

Risk	% selected	Variance from 24/25
Skilled Labour Shortage	73.3	Same
Global Supply Chain Health	60.0	Same
OEM/TCH Support	60.0	↑

Absence of a bilateral arrangement with EU	53.3	New
Inconsistent / inadequate CAA oversight	33.3	New
Missed maintenance task / Poor Forecasting	33.3	↓
Poor Communication between Maintenance, Flight Ops, Ground Ops	33.3	↓
Regulator (UK CAA / EASA / 3rd Country NAA)	33.3	↑
Single Point dependencies within Airworthiness	33.3	New
A/C introduction	20.0	Same
Ageing Aircraft	20.0	New
Commercial Pressure	20.0	New
Component Robbery	20.0	New
Human Performance Limitation/Human Error	20.0	New
Inadequate Process & Procedures	20.0	↓
Access to data	13.3	New
Contracted P145 AMO's inadequate root cause analysis	13.3	New
Management of change	13.3	New
Nominated Person(s) – qualification and competency	13.3	↓
Poor Competence Assessment / Training	13.3	↓
Roles and responsibilities between CAMO and groups not sufficiently defined	13.3	↑
Safety culture and ability to deliver positive change	13.3	↓
Sub-Contractor Management & Control	13.3	↓
Alternative Regulatory requirements for nominated persons not being considered outside of a degree or license.	6.7	New
AMO's working to different regulatory standards	6.7	New
Cyber Security and the reliance on software	6.7	New
Incorrect application of the MEL	6.7	↓
Incorrect assessment of the airworthiness status of the aircraft	6.7	↓
Incorrectly evaluated AD or SB	6.7	↓
Introduction of Part ML and Part CAO creating significant confusion between the owner/operator and CAMO	6.7	New
IT systems(access and tracking)	6.7	New
Major Component Failure	6.7	New
Manpower Job Description / Competence	6.7	↓
Missing records	6.7	New
Modifications	6.7	New
Shifts / Handover	6.7	↓
Unrecorded work	6.7	↓

Top Risks (European Based Operations)

Risk	% selected	Variance from 24/25
Absence of a bilateral arrangement with EU	71.4	New
Skilled Labour Shortage	71.4	↓

Global Supply Chain Health	42.9	Same
Regulator (UK CAA / EASA / 3rd Country NAA)	42.9	↑
Sub-Contractor Management & Control	42.9	↑
Commercial Pressure	28.6	New
Component Robbery	28.6	New
Cyber Security and the reliance on software	28.6	New
Inadequate Process & Procedures	28.6	↑
Incorrect application of the MEL	28.6	↓
Management of change	28.6	New
Modifications	28.6	New
MRO demand spike	28.6	↓
Nominated Person(s) – qualification and competency	28.6	↑
Poor Communication between Maintenance, Flight Ops, Ground Ops	28.6	↓
Unrecorded work	28.6	↓
A/C introduction	14.3	↓
Ageing Aircraft	14.3	New
Contracted P145 AMO's inadequate root cause analysis	14.3	New
Inconsistent / inadequate CAA oversight	14.3	New
Incorrect assessment of defect In-Adequate Defect Control / Task management	14.3	↓
Incorrectly evaluated AD or SB	14.3	↓
Manpower Job Description / Competence	14.3	↓
Poor Competence Assessment / Training	14.3	↓
Unqualified staff working without appropriate supervision	14.3	↓

Top Risks (Worldwide Operations)

Risk	% selected	Variance from 24/25
Global Supply Chain Health	65.0	↑
Skilled Labour Shortage	60.0	↓
Absence of a bilateral arrangement with EU	50.0	New
Sub-Contractor Management & Control	50.0	↑
Commercial Pressure	40.0	New
Missed maintenance task / Poor Forecasting	40.0	↑
Contracted Activities	35.0	New
Contracted P145 AMO's inadequate root cause	35.0	New
Regulator (UK CAA / EASA / 3rd Country NAA)	35.0	↓
A/C introduction	30.0	↓
Inadequate Process & Procedures	30.0	↑
Changes to Operations (Routes)	25.0	↑
Component Robbery	25.0	New
Human Performance Limitation/Human Error	25.0	New

MRO demand spike	25.0	↓
OEM/TCH Support	25.0	↓
Single Point dependencies within Airworthiness	25.0	New
Ageing Aircraft	20.0	New
Incorrect application of the MEL	20.0	Same
Incorrect assessment of defect In-Adequate Defect Control / Task management	20.0	↓
Management of change	20.0	New
Poor Communication between Maintenance, Flight Ops, Ground Ops	20.0	↓
Unrecorded work	20.0	↓
Access to data	15.0	New
Cyber Security and the reliance on software	15.0	New
Inconsistent / inadequate CAA oversight	15.0	New
IT systems(access and tracking)	15.0	New
Manpower Job Description / Competence	15.0	↓
Modifications	15.0	New
Roles and responsibilities between CAMO and groups not sufficiently defined	15.0	↓
Speed of growth of organisation	15.0	New
Technical incidents	15.0	New
Dependency on third party providers, unregulated within the Civil Aviation Authority, for consumables, rotables and major assemblies.	10.0	New
Diverse Fleet	10.0	New
Missing records	10.0	New
Nominated Person(s) – qualification and competency	10.0	↓
Safety culture and ability to deliver positive change	10.0	↓
Use of unapproved parts, leading to operation of unsafe aircraft	10.0	↓
Delay in application of OEM recommendations (SB, SIL, ...)	5.0	New
Incorrect assessment of the airworthiness status of the aircraft	5.0	↓
Incorrectly evaluated AD or SB	5.0	↓
Major Component Failure	5.0	New
Poor Competence Assessment / Training	5.0	↓
Unqualified staff working without appropriate supervision	5.0	↓
Use of erroneous / expired data	5.0	New

Top Risks (Rotary Wing)

Risk	% selected	Variance from 24/25
Global Supply Chain Health	63.6	↑
Skilled Labour Shortage	63.6	↓

Absence of a bilateral arrangement with EU	45.5	New
OEM/TCH Support	45.5	↑
Regulator (UK CAA / EASA / 3rd Country NAA)	45.5	↑
Inconsistent / inadequate CAA oversight	36.4	New
Poor Communication between Maintenance, Flight Ops, Ground Ops	36.4	↑
Single Point dependencies within Airworthiness	36.4	New
Human Performance Limitation/Human Error	27.3	New
Missed maintenance task / Poor Forecasting	27.3	↓
Commercial Pressure	18.2	New
Component Robbery	18.2	New
Nominated Person(s) – qualification and competency	18.2	↓
Poor Competence Assessment / Training	18.2	↓
Roles and responsibilities between CAMO and groups not sufficiently defined	18.2	↑
Sub-Contractor Management & Control	18.2	↓
A/C introduction	9.1	↓
Access to data	9.1	New
Ageing Aircraft	9.1	New
Alternative Regulatory requirements for nominated persons not being considered outside of a degree or license.	9.1	New
AMO's working to different regulatory standards	9.1	New
Contracted P145 AMO's inadequate root cause analysis	9.1	New
Inadequate Process & Procedures	9.1	↓
Incorrect application of the MEL	9.1	Same
Incorrect assessment of the airworthiness status of the aircraft	9.1	↓
Introduction of Part ML and Part CAO creating significant confusion between the owner/operator and CAMO	9.1	New
IT systems(access and tracking)	9.1	New
Major Component Failure	9.1	New
Management of change	9.1	New
Manpower Job Description / Competence	9.1	↓
Missing records	9.1	New
MRO demand spike	9.1	↓
Safety culture and ability to deliver positive change	9.1	↓
Shifts / Handover	9.1	↓
Unrecorded work	9.1	↓

Top Risks (Fixed Wing)

Risk	% selected	Variance from 24/25
Skilled Labour Shortage	72.0	Same
Global Supply Chain Health	60.0	Same
Absence of a bilateral arrangement with EU	56.0	New
Sub-Contractor Management & Control	44.0	↑
Commercial Pressure	40.0	New

Contracted P145 AMO's inadequate root cause analysis	32.0	New
A/C introduction	28.0	Same
Contracted Activities	28.0	New
Inadequate Process & Procedures	28.0	↑
OEM/TCH Support	28.0	↓
Poor Communication between Maintenance, Flight Ops, Ground Ops	28.0	↓
Regulator (UK CAA / EASA / 3rd Country NAA)	28.0	↓
Ageing Aircraft	24.0	New
Component Robbery	24.0	New
Cyber Security and the reliance on software	24.0	New
Management of change	24.0	New
Missed maintenance task / Poor Forecasting	24.0	↓
Single Point dependencies within Airworthiness	24.0	New
Unrecorded work	24.0	↓
Changes to Operations (Routes)	20.0	↓
Incorrect application of the MEL	20.0	↓
Access to data	16.0	New
Inconsistent / inadequate CAA oversight	16.0	New
Incorrect assessment of defect In-Adequate Defect Control / Task management	16.0	↓
Modifications	16.0	New
MRO demand spike	16.0	↓
Nominated Person(s) – qualification and competency	16.0	↓
Human Performance Limitation/Human Error	12.0	New
Incorrectly evaluated AD or SB	12.0	↓
Manpower Job Description / Competence	12.0	↓
Roles and responsibilities between CAMO and groups not sufficiently defined	12.0	↓
Safety culture and ability to deliver positive change	12.0	↓
Speed of growth of organisation	12.0	New
IT systems(access and tracking)	8.0	New
Missing records	8.0	New
Poor Competence Assessment / Training	8.0	↓
Technical incidents	8.0	New
Delay in application of OEM recommendations (SB, SIL, ...)	4.0	New
Dependency on third party providers, unregulated within the Civil Aviation Authority, for consumables, rotatables and major assemblies.	4.0	New
Diverse Fleet	4.0	New
Incorrect assessment of the airworthiness status of the aircraft	4.0	↓
Unqualified staff working without appropriate supervision	4.0	↓
Use of erroneous / expired data	4.0	New
Use of unapproved parts, leading to operation of unsafe aircraft	4.0	↓

Top 5 Risks (All)

Risk	% selected
Skilled Labour shortage	57.1
Global Supply chain health	38.1
Missed maintenance task / Poor Forecasting	31.0
Sub-Contractor Management & Control	28.6
OEM/TCH Support	26.2
Regulator (UK CAA / EASA / 3rd Country NAA	26.2
A/C introduction	23.8
Poor Communication between Maintenance, Flight Ops, Ground Ops	19.0
MRO demand spike	16.7
Incorrectly evaluated AD or SB	14.3
Roles and responsibilities between CAMO and groups not sufficiently defined	14.3
Incorrect application of the MEL	14.3
Unrecorded work	11.9
Unqualified staff working without appropriate supervision	11.9
Nominated Person(s) – qualification and competency	11.9
Incorrect assessment of defect In-Adequate Defect Control / Task management	9.5
Inadequate Process & Procedures	
Manpower Job Description / Competence	9.5
Incorrect assessment of the airworthiness status of the aircraft	7.1
Changes to Operations (Routes)	7.1
Safety culture and ability to deliver positive change	7.1
Use of unapproved parts, leading to operation of unsafe aircraft	4.8
Poor Competence Assessment / Training	2.4
New approvals (e.g. ETOPS, RVSM etc)	2.4

Top SPI's (All)

SPI	% selected
Occurrence Reporting (Internal & External)	38
Maintenance Errors	32
Maintenance Findings & Recurring Issues	29
Technical Incidents	24
Deferred Defects Management	23
Maintenance Program Efficiency	20
Airworthiness Directives (AD) Compliance	19
Component Reliability Analysis	17
Maintenance Schedule Compliance	16
Fleet Availability Rate	16
Communication & Coordination Efficiency	7

Parts Supply Chain Compliance	6
Scheduled Maintenance Workload Balance	5

Top Safety Risk Reports / Risk assessment items (All)

Safety Risk Report / Risk Assessment Items	% selected
Maintenance Errors	61.9
Maintenance Overruns	61.9
Incorrect maintenance actions by engineers	54.8
Incomplete maintenance	50.0
Foreign Objective Debris specifically post maintenance	47.6
Incorrect MEL application	47.6
Incorrect release of aircraft	42.9
Life limited parts/component management	40.5
Incomplete logbooks	35.7
Unrecord works	33.3
ADD items not being carried out correctly	28.6

APPENDIX D – RISK SUMMARY

1. Skilled Labour Shortage			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Delays in maintenance schedules, leading to extended grounding of aircraft and disruptions in flight operations. - Increased workloads for existing staff, which can lead to fatigue and reduced efficiency. - likelihood of errors increases, potentially compromising the quality of maintenance and overall safety. This shortage risks non-compliance and potential penalties. - Approval and certification processes for new aircraft and components are experiencing delays because there are not enough skilled staff to conduct the necessary inspections and documentation. - Quality of maintenance and inspections may decline if performed by less experienced or overburdened staff, increasing the risk of undetected faults and potential safety incidents. - High workloads and fatigue can lead to higher error rates in maintenance tasks, potentially compromising the airworthiness of aircraft. - To address the shortage of skilled labour, CAMO's may need to invest significantly in recruitment and training programs, further straining financial resources. - Frequent delays and safety concerns can erode client trust and damage the reputation of the CAMO, potentially resulting in loss of business. Incidents arising from maintenance errors or non-compliance can attract publicity, impacting the stakeholder confidence.	- To attract new talent, it is essential to implement competitive recruitment strategies that offer attractive salaries and benefits. - Additionally, investing in continuous training and development programs will help upskill existing staff, ensuring they remain competent and effective in their roles. - Developing long-term workforce planning strategies is crucial for anticipating future labour needs and proactively addressing potential shortages. - Collaborating with educational institutions can create clear pathways for students to enter the aviation maintenance field, ensuring a steady influx of qualified personnel. - Promoting a healthy work-life balance is vital for reducing employee fatigue and improving job satisfaction.	Develop comprehensive training programs to upskill existing staff and ensure new hires are adequately trained.	Training Completion Rates: Measure the percentage of staff who complete required training programs within a specified timeframe.
		Implement strategies to attract and retain skilled personnel, such as competitive salaries, benefits, and career development opportunities.	Track the turnover rates of skilled personnel to identify trends and address retention issues, number of sickness days and hours of overtime worked and differences between planned and actual resource
		Foster a strong safety culture where all employees are encouraged to report safety concerns and participate in safety initiatives.	Monitor the number and severity of safety incidents reported, particularly those related to human factors, human performance or training related.
		Invest in technology and automation to reduce dependency on manual labour and improve efficiency.	Evaluate the number of non-compliances or findings from internal and external audits related to workforce competency and training.

2. Global Supply chain health			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- The geopolitical landscape has added complexity to supply chains. Sanctions against Russia, Brexit-related uncertainties, and the COVID-19 pandemic have disrupted trade and logistics. - Whilst a bilateral allows the fitment of new EASA products on UK registered aircraft, there is still a huge pool of EASA maintained parts that are no longer eligible for use. This is also applicable to maintained parts from US based repair stations that held FAA and EASA releases. - Sanctions against Russia have disrupted trade flows and affected access to critical components. Companies must navigate geopolitical tensions while ensuring supply continuity. - The pandemic disrupted global supply chains, affecting production, logistics, and workforce availability. OEMs and suppliers faced unprecedented challenges in maintaining operations. - Poor supplier performance can lead to delays in the delivery of essential parts and components, fluctuations in demand can result in both shortages or excess inventory. - Reliability issues with next generation aircraft, organisations are prolonging the life of older generation aircraft, resulting in less tear-downs and fewer used spares availability compounding the issue.	- The UK CAA has been supporting industry where Global Supply Chain issues have been prevalent. - RIE's and exemptions have been issued to allow longer interval for deferred defects. - The CAA continues to collaborate in bilateral and/or working arrangements with other NAA's. - CAMO's should establish supplier evaluation and monitoring processes, including predictive analytics to identify potential issues early.. - Investing in training and development programs for staff and exploring automation options can alleviate some of these pressures. - Diversifying the supplier base and sourcing from multiple regions can reduce dependency on any single geopolitical area. - Developing contingency plans and maintaining strategic reserves of critical components can help mitigate these risks.	Transparency: Ensure all suppliers and subcontractors are compliant with regulatory requirements and maintain transparent operations.	Measure the percentage of completed supplier audience and risk scoring within your organisations risk register.
		Ensure effective quality control measures are present for all parts and components purchased.	Track the number of defective parts received from suppliers using reliability data. (Fail on Fit?)
		Develop collaborative relationships with suppliers to ensure effective communication and resolution of potential issues.	Evaluate suppliers based on criticality to your organisation, the risk profile of the supplier and your oversight of the provided services or goods

3. Absence of a bilateral arrangement with EASA			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- The trade and cooperation agreement between the EU and the UK addresses aviation safety with regard to approvals covering design and production of civil aeronautical products. The absence of a similar agreement with regard to continuing airworthiness could introduce an additional level of complications for Part-CAMO approved organisation. - Increased compliance costs are another major concern. Organisations may need to undergo separate certification processes for both the UK Civil Aviation Authority (CAA) and EASA, leading to duplication of efforts. - Market access restrictions can severely limit the organisation's growth and competitiveness. Without mutual recognition of certifications, the organisation's ability to operate within the European market is constrained. - Operational disruptions are another risk associated with the absence of a bilateral agreement. Differing regulatory requirements between the UK and EASA can lead to inconsistencies in maintenance practices and standards. - Legal and regulatory uncertainty can create a complex environment for organisations to navigate. The need to comply with two separate sets of regulations can lead to confusion and challenges in maintaining consistent adherence to safety and airworthiness standards.	- Establishing robust internal compliance programs is crucial for ensuring adherence to both UK CAA and EASA regulations. - Regular training for staff to keep them updated on the latest regulatory requirements. - Forming strategic partnerships with other CAMOs or maintenance organisations that have EASA approvals can be highly beneficial. - Creating dedicated compliance teams focused on managing the certification and approval processes for both regulatory bodies can streamline operations. - Investing in technology and automation tools can significantly enhance the management of compliance and certification processes. - Developing comprehensive risk management and contingency plans is vital for addressing potential operational disruptions.	Ensure full compliance with both UK CAA and EASA regulations through continuous monitoring and improvement of internal processes	Measure the percentage of compliance with UK CAA and EASA regulations through internal audits and external inspections.
		Regularly update and enhance training programs to ensure all staff are knowledgeable about the latest regulatory requirements and best practices.	Track the percentage of staff who have completed required training programs within specified timeframes.
		Develop and maintain strategic partnerships with other CAMOs and maintenance organisations to facilitate mutual support and resource sharing.	Assess the number and quality of strategic partnerships and their impact on operational efficiency and market access.
		Implement technology and automation to streamline compliance and certification processes, reducing delays and errors.	Monitor the average time taken to obtain necessary certifications and approvals from both regulatory bodies.
		Ensure consistent adherence to safety and airworthiness standards through rigorous internal audits and risk management practices.	Measure the number of audit findings and the effectiveness of corrective actions implemented to address them.
		Develop comprehensive risk management and contingency plans to address potential operational disruptions and ensure business continuity.	Evaluate the effectiveness of risk management plans through regular testing and review of contingency protocols.

4. Regulator (UK CAA / EASA / 3rd Country NAA)			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Regular audits and inspections sample organisations management system to ensure compliance. Identified deficiencies may require immediate corrective actions, which can strain resources and affect operational efficiency. - Non-compliance with regulatory requirements could also lead to enforcement actions, including suspension, or revocation of CAMO approval, which can lead to damage reputation, and result in financial losses. - Frequent changes or updates to regulations can pose challenges for CAMO's in maintaining compliance. CAMO's must have a system to ensure compliance with the regulation to exercise the privileges of their certificate. CAA reaction time to accept or approve organisational changes can affect operational efficiency. - Ambiguities in regulatory requirements can also lead to differing interpretations between CAMO's and regulators. - High-profile incidents or accidents can lead to sudden regulatory changes. CAMO's may need to implement new safety measures or procedures quickly, which can be resource-intensive. - Staying informed about industry trends and potential regulatory changes is crucial and can be challenging.	- CAMO's are required to conduct internal audits and risk assessments to ensure ongoing compliance. Regulatory misinterpretations can result in non-compliances. Improving communication with regulators and seeking clarifications can help mitigate this risk. - It is the organisations responsibility to ensure regulatory changes are captured. CAMO's should also ensure staff are trained on are trained in accordance with local procedures that are written in compliance with the regulation. - The CAA continue to measure SLA's and develop adaptable processes to ensure organisation changes are accepted or approved in a timely manner. - Regulatory changes should be advertised through a Skywise. - Any regulatory changes in progress can be reviewed in advance on the consultations page. - Ensure staff are trained in accordance with local procedures that are compliant to regulation.	Ensure compliance with all UK applicable regulations. Enhance Communication: Foster open and transparent communication channels with the UK CAA to ensure timely and accurate information exchange.	Track the number and severity of audit findings from the UK CAA. Monitor for a reduction in the number of findings over time.
		Implement a continuous improvement process for safety management systems to addressing non-compliances with effective root cause analysis and strive for best practise.	Measure the percentage of compliance with regulatory requirements during internal audits.
		Provide regular training and awareness programs for nominated persons on regulatory requirements and best practices.	Set a manageable target for responding to / addressing and close out findings or recommendations from the UK CAA, that could be communicated at Safety Review Board level

5. Sub-Contractor Management & Control			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Poor coordination between CAMO's and sub-contractors can lead to delays in maintenance activities. - Poor sub-contractor management can lead to increased maintenance costs due to rework, delays, and inefficiencies. CAMO's may need to invest additional resources to address issues arising from sub-contracted work. - Operational disruptions caused by sub-contractor issues can result in loss of revenue from grounded aircraft and delayed flights, impacting the financial stability of the organisation. - Inconsistent quality and safety standards from sub-contractors can affect the reliability of maintenance services provided by CAMO's.	- Implementing selection criteria ensures that only qualified and reliable sub-contractors are chosen. - Scheduled formal performance audits help identify and address any issues promptly, maintaining high standards of work and reliability. - Developing standardised procedures and guidelines for sub-contractors. - Establishing clear communication channels between CAMO's and sub-contractors. - The regulation requires the contracting CAMO to conduct regular audits and inspections of sub-contracted work ensures compliance with quality and safety standards.	Ensure all subcontractors comply with the relevant regulatory requirements and internal safety standards.	Number of safety incidents reported by subcontractors per task
		Improve communication channels between the operator and subcontractors to ensure timely and accurate information exchange.	Ensure all subcontractors have completed the required safety training prior to conducting any work.
		Identify and mitigate risks associated with subcontractor activities through regular audits and assessments.	Number of non-conformities identified during pre-contract audits
		Ensure subcontractors are adequately trained and competent to perform their tasks safely.	
		Foster a culture of continuous improvement in safety performance among subcontractors.	

6. OEM/TCH Support			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Inadequate or delayed technical support from TC holders can lead to significant operational disruptions for CAMO's. CAMO's rely on timely technical assistance to troubleshoot and resolve complex maintenance issues. - Delays in receiving this support can result in extended aircraft downtime and operational inefficiencies. - UK Regulation 1321/2014 requires CAMO's to comply with all applicable airworthiness standards. Inadequate support from TC holders can make it challenging to meet these regulatory requirements, risking non-compliance and associated findings. - Operational disruptions and extended aircraft downtime due to inadequate TC holder support can lead to increased maintenance costs. CAMO's may need to invest in additional resources to resolve issues independently, further straining their budgets. - Inadequate support from TC holders can affect the quality and reliability of maintenance services provided by CAMO's. This can erode client trust and satisfaction, potentially leading to loss of business.	- Establishing regular communication channels with TC holders ensures timely access to technical support and updates. - Providing training for maintenance personnel on the effective use of technical data and resources from TC holders enhances maintenance practices. - Implementing ongoing competency frameworks ensures that maintenance personnel remain up-to-date with the latest technical information and best practices, maintaining high standards of proficiency. - Developing contingency plans for scenarios where TC holder support is inadequate ensures continuity of operations. - By combining enhanced communication, comprehensive training, and contingency planning, CAMO's can effectively manage the challenges associated with TC holder support.	Maintain a communication channel with OEM/TCH to ensure timely access to technical support and updates.	Measure the average response time from OEM/TCH for technical support requests. Compliance with OEM/TCH recommendations.
		Ensure comprehensive documentation of all communications and technical support received from OEM/TCH.	Track the percentage of maintenance actions completed in accordance with OEM/TCH recommendations
		Regularly update and train maintenance personnel on the latest OEM/TCH procedures and technical information and data sources..	Monitor the percentage of maintenance personnel who have completed the latest OEM/TCH training modules and ensure 100% of relevant personnel complete training within a suitable period.

7. Commercial Pressure			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Commercial pressure in the aviation industry stems from various sources, such as financial constraints, operational demands, and market competition. Financial constraints, including budget cuts and the need to reduce operational costs, can lead to shortcuts in maintenance and airworthiness management. Operational demands, such as high demand for aircraft availability and quick turnaround times, can pressure CAMO's to expedite processes, sometimes at the expense of thoroughness. - One of the primary risks associated with commercial pressure is compromised safety standards. Under commercial pressure, CAMO's may be tempted to deviate from established safety standards and procedures. - Commercial pressure can also lead to shortcuts in internal procedures. To meet commercial demands, CAMO's might skip certain checks or use non-approved parts, compromising the integrity of the aircraft and its systems.	- Fostering a robust safety culture is essential for ensuring that employees prioritize safety over commercial interests. - Adequate staffing levels are crucial for managing workloads effectively and minimizing fatigue-related errors. Ensuring that there are enough staff members to handle the - workload helps prevent employee burnout and fatigue, which are significant contributors to human error. - Transparent reporting mechanisms are vital for encouraging employees to report safety concerns without fear of retribution. - Regular audits and inspections are necessary to ensure compliance with safety standards and identify areas for improvement. - Engaging with stakeholders, including regulators, is essential to ensure that commercial pressures do not compromise safety standards.	Foster an environment where safety is prioritized over commercial gains.	Track the number of safety-related incidents reported, aiming for an increase in reporting as a sign of a healthy safety culture.
		Implement robust risk assessment and mitigation strategies to identify and manage commercial pressure risks.	Monitor the frequency and quality of risk assessments conducted.
		: Ensure all staff are trained to recognize and manage commercial pressure.	Measure the percentage of staff who have completed safety training programs.
		Encourage transparent reporting of safety concerns without fear of retribution.	Regularly audit operations to ensure compliance with safety regulations and identify areas for improvement.

8. Missed maintenance task / Poor Forecasting			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Missed maintenance can result in unexpected aircraft grounding, disrupting flight schedules and causing operational delays. - This can lead to a cascading effect, affecting the entire fleet's availability and operational efficiency. - It can also lead to undetected faults and potential failures, increasing the risk of safety incidents. - Poor forecasting can lead to inefficient allocation of resources, such as maintenance personnel and spare parts. - Unplanned maintenance due to missed tasks can lead to higher costs, including emergency repairs and expedited parts procurement. - Operational disruptions caused by missed maintenance and poor forecasting can result in loss of revenue from grounded aircraft and delayed flights.	- Implementing systems to track and schedule maintenance tasks can help ensure that no tasks are missed and that all maintenance activities are completed on time. - Use of data analytics and predictive maintenance techniques can improve forecasting accuracy and help anticipate maintenance needs more effectively. - Conducting regular audits and inspections may identify any missed maintenance tasks and will ensure compliance with regulatory requirements. - Implementing integrated planning systems that combine maintenance, operations, and supply chain data can enhance forecasting accuracy and resource allocation. - Providing continuous training for maintenance personnel to ensure task specific competency	Ensure that all maintenance tasks are scheduled accurately and completed on time.	On-Time Maintenance Completion Rate: Measure the percentage of maintenance tasks completed on or before the scheduled date.
		Develop and implement accurate forecasting methods to predict maintenance needs.	Maintenance Task Overrun Rate: Monitor the number of maintenance tasks that exceed their scheduled timeframes.
		Minimise the number of maintenance tasks that exceed their scheduled timeframes.	Number of Missed Maintenance Tasks: Track the number of maintenance tasks that were missed or not performed as scheduled.
		Ensure 100% compliance with all maintenance protocols and procedures.	

9. Inadequate Process & Procedures			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Inadequate processes can lead to disorganized maintenance planning, resulting in missed or delayed maintenance tasks. This disorganisation can cause operational disruptions and extended aircraft downtime. - Poorly defined procedures can lead to inefficient allocation of resources, such as maintenance personnel and spare parts, increasing turnaround times and reducing overall operational efficiency. - Inconsistent maintenance practices due to inadequate procedures can increase the risk of safety incidents. Properly documented and standardised procedures are essential to ensure that all maintenance tasks are performed correctly and consistently. - UK Regulation 1321/2014 requires CAMO's to comply with strict airworthiness standards. Inadequate processes can lead to non-compliance with these regulations, risking penalties and regulatory actions. - Operational inefficiencies and errors due to inadequate processes can lead to increased maintenance costs. - Inconsistent quality and safety standards due to inadequate processes can affect the reliability of maintenance services provided by CAMO's.	- Implementing standardised operating procedures (SOPs) to improve overall efficiency. Comprehensive documentation of all processes and procedures. - Providing regular training programs for maintenance personnel. Ongoing competency assessments ensure that maintenance personnel remain proficient in their roles and adhere to established procedures, maintaining high standards of performance. - Establishing clear communication channels between all departments involved in maintenance activities facilitates effective coordination and information exchange. - Conducting regular audits and inspections of maintenance processes. - Implementing continuous improvement programs refines processes and procedures.	Ensure all operational processes and procedures comply with regulatory requirements, local procedures and industry best practices.	Percentage of processes and procedures that are fully compliant with regulatory requirements.
		Regularly update and enhance training programs to ensure staff competency in following established procedures.	Percentage of staff who have completed required training within specified timeframes.
		Foster a culture of safety where employees are encouraged to report procedural deviations and provide feedback for continuous improvement.	Number of reported incidents related to procedural deviations per 1,000 flight hours.
		Implement measures to minimise human error through better process design and automation where feasible.	Number of findings from internal and external audits related to process and procedural inadequacies.
		Foster a culture of continuous improvement in safety performance among subcontractors.	Number of human errors identified in operational processes per 1,000 flight hours.

10. Poor Communication between Maintenance, Flight Ops, Ground Ops			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Poor communication can lead to misaligned maintenance schedules, causing delays and disruptions in flight operations. - Additionally, ineffective communication between ground operations and maintenance can result in increased turnaround times. - Misunderstandings about the status of maintenance tasks can delay the preparation of aircraft for subsequent flights. This can also lead to incomplete or incorrect maintenance tasks being performed. - Poor communication can increase the likelihood of human error. Maintenance personnel may misinterpret instructions or lack crucial information, leading to mistakes that can affect the airworthiness of the aircraft. - Frequent delays, safety incidents, and regulatory non-compliance can erode client trust and damage the reputation of the CAMO. .	- Implementing standardised communication protocols across maintenance, flight operations, and ground operations can ensure that all parties have access to accurate and timely information. - Conducting regular briefings and debriefings can help ensure that all teams are aligned and aware of any issues that need to be addressed. - Providing training on effective communication skills can help reduce misunderstandings and improve information exchange between teams. - Leveraging technology, such as integrated communication systems and real-time data sharing platforms. - Ensuring that all maintenance tasks and communications are accurately documented can help maintain compliance with regulatory requirements and provide a clear audit trail.	Implement standardised communication methods across all departments to ensure clarity and consistency.	Monitor the number of incidents where poor communication was identified as a contributing factor.
		Conduct regular forums with Maintenance, Flight Ops, and Ground Ops personnel to foster relationships and enhance communication.	Conduct regular surveys to gather feedback from staff on the effectiveness of communication and identify areas for improvement.
		Develop a robust reporting system that encourages the reporting of communication issues without fear of retribution.	
		Promote a culture where safety and communication are prioritised, and all staff feel responsible for maintaining high communication standards.	

11. A/C introduction			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Integrating new aircraft into existing fleets can be complex, requiring adjustments to maintenance schedules, training programs, and operational procedures. - These integration issues can lead to initial operational disruption, as the organisation adapts to the new additions. - Ensuring compliance with UK Regulation 1321/2014 and other relevant regulations for new aircraft can be challenging. - This includes meeting all certification requirements and maintaining accurate records of maintenance and modifications. - The introduction of new aircraft necessitates comprehensive documentation and record-keeping to ensure compliance with regulatory standards, and any lapses can lead to regulatory non-compliance and potential penalties.	Developing detailed integration plans and management of change processes that outline the steps and timelines for introducing new aircraft.	All relevant personnel should receive thorough training on the new aircraft type, including its systems, operations, and maintenance procedures.	Measure the percentage of personnel who have completed the required training for the new aircraft type.
	Encouraging cross-functional collaboration between stakeholder teams facilitates effective communication and coordination during the integration process.	Implement maintenance schedules and checks to ensure the new aircraft type remains in optimal condition.	Track adherence to the maintenance schedules and procedures for the new aircraft type.
	Implementing tailored training programs (including HF) specific to the new aircraft ensures that all personnel are adequately prepared.	Foster a culture of open communication and prompt reporting of issue or anomalies related to the new aircraft type.	Monitor the number of incidents reported related to the new aircraft type
	Regular competency assessments and refresher training to maintain high standards of proficiency.	Perform frequent safety audits to identify and mitigate potential risks associated with the new aircraft type.	Track the number and severity of findings from safety audits.
	- Implementing proactive measures to identify and address potential technical issues with new aircraft. - Using centralised documentation systems to ensure records are accurately maintained and easily accessible. - Conducting regular audits of maintenance and operational procedures.	Develop and maintain a comprehensive management of change tailored to the new aircraft type.	Evaluate the effectiveness of risk mitigation measures implemented for the new aircraft type.

12. Component Robbery			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Ensuring proper documentation and traceability of all components is crucial for maintaining airworthiness standards. - Moving components without adhering to approved maintenance procedures can lead to non-compliance with regulatory standards. - Unauthorised or improperly documented component movements can compromise aircraft safety. Installing unapproved or incompatible parts can lead to system failures, posing significant risks to the aircraft and its occupants.	- Implementing robust documentation practices. - Ensuring that all component movements follow approved maintenance procedures is crucial for regulatory compliance. - Developing a Safety Management System (SMS) is vital for identifying and mitigating potential safety risks associated with component movements.	Comprehensive Documentation and Traceability: Establish a robust documentation system to ensure all component movements are accurately recorded. This includes maintaining detailed logs and using digital tracking systems to monitor the history and status of each component. This objective aims to enhance traceability and ensure compliance with airworthiness standards.	Component Traceability Compliance Rate: This SPI measures the percentage of components with complete and accurate documentation. A high compliance rate indicates effective traceability practices, ensuring that all component movements are properly recorded and traceable.
		Implement strict adherence to approved maintenance procedures for all component movements. Regular training for staff on regulatory requirements and maintenance protocols is essential. Additionally, conducting periodic audits can help identify and rectify any deviations from standard procedures, ensuring all maintenance activities are performed correctly and safely.	This indicator tracks the adherence to approved maintenance procedures during component movements. It measures the percentage of component transfers that follow the prescribed protocols, helping to ensure regulatory compliance and safety.
		Develop a comprehensive SMS that includes hazard identification, risk assessment, and mitigation strategies. This system should focus on identifying potential safety risks associated with component movements and implementing measures to mitigate these risks. Regular safety audits and reviews	Monitoring the number of incident reports related to component movements can help identify trends and areas for improvement. This SPI includes reports of unauthorized movements, documentation errors, and safety incidents.
- Inventory management is essential to account for all components accurately. Poor inventory control can result in the loss or misplacement of components, leading to operational inefficiencies and increased costs. - The risk of fraud or theft is always present when components are moved between aircraft. Implementing strong security measures and conducting regular audits can help mitigate this risk. - Frequent or unexplained movements of components between aircraft can attract regulatory scrutiny. Maintaining transparency and adhering to all regulatory requirements is essential to uphold the organisation's credibility and approval status.	- Advanced inventory management systems are crucial for accurately tracking components and preventing loss or misplacement. - Effective inventory management reduces operational inefficiencies and helps maintain a smooth workflow. - To prevent fraud and theft, organisations should implement robust security measures. - Maintaining transparency in all component movements and ensuring compliance with regulatory requirements is essential for upholding the organisation's credibility.		

13. Contracted Part 145 Root cause analysis			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Delays in maintenance schedules, leading to extended grounding of aircraft and disruptions in flight operations. - Increased workloads for existing staff, which can lead to fatigue and reduced efficiency. - likelihood of errors increases, potentially compromising the quality of maintenance and overall safety. This shortage risks non-compliance and potential penalties. - Approval and certification processes for new aircraft and components are experiencing delays because there are not enough skilled staff to conduct the necessary inspections and documentation. - Quality of maintenance and inspections may decline if performed by less experienced or overburdened staff, increasing the risk of undetected faults and potential safety incidents. - High workloads and fatigue can lead to higher error rates in maintenance tasks, potentially compromising the airworthiness of aircraft. - To address the shortage of skilled labour, CAMO's may need to invest significantly in recruitment and training programs, further straining financial resources. - Frequent delays and safety concerns can erode client trust and damage the reputation of the CAMO, potentially resulting in loss of business. Incidents arising from maintenance errors or non-compliance can attract publicity, impacting the stakeholder confidence.	- Establish clear RCA standards and expectations within Part 145 contracts - Implement RCA quality review and assurance processes within the CAMO - Monitor repeat findings and corrective action effectiveness - Strengthen CAMO-AMO communication and joint safety reviews - Enhance SMS maturity within contracted AMOs - Increase audit focus on RCA quality, not just closure - Improve training and competence in root cause analysis and human factors - Introduce targeted SPIs (e.g. repeat findings, RCA quality, closure time) - Ensure contractual arrangements support quality investigations, not rapid closure - Integrate RCA outputs into the CAMO risk register and hazard log	Improve RCA quality and effectiveness across contracted AMOs	% of RCA reports accepted at first review by CAMO % of RCAs demonstrating clear identification of root (systemic) cause - Number of RCA rejections / rework requests
		Improve RCA quality and effectiveness across contracted AMOs	% of repeat findings within 3 / 6 / 12 months % reduction in repeat findings year-on-year - Number of findings reopened after closure
		Strengthen CAMO oversight of corrective action processes	% of corrective actions reviewed and approved by CAMO - Average time to close findings (from issue to verified closure) % of corrective actions verified as effective post-closure - Number of overdue corrective actions
		Promote identification of systemic (root) causes over symptomatic fixes	% of RCAs identifying systemic / organisational causes vs immediate causes % of corrective actions addressing process, training, or system improvements - Number of RCAs including human factors or organisational contributors
		Enhance CAMO-AMO SMS integration and safety performance	- Frequency of joint CAMO-AMO safety review meetings % of AMOs providing regular safety performance data / reports - AMO occurrence reporting rate (per flight hour or maintenance input)% of AMOs assessed as meeting minimum SMS maturity criteria

14. Single Point dependencies within Airworthiness			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Single point dependencies within a Continuing Airworthiness Management Organisation (CAMO) can lead to significant operational disruptions. Relying on a single individual for critical tasks, such as airworthiness reviews or maintenance planning, can cause delays if that person is unavailable due to illness, leave, or resignation. This can compromise the airworthiness of aircraft. - Dependence on a single IT system for managing airworthiness data and records can result in disruptions if the system fails or is compromised, leading to data loss, delays in maintenance scheduling, and difficulties in demonstrating compliance during audits. - Compliance risks are also heightened by single point dependencies. If a key individual responsible for ensuring compliance with airworthiness directives is unavailable, the organisation may fail to implement necessary safety measures in a timely manner, increasing the risk of non-compliance. - Safety concerns are another critical issue associated with single point dependencies. When critical tasks are concentrated in the hands of a single individual, the risk of human error increases, which can have serious safety implications, potentially leading to incidents or accidents. - The lack of redundancy in airworthiness processes makes the organisation more vulnerable to failures.	- Implementing cross-training programs within a CAMO ensures that multiple individuals are capable of performing critical tasks. - Developing succession plans helps identify and prepare potential replacements for key roles. - Investing in redundant IT systems and data backup solutions is crucial for maintaining continuity in case of system failures. - Regularly testing backup systems verifies their effectiveness and ensures that data can be recovered when needed. - Standardising airworthiness processes and thoroughly documenting them ensures that tasks can be performed consistently. - Conducting regular internal audits and risk assessments helps identify and address single point dependencies. - Independent assessment of department function	Ensure that critical systems have redundant components to prevent single points of failure.	Track the number of single point failures identified during inspections and audits.
		Develop and implement robust maintenance procedures to identify and rectify potential single point failures.	Measure the rate at which redundant systems are implemented to mitigate single point dependencies.
		Ensure all personnel involved in airworthiness tasks are adequately trained and competent to handle single point dependencies.	Monitor the percentage of personnel who have completed training on managing single point dependencies
		Conduct regular audits and inspections to identify and address single point dependencies.	Track compliance with maintenance procedures designed to address single point dependencies.
		Continuously assess and manage risks associated with single point dependencies through a structured risk management process.	Monitor the number of incidents related to single point failures and analyse trends to identify areas for improvement.

15. Inconsistent / inadequate CAA oversight			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- The Continuing Airworthiness Manager is responsible for ensuring the organisation always complies with the applicable continuing airworthiness management requirements. Oversight of this requirement is performed internally within an organisation as part of the compliance monitoring system; and additionally, by the regulator. - Inadequate oversight could mean that in instances where an organisation may not be complying with applicable continuing airworthiness management requirements, it may go unnoticed if the organisations compliance monitoring system is also failing. - Inconsistent oversight in the application of regulation could also disrupt the organisation's operations, as expectations may not be realised. This could result in an organisation's ability to maintain its flight schedules and meet customer expectations, leading to operational inefficiencies. - Airworthiness standards can decline due to a failing compliance monitoring system and/or lack of competence of the nominated persons within an organisation. This decline can affect the overall reliability and performance of the organisation, leading to further operational and safety issues.	- Conducting robust internal audits is crucial for ensuring compliance with regulatory requirements. - Investing in continuous training and development for staff is essential to maintain high standards of competence. - Implementing a strong Quality Management System (QMS) is vital for monitoring and managing quality across all operations. - Maintaining open and proactive communication with the Civil Aviation Authority (CAA) is key to ensuring regulatory alignment. - Developing a comprehensive risk management framework - Engaging independent third-party auditors to review compliance and operational practices. - Establishing robust feedback mechanisms is crucial for capturing and addressing concerns from staff and stakeholders.	Strengthen the organisation's internal audit and compliance processes to ensure adherence to safety standards, regardless of external oversight quality.	Track the number and severity of findings from internal audits compared to external audits.
		Establish robust communication channels with the CAA to promptly address any discrepancies or concerns.	Monitor the percentage of personnel who have completed required training and competency assessments.
		Ensure that all personnel involved in continuing airworthiness are adequately trained and competent to identify and manage risks independently.	Measure the response time and resolution rate of issues communicated to the CAA.
		Create and regularly update contingency plans to address potential gaps in oversight.	Analyse the frequency and nature of incidents related to oversight issues, aiming for a reduction over time. Track compliance rates with internal and external regulations, aiming for 100% compliance.

16. Ageing Aircraft			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Managing ageing aircraft involves addressing several critical risks to ensure continued airworthiness. One of the primary concerns is structural fatigue, which occurs due to repeated stress cycles on aircraft structures. This can lead to cracks and other structural failures. - Another significant risk is widespread fatigue damage (WFD), where multiple fatigue cracks develop and interact, compromising the aircraft's structural integrity. CAMO's need to develop and apply specific inspection techniques to identify WFD early. - Corrosion is also a major concern for ageing aircraft. It is a chemical reaction that deteriorates metal components, often exacerbated by environmental factors such as humidity and salt. - The fatigue life associated with changes and repairs is another risk that CAMO's must manage. Modifications and repairs to aircraft can introduce new stress points, leading to fatigue in these areas. CAMO's must thoroughly evaluate all changes and repairs for potential fatigue issues. This involves collaboration with design approval holders and adherence to updated maintenance programs to ensure that these modifications do not compromise the aircraft's structural integrity. - The continued operation with unsafe levels of fatigue cracking poses a significant risk. Operating aircraft with undetected or unaddressed fatigue cracks can lead to sudden structural failures.	- These programs should include non-destructive testing (NDT) techniques to detect and address fatigue-related issues early. By identifying potential problems before they become critical, CAMO's can prevent catastrophic failures and ensure the continued airworthiness of the aircraft. - For widespread fatigue damage (WFD), developing and applying specific inspection techniques for early identification is crucial. This involves providing specialized training and equipment to maintenance personnel to handle WFD detection and repair effectively. - Addressing the fatigue of changes and repairs involves thoroughly evaluating all modifications and repairs for potential fatigue issues. CAMO's must collaborate with design approval holders to ensure that maintenance programs are updated and effective in addressing these issues.	Regularly inspect and maintain the structural components of ageing aircraft to prevent failures.	Percentage of scheduled inspections completed on time.
		Ensure that all systems, especially those critical to flight safety, are regularly tested and maintained in accordance with the AMP	Number of defects reported per flight hour.
		Develop and implement enhanced maintenance programs tailored to the specific needs of ageing aircraft.	Number of maintenance errors per maintenance hour.
		Collect and analyse data on the performance and maintenance of ageing aircraft to identify trends and potential issues.	Frequency of component failures per flight hour.
		Provide ongoing training for maintenance personnel on the specific challenges and requirements of maintaining ageing aircraft.	Percentage of maintenance personnel who have completed training on ageing aircraft maintenance.

17. Human Performance Limitation/Human Error			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Human performance limitations refer to the inherent physical and cognitive constraints that affect an individual's ability to perform tasks. These limitations can be influenced by factors such as fatigue, stress, workload, and environmental conditions. In the context of CAMO, these limitations can lead to errors in maintenance planning, documentation, and decision-making processes. - Human error is an inevitable aspect of any human activity, including airworthiness management. Errors can occur at various stages, from planning and execution to documentation and communication. Understanding the types of errors and their causes is essential for mitigating their impact: 1. Skill-based errors occur during routine tasks and are often the result of lapses in attention or memory. 2. Decision errors arise from incorrect choices made under conditions of uncertainty or time pressure. 3. Perceptual errors stem from misinterpretations of information or sensory inputs. These errors occur when individuals incorrectly perceive or interpret data.	- CAMO's should implement policies that ensure personnel have adequate rest periods and monitor fatigue levels regularly. - Stress reduction is another important aspect. Providing support resources and promoting a healthy work-life balance can significantly reduce stress levels among personnel. - Workload management is essential to prevent personnel from becoming overwhelmed. - Ergonomic improvements can optimise the working environment, reducing distractions and enhancing comfort. - Regular training programs are vital for keeping personnel updated on best practices and new regulations. - Encouraging a culture of open error reporting and analysis is also crucial - Establishing clear communication channels and protocols is essential for accurate information exchange.	Ensure all personnel receive comprehensive training on human factors, error management, and fatigue risk management.	Track the number of human error reports submitted over a specific period.
		Foster a non-punitive reporting culture to encourage the reporting of human errors and near-misses.	Measure the percentage of personnel who have completed human factors and error management training.
		Implement work schedules that minimise fatigue and consider human performance limitations.	Monitor the number of incidents where fatigue was identified as a contributing factor.
		Enhance communication protocols to reduce misunderstandings and errors during operations.	Shift Compliance Rate: Assess compliance with optimized work schedules designed to reduce fatigue.
		Conduct regular audits and assessments to identify potential human performance issues and implement corrective actions.	Track the number of errors attributed to communication breakdowns.

18. Management of change			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Changes in organisational structure or processes can introduce new human factors issues, such as increased workload or changes in responsibilities. These changes may affect human performance and safety, as employees may struggle to adapt to new roles or increased demands.. - The introduction of new technologies, procedures, or organisational changes can create complex operational environments. This complexity increases the likelihood of errors and safety incidents, as employees may find it challenging to navigate the new systems and processes. - Failure to thoroughly analyse the probability and severity of potential hazards can lead to insufficient risk mitigation measures, leaving the organisation vulnerable to safety risks. - Ambiguities in the levels of management responsible for making decisions about risk tolerability can result in delayed or inappropriate responses to identified risks. Establishing clear decision-making authority and responsibilities for risk management can ensure timely and appropriate responses to identified risks.	- Clear communication about changes and their impact on roles and responsibilities is essential to help employees adapt more effectively. - Simplifying processes and providing comprehensive training on new technologies and procedures can help reduce operational complexity. - Regular reviews and updates to procedures ensure they remain effective and manageable. - Implementing a thorough risk analysis process that considers both the probability and severity of potential hazards is crucial for effective risk management. - Establishing clear decision-making authority and responsibilities for risk management is vital for timely and appropriate responses to identified risks. - Expanding the scope of internal investigations to include underlying causes of incidents can help prevent repeated safety issues.	Conduct thorough risk assessments for all changes to identify potential hazards and mitigate risks.	Track the number of risk assessments completed for changes.
		Ensure all changes comply with relevant regulations and standards.	Monitor the percentage of personnel who have completed training related to the changes.
		: Improve communication and training related to changes to ensure all personnel are aware and prepared.	Track the number of incidents and near-misses related to changes.
		Implement changes in a manner that minimises operational disruptions and maintains safety.	Measure the time taken to implement changes and compare it to planned timelines.

19. Contracted Activities			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- CAMO's must ensure that all contracted organisations adhere to relevant regulations and standards to maintain compliance with Regulation 1321/2014. Non-compliance can lead to penalties and loss of approval status. - Variations in the quality of maintenance and airworthiness management can arise from contracted activities. To ensure consistent quality, robust oversight and quality control measures are necessary. - Effective communication and coordination between the CAMO and contracted organisations are also essential to prevent misunderstandings, errors, and delays in maintenance activities. - CAMO's are responsible for identifying hazards associated with contracted activities and implementing appropriate risk management strategies. - Contracted organisations must have procedures for occurrence reporting that align with the CAMO's safety reporting systems and regulatory requirements. - Contracted activities can lead to unexpected costs, such as additional maintenance work or delays. CAMO's must manage these financial risks through careful planning and contract management. Determining liability in the event of an incident or accident can be complex when multiple contractors are involved, making clear contractual agreements and insurance coverage essential to mitigate these risks.	- Developing comprehensive contracts is essential to clearly define the roles, responsibilities, and expectations of all parties involved. These contracts should include clauses for regular audits, performance reviews, and compliance checks to ensure ongoing adherence to agreed standards and regulatory requirements. - Implementing a robust oversight framework is crucial for monitoring the performance and compliance of contracted organisations. - Establishing clear communication channels and protocols is vital for effective coordination between the CAMO and contracted organisations. - Conducting thorough risk assessments for all contracted activities is necessary to identify potential risks and develop appropriate mitigation plans. - Ensuring that all contractors have effective safety management systems in place.	Ensure Compliance: Verify that all contracted activities comply with UK Regulation 1321/2014 and other relevant aviation safety regulations.	Compliance Rate: Percentage of contracted activities that meet regulatory requirements during audits.
		Hazard Identification: Implement a robust system for identifying and assessing hazards associated with contracted activities.	Incident Reporting: Number of safety incidents reported by contracted organisations within a specified period.
		Risk Management: Develop and maintain a comprehensive risk management framework to address risks arising from contracted activities.	Risk Assessment Completion: Percentage of contracted activities that have undergone a formal risk assessment.
		Communication and Reporting: Establish clear communication channels and reporting mechanisms between the operator and contracted organisations.	Corrective Actions: Number of corrective actions implemented following safety audits or incident investigations.
		Continuous Monitoring: Regularly monitor and audit contracted activities to ensure ongoing compliance and safety performance.	Training and Competency: Percentage of personnel involved in contracted activities who have completed required safety training.

20. Incorrect application of the MEL			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Incorrect application of the Minimum Equipment List (MEL) can lead to aircraft being dispatched with inoperative equipment critical for safe operation, increasing the risk of accidents or incidents. - Additionally, failure to correctly apply the MEL may result in non-compliance with airworthiness directives, potentially leading to unsafe conditions. - Misapplication of the MEL can cause unnecessary delays and operational inefficiencies. For instance, dispatching an aircraft with inoperative equipment that should have been repaired can lead to flight cancellations or delays. - Incorrect MEL application can result in deferred maintenance actions, leading to higher long-term maintenance costs and potential operational disruptions. - Incorrect MEL application can lead to increased maintenance costs due to deferred maintenance actions and potential operational disruptions. Additionally, legal and financial penalties resulting from non-compliance with MEL requirements can further strain the organisation's financial resources, affecting its overall stability.	- To mitigate the risks associated with incorrect MEL (Minimum Equipment List) application, CAMO's should focus on comprehensive training and education. - Ensuring that all personnel involved in MEL application are adequately trained and understanding the importance of correct MEL usage is crucial for maintaining safety and compliance. - Regular audits and reviews of MEL applications are essential to identify and correct any discrepancies or misapplications. - Developing and maintaining clear procedures and documentation for MEL application is vital for ensuring consistency and compliance. - Clear guidelines help personnel understand and adhere to MEL requirements.	Ensure 100% compliance with MEL procedures across all operations.	Measure the percentage of flights that fully comply with MEL items..
		Training programs cover the understanding and correct application of the MEL.	Ensure that all relevant personnel have completed MEL training programs within a specified timeframe.
		Reduce the number of MEL-related errors by a specified percentage within a set timeframe.	: Monitor the number of reported MEL application errors per xx flight hours or xx sectors.
		Implement continuous monitoring and auditing processes to identify and rectify MEL application errors promptly.	Record the number of findings related to MEL application during internal and external audits.
			Measure the percentage of corrective actions related to MEL errors that are closed within the specified timeframe.

21. MRO demand spike			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- MRO (Maintenance, Repair, and Overhaul) demand spikes can occur due to various factors. Increased aircraft utilisation from a surge in air travel necessitates more frequent maintenance. Fleet expansion by airlines requires additional MRO services to maintain new aircraft. Regulatory changes or updates can prompt a sudden increase in maintenance requirements. Unforeseen events such as natural disasters, geopolitical tensions, or pandemics can disrupt normal operations and create sudden MRO demand. - A sudden spike in demand can strain the availability of qualified maintenance personnel, making it challenging for CAMO's to recruit and retain skilled technicians, leading to potential delays and compromised maintenance quality. Additionally, increased demand can lead to shortages of essential parts and materials, affecting the timely completion of maintenance tasks. - CAMO's may face capacity issues, with existing facilities unable to handle the increased workload, resulting in longer turnaround times and potential backlogs. The supply chain for parts and materials can become strained, leading to delays and increased costs, further complicating the maintenance process. - Higher demand can drive up the costs of labour, parts, and materials, leading to increased operational expenses and impacting profitability. Delays in maintenance can result in delayed payments from clients, affecting the cash flow and financial stability of CAMO's, making it difficult to manage finances effectively during demand spikes. - Ensuring compliance with the regulation during demand spikes can be challenging, as CAMO's must maintain high standards despite increased pressure, or risk regulatory penalties. Overworked personnel and rushed maintenance processes can lead to errors, compromising the safety and airworthiness of aircraft, posing significant safety concerns.	- A robust planning system will help avoid an MRO demand spike by ensuring maintenance is ordered in advance and allowing use of permitted variations if required. Diversifying contracted maintenance organisations and suppliers helps maintain strategic stockpiles of critical parts and materials which are essential for supply chain resilience and MRO demand spike. - Expanding facilities and leveraging technology can significantly improve efficiency and handle increased workloads. By optimising space and incorporating advanced tools and systems, organisations can streamline operations and reduce turnaround times, even during peak periods. - Strengthening internal audit and compliance functions to regulatory requirements, even during demand spikes. By maintaining rigorous oversight and regular audits, organisations can uphold high standards of safety and compliance.	Efficiently forecast maintenance activities to avoid aircraft flying out of check.	Staffing Levels: The ratio of available qualified personnel against the scheduled/forecasted work during demand spikes.
		Maintain Quality of Maintenance: Ensure that the maintenance activities conducted is aligned to the expectations defined at contract level.	Maintenance Quality: Track the number of maintenance errors or incidents reported during periods of high demand.
		Minimise Safe and efficient turnarounds; ensuring thorough audits and inspections that turn arounds are conducted in a safe and compliant manner.	Turnaround Time: Monitor the average turnaround time for aircraft during demand spikes and compare it to standard periods.
		Enhance Communication and Coordination: Improve communication and coordination among different departments to manage the increased workload efficiently.	Communication Efficiency: Assess the frequency and effectiveness of communication between departments during high-demand periods.

22. Unrecorded work			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Unrecorded work can lead to disorganised and incomplete maintenance records, making it difficult to track maintenance history, plan future tasks, and ensure all necessary work is completed. This disorganisation can result in increased aircraft downtime and operational disruptions, as maintenance personnel may need to repeat inspections or repairs without accurate records. - Undocumented repairs and modifications increase the risk of undetected faults and potential safety incidents. Proper documentation is essential to ensure that all maintenance tasks are performed correctly and consistently. - Regulation requires CAMO's to maintain detailed records of all maintenance activities. Unrecorded work can lead to non-compliance with these regulations, risking penalties and regulatory actions. - Operational inefficiencies and errors due to unrecorded work can lead to increased maintenance costs. CAMO's may need to invest additional resources to address issues arising from poor documentation. - Inconsistent quality and safety standards due to unrecorded work can affect the reliability of maintenance services provided by CAMO's.	- Implementing automated maintenance tracking systems ensures that all maintenance tasks are accurately recorded and no work goes unrecorded. - Developing comprehensive documentation procedures helps maintain compliance with regulatory requirements and provides a clear audit trail. - Providing regular training programs for maintenance personnel on the importance of accurate record-keeping and best practices enhances their competency and reduces the risk of unrecorded work. - Ongoing competency assessments ensure that maintenance personnel remain proficient in their roles. - Establishing clear communication channels between all departments involved in maintenance activities facilitates effective coordination and information exchange. - Conducting regular audits and inspections of maintenance records.	Enhance Record-Keeping Accuracy: All maintenance activities are accurately recorded and documented.	Number of Unrecorded Work Incidents: Track the number of unrecorded work incidents identified during quarters of the year
		Improve Staff Training: Ensure that staff are trained with regard to records	Training Completion Rate: Measure the percentage of staff who have completed training on record-keeping and compliance.
		Ensure that the audit schedule is covers the scope of 'unrecorded work'.	
		Strengthen Reporting Mechanisms: Implement a reporting systems for staff to report unrecorded work without fear of reprisal.	Reporting Rate: Track the number of reports submitted regarding unrecorded work.
		Promote a Safety Culture: Foster a culture where safety and compliance are prioritized	Corrective Action Implementation Time: Measure the average time taken to implement corrective actions for identified unrecorded work incidents.

23. Cyber Security and the reliance on software			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Unauthorised access to sensitive data, such as aircraft maintenance records and operational data, can result in significant security breaches. These data breaches can expose critical information, potentially leading to severe consequences for the organisation, including loss of trust and legal repercussions. - Outdated or unpatched software presents system vulnerabilities that cybercriminals can exploit. When these vulnerabilities are not addressed, they can compromise the integrity of critical systems, making them susceptible to attacks that can disrupt operations and compromise safety. - Supply chain attacks are another significant threat, as third-party vendors and software providers can serve as entry points for cyberattacks. These attacks can affect the entire organisation, highlighting the importance of securing the supply chain and ensuring that all partners adhere to stringent cybersecurity standards. - Cyberattacks can lead to operational disruptions, causing delays, financial losses, and safety risks. The impact of such disruptions can be far-reaching, affecting not only the immediate operations but also the overall reputation and financial stability of the organisation.	- Conducting regular security audits is essential to identify and address vulnerabilities in systems and networks. - Implementing comprehensive cybersecurity training programs for employees is crucial. - Developing and maintaining an incident response plan is vital for quickly addressing and mitigating the impact of any cyber incidents. - Enforcing strict access controls is necessary to limit access to sensitive data and systems to authorized personnel only. - Using encryption to protect sensitive data both in transit and at rest is a fundamental security measure. - Establishing robust vendor management practices is important to ensure third-party providers adhere to the same security standards.	Implement measures to ensure the confidentiality, integrity, and availability of sensitive data, reducing the risk of data breaches.	Track the number of data breaches over a specific period to measure the effectiveness of data protection measures.
		Regularly update and patch all systems to protect against vulnerabilities and potential cyberattacks.	Monitor the number of identified and mitigated system vulnerabilities to assess the robustness of system security
		Develop and maintain a robust incident response plan to quickly address and mitigate the impact of cyber incidents.	Measure the average time taken to respond to and mitigate cybersecurity incidents.
		Conduct regular cybersecurity training and awareness programs for all employees to recognize and respond to potential threats.	: Track the percentage of employees who have completed cybersecurity training programs.
		Establish stringent security requirements for third-party vendors and regularly audit their compliance.	Monitor the compliance rate of third-party vendors with the organisation's cybersecurity standards.

23.1 Cyber Security and the reliance on software			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Dependence on software for critical functions means that any software failure can have severe operational impacts. When software fails, it can disrupt essential processes, leading to significant delays, financial losses, and potential safety risks. The reliability of software is crucial to maintaining smooth and efficient operations. - Regular updates and maintenance are essential to ensure software reliability and security. - Integrating different software systems can lead to interoperability issues, which can affect the efficiency and safety of operations. - Compatibility problems between various software components can cause malfunctions, data inconsistencies, and operational inefficiencies. Ensuring seamless integration is vital for maintaining operational effectiveness. - Ensuring that all software complies with regulatory requirements can be complex and resource-intensive. Compliance challenges arise from the need to adhere to various standards and regulations, which can vary by region and industry. Organisations must invest significant resources to ensure that their software meets all necessary compliance requirements, which is essential for avoiding legal and financial penalties.	- Ensuring all software is regularly updated and patched is crucial for protecting against known vulnerabilities. - Implementing redundancy and backup systems is essential for ensuring continuity of operations in case of software failure. - Conducting thorough interoperability testing when integrating new software is vital to ensure compatibility and minimise disruptions. - Regularly monitoring and ensuring compliance with regulatory requirements for all software used is necessary to avoid legal and financial penalties. - Performing regular risk assessments to identify potential software-related risks and develop mitigation strategies is a proactive approach to cybersecurity.	Implement regular testing and maintenance schedules to ensure the reliability and functionality of all critical software systems.	Measure the total downtime of critical software systems to assess their reliability.
		Develop and maintain backup systems to ensure operational continuity in case of software failures.	Track the frequency and timeliness of software updates and patches.
		Conduct thorough interoperability testing for all integrated software systems to ensure seamless operation.	Monitor the availability and readiness of backup systems to ensure operational continuity.
		Regularly review and update software to ensure compliance with all relevant regulatory requirements.	Track the number of interoperability issues identified and resolved during software integration.
		Conduct regular risk assessments to identify potential software-related risks and develop appropriate mitigation strategies	Measure the compliance rate of software systems with relevant regulatory requirements.

24. Modifications			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Technical risks in the context of modifications primarily involve the potential for incorrect implementation and compatibility issues. Incorrect implementation can arise from inadequate technical knowledge or errors during the modification process, leading to significant safety hazards. - Additionally, new modifications may not be fully compatible with existing systems, which can result in malfunctions or reduced performance, further compromising the safety and efficiency of the aircraft. - Regulatory compliance risks are another critical concern. Non-compliance with regulatory requirements can cause issues. Ensuring that all modifications meet these standards is essential. - Operational risks associated with modifications include downtime and resource allocation challenges. Modifications often necessitate grounding the aircraft, leading to operational disruptions and financial losses. - Inefficient use of resources during the modification process can strain the organisation's capabilities, affecting other maintenance activities and overall operational efficiency. - Decision-making risks are also significant, particularly when it comes to risk assessment and expertise as required by CAMO.A.315(b)(4).	- Enhanced training and competence are vital for ensuring that staff remain current with the latest technical knowledge and regulatory requirements. - Robust documentation and compliance checks are essential for maintaining regulatory adherence. - Regular internal audits help identify and rectify any compliance issues promptly, thereby safeguarding the organisation's approval status and avoiding potential penalties. - Effective resource management is crucial for minimising downtime and ensuring smooth operations. - Efficient planning and allocation of resources help in reducing operational disruptions. - Improved decision-making processes are fundamental to the success of modifications. - Encouraging a culture of safety and continuous improvement.	Ensure all modifications comply with regulatory requirements and standards.	Percentage of modifications that meet regulatory compliance on the first inspection.
		Identify and mitigate risks associated with modifications to maintain airworthiness.	Number of incidents or safety reports related to modifications per 1,000 flight hours.
		Implement continuous monitoring of modifications to detect and address any emerging safety issues.	Average time taken to approve modifications, indicating efficiency and thoroughness of the review process.
		Provide comprehensive training to personnel on the implications of modifications and associated risks.	Percentage of relevant personnel who have completed training on modification-related risks.
		Documentation and Reporting: Maintain thorough documentation and reporting of all modifications and their impacts on safety.	Audit Findings: Number of findings from internal and external audits related to modifications.

25. Nominated Person(s) – qualification and competency			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Inadequate training and experience among nominated persons pose significant risks to airworthiness management. Without sufficient training, these individuals may not fully grasp the complexities involved, leading to improper maintenance practices, oversight failures, and non-compliance with regulatory requirements, which can compromise aircraft safety. - A lack of knowledge about the latest regulatory changes and requirements is another critical risk. Personnel who are not well-versed in these updates may fail to implement necessary procedures, resulting in regulatory breaches, fines, and potentially the suspension or revocation of the CAMO's approval. - Poor decision-making skills among nominated persons can also have severe consequences. Incompetent decision-making can lead to incorrect assessments of airworthiness issues and inappropriate responses to safety concerns, increasing the likelihood of incidents and accidents. This not only damages the organisation's reputation but also leads to legal liabilities. - The absence of continuous professional development can hinder the effectiveness of CAMO's. Without ongoing training, nominated persons may become outdated in their knowledge and skills, making it difficult for the organisation to adapt to new technologies and methodologies. This can reduce operational efficiency and compromise safety standards.	- Implementing comprehensive training programs is essential to ensure that all nominated persons are well-equipped with the necessary knowledge and skills. - This includes both initial and recurrent training to maintain high standards of competency in airworthiness management. - Regular competency assessments should be conducted to evaluate the skills and knowledge of personnel. - Nominated persons should regularly participate in workshops, seminars, and continuous education programs to stay informed about regulatory changes and industry best practices. - Encouraging professional development within the organisation fosters a culture of continuous learning.	Verify that all Nominated Persons meet the required qualifications and competency levels.	Percentage of Nominated Persons who have completed mandatory training within a specified period.
		Implement ongoing training programs to maintain and enhance the skills of Nominated Persons.	Number of non-compliances or findings related to the qualifications and competency of Nominated Persons identified during audits.
		Regularly audit and review the qualifications and performance of Nominated Persons to ensure compliance with regulatory requirements.	Number of incidents or safety reports linked to the performance of Nominated Persons.
		Identify and mitigate any risks associated with the competency of Nominated Persons through proactive measures.	Results of periodic competency assessments, including pass rates and areas needing improvement.

26. Access to data			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Unauthorised access to sensitive data can lead to significant data breaches, compromising the integrity and confidentiality of critical information. - Such breaches can result in the manipulation or theft of data, which in turn affects the safety and compliance of aircraft maintenance operations. - Cyber-attacks pose another major threat, as they can disrupt operations and lead to the loss or corruption of essential data. - Data integrity issues, such as data corruption and incomplete data, can have severe consequences for CAMO's. Inaccurate or corrupted data can lead to incorrect maintenance decisions, potentially compromising aircraft safety. - Compliance risks are another critical concern for CAMO's. Failure to manage data access properly can result in non-compliance with Regulation 1321/2014, leading to penalties, loss of approval status, and reputational damage. - Operational disruptions caused by data access issues can significantly impact CAMO's. System downtime can disrupt maintenance schedules and operational efficiency, while improper data access controls can lead to human errors, such as accidental data deletion or modification.	- Implementing robust cybersecurity measures is essential for protecting sensitive data within a CAMO (encryption and authentication) - Ensuring data integrity and accuracy is another key aspect of effective data management. - Conducting regular data audits and validation checks helps identify and rectify any inaccuracies or inconsistencies in the data. - Enhancing compliance and audit readiness involves establishing comprehensive data management protocols that align with Regulation 1321/2014. - Developing contingency plans is crucial for ensuring operational continuity in the event of data access issues or other disruptions. - Implementing redundant systems and backup protocols can help maintain operations even if primary systems fail. - Training staff on data management best practices and cybersecurity awareness.	Maintain the accuracy, completeness, and reliability of maintenance data.	Number of incidents where maintenance data was not accessible when needed.
		Ensure that all relevant personnel have timely and secure access to necessary maintenance data.	Number of errors found in maintenance data during audits.
		Protect maintenance data from unauthorized access, tampering, and breaches.	Number of attempts to access maintenance data by unauthorized personnel.
		Conduct periodic audits to verify the integrity and accessibility of maintenance data.	Percentage of staff who have completed training on maintenance data handling.
		Provide regular training to staff on the importance of maintenance data and how to handle it securely.	Number of findings from data audits that indicate non-compliance with data handling procedures.

27. Changes to Operations (Routes)			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Different routes expose aircraft to various environmental conditions, such as extreme temperatures, humidity, and saltwater, which can accelerate wear and tear on components - Additionally, changes in flight duration and frequency can increase operational stress on aircraft systems, necessitating adjustments to maintenance schedules to prevent unexpected failures. - Logistical challenges also arise with operational changes, particularly in ensuring the availability of specific parts and equipment at different locations. - Regulatory compliance becomes a critical factor when operating in new regions. - CAMO's must also consider local aviation regulations, which can differ significantly from UK standards, requiring them to stay informed and align their practices accordingly.	- Ensuring maintenance contracts are in place; and maintenance personnel are trained and competent to handle the specific challenges of new routes is crucial. - CAMO's must conduct comprehensive safety risk assessments for new routes to identify potential hazards and implement mitigation strategies. - This includes evaluating airport facilities, and emergency response plans to ensure safe operations.	Minimise Operational Disruptions: Ensure that changes to routes do not lead to significant operational disruptions.	Number of Route-Related Incidents: Track the number of incidents or near-misses related to new routes.
		Ensure suitable provision for line maintenance. Maintain High Safety Standards: Ensure that safety standards are maintained or during and after the implementation of new routes.	Safety Audit Results: Conduct regular safety audits and track the findings related to new routes.
		Improve Communication and Coordination: Enhance communication and coordination between different departments to manage route changes effectively.	Feedback from Pilots and Crew: Collect and analyse feedback from pilots and crew regarding the new routes to identify any safety concerns relating specifically to engineering support.

28. Incorrect assessment of defect In-Adequate Defect Control / Task management			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Incorrect evaluation of Airworthiness Directives (ADs) and Service Bulletins (SBs) leading to the failure to identify and address critical safety issues. - Potential undetected defects or malfunctions, leading to accidents or incidents, compromising the safety of passengers and crew. - CAMO's must comply with all applicable ADs and relevant SBs as part of their regulatory obligations, incorrect evaluation can result in non-compliance, leading to regulatory findings, or even the suspension of the CAMO's approval. - This non-compliance can severely impact the organisation's ability to operate legally and maintain its reputation. - Failure to correctly evaluate and implement ADs and SBs can cause unexpected aircraft groundings or operational delays. - Incorrect evaluation may result in the omission of necessary maintenance actions, leading to more significant issues that require costly repairs or replacements in the future. - In the event of an accident or incident caused by the failure to comply with ADs or SBs, the CAMO and the operator may face legal actions, including lawsuits from affected parties.	- Ensure that all personnel involved in the evaluation of ADs and SBs receive training on the latest regulatory requirements and evaluation techniques. - Regular training updates help maintain high standards of competency and awareness of any changes in regulations or best practices. - Implement comprehensive quality assurance and audit systems to regularly review and verify the evaluation processes of ADs and SBs. - Develop and maintain clear, standardised procedures for evaluating ADs and SBs. - Establish clear communication channels between all departments involved in the evaluation process. - Engage with regulatory bodies to stay informed about regulatory changes and best practices.	Improve the accuracy and completeness of defect reporting by implementing standardised reporting procedures.	Measure the number of defects reported per flight hour or maintenance hour to monitor the effectiveness of defect reporting procedures.
		Develop and implement procedures and associated training for defect assessment, ensuring that all defects are correctly identified, categorized, and addressed in a timely manner.	Monitor the recurrence rate of previously rectified defects to assess the effectiveness of defect management and rectification processes.
		Ensure that all maintenance tasks are properly planned, executed, and documented, with clear accountability and oversight.	Measure the percentage of maintenance personnel who have completed required training programs on defect assessment and management.
		Provide ongoing training and development programs to enhance the skills and knowledge of maintenance staff, focusing on defect identification and management.	Track the number and severity of findings from internal and external audits related to defect management and task execution.
		Improve communication and coordination between different departments involved in defect management to ensure a cohesive approach to safety.	

29. Manpower Job Description / Competence			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Ineffective recruitment and selection processes - Poorly defined job descriptions may lead to hiring candidates who lack the necessary skills, qualifications, and experience for critical roles. - Individuals being unprepared to handle the responsibilities of ensuring airworthiness, potentially compromising safety and regulatory compliance. - Inadequate performance management is another risk associated with poorly defined job descriptions. These descriptions serve as benchmarks for evaluating employee performance. - Legal and compliance risks arise from inaccurate or vague job descriptions. These can expose the CAMO to potential disputes over job roles and responsibilities resulting in non-compliance. - Reduced employee motivation and engagement can occur when employees do not have a clear understanding of their roles and responsibilities. This could result in decreased job satisfaction, higher turnover rates and increased sickness. - Operational inefficiencies are another consequence of misaligned job roles and responsibilities. - The impact on training and development is significant. Job descriptions are crucial for identifying training needs and developing appropriate training programs.	- Ensure that job descriptions are detailed and accurately reflect the roles and responsibilities required for each position. - Periodically review and update job descriptions to reflect any changes in regulatory requirements, organisational needs, or industry best practices. - Provide comprehensive training and development programs to ensure that all personnel understand their roles and responsibilities. - Regular training sessions help maintain high levels of competency and compliance with regulatory requirements. - Use job descriptions as benchmarks for evaluating employee performance. - Develop clear communication protocols to facilitate the exchange of information between the CAMO, maintenance organisations, and regulatory bodies.	Regularly assess and verify the competence of all personnel involved in maintenance and airworthiness tasks.	Percentage of personnel who have completed mandatory training within the specified timeframe.
		Develop and maintain standardised job descriptions that clearly outline the required qualifications, skills, and responsibilities for each role.	Percentage of job descriptions reviewed and updated annually to reflect current requirements and standards.
		Implement ongoing training programs to keep personnel updated with the latest regulations, technologies, and best practices.	Average scores from regular competence assessments or audits.
		Foster a culture of open communication to ensure that any issues related to job descriptions or competence are promptly addressed.	Regular surveys to gauge employee satisfaction and confidence in their roles and responsibilities.

30. Roles and responsibilities between CAMO and groups not sufficiently defined			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Poorly defined roles and responsibilities within a CAMO can lead to communication breakdowns. Ineffective communication between the CAMO, maintenance organisations, operators, or regulatory bodies can result in misunderstandings and errors in maintenance planning and execution. - Accountability issues arise when there is no clear delineation of responsibilities. It becomes challenging to hold specific parties accountable for tasks, leading to tasks being overlooked or improperly executed. - Operational inefficiencies can occur due to ambiguities in roles. This can cause duplication of efforts or gaps in essential processes, reducing overall efficiency. - Regulatory non-compliance is a significant risk associated with unclear responsibilities. Failure to comply with regulations can lead to grounding of aircraft, and loss of CAMO approval. Inadequate oversight of subcontracted maintenance tasks might lead to non-compliance with airworthiness requirements. - The primary risk of poorly defined roles is the potential compromise of aircraft safety. Inadequate maintenance or oversight can lead to unsafe conditions, such as when the CAMO does not clearly communicate airworthiness directives to the maintenance team, resulting in critical safety updates not being implemented.	- Clear documentation is essential for defining the roles and responsibilities of all parties involved in continuing airworthiness management. - Developing comprehensive documentation ensures that everyone understands their specific duties and the importance of their tasks. - Regular training sessions are crucial to reinforce the understanding of roles and responsibilities among personnel. - Establishing effective communication channels is vital for facilitating clear and timely information exchange between the CAMO, maintenance organisations, and regulatory bodies. - Regular internal and external audits are necessary to ensure compliance with regulatory requirements and to identify any gaps in role definitions. - Collaborative planning sessions with all stakeholders are important for ensuring alignment and clarity in responsibilities.	Ensure all roles and responsibilities between CAMO and other groups are clearly defined and documented.	Measure the percentage of personnel who can accurately describe their roles and responsibilities.
		Establish robust communication channels between CAMO and other groups to ensure seamless information flow.	Track the number of communication breakdowns or misunderstandings reported between CAMO and other groups.
		Implement regular training programs to ensure all personnel are aware of their roles and responsibilities.	Monitor the percentage of personnel who have completed role-specific training within a defined period.
		Regularly monitor compliance with defined roles and responsibilities to identify and address any deviations.	Count the number of non-compliances related to role definitions identified during audits.

31. IT systems(access and tracking)			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Inadequate access controls can lead to unauthorised access to sensitive data, such as maintenance records and compliance documentation, resulting in data breaches that compromise the integrity and confidentiality of critical information. - CAMO's are vulnerable to cyber attacks, including hacking, malware, and ransomware, which can disrupt IT systems, leading to data loss, system downtime, and compromised airworthiness management. - IT system failures or maintenance can cause significant downtime, disrupting the tracking and management of airworthiness activities. This can lead to delays in maintenance schedules, grounding of aircraft, and operational inefficiencies. - Implementing and maintaining robust cybersecurity measures can be costly, impacting the financial stability of the organisation. However, failure to invest in these measures can lead to even higher costs associated with data breaches and system recovery. IT system failures can also lead to operational disruptions, resulting in financial losses due to grounded aircraft, delayed maintenance, and reduced fleet availability. - Data breaches and IT system failures can erode trust among stakeholders, including regulatory authorities, business partners, and passengers.	- Implementing advanced cybersecurity measures, such as firewalls, encryption, and intrusion detection systems, is crucial to protect against unauthorized access and cyber attacks. - Establishing strict access controls ensures that only authorized personnel have access to sensitive data and systems. - Accurate and reliable data management practices are essential for maintaining data integrity and supporting effective airworthiness management. - Conducting regular IT system audits helps identify and address potential vulnerabilities, ensuring compliance with regulatory requirements.	Protect sensitive information from unauthorized access and ensure data accuracy.	Track and reduce the number of unauthorized access attempts to IT systems.
		Minimise downtime and ensure continuous availability of critical IT systems.	Measure and minimise the total downtime of critical IT systems.
		Develop robust mechanisms for detecting and responding to security incidents promptly	Incident Response Time: Monitor the average time taken to detect and respond to security incidents.
		Ensure all IT systems comply with relevant regulations and standards.	Regularly audit IT systems for compliance and track the number of non-compliance issues identified and resolved.
		Implement strict access controls to ensure only authorized personnel can access critical systems.	Conduct periodic reviews of user access rights and track the number of access rights adjusted or revoked.

32. Poor Competence Assessment / Training			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Inadequate competency assessments can lead to unqualified personnel performing critical tasks, increasing the likelihood of human error. - Poorly assessed personnel may lack the necessary skills to perform their duties efficiently, leading to delays and increased operational costs. - Incidents resulting from poor competency can damage the organisation's reputation, leading to a loss of trust from clients and stakeholders. Repeated failures or non-compliance can affect the organisation's market position, making it less competitive and potentially leading to a loss of business. - Inadequate training can leave personnel with significant skill gaps, compromising the quality of maintenance and airworthiness management. - Lack of proper training can increase the frequency of errors in maintenance and management tasks, affecting the overall efficiency of operations. - Inadequately trained personnel are more likely to breach regulatory requirements, resulting in legal and financial repercussions.	- Implement frameworks to evaluate both technical skills and regulatory knowledge. Regularly review and update assessment criteria to stay aligned with regulatory changes and industry best practise - Develop ongoing training programs that cover the latest industry best practise, regulatory updates, and technological advancements. - Use a mix of theoretical and practical training methods to ensure comprehensive skill development and keep personnel proficient. - Establish monitoring systems to track the effectiveness of training programs and competency assessments. Conduct audits and feedback sessions to identify areas for improvement and ensure continuous compliance with industry standards and regulations.	Ensure all training programs are comprehensive, up-to-date, and tailored to the specific needs of the personnel.	Percentage of staff who have completed mandatory training within the specified timeframe.
		Develop assessment methods to accurately evaluate the competence of staff.	Percentage of personnel passing competence assessments on the first attempt.
		Implement regular refresher courses and continuous professional development opportunities.	Number of audit finding responses relating to training or lack of.
		Ensure consistency in training delivery across the organisation.	Number of incidents or near-misses attributed to inadequate training or competence.
		Encourage a culture where continuous learning and safety are prioritized.	Average scores from training feedback surveys, indicating the perceived quality and effectiveness of training programs.
			Number of non-conformities related to training and competence identified during internal and external audits.

33. Safety culture and ability to deliver positive change			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Risks related to safety culture include a lack of reporting, which can leave critical safety issues unaddressed, and inadequate training, leading to a lack of awareness and understanding of safety protocols. - Additionally, without strong management commitment, safety initiatives may not be prioritised, resulting in a weak safety culture. - The impact of a poor safety culture on CAMO's can be significant. A negative safety culture can demoralize employees, reducing their engagement and productivity. - The ability to implement positive changes is crucial for CAMO's to adapt to evolving regulations and technological advancements. Risks related to change management include resistance to change, insufficient resources, and poor communication. - Resistance and resource constraints can delay the implementation of changes, affecting compliance and operational efficiency. - Poorly managed changes can lead to ineffective processes and systems, compromising safety and airworthiness.	- Establish a non-punitive reporting system where employees feel safe to report hazards and safety concerns. - Provide thorough initial and recurrent training programs to ensure all personnel are well-versed in safety protocols and regulatory requirements. - Demonstrate strong commitment from management towards safety initiatives. This includes allocating necessary resources, setting clear safety goals, and actively participating in safety programs. - Develop a structured change management process that includes clear communication, adequate resources, and employee involvement. - Address resistance to change by involving employees in the planning and implementation stages, and provide training to help them adapt to new processes and technologies.	Foster a proactive safety culture where all employees feel responsible for safety and are encouraged to report hazards without fear of retribution.	Measure the number of safety reports submitted by employees. A higher reporting rate can indicate a positive safety culture.
		Ensure clear and effective communication channels for safety-related information across all levels of the organisation.	Track the percentage of employees who complete mandatory safety training within a specified period.
		Provide continuous safety training and development programs to enhance employees' knowledge and skills.	Monitor the number of incidents and accidents per flight hour or per number of flights.
		Implement robust risk management processes to identify, assess, and mitigate safety risks.	Conduct regular safety audits and inspections, and track the number of findings and corrective actions implemented.
		Establish a continuous improvement process for safety management systems (SMS) to adapt to new challenges and changes	Use surveys to gauge employees' perceptions of the safety culture and identify areas for improvement.

34. Incorrectly evaluated AD or SB			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Incorrectly assessing defects can lead to undetected or improperly managed issues, posing significant safety risks. - Misjudging the severity of defects can result in unexpected aircraft downtime, leading to operational disruptions and financial losses, affecting flight schedules and passenger trust. - Additionally, failure to correctly assess defects can lead to non-compliance with regulatory requirements. - Inadequate defect or task management often stems from human errors such as fatigue, lack of training, or communication breakdowns. These factors can lead to skipped inspections, improper repairs, and overall low-quality maintenance. Ignoring required maintenance or using incorrect procedures can exacerbate existing defects, leading to more severe issues over time, compromising safety and increasing maintenance costs. - Persistent issues with defect assessment and management can damage the reputation of a CAMO, leading to loss of business and trust from clients and regulatory bodies - Inadequate defect management can lead to accidents or incidents, endangering lives and leading to severe legal and financial repercussions.	- Ensure that all personnel involved in defect assessment and task management receive thorough training on the latest regulatory requirements and best practices. - Regular training updates help maintain high standards of competency and awareness of any changes in regulations or industry standards. - Implement comprehensive quality assurance and audit systems to regularly review and verify defect assessments and task management processes. - Develop and maintain clear, standardised procedures for defect assessment and task management. - Establish clear communication channels between all departments involved in defect assessment and task management. - Engage with regulatory bodies to stay informed about regulatory changes and best practices.	Implement procedures to ensure all ADs and SBs are accurately evaluated and correctly interpreted.	Measure the percentage of ADs and SBs evaluated correctly on the first attempt.
		Provide comprehensive training for relevant personnel involved in the evaluation process to minimise errors.	Track the percentage of applicable personnel who have completed the required training on AD and SB evaluation.
		Establish clear communication channels between departments to ensure that all relevant information is shared and understood.	Monitor the number of communication-related issues reported during the evaluation process.
		Conduct regular audits to verify compliance with ADs and SBs and to identify any discrepancies early.	Record the number of discrepancies found during audits related to AD and SB evaluations. Corrective Action Closure Rate: Measure the percentage of corrective actions related to MEL errors that are closed within the specified timeframe.

35. Missing records			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Missing or incomplete records can lead to an inadequate understanding of an aircraft's maintenance history, potentially resulting in overlooked maintenance tasks or inspections. - Without comprehensive records, previously identified defects or issues scheduled for repair might go unnoticed, leading to potential in-flight failures. - UK Regulation 1321/2014 mandates that CAMO's maintain detailed records of all maintenance activities. Missing or incomplete records can result in non-compliance, incurring additional time resource to address and rectify. - Missing or incomplete records can lead to delays in maintenance activities as additional inspections or verifications may be required to ensure the aircraft's airworthiness. - Accurate records are essential for effective maintenance planning. Missing records can lead to inefficient scheduling and resource allocation, impacting the overall efficiency of the maintenance process. - The need for additional inspections, repairs, or even grounding of aircraft due to missing records can lead to increased operational costs. Non-compliance and safety issues can damage the organisation's reputation, leading to a loss of business and clients.	- Utilising digital record-keeping systems ensures that all maintenance activities are accurately documented and easily retrievable. - Regular backups of records are essential to prevent data loss, ensuring that information remains intact and accessible. - Conducting internal audits helps ensure that all records are complete and up-to-date. - Providing regular training to staff on the importance of accurate record-keeping and the potential risks associated with missing records is crucial. - Maintaining open communication with regulatory bodies helps organisations stay updated on any changes in record-keeping requirements.	Aim to maintain 100% accuracy and completeness in all maintenance and operational records.	Measure the percentage of records that are accurate and complete. Aim for a target of 99% or higher.
		Implement robust digital record-keeping systems to minimise the risk of data loss or errors.	Track the number of discrepancies or issues identified during audits. A decreasing trend would indicate improvement.
		Conduct periodic audits and reviews of records to identify and rectify discrepancies promptly	Monitor the percentage of staff who have completed record-keeping training. Aim for 100% completion.
		Provide comprehensive training to staff on the importance of accurate record-keeping and the procedures to follow.	Track the number of incidents or safety reports that cite missing records as a contributing factor. Aim for zero incidents.

36. Speed of growth of organisation			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
Rapid organisational growth can lead to significant resource management risks. In terms of human resources, it can result in understaffing or the hiring of inadequately trained personnel, which may compromise compliance and safety standards. - Operational efficiency is also at-risk during periods of rapid growth. Integrating new processes and systems can be challenging, leading to inefficiencies and misalignment with regulatory requirements. - Maintaining high-quality standards becomes more difficult, increasing the risk of non-compliance and potential safety issues. - Regulatory compliance risks are heightened as well. The increased volume of documentation can lead to errors, omissions, and difficulties in maintaining accurate and accessible records. - Risk management is crucial but can be compromised during rapid growth. Ineffective implementation of Safety Management Systems (SMS) can result in unidentified or poorly managed risks. Poorly managed changes, such as the introduction of new aircraft types or expanded operations, can also lead to compliance and safety issues, underscoring the need for careful planning, execution and robust management of change processes.	- To mitigate resource management risks, organisations should implement comprehensive training programs for new hires and ensure adequate staffing levels to maintain compliance and safety standards. - For operational efficiency, establishing clear procedures for integrating new processes and systems is crucial to ensure alignment with regulatory requirements. - To address regulatory compliance risks, developing efficient documentation systems is vital to ensure accurate, up-to-date, and easily accessible records. - Effective risk management involves regularly reviewing and updating the Safety Management System (SMS) to identify and mitigate risks.	Ensure that all new operations and expansions comply with existing safety regulations and standards.	Track the number of incidents and accidents per operational hour or flight.
		Develop and implement comprehensive training programs for new and existing staff to maintain high safety standards.	Measure the number of compliance audits conducted and the percentage of findings closed within a specified timeframe.
		Promote a strong safety culture across the organisation, emphasizing the importance of safety in all operations.	Monitor the percentage of staff who have completed mandatory safety training programs.
		Establish clear communication channels to ensure that safety information is effectively disseminated throughout the organisation.	Track the number of safety reports submitted by staff and the time taken to address reported issues.
		Regularly monitor and review safety performance to identify areas for improvement and ensure continuous compliance.	Measure employee satisfaction with safety procedures through regular surveys and feedback mechanisms.

37. Technical incidents			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Technical incidents can significantly disrupt the operations of a Continuing Airworthiness Management Organisation (CAMO). - These incidents often lead to unplanned maintenance activities, grounding of aircraft, and delays in flight schedules. The need for immediate corrective actions can strain resources and affect the organisation's ability to manage its fleet efficiently. - Technical incidents can trigger scrutiny and audits by regulatory authorities. CAMO's must demonstrate that they have effective processes in place to identify, report, and rectify technical issues. - Safety performance, technical incidents highlight vulnerabilities in maintenance practices, procedures, and oversight. If - The financial impact of technical incidents can be substantial. The costs associated with unplanned maintenance and aircraft downtime can strain the financial resources of a CAMO.	- Robust maintenance planning and scheduling. - Developing contingency plans is also essential to manage aircraft grounding and flight schedule disruptions effectively. - Establishing comprehensive processes for identifying, reporting, and rectifying technical issues is vital. - Regular internal audits help ensure that the organisation remains compliant with regulatory requirements. - Proactively engaging with regulatory authorities to address any findings of non-compliance can prevent potential penalties and maintain the organisation's approval status. - Implementing a safety management system (SMS) allows for effective monitoring, reporting, and addressing of safety concerns. - Financial management is also crucial in mitigating the impact of technical incidents.	Aim to decrease the number of technical incidents per flight hour by a specific percentage over a defined period.	Number of technical incidents per 1,000 flight hours.
		Improve the effectiveness and efficiency of maintenance procedures to prevent technical failures.	Number of maintenance errors reported per month.
		Encourage comprehensive reporting and analysis of technical incidents to identify root causes and implement corrective actions.	Percentage of maintenance tasks completed on time and in accordance with regulatory requirements.
		Enhance training programs for maintenance personnel to ensure they are well-equipped to handle technical issues.	Percentage of maintenance personnel who have completed required training programs within a specified timeframe.

38. Dependency on third party providers, unregulated within the Civil Aviation Authority, for consumables, rotables and major assemblies.			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Unregulated providers may not meet the stringent quality standards required in aviation. This can lead to the use of substandard parts, posing significant safety risks and potentially resulting in non-compliance with airworthiness requirements. - Dependence on third-party suppliers can lead to operational disruptions if these providers fail to deliver parts on time or face their own supply chain issues. Such disruptions can cause delays in maintenance schedules, affecting the overall efficiency and reliability of the aircraft fleet. - Proper documentation and traceability of parts are essential for regulatory compliance and safety. Unregulated providers might not maintain the necessary records, making it difficult to track the history and authenticity of parts. This lack of traceability can complicate audits and regulatory compliance, potentially leading to legal and operational challenges. - Third-party providers, especially those handling IT systems or sensitive data, can introduce cybersecurity vulnerabilities. Breaches in cybersecurity can lead to data loss, operational disruptions, and regulatory penalties. Ensuring robust cybersecurity measures and monitoring third-party providers is essential to protect sensitive information and maintain operational integrity. - Unregulated providers may not be fully aware of or compliant with aviation regulations. This increases the	- Implementing a rigorous vetting process for selecting third-party providers is crucial. This involves conducting thorough audits to ensure providers meet the required quality and regulatory standards. Regular audits and inspections help maintain ongoing compliance - and quality assurance, ensuring that all parts and services meet the necessary safety requirements. - Establishing clear and comprehensive contractual agreements with third-party providers is essential. These contracts should outline quality standards, delivery timelines, documentation requirements, and compliance with aviation regulations. Including penalty clauses for non-compliance can serve as an effective deterrent, ensuring providers adhere to agreed-upon standards and timelines. - Investing in advanced traceability systems is vital to ensure all parts and components can be tracked throughout their lifecycle. This	Establish and maintain rigorous quality control processes to ensure all third-party providers meet the required standards. This includes regular audits and inspections to verify compliance with aviation regulations and quality requirements.	This SPI measures the effectiveness of the vetting and auditing process, ensuring providers meet quality and regulatory standards.
		Develop strategies to ensure the reliability and timeliness of parts and components delivery. This includes establishing contingency plans and maintaining a diverse supplier base to mitigate the impact of supply chain disruptions.	This helps monitor the reliability of third-party suppliers and identify potential supply chain disruptions early.
		Enhance Traceability and Documentation: Implement advanced traceability systems to ensure all parts and components are properly documented and traceable throughout their lifecycle. This objective aims to facilitate easier audits and ensure regulatory compliance.	Percentage of parts with complete and accurate traceability records: Ensuring proper documentation and traceability of parts is crucial for regulatory compliance and safety.
		Strengthen Cybersecurity Measures: Enhance cybersecurity protocols to protect sensitive data and IT systems. This includes implementing secure communication channels, conducting regular security audits, and ensuring third-party providers adhere to stringent cybersecurity standards.	Number of cybersecurity incidents reported and resolved: This assesses the effectiveness of cybersecurity protocols and the organisation's ability to respond to potential threats.

39. Diverse Fleet			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Managing a diverse fleet involves dealing with various maintenance schedules, requirements, and procedures specific to each aircraft type. - Each aircraft type demands specific technical knowledge and skills for proper maintenance and airworthiness management. Ensuring that staff are adequately trained and certified for multiple aircraft types can be both challenging and costly. - A diverse fleet requires a comprehensive inventory system to manage spare parts and components effectively. Inefficient inventory management can result in delays in maintenance, increased operational costs, and the risk of using incorrect or non-compliant parts. Implementing advanced inventory management systems can help track and manage parts more efficiently, reducing these risks. - Different aircraft types may be subject to varying regulatory requirements and airworthiness directives. - Maintaining accurate and up-to-date records for a diverse fleet involves managing large volumes of data. - The complexity of managing a diverse fleet increases the likelihood of human error in maintenance and airworthiness management tasks. Human errors can lead to safety incidents, increased maintenance costs, and potential regulatory violations.	- Implementing standardised maintenance procedures and checklists for different aircraft types helps reduce complexity and ensures consistency across the fleet. - Developing and maintaining comprehensive training programs is essential to ensure that all staff are adequately trained and certified for the aircraft types they manage. - Utilising advanced inventory management systems allows for efficient tracking and management of spare parts and components. - Conducting regular audits and inspections is necessary to ensure compliance with regulatory requirements and identify areas for improvement.	Ensure that maintenance and operational procedures are standardised across all fleet types to minimise variability and potential errors.	Track the number of incidents and accidents per aircraft type to identify trends and areas needing improvement. Maintenance Error Rates: Monitor the frequency of maintenance errors across different aircraft types to ensure that standardization efforts are effective.
		Implement comprehensive training programs to ensure that all personnel are competent in handling the specific requirements of each aircraft type in the diverse fleet.	Measure the percentage of personnel who have completed required training for each aircraft type to ensure compliance and competency.
		Foster effective communication channels between different departments and teams to ensure that information related to the diverse fleet is accurately and promptly shared.	Assess the effectiveness of communication through surveys or feedback mechanisms to ensure that critical information is being shared appropriately.

40. Incorrect assessment of the airworthiness status of the aircraft			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Incorrect airworthiness assessments can lead to undetected defects or maintenance issues, increasing the risk of in-flight failures and accidents. Ensuring the airworthiness of an aircraft is fundamental to passenger and crew safety, and any oversight can result in hazardous conditions. - Misjudging the airworthiness status can lead to unexpected maintenance needs, causing operational disruptions and increased downtime. These inefficiencies can result in frequent flight delays and cancellations, affecting the airline's reliability and reputation. - CAMO's must adhere to stringent regulations. Incorrect assessments can lead to non-compliance which could result in findings. Persistent non-compliance and safety issues can jeopardise an organisation's approval status, impacting its ability to operate legally. - Incorrect assessments can lead to higher maintenance costs due to the need for corrective actions and unscheduled repairs. In the event of an accident or incident, the CAMO may face significant liability claims and increased insurance premiums, further straining financial resources.	- Regular training programs for personnel are essential to ensure they are up-to-date with the latest airworthiness assessment techniques and regulatory requirements. - Implementing comprehensive quality assurance and audit systems allows for regular review and verification of airworthiness assessments. - Maintaining detailed and accurate records of all assessments and maintenance activities is crucial for traceability and accountability. - Engaging with the UK CAA and other regulatory bodies keeps organisations informed about regulatory changes and best practices in airworthiness management.	Ensure all personnel involved in airworthiness assessments receive comprehensive and regular training.	Percentage of personnel who have completed required airworthiness training within a specified period.
		Standardize and regularly update documentation and procedures related to airworthiness assessments.	Audit Findings: Number of non-compliances or findings related to airworthiness assessments identified during internal audits.
		Conduct frequent internal audits and oversight to ensure compliance with airworthiness standards.	Number of errors or discrepancies found in airworthiness documentation.
		Use advanced software and tools to monitor and assess the airworthiness status accurately.	Number of incidents or near-misses related to incorrect airworthiness assessments.
		Promote a culture where safety and accurate reporting are prioritized and encouraged.	Percentage of corrective actions implemented within the stipulated time frame following an audit or incident.

41. Major Component Failure			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Major component failures, such as those involving engines or structural elements, can lead to catastrophic events that endanger the lives of passengers and crew. - When major components fail, aircraft are often grounded, leading to significant operational disruptions and financial losses. - Promptly addressing major component issues is crucial for regulatory compliance. Failure to do so can result in penalties and the potential loss of CAMO approval. Furthermore, repeated component failures can attract increased scrutiny from regulatory authorities, leading to more frequent audits and inspections. - The repair or replacement of major components often involves high costs, which can strain the financial stability of the organisation. Frequent component failures can also lead to higher insurance premiums, further increasing operational costs. - Repeated failures can erode trust among stakeholders, including passengers, regulatory authorities, and business partners. - High-profile incidents resulting from component failures can damage the organisation's brand and reputation, making it difficult to maintain a positive public image.	- Implementing a robust predictive maintenance/reliability program is essential for identifying potential component failures before they occur. - Providing ongoing training for maintenance personnel is crucial to equip them with the latest knowledge and skills needed to handle major component issues. - Use of advanced monitoring systems allows for real-time tracking of the performance and condition of major components. - Working closely with component manufacturers is vital to understand failure modes and implement design improvements.	Aim to reduce the frequency of major component failures through rigorous maintenance and inspection protocols.	Track the number of major component failures per flight hour or cycle.
		Improve the ability to detect potential failures early and respond promptly to prevent escalation.	Record and analyse the number of incidents related to component failures.
		Maintain strict adherence to all regulatory requirements and industry best practices for component maintenance and replacement.	Monitor the number and severity of findings during routine inspections.
		Implement a continuous improvement process to regularly review and enhance maintenance procedures based on data and feedback.	Track the results of internal and external audits to ensure compliance with regulatory standards.

42. Unqualified staff working without appropriate supervision			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Unqualified staff in CAMO's poses significant safety hazards. These individuals are more likely to make errors in maintenance and inspection tasks, leading to undetected faults and potential failures in aircraft systems. - Regulatory non-compliance is another critical risk associated with unqualified staff. UK Regulation 1321/2014 mandates specific qualifications and competencies for personnel. Failure to meet these standards can result in penalties and loss of certification. - Operational inefficiencies can also arise from employing unqualified staff. These individuals may require more time to complete tasks due to a lack of expertise, leading to delays in maintenance schedules and increased aircraft downtime. - Supervisors may need to spend additional time overseeing unqualified staff, diverting resources from other critical tasks and reducing overall efficiency. - The financial implications of employing unqualified staff can be substantial. Errors and inefficiencies can lead to increased costs for rework, additional training, and potential fines for non-compliance. Additionally, the increased risk of incidents and accidents can result in higher insurance premiums for the organisation.	- Appropriate supervision is essential for ensuring staff competence. Supervisors play a crucial role in providing adequate training and development opportunities, enabling staff to perform their tasks competently. - Regular monitoring and assessment of staff performance help identify areas where additional support or training is needed, ensuring continuous improvement in skills and knowledge. - Maintaining high safety standards within the organisation is another critical aspect of effective supervision. - Supervisors are responsible for identifying and managing risks appropriately, which helps uphold safety protocols. They also ensure that all activities comply with regulatory requirements, reducing the risk of non-compliance and associated penalties.	Achieve 100% compliance with training and certification requirements for all staff.	Measure the percentage of staff who have completed required training and certification programs.
		Implement a robust supervision framework to ensure all unqualified staff are appropriately supervised.	Track the ratio of qualified supervisors to unqualified staff to ensure adequate supervision levels.
		Establish a continuous improvement program to regularly review and update training and supervision protocols.	Monitor the number of incidents or near-misses involving unqualified staff to identify areas for improvement.
			Record the number of non-compliance findings related to staff qualifications and supervision during internal and external audits.
			Collect and analyse feedback from staff regarding the effectiveness of training and supervision programs.

43. Use of unapproved parts, leading to operation of unsafe aircraft			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Unapproved parts may not meet the stringent quality and safety standards. - Potentially leading to premature failure or malfunction and causing accidents or incidents. - The integrity of the aircraft's airworthiness is compromised when unapproved parts are used, which can result in the aircraft being grounded or restricted from flying, affecting operational efficiency. - Using unapproved parts violates Regulation 1321/2014, leading to regulatory penalties, and potential revocation of the CAMO's approval status. - Identifying and replacing unapproved parts can be costly, including the cost of parts, labour, and potential downtime for the aircraft. - The use of unapproved parts can damage the reputation of the CAMO, leading to a loss of trust among clients, partners, and regulatory bodies. - Negative publicity and loss of trust can affect the CAMO's market position, leading to a decline in business opportunities and revenue.	- Implementing procurement processes ensures that all parts are sourced from approved suppliers with proper documentation and traceability. - The UK CAA recently released CAP 3037 to provide additional guidance on receiving parts. - Strengthening quality control measures is essential to detect and prevent the use of unapproved parts. This includes conducting regular audits, inspections, and testing of parts to ensure they meet the required standards and specifications, thereby maintaining the safety and reliability of aircraft. - Providing ongoing training for staff on the importance of using approved parts and the risks associated with unapproved components is crucial. - By continuously reviewing and improving procurement processes, quality control measures, and training programs, organisations can enhance their overall maintenance practices.	All parts used in aircraft maintenance and operations must be sourced from approved suppliers and comply with regulatory standards form 1.	Track the number of training sessions conducted for maintenance personnel on the identification and use of approved parts.
		Established training programs for maintenance personnel on the identification and handling of approved parts.	Monitor and report the number of incidents where unapproved parts were identified in use.
		Implement rigorous inspection and verification processes to ensure all parts are approved and meet safety standards.	Measure the compliance rate of internal and external audits regarding the use of approved parts.
		Develop systems for reporting and tracking the use of parts, ensuring traceability and accountability.	Track the rate at which safety concerns related to parts are reported by staff.
		Promote a culture of safety where all staff are encouraged to report any concerns about parts and maintenance practices without fear of retribution	

45. AMO's working to different regulatory standards			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- When a CAMO contracts a Part 145 MRO organisation, which also operates under different regulatory standards, there is a risk of non-compliance with UK regulations. - Variations in maintenance practices and quality control procedures between different regulatory frameworks can impact the safety and airworthiness of the aircraft. - Ensuring consistent quality control is crucial to maintaining high safety standards and preventing potential issues that could arise from differing practices. - Inconsistent documentation standards can result in incomplete or inaccurate maintenance records. This can complicate audits and inspections, making it difficult to verify that all maintenance activities have been performed correctly and in compliance with regulations. - Differences in regulatory language and terminology can lead to misunderstandings and miscommunications between the CAMO and the contracted Part 145 organisation. - Discrepancies in regulatory adherence can create challenges in determining liability and accountability in the event of maintenance-related incidents.	- The CAMO should establish clear and detailed contracts. - Conducting thorough audits is another crucial strategy. Regular audits of the Part 145 organisation can help identify any discrepancies or non-compliance issues early on. - Maintaining open communication channels is essential for effective collaboration. - Providing training and support to the Part 145 organisation can also be beneficial. - Establishing clear roles and responsibilities is vital for accountability.	The Part-CAMO must ensure that the contracted Part 145 organisation complies with all applicable airworthiness requirements and standards, even if they differ from the Part-CAMO's regulatory framework.	Measure the rate of compliance with regulatory requirements and maintenance standards by the Part 145 organisation.
		The primary objective is to maintain the airworthiness of the aircraft by ensuring that all maintenance activities are performed correctly and in accordance with the approved maintenance program.	Monitor the number and severity of findings from audits and inspections of the Part 145 organisation.
		Implement a robust risk management process to identify, assess, and mitigate any risks associated with the maintenance activities performed by the Part 145 organisation.	Measure the adherence to scheduled maintenance timelines and the timely completion of maintenance tasks.
		Establish and maintain a quality assurance system to monitor and evaluate the performance of the contracted Part 145 organisation.	Track the number of incidents or accidents related to maintenance activities performed by the Part 145 organisation.
			Track the rate and effectiveness of defect rectification by the Part 145 organisation.

46. Delay in application of OEM recommendations (SB, SIL, ...)			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Delaying the implementation of OEM recommendations can significantly compromise aircraft safety. These recommendations often address critical issues that, if not resolved promptly, could lead to system failures or accidents. - Ensuring timely compliance with these recommendations is essential to maintain the highest safety standards and prevent potential hazards. - Non-compliance with OEM recommendations can result in regulatory violations. - Operational disruptions are another risk associated with delaying OEM recommendations. Failure to implement necessary updates or modifications can lead to unexpected aircraft downtime, affecting flight schedules and operational efficiency. - Increased maintenance costs are a likely consequence of delaying recommended actions. Over time, minor issues can escalate into more extensive damage, leading to higher repair costs and more extensive maintenance work. Addressing problems promptly can help manage maintenance expenses more effectively. - Reputation damage is a another risk for CAMOs that persistently delay addressing OEM recommendations. - Non-compliance with OEM recommendations might affect insurance coverage, potentially leading to higher premiums or denial of claims in the event of an incident.	- Establishing a robust system for monitoring OEM recommendations and planning their implementation is crucial. - Adequate resource allocation is essential to avoid delays in implementing OEM recommendations. - Regular training sessions for maintenance staff are vital to ensure they understand the importance of timely implementation of OEM recommendations. - Implementing a risk assessment process allows for the evaluation of the potential impact of delaying specific OEM recommendations. - Maintaining open communication channels with OEMs is important for seeking clarifications and support when needed. - Conducting regular internal audits and reviews is essential to ensure compliance with OEM recommendations.	Ensure that all OEM recommendations are implemented within the specified time frame.	Measure the percentage of OEM recommendations implemented within the specified time frame.
		Regularly monitor and audit compliance with OEM recommendations.	Track the number of audit findings related to delays in implementing OEM recommendations.
		Develop and implement risk mitigation strategies for any delays in applying OEM recommendations.	Monitor the number of risk assessments conducted for delayed OEM recommendations and the effectiveness of mitigation measures.
		Enhance staff training and awareness regarding the importance of timely implementation of OEM recommendations.	Measure the percentage of staff who have completed training on the importance of timely implementation of OEM recommendations.

47. Introduction of Part ML and Part CAO creating significant confusion between the owner/operator and CAMO			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- The coexistence of multiple regulations such as Part-ML, Part-M, Part-CAMO, and Part-CAO can create significant confusion. Each regulation has its own specific requirements and scope, leading to potential misunderstandings between the owner/operator and the CAMO. - Ensuring compliance with the distinct requirements of each regulation is challenging. This involves maintaining accurate documentation, training staff on various regulatory requirements, and implementing appropriate procedures to meet these standards. - Miscommunication can arise due to the different scopes and requirements of each regulation. Clear and consistent communication between the owner/operator and the CAMO is essential to avoid misunderstandings and ensure that all regulatory requirements are met. - Managing the operational aspects of different regulations simultaneously increases administrative burden and the potential for errors. - Staff must be adequately trained and competent in understanding and applying the different regulations. Ongoing training and development are necessary to keep up with regulatory changes and ensure compliance. - Non-compliance with any of the regulations can result in grounding of aircraft and disruptions to service. Robust compliance monitoring and quality assurance systems are crucial to mitigate this risk.	- An Appendix 1 contract (applicable to Part-M or Part-ML as appropriate), should define the obligations of the signatories in relation to the continuing airworthiness of the aircraft. - A compliance monitoring system should ensure that regulatory requirements are integrated into business processes. - Employees understand their responsibilities, and operations are regularly reviewed for compliance. - Regular and ongoing training programs are crucial to keep staff updated on the latest regulatory requirements and best practices. This includes specific training on regulations such as Part-ML, Part-M, Part-CAMO, and Part-CAO, as well as general compliance and safety procedures. - Establishing robust communication channels between the all stakeholders. - Promoting a culture of safety and compliance within the organisation can encourage proactive identification and resolution of	Ensure all staff are fully trained and understand the requirements of Part-ML, Part-M, Part-CAMO, and Part-CAO.	Measure the percentage of staff who have completed training on Part-ML, Part-M, Part-CAMO, and Part-CAO within the last year.
		Establish clear and consistent communication channels between the owner/operator and the CAMO.	
		Implement a unified compliance management system to streamline processes and reduce administrative burden.	
		Encourage proactive safety reporting to identify and address potential compliance issues early.	Track the number of communication-related incidents or misunderstandings reported between the owner/operator and the CAMO. Compliance: Review the number of findings caused by breach of Appendix 1 contract arrangements.
		Perform regular internal audits to ensure compliance with all regulatory requirements.	
		Promote a Safety Culture: Foster a culture of safety and compliance within the organisation.	

48. Shifts / Handover			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Poor shift handovers can lead to the loss of critical information regarding the status of aircraft maintenance and airworthiness. - Ensuring that all relevant details are communicated during handovers is essential to maintain high safety standards. - Miscommunication during shift handovers increases the likelihood of errors. If the outgoing shift fails to convey important details about ongoing maintenance tasks, the incoming shift may make decisions based on incomplete information. - Inefficient handovers can cause operational delays. When the incoming shift is not fully briefed on the status of tasks, they may need additional time to gather necessary information, leading to delays in returning aircraft to service. - Regulatory non-compliance is a significant risk associated with poor handovers. Poor handovers can result in gaps in documentation and record-keeping, potentially leading to regulatory non-compliance. - Inadequate communication during handovers can create safety hazards. If critical safety issues are not effectively communicated, unsafe conditions may be overlooked, increasing the risk of accidents.	- Implementing standardised procedures for shift handovers is crucial to ensure consistency and completeness in the transfer of information. - Using both written and verbal communication is essential for conveying critical information. Written logs provide a reference for the incoming shift. - Verbal communication complements this by allowing for immediate clarification and discussion of any issues. - Regular training and awareness programs are vital to emphasise the importance of effective handovers. Staff should be educated on the potential risks associated with poor communication and the impact it can have on safety and operational efficiency. - Utilizing technology, such as digital handover tools, can streamline the handover process and ensure accurate information transfer.	Ensure that all shift handovers include comprehensive and clear communication of critical information.	Regular audits of handover processes to assess the quality and completeness of information transferred
		Develop and implement standardised handover procedures to minimise the risk of information loss.	Collect and review feedback from staff on the handover process to identify potential improvements.
		Provide regular training to staff on effective handover techniques and the importance of accurate information transfer.	Measure the number of errors or near-misses attributed to handover issues.
		Implement measures to reduce the likelihood of errors during shift handovers.	Rates: Monitor the percentage of staff who have completed handover training programs
			Track and analyse incidents related to shift handovers to identify trends and areas for improvement.

49. Use of erroneous / expired data			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Erroneous data can significantly impact the safety of aircraft by leading to incorrect maintenance schedules. This can result in either premature or delayed maintenance activities, which may compromise the aircraft's safety and potentially cause in-flight failures or accidents. - Inaccurate data can affect the tracking of components, leading to the use of unapproved or expired parts. This jeopardises the airworthiness of the aircraft and increases the risk of mechanical failures. - Operationally, incorrect data can cause unnecessary maintenance activities or missed critical maintenance tasks, leading to increased aircraft downtime and operational disruptions. This not only affects the availability of aircraft but also the efficiency of operations. Additionally, erroneous data can lead to the misallocation of resources, such as manpower and materials, further affecting the efficiency and effectiveness of maintenance operations. - From a financial perspective, the use of erroneous data can lead to increased maintenance costs due to unnecessary or repeated maintenance activities. In the event of an incident caused by erroneous data, CAMO's may face significant liability and compensation claims, which can impact their financial stability. T	- Implementing robust data verification and validation processes is crucial to ensure the accuracy and integrity of data used in maintenance activities. - Regular training for personnel on accurate data entry and management is essential. This training should emphasize the importance of data accuracy and the potential risks associated with erroneous data. - Raising awareness among staff about these risks can foster a culture of diligence and attention to detail, further minimizing the chances of data-related issues. - Advanced technologies such as blockchain and AI can be utilized to enhance data accuracy and traceability. - Conducting regular internal audits and reviews is vital to identify and rectify any discrepancies in data management processes.	Ensure all operational data is accurate, up-to-date, and validated before use.	Measure the number of data errors identified during audits relative to the total data entries.
		Conduct periodic audits to identify and rectify any instances of erroneous or expired data.	Track the percentage of scheduled data audits completed on time.
		Implement regular training programs to ensure staff are aware of the importance of data integrity and the procedures for maintaining it.	Monitor the percentage of staff who have completed data integrity training within a specified period.
		Develop and maintain systems that automatically flag and prevent the use of outdated or incorrect data.	Record the number of alerts generated by data management systems indicating potential data issues

50. New approvals (e.g. ETOPS, RVSM, HOFO etc)			
Risk Summary	Mitigation Strategies	Example Safety Objectives	Example SPI's
- Managing the additional operational requirements associated with Part SPA approvals can increase complexity. This includes ensuring that aircraft and personnel meet the specific criteria for operations such as Extended Range Twin Operations (ETOPS), Low Visibility Operations (LVO), and Performance-Based Navigation (PBN), as well as introducing additional bespoke maintenance requirements and costs. Ensuring compliance with these additional requirements can be challenging. - The organisation must stay updated with the latest regulatory changes and ensure that all procedures and documentation meet the stringent standards set by these regulations. - The organisation must ensure that all personnel involved in the management and operation of aircraft under Part SPA approvals are adequately trained and competent. This may require additional training programs and certifications to meet the specific requirements of these approvals. - Maintaining accurate and comprehensive records is crucial for regulatory compliance. The organisation must ensure that all documentation related to Part SPA approvals is meticulously maintained and readily available for inspection by regulatory authorities.	- Provide training programs to ensure that all personnel involved in the management and operation of aircraft under Part SPA approvals are adequately trained and competent. This includes specific training ETOPS, LVO, and PBN. - Develop and maintain comprehensive documentation to ensure all procedures and records meet regulatory requirements. This includes meticulous record-keeping for all activities related to Part SPA approvals, ensuring that documentation is accurate and readily available for inspection. - Conduct regular internal and external audits to ensure compliance with regulatory requirements. These audits help identify any gaps in procedures or documentation and provide opportunities for continuous improvement. - Establish clear communication channels and protocols to facilitate effective information exchange between the CAMO, maintenance organisations, and regulatory bodies.	Maintain full compliance with all regulatory requirements under Part SPA	Percentage of compliance with Part SPA requirements during audits and inspections.
		Risk Mitigation: Identify and mitigate potential risks associated with new operational approvals.	Number of risk assessments completed for new operational approvals within a specified timeframe.
		Continuous Improvement: Foster a culture of continuous safety improvement within the organisation.	Percentage of personnel who have completed required training for new operational procedures.
		Ensure all personnel are adequately trained and competent in new operational procedures.	Number of incidents and near-misses reported related to new operational approvals.
		Aim to reduce the number of incidents and near-misses related to new operational approvals.	Percentage of corrective actions implemented within the target timeframe following identified non-compliances or incidents.