Compliance Workshop Tues 8th September

- EASA Compliance Audit – Repeat Finding Considerations
- Evaluating Root Cause Analysis (RCA) Robustness, Techniques, Challenges, and Best Practices
- Dealing with Situations Arising During the Audit & Strategic Communication
- Auditing Change Management Across the Business - A Guide for Compliance Auditors
- EASA Airworthiness Review (ARC) Compliance Auditing Challenges
- Performance-Based Audit: Methods and Processes for Setting KPIs in Aviation Compliance Auditing
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EASA Compliance Audit – Repeat Finding Considerations

Sofema Aviation (SA) Considers the issues which typically lead to findings repeating over multiple audits.

Introduction

When a non-conformity recurs, following corrective action closure, an auditor must systematically evaluate the breakdown across the analytical, implementation, and governance layers of the organization's EASA Management System.

Evaluating Root Cause Analysis (RCA) Depth and Multi-Factor Drivers

- The primary cause of recurring findings is a RCA process that targets superficial symptoms rather than systemic drivers. (Remember the business area owner is responsible to establish both the Root Causes as well as the Contributing Factors and to provide mitigations for all)

- Organizations often fall into the trap of isolating human error as the ultimate root cause, leading to repetitive and ineffective actions such as retraining personnel, issuing reminder memos, or amending procedures.

Distinguishing Contributing Factors from Root Causes:

Contributing factors describe the immediate operational environment

- Such as staff fatigue, ambient noise, time pressure, or ambiguous task cards.

- Root causes represent the underlying organizational design failures that allow those conditions to persist, such as flawed rostering logic, inadequate tooling budgets, or contradictory operational key performance indicators (KPIs).

Multi-Factor Analysis: Under EASA principles (e.g., ORO.GEN.200, Part-145.A.200, or CAMO.A.200), operational breakdowns rarely stem from a single variable.

- An acceptable RCA must map multiple interacting causal factors across technical, organizational, and behavioral domains.

Important Note - If an organization's RCA framework (e.g., 5 Whys, Fishbone, Bowtie) consistently yields single-point human error conclusions, the RCA methodology itself is non-compliant.

Evaluating Corrective Action Implementation and Verification Deficits

When an RCA successfully identifies systemic drivers but findings still recur, the failure lies within the Corrective and Preventive Action (CAPA) execution and verification mechanisms.

- **Output vs. Outcome Closure Bias:** A common failure mode occurs when the Compliance Monitoring Function (CMF) closes a finding based purely on output verification (e.g., confirming a new procedure was published) rather than outcome verification (e.g., confirming sustained operational change in practice).

Absence of Post-Implementation Audits: The management system must enforce a mandatory, time-delayed effectiveness review loop.

The CM should keep findings conditionally open or mandate a scheduled follow-up audit within 90 to 180 days to sample the process under real operational conditions before formal closure.

- If the CM closes findings without measuring effectiveness, the breakdown resides within the compliance monitoring process itself.

Diagnosing Management System Weakness and Executive Ownership

Recurring non-conformities often reveal a structural ceiling on local authority.

- Middle managers frequently understand the root cause but lack the budget, cross-departmental authority, or headcount needed to implement a true fix.

The Middle Management Authority Ceiling: When a permanent fix requires capital expenditure, fleet modifications, software integration, or cross-departmental restructuring, operational managers are forced to implement local "band-aid" solutions. The recurring finding is an artifact of this authorization bottleneck.

Accountable Executive (AE) Buy-In & Governance: Under EASA governance structures, the Accountable Manager holds ultimate responsibility for financing and equipping the organization to ensure compliance (e.g., ORO.GEN.200(a)(1) & (2)).

- Persistent recurrence indicates a breakdown in the Safety Review Board (SRB) or Management Review escalation pathways.
- If the AE is not regularly briefed on repeat finding trends, or if resource requests to resolve audit findings are rejected without a formal safety risk assessment, the finding must be elevated to a management system level non-compliance against executive oversight.

Audit Sampling Protocol and Strategic Interview Framework

To determine the precise failure point during an audit, use the following interview strategies and documentation checks.

Targeted Questions for the Accountable Executive

- How are repeat audit findings and systemic compliance trends presented to you during Executive Management Reviews, and what threshold triggers your direct financial or operational intervention?
- When a corrective action requires capital investment or cross-departmental reorganization, what direct approval pathway exists to bypass middle-management resource constraints?
- How do you ensure that the resources allocated across departments are sufficient to address systemic root causes rather than short-term procedural fixes?

Targeted Questions for the Compliance Manager

- What objective evidence does the CM require before formally closing a finding, and what percentage of closed CAPAs undergo a deferred 90–180 day effectiveness audit?
- How do you track, aggregate, and trend root causes across different operational departments to identify underlying management system weaknesses?
- What formal escalation pathway do you use when a department manager proposes a corrective action that you consider insufficient to prevent recurrence?

Key Audit Artifacts to Request

- Minutes, hazard logs, and action item tracking registers from Safety Review Board (SRB) and Management Review meetings over the previous 12 to 24 months.
- CM effectiveness verification audit records and sampling evidence collected post-closure.

- RCA worksheets, causal trees, or risk assessments associated with both the original finding and its subsequent recurrences.
- Capital expenditure applications, resource allocation requests, or business cases submitted by operational managers seeking to resolve compliance findings.

Level 2 Audit Finding Statement: Management System & Executive Governance Oversight

Regulatory Reference:

- EASA ORO.GEN.200(a)(1) & (a)(2) / Part-145.A.200(a)(1) & (a)(2) / CAMO.A.200(a)(1) & (a)(2) – Management System (Accountable Executive Responsibility & Resource Allocation)
- AMC1 ORO.GEN.200(a)(6) / AMC1 Part-145.A.200(a)(6) – Compliance Monitoring Function and Corrective Action Verification Loop

Finding Classification: Level 2 Non-Conformity (Note: Elevates to Level 1 under ORO.GEN.160 / 145.B.50 / CAMO.B.350 if uncorrected within agreed timelines or if the failure directly reduces safety margins/airworthiness).

Statement of Non-Conformity: The organization's management system fails to ensure that repeat non-conformities are effectively escalated, resourced, and resolved at the Accountable Executive level. The management system has permitted systemic root causes to remain unaddressed across successive audit cycles, resulting in recurring operational non-compliances and ineffective corrective action monitoring.

Audit Evidence:

- **Repeat Findings:** Audit Finding [Ref: AUD-XXXXXX] regarding [specific operational process, e.g., tool control / maintenance documentation] was closed on [Date] based on procedural updates. An identical non-conformity recurred under Audit Finding [Ref: AUD-2025-004] and again during Audit [Ref: AUD-XXXXXX].
- **Superficial Root Cause Analysis:** Root Cause Analyses (RCA) for Findings [AUD-XXXXXXX] and [AUD-XXXXXX] relied on isolated human error ("staff failed to follow procedure") and implemented localized actions ("reminded staff / updated SOP"). The RCA failed to evaluate underlying systemic drivers, such as shift handovers, staffing levels, and conflicting operational KPIs.
- **Governance Breakdown:** Review of Safety Review Board (SRB) and Management Review minutes over the past 12 months showed that recurring non-conformity trends and operational resource deficits were not escalated to or reviewed by the Accountable Executive.
- **Resource Allocation Ceiling:** Line management documented capital and personnel constraints as the barrier to a permanent fix in [Internal Memo Ref / Date], yet no

formal risk assessment or resource allocation request was presented to the Accountable Executive for authorization.

- **Verification Loop Failure:** The Compliance Monitoring Function closed the initial findings based solely on paper proof of SOP amendments without performing a mandatory 90–180 day post-implementation effectiveness audit.

Safety Impact & Systemic Assessment: Operating a compliance system that closes findings on paper without resolving underlying operational enablers undermines the integrity of the Safety Management System. When middle management lacks the cross-departmental authority or budget to resolve root causes, the failure ceases to be an operational issue and becomes a structural breakdown of executive governance.

Required Action:

- **Immediate Mitigation:** Re-open Finding [Ref: AUD-XXXXXX] and execute a multi-factor Root Cause Analysis incorporating operational, resource, and management factors.
- **Governance Integration:** Implement an automated escalation mechanism within the Compliance Monitoring Manual (CMM) requiring any repeat finding to be logged directly onto the Accountable Executive's risk dashboard and SRB agenda.
- **CMF Effectiveness Verification:** Establish a mandatory post-closure effectiveness audit sampling protocol within the CMF for all complex or repeat CAPAs prior to final administrative closure.

Evaluating Root Cause Analysis (RCA) Robustness, Techniques, Challenges, and Best Practices

Sofema Aviation (SA) considers techniques which auditors may use to assess whether an RCA is robust and effective?

- Auditees frequently stop their Root Cause Analysis (RCA) at immediate or direct causes, such as isolated human error, oversight, or SOP slips, because addressing systemic organizational failures requires deeper investigation, management accountability, and financial commitment.
- To ensure an RCA is robust and prevents recurrence, auditors must systematically challenge superficial findings and verify whether the auditee has identified the underlying system weaknesses.

Auditor Techniques to Assess RCA Effectiveness

- **The Direct Cause vs. Systemic Root Cause Test:** Auditors must differentiate between the direct cause (the immediate action or trigger that caused the non-conformity) and the root cause (the lowest-level management or process breakdown).

    - Auditors should apply the following test: "If this specific worker or task is corrected, could the same issue occur in another department or shift?" If the answer is yes, the auditee has only identified a direct or contributing factor.

- **Evaluating the Depth of the "5 Whys":** Review the auditee's questioning chain to confirm they progressed past superficial explanations.
    - A robust RCA typically reaches 4 to 5 "Whys," transitioning from operational slips to systemic issues like inadequate training design, flawed manual procedures, unmanaged change, or lack of resources.
- **Auditing Data and Fact Substantiation:** Verify that every link in the causal chain is supported by documented objective evidence rather than assumptions or speculation.
    - Ensure that alternative potential causes were systematically evaluated and ruled out using logical evidence.
- **Reviewing Formal Analysis Frameworks:** For complex non-conformities, assess whether the auditee used structured graphical or logic models:
    - **Ishikawa (Fishbone) Diagrams:** Examining inputs across Manpower, Paper, Equipment, and Environment.
    - **Tripod Beta / Bow-Tie Models:** Identifying active human failures, environmental preconditions, and broken organizational barriers.
- **Assessing Corrective Action Alignment (CAPA):** Evaluate whether the proposed Corrective Actions address the organizational system (e.g., updating procedures, revising training syllabi, re-allocating tooling) rather than applying "sticking plaster" fixes like simply retraining or admonishing the individual worker.

Key Challenges in Assessing Auditee RCA

- **Overcoming "Blame Culture" Fixation:** Auditees often default to blaming individual operator error to avoid exposing higher-level management system shortfalls.
- **Distinguishing Contributing Factors from Root Causes:** Auditees frequently mistake environmental or situational contributing factors (which increase likelihood) for root causes (which, if removed, completely eliminate the recurrence mechanism).

Best Practices for Auditors

- **Maintain Clear Ownership Boundaries:** The auditee must retain full ownership of determining and implementing the root cause solution, while the auditor acts as an independent validator who accepts or rejects the logic based on evidence.

- **Closed-Loop Verification:** Never close a finding based solely on a proposed plan; mandate dynamic follow-up auditing to verify that the corrective action was implemented effectively and that performance has improved over time.

Dealing with Situations Arising During the Audit & Strategic Communication

Executive Summary

For experienced auditors operating within European Aviation Safety Agency (EASA) compliant Aviation Compliance Monitoring Systems (CMS), technical knowledge of regulations such as Part-ORO, Part-145, and Part-M is only one part of the role.

The true test of an effective auditor lies in managing real-time situations on the audit floor, steering difficult interviews, and maintaining absolute objectivity when unexpected friction or resistance occurs.

This discussion document explores the psychological dynamics of the audit floor, de-escalation techniques, neutral communication strategies, and practical methods for resolving on-site auditing challenges professionally.

The Psychology of the Auditee: De-escalating Friction

Understanding the psychological dynamics of an auditee is essential for managing real-time situations during an audit. Auditees frequently display anxiety, defensiveness, or reluctance when subjected to audit oversight.

- **The Control-Threat Reflex:** Humans have an innate desire to maintain control over their immediate work environment. When an auditor enters their workspace, the auditee may perceive the audit as a direct challenge to their personal control or professional standing, triggering defensive behaviors or a feeling akin to an inferiority complex.
- **The Mismatch Between Production and Protection:** Operational personnel are primarily driven by daily production, schedules, and outputs. In contrast, compliance auditors are tasked with ensuring protection through regulatory and procedural adherence. Recognizing this fundamental mismatch helps auditors reframe their presence as systemic verification rather than personal scrutiny.
- **De-escalation Strategies on the Floor:**
    - **Physical Parity:** If possible conduct interviews in a quiet area where both the interviewer and interviewee can sit down comfortably. Never stand over a seated auditee, as keeping eyes at the same level maintains a sense of personal equality.
    - **Neutral Demeanor:** Maintain relaxed body language and use a soft, neutral vocal tone to reduce operational tension.

- **Early Role Clarification:** Use the pre-audit conversation to explicitly clarify that the audit evaluates organizational processes, systems, and procedures—never individual performance or capability.

Strategic Interviewing & Active Listening

Developing advanced interview skills is a cornerstone of auditor competence. Mid-experience auditors must move beyond rigid checklist execution to elicit meaningful operational context.

- **Hearing vs. Active Listening:** Hearing is merely the passive perception of sound stimuli. In contrast, active listening is a deliberate cognitive activity that decodes, interprets, and evaluates verbal information within the context of the audit.
- **Effective Questioning Techniques:**
  - **Open-Ended Prompts:** Initiate dialogue using open questions that allow the auditee to explain workflows in detail, such as asking how specific maintenance, flight support, or documentation procedures are managed.
  - **Positive Leaning Prompts:** When communication stalls or encounters friction, re-engage the auditee with constructive prompts, such as asking what operational or procedural improvements they would implement if given the authority.
- **Separating Hearsay from Objective Evidence:** Statements gathered during interviews provide valuable qualitative insight into operational culture and procedural understanding. However, oral statements remain hearsay until verified. Auditors must cross-reference verbal accounts with physical records, approved technical data, or direct observation to establish objective proof.

Communication Pillars for Audit Feedback & Reporting

The choice of words and tone during an audit directly dictates how well finding reports are received and acted upon by management. Accusatory phrasing triggers immediate defensiveness, whereas objective, neutral phrasing encourages constructive problem-solving.

Phrasing Guideline: Describe discrepancies in terms of procedural gaps rather than personal non-compliance. For example, state *"The process specified in Exposition Section 3.2 was not fully reflected in the task card execution"* instead of *"The technician violated company procedures"*.

To ensure effective audit communication, lead and senior auditors should adhere to six core attributes:

- **Accuracy:** Communications must be factual, error-free, and grounded in direct evidence to avoid distortions or operational misunderstandings.
- **Objectivity:** Maintain an impartial perspective, evaluating the current state without being swayed by previous audit history or personal impressions.
- **Clarity:** Use logical structure and plain language, avoiding unnecessary technical ambiguity or over-complicated terminology.
- **Constructiveness:** Present observations neutrally to help the auditee understand the gap without dictating the exact solution, as root cause resolution belongs to the process owner.
- **Completeness:** Present all findings in a comprehensive, structured manner rather than drip-feeding issues piecemeal throughout the audit.
- **Timeliness:** Raise significant non-conformities promptly to ensure key management is informed without unexpected delays.

Handling Real-Time Situations on the Audit Floor

- **Managing Auditee Pushback:** When an auditee challenges a finding, auditors must avoid emotional arguments. Re-anchor the conversation directly to the reference standard—whether an EASA Implementing Rule, Acceptable Means of Compliance (AMC), or internal manual procedure. Invite the auditee to demonstrate how the existing practice meets the written requirement. If agreement cannot be reached on the floor, document the facts objectively and escalate the topic to the Compliance Monitoring Manager.
- **Maintaining Perspective on Sample Size:** Auditors do not need to inspect 100% of records to assess process health. A sample size as low as 10% can adequately demonstrate whether a procedure is working effectively. Over-digging simply to find minor errors wastes audit resources and damages professional relationships.
- **Recognizing the Value of a "No-Finding" Audit:** A clean audit where no discrepancies are identified is a positive outcome, proving that the organization is conforming to standards. Auditors should never feel compelled to keep digging until they find a defect.
- **Escalating Uncovered Safety Hazards:** While quality audits focus on regulatory compliance, an auditor may occasionally observe an active safety hazard or operational exposure. In such cases, the hazard must be brought to the immediate attention of the department manager and routed into the Safety Management System (SMS) data capture process for formal risk assessment.

Summary Principles for the Effective Auditor

To maintain high standards across all auditing activities, auditors should consistently apply three guiding principles:

- **Focus on Systems, Not Personnel:** Always evaluate facilities, documented procedures, and competency management processes rather than judging individual worker actions.
- **Preserve Independent Objectivity:** Operate independently from the operational department being audited to ensure an unbiased evaluation for senior leadership and the Accountable Manager.
- **Ensure Complete Evidence Verification:** Validate every observation with repeatable, trustworthy objective evidence before finalizing any formal non-compliance report.

Auditing Change Management Across the Business - A Guide for Compliance Auditors

Introduction

We all understand that within an evolving aviation regulatory landscape governed by European Aviation Safety Agency (EASA) standards—such as Regulation (EU) 2018/1139, Part-145, Part-CAMO, and ORO.GEN.200 change is continuous

- Whether an organization is expanding fleet size, altering maintenance procedures, adopting new software, or restructuring departments, organizational changes introduce systemic risk
- For effective compliance auditors, auditing change management is both a refresh on foundational compliance auditing principles and an educational deep dive into evaluating business adaptation

Important Note – It is understood as a given that we should not in any case compromise regulatory compliance or operational safety.

- Compliance monitoring cannot remain static;
- It should dynamically adapt to monitor how effectively an organization manages transitions
- Auditing change management requires looking beyond basic checklist conformance to evaluate whether the business can plan, execute, validate, and control change while keeping safety and compliance intact.

Structural Framework: CA, QC, and SMS in Change Management

To audit change effectively, auditors must distinguish between the distinct roles within an EASA-compliant management system.

- **Quality Control (QC) Ownership**: Quality Control is the responsibility of Post Holders and Business Area Owners. They deliver compliant operational processes, establish working procedures, and manage the competence of their personnel during changes.
- **Compliance Auditing (Independence)**: Compliance Auditing (headed by the Compliance Manager) operates independently to audit all QC processes, verifying that company documentation and actual operational practices conform to internal standards and external regulations.
- **Safety Management Systems (SMS) Synergy**: SMS is forward-looking and proactive, focusing on hazard identification and risk exposure. Conversely, CA is compliance-focused, comparing operational performance against established standards.

Initiating Business Change

When an organization initiates business changes, the SMS must perform proactive risk assessments and identify appropriate mitigations.

- Concurrently, the CA function must independently verify that all modified processes, manuals, and training requirements are fully documented, approved, verified, and validated prior to operational implementation.
- The Accountable Manager remains ultimately responsible for both systems, relying on effective feedback loops from the Compliance Manager to stay informed of significant non-conformities during transitions.

Key Challenges in Auditing Change Management

Auditing organizational change introduces specific operational and human challenges that auditors must navigate carefully:

- **Incomplete Verification and Validation of Procedures**: A frequent finding during organizational transitions is procedural drift, where changes are implemented operationally before procedures are officially updated, or where new manuals are written without being verified and validated for practical application.

- **Human Factors and Cultural Resistance**: Organizational change impacts workplace culture, supervisory norms, and staff motivation. Unclear project objectives, lack of leadership commitment, or delayed training syllabi create employee anxiety and non-compliance. If personnel are not properly trained on revised procedures prior to rollout, execution often fails.
- **Safeguarding CA Independence**: When business area owners lack time or expertise, CA personnel are often tempted to directly draft new Quality Control procedures. This creates a severe conflict of interest. QA cannot remain truly independent if it audits procedures designed by its own staff.

Auditor Note: If QA assists in drafting procedures due to resource constraints, the Business Area Owner must formally define the requirements, accept ownership, sign off on the final text, and manage the associated training. Only then can QA maintain its independent oversight role.

Best Practices Across the Audit Lifecycle

Successful auditors should adopt structured, best-practice techniques to deliver thorough and impactful change management audits.

Pre-Audit Planning and Documentation Review

- **Assess Management Review Integration**: Review recent Management Evaluations and Safety Review Board minutes to verify that planned changes were formally evaluated at the executive level.
- **Verify Revision Control and Approvals**: Check document control logs to ensure all revised manuals, work instructions, and forms received appropriate internal sign-offs and Competent Authority approvals or acceptances before operational release.
- **Evaluate Dynamic Audit Scheduling**: Confirm that the compliance monitoring program dynamically adjusts its schedule to audit high-risk changed areas rather than adhering rigidly to fixed annual cycles.

Execution and Interviewing Techniques

- **Master the Art of Open-Ended Questions**: Avoid simple binary "yes/no" queries. Put auditees at ease in a quiet, neutral environment and ask open-ended questions such as: *"How was this procedure validated before rollout?"*, *"What training did your team receive regarding this process change?"*, or *"What prompts a review of this procedure?"*
- **Examine Competence and Resources**: Verify that manpower, tooling, facilities, and training records were updated to support the change. Ensure staff competence is managed to a controlled standard rather than assumed.
- **Observe Physical Operations**: Combine document audits with random operational sampling and witnessing of live activities to ensure that published procedural changes match real-world execution on the shop floor or flight line.

Post-Audit Analysis and Root Cause Oversight

- **Enforce True Root Cause Analysis (RCA)**: When non-conformities occur during a change, the audit finding must be assigned to the Business Area Owner to determine the root causes as well as contributing factors. Auditors should refrain from imposing solutions.

- **Validate RCA Depth**: The auditor's role is to evaluate whether the auditee's RCA & Determination of Contributing Factors addresses underlying system failures rather than merely treating direct symptoms or penalizing individuals. Ensure corrective actions address the management system itself to prevent recurrence.

Conclusion

- Auditing change management across an aviation enterprise requires a balance of regulatory rigor, systemic perspective, and diplomatic communication.
- Compliance auditors serve as a crucial line of defense for the Accountable Manager, ensuring that business evolution does not degrade internal standards or regulatory compliance.
- By auditing process effectiveness, verifying robust risk integration, and ensuring clear ownership of corrective actions, auditors help transform potential change-induced vulnerabilities into verified operational strength.

EASA Airworthiness Review (ARC) Compliance Auditing Challenges

EASA's transition to Part-CAMO, Part-CAO, and Part-ML, alongside regulatory updates such as Regulation (EU) 2026/100, have transformed the Airworthiness Review Certificate (ARC) from a periodic administrative compliance check into a continuous, SMS-driven safety gate.

Fundamental Regulatory Shifts

- **SMS & Safety Management Integration:** Legacy standalone Quality Systems under Part-M Subpart G are replaced by integrated Management Systems (MS) under Part-CAMO and Part-CAO. ARC outputs directly feed internal hazard identification, safety risk assessments, and non-conformity tracking.
- **Competency Over Static Qualification:** Static credential checks for Airworthiness Review Staff (ARS) are replaced by dynamic, formal competency evaluations covering practical capabilities, human factors awareness, regulatory updates, and physical inspection techniques.
- **Part-ML Simplification & Flexibility:** General Aviation rules separate ARC processes from commercial air transport standards by introducing Self-Declared Maintenance Programmes (SDMPs), Minimum Inspection Programmes (MIPs), and simplified ARC issuance (EASA Form 15c)—shifting substantial responsibility onto independent ARS and Approved Maintenance Organisations (AMOs).
- **Modernization & Digital Integrity:** Legacy "controlled environment" concepts are eliminated in favor of standardized Airworthiness Review Reports, mandatory record retention, and tamper-evident digital record-keeping rules.

Impact on Industry & Compliance Auditors

- **For CAMOs & CAOs:** Airworthiness oversight shifts from an annual paperwork event to continuous internal control. Organizations face an increased burden of proof, requiring exhaustive physical survey records, strict ARS independence from routine aircraft management, and detailed technical justification for any Aircraft Maintenance Programme (AMP) or Instructions for Continued Airworthiness (ICA) deviations.
- **For Compliance Auditors:** Auditing pivots from "tick-box" compliance to evaluating system effectiveness, data integrity, organizational safety culture, human performance limits during turnaround pressure, and root-cause analysis quality. Auditors must actively verify "Work-as-Imagined" against actual "Work-as-Done" on the ramp.

Delivery an ARC Audit in Steps

Phase 1: ARS Authorization & Independence (Preparation)

- **Scope & Qualification Verification:** Inspect Airworthiness Review Staff (ARS) authorization files to confirm active aircraft type ratings, mandatory recurrent regulatory updates, and human factors training. Verify that formal, dynamic competency assessments are conducted periodically rather than relying on legacy static credentials.
- **Independence Auditing:** Cross-reference duty rosters, maintenance sign-offs, and continuous airworthiness management records for the specific tail number. Confirm the nominated ARS had zero direct involvement in routine CAMO/CAO activities (e.g., maintenance planning, AD evaluation, or work package issuance) for that aircraft during the preceding 12 months.
- **Key Audit Artifacts:** Request ARS competence evaluation matrices, formal organizational authorization certificates, duty segregation logs, and MSN-specific task allocation records.

Phase 2: Reverse-Traceability Record Sampling (Execution)

- **Targeted Sampling Selection**: Select a high-risk sample from issued EASA Form 15 certificates or Airworthiness Review Reports (ARR). Prioritize recent major modifications, structural repairs, newly installed Life-Limited Parts (LLPs), deferred defect logs, and newly issued Airworthiness Directives (ADs).
- **Document Hierarchy Traversal:** Walk backward from the final ARC summary entry directly to raw task cards, pilot logbooks, and component birth certificates (EASA Form 1 or FAA Form 8130-3). Validate that every link in the chain contains valid

maintenance release signatures, correct facility authorization numbers, and unambiguous task references.

- **Red Flags to Target**: Summary compliance lists that lack underlying task card packages, mismatched serial numbers, broken back-to-birth history on LLPs, and unverified self-declarations under Part-ML SDMPs.

Phase 3: Physical Survey Reconciliation (Verification)

- **Configuration Matching:** Perform an aircraft walkthrough alongside or immediately following the ARS physical survey. Reconcile high-visibility physical components against the technical record baseline:
    - **Data Plates & Serials**: Engine, APU, and landing gear physical serial numbers against engine logbooks and maintenance tracking software.
    - **Safety & Emergency Equipment:** Part numbers, serial numbers, and expiry dates for escape slides, fire extinguishers, oxygen bottles, and ELTs against the emergency equipment status sheet.
    - **Antennas & Placards:** Antenna layouts, structural repairs, and exterior/cockpit warning placards against Supplemental Type Certificates (STCs) and repair documentation.
- **Deferred Defect Verification:** Inspect the physical aircraft for open items listed in the deferred defect log. Verify physical tagging, temporary repair limits, and operational placards on the flight deck.
- **Human Performance & Ramp Interviews:** Engage the ARS directly during or after the survey with targeted inquiries (e.g., "How did you verify the modification status of this physical antenna layout against the wiring diagram?") to assess practical depth and pressure-handling capabilities.

Core Audit Challenges & Best Practices

- **Paper/Digital Disconnect vs. Physical Reality:** Conduct live physical survey sampling alongside desktop record reviews. Use operational inquiries during ARS interviews, such as: *"What step or physical installation check felt most difficult to complete under time pressure?"*
- **Digital Record Integrity & Fragmentation:** Audit the software pipeline behind digital logbooks. Validate system validation certificates, electronic signature security trails, user permission hierarchies, and historical data migration logs to confirm entries remain uncorrupted.

- **Part-ML SDMP & ICA Flexibility:** Audit the technical baseline and rationale behind owner-declared programs or manufacturer deviations, ensuring flexible rules never compromise mandatory ALIs or active ADs.

Performance-Based Audit: Methods and Processes for Setting KPIs in Aviation Compliance Auditing

Sofema Aviation Considers Operational Use of the EASA PSOE Model to support Performance Based Auditing throughout industry.

Introduction

The aviation regulatory landscape is experiencing a pivotal shift, moving away from a rigid, "box-ticking" compliance model toward a performance-oriented, risk-based maturity framework.

- Central to this transition is Performance-Based Oversight (PBO), which emphasizes evaluating the actual effectiveness of an organization's management system rather than merely verifying the existence of documented procedures
- The implementation of tools like the EASA Management System Assessment Tool (MSAT) presents a strategic opportunity for operators to embed safety directly into their organizational DNA
- By aligning auditing practices with a performance-based perspective, organizations can foster predictive risk management, secure extended oversight cycles, and establish a collaborative regulatory partnership based on shared safety data

Here we consider the methods and processes for conducting performance-based audits and establishing robust Key Performance Indicators (KPIs) to measure compliance and safety effectiveness.

The Foundation: The PSOE Maturity Model

To implement performance-based auditing, it is essential to utilize a maturity model that categorizes the developmental stages of management system processes. The EASA MSAT utilizes the PSOE framework to guide this evaluation

- Present (P): Processes are documented within the management system
- Suitable (S): The design and scope of the process are appropriate for the organization's specific size, nature, complexity, and risk profile.
- Operating (O): The process is in active use by staff and is producing outputs, which can be verified through internal interviews and observations.
- Effective (E): The process is achieving its desired safety outcomes, delivering measurable results, and driving continuous improvement.

The Core Challenge in Auditing

A key question in modern compliance auditing is distinguishing between a system that is merely "Operating" to satisfy a checklist, versus one that is "Effective" in delivering measurable safety outcomes Auditors are trained to verify that processes do not just generate activity (e.g., holding meetings or generating audit reports), but actually lead to tangible risk reduction.

Methods of Performance-Based Auditing

Conducting a performance-based audit requires moving beyond document reviews. Auditors must actively triangulate evidence to ensure consistency between what is written, what is understood, and what is achieved.

Evidence Sources for Review (ESoR)

Performance-based auditing relies on diverse evidence sources to validate maturity for example:

- **Documentation & Records:** While these demonstrate that a process exists and activities are taking place (supporting the "Present" and "Operating" levels), they do not independently prove effectiveness.
- **Interviews:** Engaging with personnel across all levels ensures that procedures are not purely theoretical Interviews test whether staff consistently understand and apply the documented processes
- **Observations:** Observing meetings (such as Safety Review Boards), reporting discussions, and operational routines provides direct insight into how the management system functions and influences decision-making in real-time

Safety Performance Data: To achieve an "Effective" rating, organizations must provide data showing the element is achieving its safety or compliance objectives/

Triangulation of Evidence

A mature audit methodology relies on triangulation, comparing different evidence sources to ensure they support the same conclusion

- For example, if a procedure mandates hazard reporting, auditors will check records for submitted reports, interview staff to confirm their understanding of the process, and review performance dashboards to analyze reporting trends.
- When all these factors align, confidence in the system's maturity increases significantly

Process of Setting KPIs for Compliance Auditing

Establishing effective KPIs and Safety Performance Indicators (SPIs) is a critical step in performance-based auditing. Results must be measurable, and trends should demonstrate sustained improvement or stable achievement at target levels.

Principles of Effective KPI Design

When defining KPIs for compliance and safety auditing, organizations must ensure they are:

- Outcome-Oriented: KPIs must link process outputs directly to safety or compliance outcomes, rather than just tracking activity volume.
- Aligned with Strategic Priorities: Objectives and SPIs should align with broader organizational goals and external frameworks, such as the European Plan for Aviation Safety

- Data-Driven & Actionable: KPIs must be supported by reliable data (e.g., from safety performance dashboards) and trigger proactive risk management interventions when targets are not met.

Categorizing Compliance and Safety KPIs

Based on the MSAT framework, performance metrics can be structured across several key operational domains [cite: 1]. The table below outlines recommended KPIs for compliance auditing.

KPI Category Example Metrics & SPIs Evidence of Effectiveness

KPI Category	Example Metrics & SPIs	Evidence of Effectiveness
Corrective Actions & Compliance	• On-time completion rate of corrective actions (e.g., 90%+ compliance target) • Rate of repeat audit findings over time	Corrective actions address systemic root causes rather than temporary quick fixes, and audit trends demonstrate a steady reduction in findings within targeted risk areas.
Operational Risk Reduction	• Reduction in deferred defects • Decrease in the frequency and severity of recurring incidents (e.g., fewer maintenance errors, reduced loading slips, lower ground damage cases)	Core performance metrics show visible positive shifts, while risk heatmaps reflect movement from high-risk categories to medium or low levels following specific interventions.
Proactive Risk Management	• Number of hazards identified prior to adverse events occurring • Hazard closure and reporting tracking rates	Hazards are proactively identified using predictive data analysis (e.g., reliability data, surveys), resulting in documented assessments that directly lead to tangible changes in procedures, workflows, or technology.
Safety Culture & Reporting	• Volume and trend of voluntary, confidential safety reports • Employee participation and understanding in safety promotion campaigns	A sustained increase in voluntary reporting reflects deep trust in a non-punitive system, and staff across all organizational levels can clearly articulate how their feedback resulted in implemented safety changes.

Embedding KPI Analysis into Organizational Routines

Setting KPIs is only the first step; utilizing them effectively dictates the success of a performance-
based management system.

Utilizing Performance Dashboards

Performance dashboards are critical for presenting evidence of effectiveness

- They convert scattered records into visible patterns, allowing auditors and management to quickly determine if a process is stable, improving, or drifting.
- Dashboards should visually track KPIs/SPIs against established safety performance targets (SPTs).

Integrating Data into Decision-Making

A true performance-based system leverages KPI data to influence both financial and operational
choices.

- Safety Review Board (SRB) minutes must reflect that leadership actively discusses risks and uses safety data to drive decisions, such as budget allocations for training or new technology.

Addressing the Integrated Management System (IMS) Challenge

A common failure point in performance auditing is the fragmentation of data.

- Organizations often fail to share hazard logs or reliability data across integrated approvals (e.g., CAMO and Part-145), leading to missed systemic risks
- Using inconsistent risk matrices across different departments makes it impossible for senior management to compare overall operational risks
- KPIs must therefore be standardized and centralized within a unified framework.

Considerations - How Can AI support the EASA Audit Process

Sofema Aviation (SA) considers how AI can support audit related tasks

Introduction

Whilst AI has the potential to shift aviation compliance from periodic spot-checks to real-time risk surveillance. Humans must still supervise the process to ensure thoughtful decisions and protect the industry's safety culture.

Continuous Intelligence in Auditing

Traditional EASA compliance typically relies on sampling 5% to 10% of historical logbooks, flight data, or maintenance signoffs.

- AI models eliminate this blind spot by ingesting 100% of operational data streams in real time, including digital work orders, telemetry, training records, and shift handovers, to identify subtle, systemic micro-anomalies before they manifest as incidents.

Just Culture & SMS Imperative

Under EASA EU Regulation 376/2014 and standard Safety Management Systems (SMS), safety relies on open incident reporting without fear of unjustified punishment.

- AI tools evaluate binary data, not human intent, systemic pressures, or environmental friction.

Note - Algorithmic compliance scoring risks creating a surveillance state that suppresses voluntary safety reporting, destroying the Trust ecosystem essential to Just Culture.

The Synergistic Compliance Framework

- AI's Domain (Data & Detection): Pattern recognition, statistical anomaly detection, cross-referencing regulatory documentation, and continuous risk-scoring.
- Human's Domain (Context & Culture): Root-cause analysis, evaluating human factors (fatigue, morale, training gaps), conducting psychological safety interviews, and making final regulatory risk determinations.

Where AI Delivers High Value (Data & Pre-Audit Analysis)

- **Document Alignment & Gap Analysis:** Natural Language Processing (NLP) models can cross-reference EASA Hard Law (IRs) and Soft Law (AMC/GM) against company manuals (MOE, CMM, OM) to instantly flag regulatory updates, out-of-date references, or conflicting procedures.
- **100% Data Screening vs. Spot-Checking:** Instead of sampling 5% of work packages, flight logs, or training files, machine learning can screen 100% of records. It detects time-stamp anomalies, missing signatures, or out-of-sequence maintenance sign-offs in seconds.
- **Targeted Audit Planning:** By aggregating historical audit findings, Mandatory Occurrence Reports (MORs), and hazard logs, predictive tools highlight elevated risk areas across outstations or departments, allowing auditors to build risk-based audit schedules.
- **Semantic Evidence Retrieval:** AI allows auditors to query compliance databases in natural language, instantly surfacing exact procedural evidence for specific EASA requirements.

Where the Human Auditor Is Irreplaceable (Context & Culture)

- **Nuanced Interviewing & Intent:** AI cannot interpret body language, hesitation, or subtle evasiveness during staff interviews. A certifying technician saying "we always follow the manual" with nervous laughter signals operational pressure that AI will miss entirely.
- **Evaluating Safety & Just Culture:** Assessing whether a company maintains a healthy safety culture requires qualitative observation of shift handovers, management responsiveness, and open reporting habits—factors absent from written documentation.
- **Judging Operational Context:** Determining whether a procedural deviation was a reckless violation or an adaptive safety workaround requires operational experience and human context.
- **Physical Verification:** AI cannot walk the hangar floor to check tool calibration tags, inspect chemical storage segregation, or observe an actual line-maintenance task in progress.

Final Considerations

AI is able to support a pre-audit intelligence layer, analyzing bulk data, mapping regulatory gaps, and drafting targeted lines of inquiry.

The human auditor acts as the qualitative investigator, conducting interviews, verifying physical reality, and determining root causes.

Developing EASA Risk Based Aviation Compliance Audit programs

Sofema Aviation (SA) considers a framework for EASA Risk-Based Compliance Monitoring (CMP)

Introduction

EASA regulations (ORA.GEN.200, CAMO.A.200, Part-145.A.200) mandate shifting from fixed 12-month audit cycles to dynamic, risk-based compliance monitoring, concentrating oversight resources where operational risk and complexity are highest.

Core Assessment Methodologies & Domain Application

Organisations must combine qualitative expert judgment with data-driven metrics to objectively prioritize audit resources:

- **Qualitative Risk Assessment**: Relies on expert judgment and risk evaluation matrices (Likelihood vs. Severity) for novel approvals, restructuring, or regulatory updates where baseline data is scarce.
    - *Primary Application*: Crew Training (ATO/ORA), syllabus modifications, instructor standardization.

- **Semi-Quantitative Scoring**: Assigns weighted numerical scores to operational complexity, management turnover, past finding history, and voluntary safety report volume.
    - *Primary Application*: CAMO & Part-145 Maintenance, certifying staff turnover, tool calibration, deferred defects.
- **Quantitative & Data-Driven Analysis**: Leverages hard metrics and statistical anomalies from Flight Data Monitoring (FDM), Minimum Equipment List (MEL) usage rates, and Safety Performance Indicators (SPIs).
    - *Primary Application*: Flight Operations, route/airport complexity, crew fatigue reports, Line Operations Safety Audit (LOSA) trends.
- **Barrier-Based (Bowtie) Assessment**: Maps audits directly to critical safety barriers, prioritizing processes linked to single-point failure barriers regardless of historical stability.
    - *Primary Application*: Cross-domain high-risk activities (e.g., ETOPS, Low Visibility Operations).

The 5-Step Multi-Domain Audit Process

1. **Data Integration**: Synthesize risk inputs across Flight Ops, CAMO, Part-145, Training, and Ground Handling—including voluntary reports, non-compliances, management changes, operational expansions, and SMS hazard registries.
2. **Risk Scoring & Matrix Mapping**: Evaluate processes based on complexity, change velocity, historical compliance, and safety criticality to assign composite risk scores.
3. **Dynamic Schedule Generation**: Replace standard blanket cycles with risk-adjusted audit intervals. Extend mature, low-risk areas up to EASA AMC maximums while increasing frequency for volatile or high-risk domains.
4. **Targeted Execution**: Shift audit scope from superficial "tick-box" compliance checks to operational effectiveness, human factors, and critical barrier performance.
5. **Feedback & Adaptation**: Feed findings, SMS trend analyses, and operational changes back into the matrix to adjust the schedule dynamically throughout the year.

System Integration & Operational Triggers

- **Trigger Thresholds**: Establish defined risk score ceilings that automatically force audit interventions (e.g., a process score jump requiring an ad-hoc audit within 30 days).
- **Inherent vs. Residual Risk**: Continuously balance inherent risk (the baseline risk of activities like ETOPS) against residual risk remaining after evaluating internal controls and past audit outcomes.

EASA Evidentiary Requirements

To prove a compliant risk-based CMP during oversight audits, organisations must present:

- **Variable Audit Master Plan**: Visual proof of varying audit frequencies across departments (e.g., 6-month cycles for new fleet additions vs. 24-month cycles for stable legacy processes).
- **Documented Allocation Criteria**: Formal SMS/Compliance procedures detailing the exact algorithms or matrices used to convert risk scores into audit intervals and scopes.
- **Operational Trigger Logs**: Records demonstrating clear causality between safety events or organizational changes and subsequent non-scheduled audits or scope expansions.
- **Living Plan Revisions**: Historical revision logs showing mid-cycle adjustments to audit dates, scopes, and allocated auditor hours in response to emerging risks.
- **Closed-Loop Systemic Findings**: Audit reports analyzing root causes and joint Safety/Compliance review meeting records proving active alignment between risk registers and audit planning.

Example Risk-Based Compliance Audit Scheduling (Part 145 Organisation)

1. Purpose and Scope

This procedure defines the methodology used by the Compliance Monitoring Manager (CMM) to establish, review, and adapt the internal audit plan for all Part-145 maintenance activities, facilities, and subcontracted functions in accordance with Point Part-145.A.200(a)(6). Audit frequencies and sampling scopes shall be determined using a semi-quantitative risk evaluation.

2. Composite Risk Scoring Model

Each maintenance department, workshop, line station, and sub-contractor process shall undergo an annual risk assessment—or ad-hoc reassessment following major operational changes—using the Composite Risk Score formula:

$$CRS = (OC \times 0.25) + (OS \times 0.25) + (SD \times 0.25) + (CH \times 0.25)$$

Where CRS yields a weighted value between 1.0 (lowest risk) and 5.0 (highest risk).

3. Assessment Parameters

- **Operational Complexity (OC):** Evaluates the technical scope of work. Scale factors include: single vs. multi-fleet ratings, specialized testing/NDT capabilities, engine overhaul scope, and reliance on sub-contracted maintenance.

- **Organizational Stability (OS):** Evaluates human and structural change. Scale factors include: turnover rate of Certifying Staff and Support Staff, changes to Nominated Persons, facility relocations, and rapid head-count expansion.
- **Safety Data Metrics (SD):** Evaluates safety system trends over the trailing 12 months. Scale factors include: voluntary safety reports involving the process, internal MORs, repeat technical defects, tool/equipment calibration failures, and component installation errors.
- **Compliance History (CH):** Evaluates past oversight performance over the trailing 24 months. Scale factors include: volume and severity of internal audit findings (Level 1 vs. Level 2), findings raised by national aviation authorities (NAA/EASA), and CAPA implementation timely closure rates.

4. Audit Intervals and Action Thresholds

- **High Risk (**$3.8 \leq CRS \leq 5.0$**):** Accelerated 6-month audit cycle. The audit scope shall focus on critical barrier verification, error-capturing methods (independent inspections), and human performance factors.
- **Medium Risk (**$2.3 \leq CRS \leq 3.7$**):** Standard 12-month compliance monitoring schedule focusing on procedural conformance and facility/tooling integrity.
- **Low Risk (**$1.0 \leq CRS \leq 2.2$**):** Extended audit cycle up to a maximum of 24 months, provided continuous oversight data remains stable and no unresolved Level 1/2 findings exist.

5. Mandatory Dynamic Overrides

Regardless of the overall CRS, an immediate off-schedule compliance audit shall be initiated within 14 business days if any single parameter score reaches 5.0, or upon the occurrence of a Level 1 NAA finding, a major unmitigated maintenance error, or a change in the Maintenance Organisation Exposition (MOE) scope of approval.

The Role of the External EASA Part 145 Auditor

Sofema Aviation Considers the Challenges Facing the External Auditor

Introduction

Under Regulation (EU) No 1321/2014 (including its Annexes: Part-M, Part-145, Part-CAMO, Part-CAO, Part-66, and Part-147), continuing airworthiness and maintenance organisations must establish a Compliance Monitoring Function / Organisational Review) to monitor compliance with applicable airworthiness requirements.

An organisation may subcontract or contract the independent audit element of its compliance monitoring system to an external auditor or external qualified entity under specific regulatory circumstances:

- **Small Part-145 Organisations** (up to 10 maintenance staff) may subcontract the independent audit function to an external qualified person or organisation, subject to competent authority agreement.
- **Part-CAMO Organisations** may contract external personnel to carry out independent audits under the responsibility of the Compliance Monitoring Manager (CMM).
- **Small Combined Airworthiness Organisations (Part-CAO)** or Part-M organisations may conduct regular Organisational Reviews supported or executed by external auditors.
- **Part-147 Maintenance Training Organisations** (small MTOs) may contract the independent audit function to external qualified persons, requiring at least two audits every 12 months (one unannounced).

Impact of Specific Organisational Configurations on External Audit Tasks

Combined Compliance Monitoring Manager (CMM) & Safety Manager (SM)

- **Regulatory Context**: Under AMC1 145.A.30(c);(ca) and AMC1 CAMO.A.305(a)(4);(a)(5), a single person may manage both the compliance monitoring function and safety management processes, subject to a risk assessment and competent authority agreement.
- **Audit Mandate**: Per GM1 145.A.200(a)(6) and GM1 CAMO.A.200(a)(6), *"the compliance monitoring function itself should be subject to independent monitoring of compliance"*. Because an individual cannot independently audit their own function, when CMM and SM are combined into one role, an external auditor is strictly necessary to perform an independent audit of both the CMM and SM functions .
- **Key Focus Areas for the External Auditor**:
    - Assessing whether the dual-role holder maintains adequate independence from operational/maintenance activities.
    - Auditing whether sufficient resources are allocated to both compliance monitoring and safety management without one function overshadowing the other.
    - Independently auditing safety risk management key processes (hazard identification, safety risk assessments, risk mitigations, and safety performance monitoring) .
    - Evaluating the effectiveness of the Internal Safety Reporting Scheme, Just Culture policy, and occurrence investigations .

Competence Management Sitting with the Compliance Manager

- **Regulatory Context**: Point 145.A.30(e), point CAMO.A.305(g), and point CAO.A.035(e) require organisations to establish and control the competency of all personnel involved in maintenance, continuing airworthiness, safety management, and compliance monitoring.
- **Audit Mandate**: When the CMM administers competency assessments, initial/recurrent training, and qualification records, they cannot audit their own administrative work.
- **Key Focus Areas for the External Auditor**:
    - Independently sampling personnel files to verify that competency assessments are conducted prior to unsupervised work .
    - Auditing initial and 2-year recurrent training records for Safety/Human Factors, Fuel Tank Safety (FTS), Electrical Wiring Interconnection System (EWIS), and Critical Design Configuration Control Limitations (CDCCL).
    - Verifying certifying staff, support staff, and Airworthiness Review Staff (ARS) authorisations, Part-66 licence validity, 6-month recent experience in 2 years, and minimum age requirements .

Documentation Management Sitting with the Compliance Manager

- **Regulatory Context**: Point 145.A.70, point CAMO.A.300, and point CAO.A.025 require maintaining the exposition (MOE/CAME/CAE) and procedures, while 145.A.45 / CAMO.A.325 require controlling current maintenance data .
- **Audit Mandate**: If the CMM controls manual revisions, maintenance data subscriptions, and record retention systems, an external auditor must audit these document control processes.
- **Key Focus Areas for the External Auditor**:
    - Auditing CAME/MOE/CAE amendment procedures: verifying proper direct approval by the Competent Authority or valid use of indirect approval for minor amendments.
    - Auditing the change management procedure and tracking Alternative Means of Compliance (AltMoC) .
    - Verifying that current maintenance data (AMM, IPC, SRM, ADs, SBs, ICAs) is maintained and accessible to staff .

- Auditing record-keeping integrity, electronic database security/backups, and retention periods (3 years for maintenance/AR records; 5 years for management system/contracts) .

Comprehensive External Auditor Task Matrix

Based on Regulation (EU) No 1321/2014, the tasks to be carried out by an external auditor are structured across seven operational domains:

1. Compliance Monitoring & Safety Management Systems (CMS / SMS)
2. Competence, Qualifications & Human Factors
3. Expositions, Manuals, Maintenance Data & Document Control
4. Continuing Airworthiness Management Tasks (CAMO / CAO-CAM)
5. Maintenance Execution, Production Planning & Workshop Controls
6. Contracting, Subcontracting & Supply Chain Oversight
7. Audit Process, Product Sampling, Reporting & Accountable Manager Feedback

Domain 1: Compliance Monitoring & Safety Management System (CMS / SMS) Audits

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
CMS-01	Audit the Compliance Monitoring Function itself for independence, audit plan execution, and completeness .	145.A.200(a)(6) / CAMO.A.200(a)(6) / CAO.A.100
CMS-02	Audit the dual-role structure (CMM + SM) for potential workload conflicts and proper reporting lines directly to the Accountable Manager .	AMC1 145.A.30(c);(ca) / AMC1 CAMO.A.305(a)(4);(a)(5)
SMS-01	Audit Hazard Identification & Risk Assessment processes (reactive, proactive, predictive hazard identification and risk control tolerability) .	145.A.200(a)(3) / CAMO.A.200(a)(3)
SMS-02	Audit the Internal Safety Reporting Scheme, Just Culture policy, reporter confidentiality, and closed-loop corrective action tracking .	145.A.202 / CAMO.A.202

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
SMS-03	Verify internal safety investigations, causal/contributing factor analysis, and root cause determination .	145.A.95 / CAMO.A.150 / 145.A.202(c)
SMS-04	Audit the Management of Change process for organizational, operational, or key personnel changes .	145.A.85, 145.A.200(a)(3) / CAMO.A.130, CAMO.A.200(a)(3)
SMS-05	Verify Emergency Response Plan (ERP) interface procedures and immediate safety action protocols.	145.A.200(a)(3) / CAMO.A.200(a)(3)
SMS-06	Audit Safety Performance Monitoring & Safety Objectives progress reviews during Safety Review Board (SRB) meetings.	AMC1 145.A.200(a)(1) / AMC1 CAMO.A.200(a)(1)

Domain 2: Competence, Qualification & Personnel Management Audits

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
HR-01	Audit the Personnel Competency Assessment Procedure (initial assessment prior to unsupervised work, continuous evaluation, job descriptions, logbook records) .	145.A.30(e) / CAMO.A.305(g) / CAO.A.035(e)
HR-02	Verify initial and 2-year recurrent Safety Training / Human Factors syllabi and attendance records for all staff .	AMC4 145.A.30(e) / AMC3 CAMO.A.305(g)
HR-03	Verify technical training records: Fuel Tank Safety (FTS Phase 1/2/recurrent), EWIS, and CDCCL training.	AMC5 145.A.30(e) / Appendix IV to AMC5 145.A.30(e) / App XII to M.A.706(f)
HR-04	Audit Certifying Staff & Support Staff authorisations: Part-66 licence validity, type ratings, age ≥21, and 6 months of actual maintenance experience in 2 years .	145.A.30(g),(h),(i), 145.A.35 / CAO.A.040

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
HR-05	Audit Airworthiness Review Staff (ARS) qualifications, formal acceptance (EASA Form 4 / CAME/CAE list), and 6 months experience in 2 years (or 1 AR in 12 months) .	145.A.37 / CAMO.A.310 / CAO.A.045
HR-06	Audit one-off and limited flight crew certifying staff authorisations (145.A.30(j) / M.A.607(b) / CAO.A.040(b)), reporting within 7 days, and re-check records .	145.A.30(j) / M.A.607(b) / CAO.A.040(b)
HR-07	Audit Specialised Tasks personnel qualifications (NDT Level 1/2/3 to EN 4179, welders to recognised standards).	145.A.30(f) / M.A.606(f) / CAO.A.035(f)

Domain 3: Expositions, Manuals, Maintenance Data & Document Control Audits

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
DOC-01	Audit MOE / CAME / CAE structure, content, and Accountable Manager signed commitment statement .	145.A.70 / CAMO.A.300 / CAO.A.025
DOC-02	Verify management of changes: Competent Authority prior approvals vs. indirect approval procedures for minor changes.	145.A.70(c), 145.A.85 / CAMO.A.130, CAMO.A.300(c) / CAO.A.105
DOC-03	Verify evaluation, documentation, and approval of Alternative Means of Compliance (AltMoC) .	145.A.120 / CAMO.A.120 / CAO.A.017
DOC-04	Audit Maintenance Data control (AMM, IPC, SRM, CMM, ADs, SBs, ICAs): currency, distribution, and fast-track urgent update mechanisms .	145.A.45 / CAMO.A.325 / CAO.A.055
DOC-05	Audit modified maintenance instructions procedure (145.A.45(d)), ensuring no modification of CDCCL and feedback sent to author.	145.A.45(d) & AMC1 145.A.45(d)

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
DOC-06	Audit Record-Keeping System: 3-year retention for maintenance/AR records; 5-year retention for SMS, compliance monitoring, and contracts .	145.A.55 / CAMO.A.220 / CAO.A.090
DOC-07	Verify electronic record & IT database safeguards: anti-tampering access controls, backup every 24 hours, and remote off-site backup storage.	145.A.55(e)-(g) / CAMO.A.220(d)-(f)

Domain 4: Continuing Airworthiness Management Tasks Audits (CAMO / CAO-CAM)

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
CAM-01	Audit Aircraft Maintenance Programme (AMP) development, annual effectiveness review, reliability programme management, and competent authority approval / indirect approval .	M.A.302 / ML.A.302 / CAMO.A.315(b)(1) / CAO.A.075
CAM-02	Audit Airworthiness Directives (AD) & Emergency AD processing, technical evaluation, maintenance work order integration, and closed-loop compliance tracking .	M.A.303 / CAMO.A.315(b) / CAO.A.075
CAM-03	Audit Modification and Repair management: verification of approved Part 21 / CS-STAN data, STCs, and CDCCL impact assessments .	M.A.304 / CAMO.A.315(b)(3),(4) / CAO.A.075
CAM-04	Audit Aircraft Continuing Airworthiness Record System & Technical Log System entries (flight hours/cycles, life-limited parts status, time-controlled components, mass & balance, deferred defects) .	M.A.305, M.A.306 / CAMO.A.220, CAMO.A.315
CAM-05	Audit Airworthiness Review (AR) processes: documented record review, physical aircraft survey, compliance report generation, and ARC (Form 15a/15b/15c) issuance or extension .	M.A.710, M.A.901 / CAMO.A.320 / CAO.A.085

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
CAM-06	Audit Permit to Fly issuance procedures under CAMO/CAO privileges (conformity with approved flight conditions) .	M.A.711(c) / CAMO.A.125(f) / CAO.A.095(d)
CAM-07	Audit Mandatory Occurrence Reporting (MOR) to Competent Authority, State of Registry, and Design Approval Holder within 72 hours .	145.A.60 / CAMO.A.160 / CAO.A.085

Domain 5: Maintenance Execution, Production Planning & Workshop Audits (Part-145 / Part-CAO / Subpart F)

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
MNT-01	Audit Production Planning & Man-Hour Planning: verification of man-hour availability vs. workload, shift patterns, fatigue risk management, and shift handover procedures .	145.A.47 / 145.A.30(d) / CAO.A.035, CAO.A.060
MNT-02	Audit Facility & Environmental Conditions: hangar availability, workshop segregation, clean working environment, lighting, temperature, noise control .	145.A.25 / M.A.605 / CAO.A.030
MNT-03	Audit Tooling & Test Equipment Controls: control register, calibration to national standards, validity labels, and alternate tooling approval procedures.	145.A.40 / M.A.608 / CAO.A.050
MNT-04	Audit Component & Material Acceptance: incoming physical inspection, EASA Form 1 / equivalent verification, standard parts, raw/consumable material conformity certificates .	145.A.42 / M.A.501 / CAO.A.050
MNT-05	Audit Component Segregation & Mutilation: secure store segregation for unserviceable items; permanent mutilation or non-flight marking for unsalvageable parts .	145.A.42(c) / M.A.504 / CAO.A.050
MNT-06	Audit In-House Part Fabrication Procedures (145.A.42(b)(iii)): verifying approved design data, no	145.A.42(b)(iii) & AMC1 145.A.42(b)(iii)

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
	external supply/EASA Form 1 issuance, and proper part marking .	
MNT-07	Audit Performance of Maintenance & Error-Capturing Methods: general post-maintenance verification (clear of tools/extraneous parts), Critical Maintenance Tasks identification, and Independent Inspections / Re-inspections .	145.A.48 / M.A.402 / CAO.A.060
MNT-08	Audit Certificate of Release to Service (CRS) Issuance: verifying certifying staff sign-off, technical log entries, incomplete maintenance warnings, and temporary component fitting (30 FH limit) .	145.A.50 / M.A.801 / CAO.A.065

Domain 6: Contracting, Subcontracting & Supply Chain Audits

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
SUB-01	Audit Subcontracted Maintenance Procedures (145.A.75(b) / 145.A.205 / CAMO.A.205 / CAO.A.095): pre-subcontract audits, subcontractor list in MOE/CAME/CAE, and verifying subcontractor works under the organisation's management system .	145.A.75(b), 145.A.205 / CAMO.A.205 / CAO.A.095(a)(2),(b)(3)
SUB-02	Audit Contracted Maintenance Agreements: review of technical maintenance contracts (Appendix XI to AMC M.A.708(c) / Appendix IV to AMC1 CAMO.A.315(c)) between CAMO/Operator and Part-145/CAO maintenance organisations .	Appendix XI to AMC M.A.708(c) / App IV to AMC1 CAMO.A.315(c)
SUB-03	Verify Supplier Evaluation & Control Procedures: initial and recurrent quality assessment of parts suppliers, stockists, distributors, and brokers .	145.A.42(b)(i) & GM3 145.A.42(b)(i)
SUB-04	Verify Competent Authority Access Clause: ensuring all contracts and subcontracts grant	145.A.140 / CAMO.A.140 / CAO.A.110

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
	unrestricted access to competent authority inspectors.	

Domain 7: Audit Process, Product Sampling, Reporting & Accountable Manager Feedback

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
AUD-01	**Audit Plan Development**: Formulate an annual independent audit plan covering all branches, product lines, line stations, and subcontracted activities .	145.A.200(a)(6) / CAMO.A.200(a)(6) / CAO.A.100
AUD-02	**Product Audits**: Perform sample product audits (witnessing functional/operational tests, physical survey of aircraft/engine/component undergoing maintenance) .	AMC2 145.A.200(a)(6) / AMC2 CAMO.A.200(a)(6)
AUD-03	**Unannounced Audits**: Conduct a percentage of unannounced audit visits, including off-hours/night shifts where applicable.	AMC2 145.A.200(a)(6) / AMC2 CAMO.A.200(a)(6)
AUD-04	**Remote Audits (ICT)**: If conducting remote audits, ensure compliance with GM1 145.A.200(a)(6) / GM1 CAMO.A.200(a)(6) (data security, video/audio quality, real-time access, auditee agreement) .	GM1 145.A.200(a)(6) & 145.B.300 / GM1 CAMO.A.200(a)(6)
AUD-05	**Audit Reporting**: Raise formal audit reports detailing findings classified against regulatory requirements using standardized templates (EASA Form 6 / Form 13 / Form 613 format) .	145.A.200(a)(6) / CAMO.A.200(a)(6) / CAO.A.100
AUD-06	**Root Cause & Action Plan Review**: Review the organisation's root cause analysis, contributing factors, and proposed corrective/preventive action plans .	145.A.95 / CAMO.A.150 / CAO.A.115

Task Reference	Detailed External Audit Task	Applicable Regulation / AMC
AUD-07	**Direct Feedback to Accountable Manager**: Provide direct audit reports and half-yearly summary reports to the Accountable Manager to ensure executive awareness and corrective action enforcement .	AMC4 145.A.200(a)(6) / AMC4 CAMO.A.200(a)(6)

External Audit Execution Workflow & Deliverables Summary

1. Pre-Audit Preparation & Risk-Based Audit Schedule Development

(Review CAME/MOE/CAE, Previous Findings, Hazard Logs, Changes)

2. Execution of On-Site / Remote Audits & Product Sampling

(System Audits, Facility/Tooling Checks, Workcard Verification, Aircraft Sampling)|

3. Assessment of Dual-Role & Combined Responsibility Functions

(Independent verification of CMM/SM, Competence & Document Control Systems)

4. Audit Report Generation & Finding Categorisation (Level 1 / Level 2 / Obs.)

(Utilising EASA Form 6 / Form 13 / Form 613 Standards)

5. Root Cause & Corrective Action Plan Evaluation & Follow-Up

(Reviewing Causal Analysis, Preventive Mitigations, Closure Timelines)

6. Executive Feedback to the Accountable Manager & Safety Review Board

(Half-Yearly Summary Reports & Direct Escalation of Unresolved Safety Issues)

1. **Pre-Audit Planning**: The external auditor must establish a risk-based 12-month audit schedule covering 100% of applicable regulatory topics and functional areas .
2. **Execution & Sampling**: Audits must combine process audits with physical product sampling (aircraft/component inspections) and unannounced visits .
3. **Focus on Dual Roles**: Special attention must be given to independently auditing the CMM, SM, competency management, and document control systems when those roles are combined or held by the CMM, ensuring no self-auditing occurs .
4. **Formal Reporting & Root Cause Verification**: Audit reports must record findings clearly, evaluate root causes and contributing factors, and verify the timely implementation of corrective actions .

5. **Direct Escalation**: The external auditor must report findings and half-yearly compliance summaries directly to the **Accountable Manager** to ensure appropriate executive oversight and resource allocation .