|  |  |  |
| --- | --- | --- |
| SGS merki með ensku undir@2x | **EASA PART 145 MOE CHECKLIST** | **LHD-240**  **Dags. 03.01.2024** |

1. **Scope**

The Maintenance Organisation Exposition (MOE) compliance checklist and user guide are to assist aircraft and component maintenance organisations wishing to obtain EASA Part 145 approval. This document is complementary to the requirements of Implementing Rule (IR) - Regulation EU 1321/2014 Annex II, Part-145 “as amended” and does not supersede or replace the information defined within the IR.

The checklist includes suggested subject headings and all the relevant information as detailed in 145.A.70 and its AMC & GM, the format of which may be modified to suit the organisation's preferred method. The checklist should show compliance by referring to the “MOE reference/comment” where the information in the MOE is located and an explanation if not applicable.

This checklist, when completed, should be submitted with the initial draft MOE.

1. **Important warning**

This user guide is designed to be used by:

* Part 145 Maintenance Organisations - To assist them in the production and maintain their MOE
* ICETRA - As a comparison document for MOEs submitted to them for approval

The user guide is provided for guidance only and should be customised by each organisation to demonstrate how they comply with Part 145. It is the organisation's responsibility to ensure compliance with the IR. The organisation may choose to use another format as long as all the applicable sections of the regulation are addressed and cross-referenced.

For each detailed procedure described within the MOE, the Part 145 organisation should address the following questions:

What must be done? Who should do it? When must it be done? Where must it be done? How must it be done? Which procedure(s)/form(s) should be used?

The MOE should be written in the English language.

1. **Exposition format**

The MOE may be produced in hardcopy or electronic format;

* Hardcopy: ICETRA recommends using white paper (format A4). The MOE shall be provided in a binder with section dividers. (recto/verso can be used)
* Electronic Format: The Exposition should be in Portable Document Format (PDF), but a printed copy shall be delivered to the ICETRA to facilitate the document study.

1. **Structure of the Maintenance Organisation Exposition**

The MOE may be produced as a single document or consist of several separate documents.

* Single document: The standard MOE produced i.a.w. AMC 145.A.70 (a) is a unique and complete document. It must contain all the required information to show compliance with the regulation, including detailed maintenance and quality system procedures (see AMC 145.A.70(a)).
* Several documents: The MOE must contain at least the information detailed in AMC1 145.A.70(a) 1.1 to 1.12 (General). The additional material may be published in separate documents, which must be referenced from the MOE. In this case:
  + The MOE should cross-refer to the associated procedures, documents, appendices, forms, and all other lists managed separately (e.g., the list of certified staff and the capability list).
  + These associated documents must meet the same rules as described for the MOE.
  + This/these associated document(s), procedure(s), form(s), etc., must be provided to the ICETRA as part of the MOE.

Certain sections of the headings defined within AMC1 145.A.70(a) may be ‘not applicable’ for some organisations. In this case, they should be annotated as such within the MOE.

1. **Exposition pages’ presentation**

Each page of the MOE should be identified as follows (this information may be added in the header or footer;

* the name of the organisation (official name as defined on the EASA Form 3 approval certificate)
* the issue number of the MOE
* the amendment/revision number of the MOE
* the date of the revision (amendment or issue depending on the way the organisation has chosen to revise the MOE)
* the chapter of the MOE
* the page number
* the name of the document, i.e. "Maintenance Organisation Exposition.”

At the beginning of the volume, the cover page should specify:

* Part 145 Maintenance Organisation Exposition;
* The name of the organisation (the official one defined on the EASA Form 3 approval certificate)
* The approval reference of the PART 145 organisation
* The copy number from the distribution list

1. **Corporate commitment by accountable manger**

Before submission of the ‘draft’ MOE to the ICETRA for approval, the accountable manager must sign and date the corporate commitment statement (General 1.1). It confirms that they have read the document and understand their responsibilities under the approval. In the case of a change of accountable manager, the new incumbent must sign the document and submit a suitable amendment to the ICETRA for approval.

1. **Procedures**

The purpose of the maintenance organisation exposition (MOE) is to set forth the organisation's procedures, means and methods. Compliance with its contents will assure compliance with the requirements of Part-145. Procedures describe what to do, in what order, when and by whom to achieve specified results, thus ensuring compliance with the rules. Even though procedures should be brief, simple and direct, they cannot be too brief. A suitable procedure will be logical, clear and easy to implement.

Ensure sufficient details in the procedures to ensure compliance and a predictable auditable result.

1. **Part IR reference**

The column contains the reference to the hard law. The connection to AMCs or GMs is only given if deemed necessary. Reviewing the AMCs and GMs and considering them is essential to ensure compliance. The Part-ML references are not necessarily provided. However, for Part-145 maintenance organisations maintaining Part-ML aircraft, the applicable procedures must include compliance with Part-ML. It is the maintenance organisation's responsibility to review the part-ML requirements.

1. **Application** (Part 145.A.15(a)(b))

An application for a certificate or an amendment shall include:

* EASA Form 2 Part-145 – Application for part-145 approval
* Draft MOE
* LHD-04 for each nominated personnel– Details of Personnel required to be accepted as specified in Part-145
* The result of a pre-audit performed by the organisation. This may be submitted later when the draft MOE is compliant, and the ICETRA is ready for its initial or changed audit.

|  |  |  |  |
| --- | --- | --- | --- |
| **MOE Reference** |  | | |
| **Organisation Official Name** |  | | |
| **Date** |  | | |
| **Summited by** |  | **Signature** |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Compl.** | **Content** | **Part IR reference** | **MOE reference / comment** |
|  | Cover page |  |  |
|  | Part 145 Maintenance Organisation Exposition |  |  |
|  | The official name of the organisation as defined on EASA Form 3 |  |  |
|  | The approval reference of the Part 145 organisation |  |  |
|  | The copy number from the distribution list |  |  |
|  | Part 0 – Introduction |  |  |
|  | Foreword |  |  |
|  | Table of content |  |  |
|  | List of effective pages |  |  |
|  | List of issues/amendments or record of revision with the exact information of the type of approval, i.e.:   * Changes that were prior approved by ICETRA * Changes that were approved internally, changes that did not require prior approval |  |  |
|  | ICETRA Letter of Approval (LOA) |  |  |
|  | Internal organisation approval page signed by CM and TM   * Internal approval statement * Title, name, date and signature (CM and TM) |  |  |
|  | Revision highlights / Summary of changes |  |  |
|  | Effective date of the current revision   * The effective date is when the amendment introduced in this amendment takes effect. * The effective date can be established just before or after the final approval of the MOE by ICETRA. This is to obtain the necessary time to incorporate the amendment, e.g., train personnel, print forms, etc. |  |  |
|  | Distribution list   * MOE copy number * Location of copies * Holders of the copies * Format of copies (e.g. electronic or paper) |  |  |
|  | Abbreviation, terminology and definitions |  |  |
|  | Cross-reference list from the MOE to AMC1 145.A.70(a), if applicable |  |  |
|  | Organisation information, i.e.:   * Address of approved locations (Head Office – principle place of business) * Mailing Address(es) * Telephone number(s) * E-mail address of the Head Office |  |  |
|  | Part 1 - General |  |  |
|  | 1.1 Statement by the accountable manager   * When the AM is not the CEO of the organisation, then such CEO shall countersign the statement * Signed by AM * Date * Accountable manager and (quote position) * For and on behalf of (quote organisation name) * A sample of a statement may be used in AMC1 145.A.70(a)(1). Any modification to the statement must not alter its intent   NOTE: If the Accountable Manager is not the chief executive officer, the latter must countersign the statement. Furthermore, the organisation should demonstrate that the accountable manager has direct access to the chief executive office and has the necessary funding allocation for the intended maintenance activities. | *145.A.30(a) 145.A.70(a)(1) 145.A.90(a)* |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1.2 Safety policy and objectives  The safety policy established by the accountable manager should, as a minimum, include a statement that should:   * Reflect organisational commitments regarding safety and its proactive and systematic management, including the promotion of a positive safety culture * Include internal reporting principles and encourage personnel to report maintenance-related errors, incidents and hazards * Recognise the need for all personnel to cooperate with the compliance monitoring and internal investigations referred to under point (c) of AMC1 145.A.200(a)(3) * Be endorsed by the accountable manager * Be communicated, with visible endorsement, throughout the organisation * Be periodically reviewed to ensure it remains relevant and appropriate for the organisation   The safety policy should include a commitment to:   * Comply with all the applicable legislation to meet all the applicable requirements and adopt practices to improve safety standards; * Provide the necessary resources for the implementation of the safety policy * Apply human factors principles, including giving due consideration to the aspect of fatigue * Enforce safety as a primary responsibility of all managers * Apply ‘just culture’ principles to internal safety reporting and the investigation of occurrences and, in particular, not to make available or use the information on occurrences: * (i) to attribute blame or liability to front-line personnel or other persons for actions, omissions or decisions taken by them that are commensurate with their experience and training; or * (ii) for any purpose other than maintaining or improving aviation safety.   Note: It is the accountable manager (AM) that establishes the safety policy specified in point 145.A.30(a)(2) and 145.A.200(a)(2), and it is essential to understand that the AM must promote the safety policy as stated in 145.A.30(a)(2).  Also, senior management should continually promote the safety policy to all personnel, demonstrate its commitment to it, and provide necessary human and financial resources for its implementation (AMC1 145.A.200(a)(2). | *145.A.30(a)(2) AMC 145.A.47(b)1  145.A.65(a) 145.A.65 (a) 145.A.70(a)(1)(2)* 145.A.200(a)(2) |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1.3 Management personnel  The titles and names of the senior persons appointed and nominated in Part 145.A.30(a)(b)(c). The Part-145 functions may be subdivided under individual managers or combined in any number of ways, e.g. base, line and workshop managers under one “maintenance manager.”   * Accountable manager * Compliance manager (Nominated LHD-04 form holder) * Safety manager (Nominated LHD-04 form holder) * Base maintenance manager (Nominated LHD-04 form holder) * Line maintenance manager (Nominated LHD-04 form holder) * Workshop maintenance manager (Nominated LHD-04 form holder) * Responsible Level 3 for NDT (if applicable – NDT capability) (Nominated LHD-04 form holder) * List who deputises maintenance managers in case of lengthy absence. Every nominated deputy should be able to demonstrate to ICETRA a similar qualification and experience * Issuance of deputy * Put in a bracket behind the title and name “(Nominated LHD-04 form holder)” as the example above or by other means to make it clear who is nominated on ICETRA form LHD-04 and therefore subject to change approval as per point 145.A.85(a)(2)   This list comprises the minimum senior personnel in a medium to large organisation, for which the ICETRA would require an ICETRA form LHD-04 to be completed. Form LHD-04 is not mandatory for the accountable manager. The issuance of such a form remains the easiest way to demonstrate his knowledge of Part-145 as required. Lesser posts could exist in a smaller company. This, in effect, is the "group of persons" referred to in Part 145.A.30(b) whose responsibilities include ensuring that the Part-145 approved maintenance organisation complies with Part-145 requirements. These persons are ultimately directly responsible to the accountable manager as per 145.A.30(cb) for this function, except for the responsible Level 3 NDT staff that report to any maintenance managers.  Other posts may be added if desired, but whether they are considered "management" for ICETRA LHD-04 form purposes should be clearly shown. | *145.A.30(a)(b)(c)(ca)(ab) (f) 145.A.70(a)(3) 145.A.85(a)(2)(3) 145.A.200(a)(1)* |  |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1.4 Duties and responsibilities of the management personnel   * Accountable manager * Compliance manager * Safety Manager * Base maintenance manager * Line maintenance manager * Responsible Level 3 for NDT (if applicable – NDT capability) * Other section managers, as determined by the organisation   The nominated persons in accordance with points 145.A.30(b), (c) and (ca), shall be able to demonstrate relevant knowledge, background and satisfactory experience related to aircraft or component maintenance and demonstrate a working knowledge of this Regulation.  To assist in the assessment of competence, a job description is necessary for each job role (see 3.19 and AMC1-5 145.A.30(e)).  Ensure that one of the accountable manager's responsibilities is to establish and promote the safety policy specified in point 145.A.200(a)(2) as required in point 145.A.30(a)(2). | | *145.A.30(a)(b)(c)(ca)(cc) (e)*  *145.A.35(i)*  *145.A.65(a)(c)(2)*  *145.A.70(a)(1)(2) 145.A.90(a)*  *145.A.200(a)(2)* | |  |
|  | 1.5 Management organisation chart   * Showing associated chains of responsibility of the senior persons specified in Chapter 1.3. The Form LHD-04 holders should be identified in the chart * The names of the management personnel may be included in the boxes of the organisation chart, but this is optional * Compliance monitoring personnel must be shown to be independent of maintenance managers and must report directly to the accountable manager * Responsible Level 3 NDT staff must report directly to any of the maintenance managers as most appropriate | | *145.A30(b)(c)*  *145.A.70(a)(5)*  *145.A.200(a)(1)* | |  |
|  | | 1.6 List of certifying staff, support staff and airworthiness review staff   * Full name of the staff * Identification number of the authorisation * Their scope of approval for each person * Base certifying staff – category C * Base maintenance support staff – category B1, B2, B2L, B3 and L, as appropriate * Line certifying staff – category A, B1, B2, B2L, B3 and L, as appropriate * Engine shop certifying staff * Component certifying staff * Certifying staff under NDT D1 rating, specialised services * Pilot based on the flight crew licence held (if applicable) * For a larger organisation with frequent changes to CRS staff, it is possible to cross-refer from paragraph 1.6 to another record (including a computer record) where a list of the certifying and support staff is kept. In this case, an explanation of where the list is maintained and how it is updated and sent to ICETRA must be included in the MOE. This list, incorporated in an appendix or separate from the basic MOE, is an integral part of the MOE. This means that it should be approved (directly by the ICETRA or by the organisation through a procedure which the ICETRA has approved). * The list must be sent to ICETRA when amended. * The list must be revision controlled, i.e. revision number and date   Note: The list must reflect the scope of the approval, showing adequate staff to support the scope of the approval. Each staff must be listed with their scope of approval | *145.A.30(g)(h)(i)(j) 145.A.35(j) 145.A.37(a)(b)(c) 145.A.70(a)(6)* |  | |
|  | | 1.7 Manpower resources   * Base maintenance * Engine and component maintenance (workshops) * Line maintenance * Technical support staff * Components, materials, equipment and tools store staff * Subcontracted services   + Full time   + On-demand * Specialised activities (D1 NDT rating) * Engineering * Production planning * Administration * Compliance department/auditing * Safety management * Airworthiness review staff (if applicable) * Etc.   Procedure for:   * Man-hour planning   + Review and update every 3 months * Reassess work intended to be carried out when actual staff availability is less than the planned staff level for any particular work shift or period   Notes:  The resources described must justify the grant of approval as defined in paragraphs 1.8 (facilities to be approved) and 1.9 (scope of work) in sufficient detail to explain the support at each site and for each function, as required by Part 145.A.30(d).  Numbers of personnel should be given in general terms so that a clear picture is given without the need for amendment due to routine staff fluctuations. Still, it can highlight any significant re-deployment or loss of staff.  The organisation should not declare the percentage of staff used under this approval but the number of staff needed to comply with Part-145 requirements.  Where the approval is sub-divided into sites or different major functions, the resources should be related to each location and function. Resources do not only mean numbers, but it also means qualifications and competence.  To meet a specific operational necessity, a temporary increase of the proportion of contracted staff may be permitted to the organisation by the competent authority, per an approved procedure which should describe the extent, specific duties, and responsibilities for ensuring adequate organisation stability.  In addition to the above, the organisation should have a maintenance man-hour plan that considers all maintenance activities carried out within and outside the Part-145 approval. The planned absence (for training, vacation etc.) should be considered when developing the man-hour plan. | *145.A30(d) 145.A.30(d) 145.A.37(a) 145.A.70(a)(7)* |  | |
|  | | 1.8 General description of the facilities at each address intended to be approved   * Base maintenance facilities   + Hangar accommodation   + Specialised workshops   + Environmental provisions   + Office accommodation for planning, technical records, quality, technical reference area, storage, etc.) * Line maintenance facilities at each location, as appropriate (see base facilities) * Component maintenance facilities * Layout of premises * Work away from the main base/workshop (subcontract) * Where the organisation does not own the accommodation, as in the case of a hangar where access is rented or shared, proof of tenancy/access may be required   This section should describe each of the facilities, in some detail, at which the organisation intends to carry out maintenance, thereby building up a picture of what the ICETRA is being asked to approve. All sites should be covered; however, a different emphasis can be placed on sites of different importance. For example, those sites mentioned in the approval document need a detailed description. Other significant sites, such as principal (over-night) line stations, must be clearly described, while en-route stations at which minor line maintenance tasks are performed may be briefly covered. The detail required in each case will vary with the scope of work.  Refer to Part 145.A.25 for details of what the organisation is expected to provide for facilities in terms of size, environmental conditions, docking, storage, etc.  In accordance with AMC 145.A.25(a)(3), hangars may be required for line maintenance of aircraft. In this case, the availability of a suitable hangar shall be demonstrated, particularly in the case of inclement weather for minor scheduled work and lengthy defect rectification. | *145.A.25(a)(b)(c)(d) 145.A.70(a)(8)(15) 145.A.75(d)* |  | |
|  | | 1.9 Organisations intended scope of work   * Each location, with details of capability and limitations * Aircraft maintenance (base and line) * Engine/APU maintenance * Component maintenance * D1 NDT - Specialised services (methods and techniques) * NDT capability under the A, B and C ratings as applicable * Fabrication of parts, i.a.w. 145.A.42(c) (procedure in 2.24) * Maintenance away from the approved locations * Airworthiness review for Part-ML aircraft, if specially approved * Other specialised activities (if applicable). E.g. aircraft painting, welding, machining etc. * Fabrication of parts (AMC1 145.A.42(b)(iii)   This chapter must give details about each site and its limitations. Each bullet point above is further supported by an appropriate procedure(s) to be permitted.  See Appendix I in this document for further explanation. | *145.A.20 145.A.42(b)&(c) 145.A70(a)(9) 145.A.75(a)(b)(c)(d)(e) (f) (g) 145.A.80* |  | |
|  | | 1.10 Procedure for changes (including MOE amendment) requiring prior approval  Changes that require prior approval are:   * Name of the organisation * Approved maintenance locations/bases * Addition or cancellation of approved maintenance location/bases * Change of accountable manager * Change of nominated personnel (base, line and workshop manager(s)) * Change of compliance manager * Change of Safety Manager * Changes to the procedure as regards changes not requiring prior approval 145.A.85(c) * The use of AltMoC or changes to AltMoC * Changes to the MOE procedure for the use of alternative tooling or equipment * Changes to the MOE procedure allowing a B-rated organisation to carry out maintenance on an installed engine during ‘base’ and ‘line’ maintenance * Changes to the MOE procedure allowing a C-rated organisation to carry out maintenance on an installed component (other than a complete engine/APU) during ‘base’ and ‘line’ maintenance or at an engine/APU maintenance facility * Changes to the procedures to establish and control the competency of personnel   The organisation shall apply for and obtain approval for all changes requiring prior approval. The application shall be submitted before such changes take place to enable ICETRA to determine that there is continued compliance with Part-145 and to amend, if necessary, the organisation certificate and the related terms of approval attached to it.  Procedure:   * When to notify the change (All changes need to be notified before being implemented) * Who in the maintenance organisation is in charge of the notification * Is it possible to use a table listing the various types of changes and documents to be provided * When to perform pre-audit and compliance manager statement * MOE amendment procedure   The organisation shall provide the competent authority with any relevant documentation, e.g.:   * EASA Form 2 * Risk assessment * ICETRA LHD-04 with CV and other supporting documents * The result of a pre-audit performed by the organisation's compliance monitoring * Draft amendment to the exposition (MOE   Changes shall only be implemented upon the receipt of formal approval. | *145.A.15(a)(b) 145.A30(a)(b)(c)(ca)(e)(f) 145.A.40(a)(i) 145.A.70(a)(11)(b)(c) 145.A.85(a)(b)(c) 145.A.120(b) Appendix II (f)(g)* |  | |
|  | | 1.11 Procedure for changes (including MOE amendment) not requiring prior approval  Changes that do not require prior approval are:   * Changes that do not require prior approval as agreed with ICETRA * The following may be considered for changes not requiring prior approval:   + Correction of type errors on any document   + Amendment of an associated procedure not affecting the approval   + Addition or cancellation of P/N in the approved capability list where the EASA Part-145 “C” rating is held, and any additional component is of similar technology & within existing ATA chapter capability   + Renewal of certifying staff (CS) authorisation date in the CS list   + The addition/removal of a subcontractor not affecting the approval   + Addition/removal of a contracted organisation not affecting the approval * The internal approval process * Who in the maintenance organisation is in charge of the internal approval, i.e.compliance monitoring function * MOE amendment procedure and a clear indication (list of revisions) in the MOE of changes and different approvals for each revision * Notification process to ICETRA, including the revised MOE * Revision acknowledges receipt process * If the capability list or list of certifying staff and support staff are kept as separate documents (extending the MOE to the lists), it is vital to recognise and ensure the following: * ICETRA need to receive and hold each revision regardless of how they are approved (prior or not) * The MOE must have explicit references to such list and procedure for the approval and control * Each list must have its revision status and the date and an indication of approval * Lists must reflect the approval of the organisation   Point 145.A.85(c) introduces the possibility for the organisation to agree with ICETRA that certain changes to the organisation (other than those covered in 1.10) can be implemented without prior approval depending on the compliance and safety performance of the organisation, and in particular, on its capability to apply change management principles. | *145.A.70(a)(10)(11)(b)(c) 145.A.85(c)* |  | |
|  | | 1.12 Procedure for alternative means of compliance (AltMoC)  This chapter is optional and intended to describe the possibility of applying for AltMoC, although the organisations are encouraged to follow the published EASA AMCs.  The organisation must demonstrate that the AltMoC complies with the Basic Regulation (BR) and its delegated Implementing Rules (IR). AltMoC cannot be used to justify non-compliance with BR and IRs or deviations.  If the organisation chooses not to use the AltMoC option, it must be stated in this part. A procedure is, therefore, not needed.  Procedure   * Identification of the person responsible for AltMoCs * The content of the AltMoC * Assessment of proposed AltMoC   + including demonstrating that the AltMoC reaches an acceptable level of safety, taking into account the level of safety provided by the corresponding EASA AMC * A summary of the AltMoC * Identification of the applicable requirements affected and demonstration of compliance with these requirements * Applying for an AltMoC with a complete description, including how compliance with BR and IR is achieved   + The description must include any revisions to the MOE or procedures affected, including chapter 5.5   + Applying with EASA Form 2 * Monitoring the effectiveness of the AltMoC * AltMoC cross-reference to document/procedure, etc., affected * The use of the AltMoC after approval from ICETRA | *145.A.55 145.A.70(a)(17) 145.A.85(b) 145.A.120(a)(b) 145.A.200(a)(6)* |  | |

|  |  |  |  |
| --- | --- | --- | --- |
|  | PART 2 – MAINTENANCE PROCEDURES |  |  |
|  | 2.1 Supplier evaluation and subcontractor control procedure   * Type of providers   + Suppliers   + Contracted organisations   + Subcontracted organisation * Supplier - Any source providing components, standard parts, or materials to be used for maintenance, e.g.:   + EASA Part-145/CAO MO, Part-21 POA, operators, distributors, brokers, aircraft owners, etc.   + List of suppliers under the direct control of the compliance monitoring department   + Suppliers of tools and tool calibration are excluded in this chapter. It is described in Chapter 2.4 * Contracted organisation   + An EASA Part-145/CAO maintenance organisation that carries out maintenance under its approval for another approved maintenance organisation   + Listed in chapter 5.4 * Subcontracted organisation   + An organisation not itself appropriately approved to Part-145 that carries out maintenance tasks or a specialised service of aircraft or component as a subcontractor for an organisation appropriately approved under Part-145, as per 145.A.75.(d)   + Listed in chapter 5.2   **Supplier evaluation** Detailed guidance for suppliers' evaluation is provided in Part-145 guidance material. Suppliers certified to officially recognised standards do not exempt the organisation from its obligation to ensure supplied components and materials are in satisfactory condition and meet the applicable criteria of Part-145 regulation. Supplier evaluation may depend on different factors, such as the type of component, whether or not the supplier is the manufacturer of the component, the TC holder or a maintenance organisation, or even specific circumstances, such as aircraft on the ground. This evaluation may be limited to a questionnaire from the Part-145 organisation to its suppliers, a desktop evaluation of the supplier’s procedures or an on-site audit if deemed necessary.   * Initial approval of each type of supplier:   + Selection processes   + Internal acceptance process   + Issuance of the internal authorisations (e.g. scope of authorisation, validity etc.)   + Producing the list of suppliers   + internal distribution of the list, access and authorisation of a computerised list * Monitoring of the lists of each type of supplier versus internal authorisation The list of suppliers shall be managed under the control of the Quality Department.   + Incoming inspection results, audit results, possible internal limitation   + Assessment of the service provider   + Updating the list   + Withdraw of the internal authorisation, when applicable * Management of the purchase orders according to the approved suppliers * Records of suppliers' information:   + Files   + Duration/location   + Type of documents (Certificates, audit reports, incoming inspection results etc.)   **Monitoring the contracted organisations**  A process similar to the case of monitoring the suppliers may be adopted.   * Initial approval of each contracted organisation * Monitoring of the list (Ch. 5.4) of each type of contracted organisation vs internal authorisation * management of the purchase order according to the approved contracted organisation * Records of contracted organisations' information   **Monitoring subcontractors**   * Initial approval of each subcontractor   + Pre-audit before approval and inclusion in the internal audit plan   + Approved maintenance organisation expertise and procedures to control the sub-contractor   + Supervision the inspection and release from the sub-contractor   + Contract to allow access of EASA to the sub-contractor * Monitoring of the lists (Ch. 5.2) of each type of subcontractors versus internal authorisation * Management of the purchase orders according to the approved subcontractors * Records of subcontractors' information | *145.A.42(a)(b) 145.A.70(a)12, 14, 16 145.A.75(b)(d) 145.A.205(a)(b)* |  |
|  | 2.2 Acceptance/inspection of aircraft components and material, and installation  This paragraph shall describe the procedures for receiving components, parts, and materials from outside the organisation, such as suppliers, contracted organisations, etc.   * Classification and definitions   + Serviceable components   + Unserviceable components   + Standard parts   + Raw and consumable material   + Unsalvageable components * Component / Material acceptance procedures   + Release documents or the equivalent of each classification (new & used) and different sources     - Countries and different acceptable forms (per BASA/TIP/Executive Director Decision (EDD), e.g. US, Canada, Brazil, UK, Japan, Israel, etc.)   + Sources,   + Conformity with company requirements (e.g. type of release requested)   + Records * Incoming inspection/receiving inspection   + Required documentation, e.g. CofC, EASA Form 1 or equivalent   + Compliance with order/condition   + Condition inspection - package, the component itself, plugs and caps, etc.   + Split of batches for material/standard parts and traceability   + Quarantine procedure   + Modification standards and AD compliance   + Identification of storage limitation/life limits   + Identification of special manufacture’s storage conditions, such as temperature (min-max), humidity, lighting, electrostatic sensitive, etc., that need to be followed   + Entry in storage computer registry of special storage condition for components and materials   + Ensure that required storage conditions can be demonstrated   + Identification of parts, components, and materials after receiving inspection, e.g. tagging   + Records and traceability   + Receiving in AOG situation directly at the AOG location – delegated procedure * Acceptance and incoming inspection of components from internal sources, e.g. transfer between workshops and stores   + Conformity with company requirements   + Records   + Required documentation   + Compliance with order/condition   + Quarantine procedure   + Identification of storage limitation/ life limits * Acceptance and incoming inspection of “Field Loadable Software” (see Appendix II) * Components removed serviceable from aircraft (AMC2 145.A.50(d) 2.6 & 2.7) * Components received from customers for repair or overhaul etc. * The procedure of treatment of a suspected unapproved part (bogus parts)   + Identification   + Records   + Notification to the authority and EASA   + Form used, e.g. occurrence reporting MOE 2.18 * Acceptance and incoming inspection of new parts and appliances without an EASA Form 1 for European Light Aircraft (ELA). Reference to EASA Certification Memorandum: EASA CM–21.A–K–001 Issue: 02 or later revision * Installation of components, standard parts and materials   + Procedure for verification before installation of components, standard parts and materials   + Verification of the applicable maintenance data specifies the particular component, standard part or material   + Verification of satisfactory condition and appropriate documents for installation   + Verification that a component is eligible to be fitted when different modification and/or airworthiness directive configurations may be applicable   + Verification before installation of standard parts on an aircraft or component (e.g. traceability, applicable standard as per maintenance data requirement)   + Verification before use of any raw or consumable material on an aircraft or component (e.g. due dates, applicable specification as per maintenance data requirement)   + verification for components which do not need an EASA Form 1 as per 145.A.42(a)(i)   **Installation** - components, standard parts and materials shall only be fitted when specified in the applicable maintenance data. This data could include parts catalogue (IPC), service bulletins (SB), aircraft maintenance manual (AMM), etc. Therefore, installing a component, standard part, and material can only be done after checking the applicable maintenance data.  This check shall ensure that the part number, modification and AD status, limitations, etc., of the component, standard part or material are the ones specified in the applicable maintenance data of the particular aircraft or component (i.e. IPC, SB, AMM, CMM, etc.) where the component, standard part or material is going to be installed. The organisation shall establish procedures to ensure that this check is performed before the installation.  It is important to list what forms are acceptable and for what, e.g. CofC, FAA Form 8130-3, TCCA Form One, TCCA 24-0078 UK CAA Form 1. It must be stated how the said forms must be completed for new parts and used parts. Also, Part-145 MO maintaining Part-ML aircraft may accept components with certification documents only acceptable for installation in Part-ML aircraft. The adequate procedure, segregation etc., must be established so installation is only in Part-ML aircraft. | *145.A.42(a)(b)(c) 145.A.50(d) 145.A.55(a) 145.A.70(a)12 21.A.307(b)(c) ML.A.502(a) M.A.502(e) 21.A.307* EASA Certification Memorandum: EASA CM–21.A–K–001 Issue: 02 or later revision *AMC1 CAO.A.070(a)(2.8) BASA/TIPs* Executive Director Decisions (EDDs) |  |
|  | 2.3 Storage, tagging and delivery of components and materials to maintenance   * Procedures for maintaining satisfactory storage conditions (including segregation) of:   + Rotatable   + Perishables, raw material   + Flammable fluids   + Engines   + Bulky assemblies   + Part-ML aircraft components (if applicable)   + Record of position in the store (s)   + Parts and appliances referred to in point 21.A.307(b)(c) (New parts and appliances without an EASA Form 1 for European Light Aircraft (ELA). Reference to EASA Certification Memorandum: EASA CM–21.A–K–001 Issue: 02 or later revision * System and procedure to control shelf life, Life limit, ADs, modification standards (Part 2.11), temperature, humidity, etc. * Special storage requirements (condition and limitation), e.g., ESD-sensitive devices, rubber, materials etc. * Tagging / Labelling system and storage areas   + Serviceable parts /materials   + Unserviceable   + Unsalvageable components (see Part 145.A.42(c) and M.A.504(a)(b) and its AMC)   + Quarantine   + Batch number   + Scrap * Disposal of unsalvageable components (see Part 145.A.42(c)) * Issue of components to the maintenance process * Free-issue dispensing of standard parts (control, identification, segregation) * Temperature and humidity control, including monitoring and recording log of temperature and humidity   Storage facilities' condition for components, equipment, tools, and materials must be in accordance with the manufacturer’s instructions. Storage facilities must be clean, well-ventilated and maintained at a constant temperature.  Manufacturer’s storage conditions must be followed. That implies that the maintenance organisation must be able to demonstrate what and if any special storage condition needs to be followed.  For example, suppose the manufacturer’s storage condition requires a particular temperature and humidity for a component or material. In that case, the maintenance organisation must be able to demonstrate and show what it is (min and max) and that the condition is and has been maintained.  Some storage facilities may need several particular areas with different temperature and humidity control to ensure the serviceability of the components and materials. | *145.A.25(d) 145.A.42(a)(b)(c) 145.A.70(a)12 ML.A.502(a) M.A.502(e)  M.A.504(a)(b) 21.A.307* EASA Certification Memorandum: EASA CM–21.A–K–001 Issue: 02 or later revision |  |
|  | 2.4 Acceptance of tools and equipment   * Evaluation before procurement of tools * Acceptance of tools and equipment   + Sources   + Standard tools, task-specific tooling and alternative   + Personal (own) instrument/tool/equipment   + Conformity with organisation requirements   + Records/listing * Incoming inspection for tools and equipment   + Receiving   + Required documentation, certification and calibration   + Calibrated tools acceptance criteria (see 2.5 below)   + Compliance with order and condition   + Checking against the specification made by the aircraft/engine/component manufacturer   + Marking, identification/tagging/release   + Verification of necessary control, servicing, inspection and calibration as applicable   + Evidence of the incoming inspection   + Records   + Personal (own) instrument/tool/equipment * Alternate tooling and equipment procedure   + Approval   + Acceptance   + approved data used   + manufacturing control   + records of maintenance data * Subcontracted organisation tools and equipment, if applicable * Lent/borrowed tools and equipment procedure   + See items in acceptance and incoming above   Tools are classified into:   * “standard” tools; and * “task specific” tools.   Standard tools and equipment that are commercially available and not exclusively used in the aviation industry.  Task-specific toolings are those tools and equipment designed for the particular aircraft/engine/component/NDT/etc. Maintenance task and specifically identified in the maintenance data by P/N, supplier and description.  Where the maintenance data specifies a particular tool or equipment, the organisation must use that tool or equipment unless the use of alternative tooling or equipment is allowed by the maintenance data and agreed upon by ICETRA via procedures in the MOE.  Alternative tools are tools manufactured when allowed by the maintenance data and procedures in the MOE according to technical data.  All tools and equipment need to be controlled, i.e. classified (standard, task-specific, alternative), listed, marked, calibrated (if applicable), serviced, inspected for condition and traceable to source and maintenance data.  The following EASA document (UG.CAO.00132-001) gives guidance regarding tools and equipment to comply with 145.A.25(d) and 145.A.40(a)(b): <https://www.easa.europa.eu/download/foreign-part-145-approval/Annex%20B/B14.%20UG.CAO.00132%20Tools%20%26%20Equipment.pdf>  Please note: There is no “grandfathering” of tools and equipment. All have to comply with Part 145.A.40(a)(b), meaning that tools and equipment that may have been in use before EASA approval was granted, in particular, alternative (in-house manufactured), cannot be used if not in compliance with the said requirements. | *145.A.40(a)(b) 145.A.70(a)12 EASA UG.CAO.00132-001* |  |
|  | 2.5 Calibration of tools and equipment   * Control of all tools and equipment, including calibrated tools and equipment, including personal tools * Control of ESD mats and wrist straps * The system used to list tools and equipment, i.e. calibrated tools and equipment, standard tools, task-specific tooling and alternative tooling * Calibration standard used * Calibration interval of different tools * Calibration records * Control of calibration records * Control and listing of un-calibrated tools and equipment (task special tools and equipment, e.g. contained in manufacture data) * Control of tools and equipment in need of servicing, e.g. jacks, hydraulic servicing units, etc. * Control of personal or loaned calibrated tools * Control of access equipment and inspection platforms/docking needs to be controlled and maintained as per procedure in a serviceable condition.   ESD mats and wrist straps and their grounding must be inspected, cleaned (especially the wristband) and tested periodically per the manufacturer's instruction. The proper individual connection to the ground of the mats and wrist straps (not in series or “daisy chain” is essential. Ensure appropriate control and usage.  The organisation shall ensure that all tools, equipment and particularly test equipment, as appropriate, are controlled and calibrated according to an officially recognised standard at a frequency to ensure serviceability and accuracy. The organisation shall keep records of such calibrations and traceability to the standard used.  An accredited calibration laboratory by an accreditation body must perform the calibration. This could, for example, be laboratories accredited to ISO/IEC 17025. Calibration is not an EASA Part-145/CAO maintenance organisation privilege, and such activities are formally outside the maintenance organisation.  The maintenance organisation's responsibility is to send the tools for calibration when required. It has to ensure that proper standards are used, and know the acceptance criteria when receiving the tools back from the calibration laboratory, i.e. what deviations/precision/accuracy are acceptable according to the maintenance data and its intended use. It may differ from tool to tool and may depend on the task(s). The calibration laboratory typically only gives information about the accuracy (deviation) during the calibration check.  The following information may be helpful:   * AIC B 007 / 2017: <https://eaip.isavia.is/AIRAC_004-22_2022_07_14/>   EASA UG: <https://www.easa.europa.eu/sites/default/files/dfu/UG.CAO_.00132-002%20Foreign%20part%20145%20approvals%20%E2%80%93%20Tools%20%26%20Equipment.pdf> | *145.A.40(b) 145.A.70(a)12 EASA UG.CAO.00132-001* |  |
|  | 2.6 Use of tooling and equipment by staff (including alternate tools)   * Distribution of tools (e.g. a record of user and location) * Determining tool, access equipment and inspection platforms/docking, etc., serviceability before the issue and use * Training and control of personnel in the use of tools and equipment – (records of training) * Personal (own) instrument/tool/equipment control * Lent / borrow tools and equipment control * Control of alternate tools   + Demonstration of equivalence between design/manufacturing data of alternate tools and the data/features of the tools recommended in the maintenance data of the manufacturers   + In-house identification rule of alternate tools (PN, SN)   + The alternate tools validation process   + Register of alternate tools /tagging/relation between the references of origin tools and alternate tools   + Treatment of possible changes of maintenance data according to the new references of alternate tooling (modifications limited to the references of the tooling to   be used and adaptation of maintenance data regarding alternate tooling)   * + Use/storage/maintenance manuals according to the need   + In-house approval of each alternate tooling before servicing   + Storage of the records of alternate tooling * Procedure to control tools and equipment and inspection platforms/docking etc., after completion of maintenance | *145.A.25(d) 145.A.40(a)(b)  Part 145.A.48(a)* |  |
|  | 2.7 Procedures for controlling working environment and facilities   * The standard for office facilities * The standard for hangar facilities * The standard for component workshops * The standard for paint shop * The standard for a battery shop * The standard for storage facilities * The standard for oil, grease and flammable liquid storage * The standard for access equipment and inspection platforms/docking etc.   Think of:   * “Foreign Object” exclusion programme * Cleaning programme * Individual responsibilities * Timescales * Waste material disposal * Segregation of facilities to prevent cross-contamination * Special procedures for some facilities, e.g. painting, white room, parts cleaning * Control of access equipment and inspection platforms/docking, etc., to ensure adequate condition | *145.A.25(a)(b)(c)(d) 145.A.40(a)(b) 145.A.47(a) 145.A.60(a) ICAO DOC.9824 Human Factors Guidelines for Aircraft Maintenance Manual* |  |
|  | 2.8 Maintenance data and relationship to aircraft/aircraft component manufacturers’ instructions, including updating and availability to staff   * Control of information * Technical library * Subscriptions control * Information held/needed regarding the scope of work * Issue/amendment control * Technical information amendment procedures * Manuals * Service Information (AD, SB, SIL, etc.) * Distribution: access to the staff * Company Technical Procedures / Instructions * Issue / Amendments control * Distribution: access to the staff * Maintenance documentation * Preparation from approved sources * Work card/worksheet system   + Differentiate disassembly, accomplishment, reassembling and testing   + Complex or lengthy maintenance task – supplementary work card/worksheet * Amendment control * Transfer/transcribe airworthiness data * Review and identification of amendment status of maintenance instructions * Distribution of airworthiness data: access to the staff * Modifying maintenance instruction (145.A.45 (d)) * Verification and validation of new procedures where practicable * Incorporation of best practice and human factors principles * Control of customer-supplied maintenance data * Incorporating Fuel Tank Safety concepts into maintenance documentation (Job Instruction Cards etc.) * Incorporation of CDCCL concept. ED Decision n° 2009/007R * compliance with CDCCL instructions * , traceability of CDCCL completion * Awareness of Technical Publications, Instructions and Service Information by the staff   Note: Access to maintenance data by staff must be in close proximity to the aircraft or component being maintained and readily available.  Complex or lengthy maintenance tasks involve multiple disciplines or shifts, multiple zones/access openings, special tools, or a combination. The stages into which the work cards are to be subdivided should refer to where work can be interrupted. Subdivision should indicate when a different discipline continues to work if no separate work cards are provided. | *145.A.45(a) to (g) 145.A.70(a)12 21.A.90B 21.A.431B* |  |
|  | 2.9 Acceptance, coordination and performance of repair works   * Company policy * Sources of repair approval (e.g., DOA, SRM, etc.) * Source as per 21.A.90B and 21.A.431B * Internal repairs * External repairs * Work order * Maintenance instruction (job cards etc.) * Control of the scope of work (limitations and conditions) * Control system for fabrication of parts, processing and inspection per Part 145.A.42(b)(iii)   This paragraph should refer to the repairs to be carried out, which are not described in the manufacturer's documentation. According to Part 145.A.45(d), the Part-145 organisation may only modify the maintenance instructions per a procedure described in the MOE, provided that the changes do not affect the design of the repairs. | *145.A.42(b)(iii) 145.A.45(a) 145.A.48(c)(4) AMC 145.A.50 145.A.70 (a)12 21.A.90B 21.A.431B CS-STAN* |  |
|  | 2.10 Acceptance, coordination and performance of scheduled maintenance works  This procedure is primarily applicable for maintenance under Ax ratings in relation to establishing compliance with the operator’s maintenance programme. However, it can also be adopted for maintenance under Bx and Cx ratings when necessary to clarify the terms under which scheduled maintenance is to be defined for an engine or component starting from the work order received from the customer.  A procedure is to be included, with intent to explain how the maintenance organisations ensures the operator’s maintenance programme is considered to comply with the contract for aircraft maintenance. Additional guidance can be found in Appendix IV to AMC1 CAMO.A.315(c) - contracted maintenance.   * Identification of the maintenance programme under which the maintenance has to be carried out * Maintenance programme access by the maintenance organisation as part of the work order/contract * Procedure to ensure a maintenance release is done in compliance with the approved operator’s maintenance programme (this procedure may cross-refer to chapter MOE 2.16)   The maintenance release should relate to the task specified in the (S)TC holder’s or operator’s instructions or the aircraft maintenance programme which itself may cross-refer to maintenance data.  Deviations from the maintenance programme and related approval by the competent authority of the operator is intended to be described in the MOE chapter 3.15.  The maintenance program is always the operator's responsibility! | *145.A.45 145.A.50(b)  145.A.70(a)12* |  |
|  | 2.11 Acceptance, coordination and performance of airworthiness directives works  The follow-up of the airworthiness directives is the responsibility of the owner/operator, who is responsible for requesting their enforcement of the work order sent to the maintenance organisation. The maintenance organisation is then responsible for embodying the ADs which have been ordered.  It is necessary to make a difference between the activities of management/launching of ADs on behalf of the customers and the one carried under the Part-145 approval.  Only the AD-related activities which concern the Part-145 approval have to be described in the MOE, with particular reference to the following points.  Identification of the responsibilities of the maintenance organisation with regard to airworthiness directives, such as but not limited to establishing compliance with the following:   * Company policy   + Access to the relevant ADs   + Studying ADs according to the scope of work of the organisation   + Selection ADs according to the scope of work of the organisation   + Recording ADs according to the scope of work of the organisation   + Internal or external ADs embodiment (linked to the scope of work) * Procedure for control of ADs applicable to components in the store(s) of the maintenance organisation * Verification that, before installation on an aircraft, a component is eligible to be fitted when different airworthiness directive configurations may be applicable * Procedure to ensure that a maintenance release is not issued in case of any non-compliance which is known to endanger flight safety (e.g. overdue AD known by the maintenance organisation, etc.) ((may refer to MOE 2.16 procedure endorsing this requirement) * The accomplishment of aircraft or equipment ADs/work orders specifying the status of the document to be used (may refer to MOE 2.8 procedure endorsing this requirement) * Awareness of the mandatory character of the associated maintenance data * Identification of the mandatory requirement in the maintenance documentation | *145.A.42(a)  145.A.45  145.A.50(a)(b) 145.A.70(a)12* |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2.12 Acceptance, coordination and performance of modification works   * Company policy   + Sources of modification approval (DOA, (S)TC holder (BASA/TIP), EASA, etc.)   + Internal modification   + External modification, including the embodiment of STCs. * Control of the scope of work (limitations and conditions) * Control system for fabrication of parts processing and inspection per Part 145.A.42(b)(iii) already addressed in chapter 2.30 * Control the fabrication, the inspection assembly and the test of fabricated parts.   This paragraph should refer to the modifications to be embodied on the aircraft/equipment/engines described in the manufacturers’ documents and the modifications not defined in the manufacturers’ documents. According to Part 145.A.45(d), the Part-145 organisation can only modify the maintenance instructions per a procedure described in the MOE.  The operator must follow up on the optional modification and ask for their enforcement on orders sent to the maintenance organisation.  It is necessary to make a difference between the management/developing/launching activities of optional modification on behalf of customers/air carriers and the one carried out as part of the Part-145 agreement. Only the activities above which concern Part-145 organisation works have to be presented in the MOE | *145.A.42(b)(c) 145.A.45 145.A.48(c)(4)  145.A.70(a)12* |  |
|  | 2.13 Maintenance documentation development, completion and sign-off   * Identification of the templates in use to record maintenance that may also refer to Chapter 5.1 * Worksheets for non-routine tasks * Assembly/composition of work packages for the issue to maintenance activity * List of maintenance documents which build up a standard work package (e.g. a front page with general information, a list of tasks required, work cards, associated work orders, etc.) * Maintenance documentation completion, including worksheet/work card   + - Accomplishment (sign-off)     - B1/B2/B3 etc., support staff sign-off, as applicable     - Independent inspection sign-off     - Reinspection sign-off (only in unforeseen cases as per AMC4 145.A.48(c)(2)( d)(2)     - Process of declaring a task not applicable, including conditional tasks     - Method of recording test results and dimensions information     - Process of recording materials/parts replaced together with the related traceability to the accompanying documents     - Record and management of additional works     - Record and management of deferred items     - The process to correct a maintenance record imperfectly/incorrectly entered during the performance of maintenance. This cannot be done after maintenance release issuance     - Procedure to ensure correct completion of customer-provided work cards (e.g. training on customer paperwork, etc.)     - Use of personal stamps   + Sign-off policy: summary table for tasks sign-off The procedure shall indicate when a task is to be considered signed-off and by which means (e.g. use of a personal stamp, use of signature, combination of a stamp and signature, etc.).  The sign-off policy is established to assign clear responsibilities for performing maintenance tasks, even when a task may be signed off by more than one person (e.g. additional inspection) or is signed off based on tasks carried out by a subcontracted organisation.  Any person performing maintenance shall be responsible for the tasks performed. A task can only be signed off by “authorised personnel”. The use of a sign-off summary table is recommended, which shall be consistent with the procedures in MOE, e.g. 2.25, 3.9, 3.13, 3.14, etc. Refer to EASA UG.CAO.00024-009 or later revisions, part 2.13, for example of a table * Assembly of completed work package for certification * Procedure to ensure that after completion of maintenance, a general verification is carried out and signed for to ensure that the aircraft or component is clear of all tools, equipment and any extraneous parts or material and that all access panels removed have been refitted * Control and use of customer-supplied work cards/worksheets   This paragraph should refer to the creation of a standard work file and how to complete the work documents/ work cards making up these files. Specific instructions from manufacturer maintenance data related to CDCCL shall be considered.  It is recommended to structure this chapter in separate paragraphs with clear differentiation between each rating in the scope of work (e.g., aircraft, engines, components, specialised services). | *145.A.45  145.A.48(b)(c) AMC 145.A.50(b)(5) 145.A.55(a) 145.A.70(a)12 EASA* UG.CAO.00024-*09  or later revisions, part 2.13* |  |
|  | 2.14 Technical records control   * Composition of any maintenance records retained by the MO * Airworthiness review records responsibilities, retention and access (if applicable)   + How records are kept   + Periods of records keeping   + Location of record storage   + Access to the records   + Responsibilities * System for control, storage conditions (fire extinguisher system, fire detection, etc.) and retrieval of records (paper or computer-based) * Control of access to records (paper and computer-based records) * Computer system and related backup * Record-keeping systems (essential records) (W/P, TLB etc.) * Lost or destroyed records (reconstruction and ICETRA acceptance) * Provision of records to the operators (copy or original W/P, TLB, CRS) * Retention of records   + The format of records   + Periods (minimum three years from CRS)   + Methods and Security   + Reliable traceability of all of the organisation's activities * A commitment that all retained maintenance records covering the last three years shall be distributed to the last owner or customer of the respective aircraft or component in case the maintenance organisation terminates its operation. | *145.A.55(a)(b)(c)(e)(f) 145.A.70 (a)12* |  |
|  | 2.15 Rectification of defects arising during maintenance   * Procedure to record defects arising during maintenance   + Line   + Base   + Shop * Line/base/shop maintenance procedure:   + Sign-off of defects   + Records of defects * Carrying forward defects to future maintenance inputs - (control, accountability, owner acceptance, approved data) * Assessment/analysis of defects and rectification * Notification process (when necessary) to the customer, TC/STC holder, State of Registry and ICETRA (see 2.18) * Report to the operator/ approval of the customer to launch the rectification according to the contract   Incorporation of standard defect rectification in work files, records, control, release certificate and information to the customers are to be dealt with in paragraphs 2.13, 2.14, 2.16, 2.17 | *145.A.45 145.A.48(c)(4),(5) 145.A.50(a) 145.A.55(a) 145.A.60 M.A.304 ML.A.304 M.A.403(b) ML.A.403(b) AMC 20-8 (EU) 376/2014* |  |
|  | 2.16 Release to service procedure   * Definition of the maintenance release statement * Company procedures   + Certifying staff verify that all maintenance that was ordered has been properly carried out (145.A.50(a))   + Maintenance release statement * Base maintenance release, large aircraft * Base maintenance release other than large aircraft (if it is different from large aircraft) * Line maintenance release * Maintenance check flight (MCF)   + Coordination with owner/CAMO/CAO, including an agreement for the MCF   + Release before MCF   + Post MCF processes * Maintenance release in AJTL * Issue of a maintenance release by the flight crew commander, if applicable * Component maintenance release (issue of EASA Form 1) * Component maintenance release (internal release without EASA Form 1 if applicable) * Component removed as serviceable from an aircraft, issue of EASA Form 1 (AMC2 145.A.50 (d)(2.6) * D1 rating (NDT) maintenance release (refer to Appendix III in this document for information) * Maintenance release in case of one-off authorisation   + The MOE 3.9 specifies the related qualification requirement)   + Notification to ICETRA   + Definition of records to be kept and location of records   + Task re-checked when affecting flight safety * Issue of a maintenance release with incomplete work   + Enter such fact in the maintenance release   + The person/organisation responsible for the continuing airworthiness agreement (e.g. endorse on the certificate)   + Informing, in writing (AMC1 145.A.50(e) 2.) * Sign-off after maintenance task completion (see GM 145.A.48) * Maintenance release should contain the following minimum information:   + Cross-reference to work packs, if applicable   + Reference to maintenance data used, including its revision status (mandatory)   + Task(s) specified in the (S)TC holder’s   + Task(s) specified in the operator/owner instructions or AMP   + Date/FH/Cycles/Landings etc., as appropriate, when such maintenance was carried out   + The location where the maintenance release is issued   + Identification of the person issuing the maintenance release, including     - CS authorisation number     - Signature of the CS   + The limitation to airworthiness or operation, if any   + EASA Part-145 approval number * Impossibility to sign a release certificate that could hazard flight safety, e.g.:   + AD ordered or known to be applicable which is overdue and not embodied   + Works which were carried out not per approved data   + Discrepancies that may have consequences on the airworthiness of the aircraft/ component/ engine   + NDT inspections with defects outside the limits * Impossibility to sign a release certificate due to unexpected non-availability of facilities, equipment, tooling material, maintenance data or certifying staff * Need to complete a maintenance work order which leaves the aircraft/engine/components in non-approved configuration (e.g. maintenance release of an aircraft where the maintenance organisation is only ordered to remove an engine) * Need to issue a maintenance release for a maintenance check flight, where an STC has been incorporated which is not yet approved (e.g. parts installed in “prototype status”, maintenance performed using data pending approval, etc.). See EASA\_21\_S21\_GP001 – Good practices, coordination between design and maintenance for the first installation of a change to a product: <https://www.easa.europa.eu/sites/default/files/dfu/approvals-and-standardisation-organisation-approvals-docs-good-practices-EASA_S21_GP001_1209.pdf> * The specificities of EASA Form 1. This procedure shall at least address the following issues:   + The address to be recorded in the EASA Form 1 block nr. 4 is the address of the PPB, which is reflected on the first page of the EASA Form 3 certificate. However, to allow the identification of the maintenance site where the EASA Form 1 is issued (in the case this is different from the PPB), the organisation shall ensure a system is in place to retrieve the information of the maintenance site where the EASA Form 1 was issued, starting from the tracking number of the EASA Form 1 (block nr. 3)   + The tracking numbering system of EASA Form 1 shall be described demonstrating a unique number is used   + An identification system shall enable tracking of the location where the maintenance has been released to service   + The recording system allows retrieving all the issued EASA Form 1 easily   + The cancellation or correction of an EASA Form 1 mistakenly completed/issued * The use of abbreviations (“OK” should not be acceptable), capital letters, and ballpoint pen (blue or black) * Issue of a one-off maintenance release authorisation * Certification authorisation (identity, qualified staff)   The following cases should be addressed in this chapter:   * The maintenance organisation shall be responsible for the maintenance that is performed within the scope of its approval (145.A.48(b)) * The impossibility of signing a maintenance release certificate that could hazard flight safety (AD owed and not enforced, work carried out not per the approved data, without approved data, discrepancies that may have consequences on the airworthiness of the aircraft/ equipment/ engine * The temporary fitting of an aircraft component without an appropriate maintenance release certificate in case of AOG in stopover and associated conditions (30 hours of flight, agreement of the customer, acceptable certificate, checking the status of the equipment, technical log record, corrective action when the aircraft returns to its maintenance base...) * Address maintenance release, especially by different staff, i.e. A, B1, B2, B2L B3, C, L, component and NDT staff as applicable | *145.A.30(g)(h)(i)(j) 145.A.35(a)to (m) 145.A.48(a)(b)(c)(d) 145.A.50(a)to(F) AMC1 145.A.50(e)4. 145.A.55 (a)(b)(c) 145.A.70 (a)12 145.A.75 AMC M.A.401(c) 4. M.A.301(i) GM.301(i) ML.301(f) GM1 ML.A.301(f)*  *See also: NPA 2014-11 for helpful information EASA\_21\_S21\_GP001 – Good practices, coordination between design and maintenance for the first installation of a change to a product* |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2.17 Records for the person or organisation that ordered maintenance   * Procedure for the composition of maintenance records to be provided to the customer/operator   + - Composition/records to be provided     - In what format(s)     - When records will be provided     - Who is responsible for the composition | *145.A.55(a)(2) 145.A.70(a)12 M.A.305 AMC M.A.305(f)* |  |
|  | 2.18 Occurrence reporting  Procedure for internal reporting   * Aims and objectives of an error management system   + The encouragement of reporting   + A Code of Practice   + No reprisal policy * List of reportable occurrences * Description of process to report occurrences (occurrence reporting system) * Description of process to investigate occurrences * Description of process to record occurrences * The analysis of occurrence data * Management actions in response to occurrence findings feedback to staff * Sharing information from investigations * Methods for reporting to:   + ICETRA, EASA and allocated NAAs   + Manufacturer – TC/STC/design holder   + The organisation responsible for continuing airworthiness(CAMO/CAO/Owner/Holder/operator/customer) * Persons responsible for reporting * Reportable defects * Technical occurrence report and completion instructions * Investigation procedure and follow-up system   + The follow-up report is intended to provide details of the organisation's actions to prevent similar occurrences in the future. It shall be made as soon as those actions have been identified. * Reporting timescale * Reports must contain pertinent and evaluation results (where known) * Persons responsible for reporting * Occurrences reported by subcontractors * Permitted reporting periods and retention of data * Reportable Defects Investigation procedure and follow-up system * Reporting and collection of fatigue issues * Reporting timescale * Confidentiality safeguard for the identity of the reported and the persons mentioned in the report * Voluntary occurrences and method   + This procedure must describe voluntary reporting. This reporting is intended to feed the safety reporting scheme described in MOE 3.2.   This procedure must describe the mandatory reporting to ICETRA, EASA, to the person or organisation that is responsible for the continuing airworthiness of that aircraft (CAMO/CAO/owner (holder)), to the State of Registry NAA, to the design approval holder of the aircraft ((S)TC holder) or component any safety-related event or condition of an aircraft or component identified by the organisation which endangers or, if not corrected or addressed, could endanger an aircraft, its occupants or any other person, and in particular any accident or serious incident. For events or conditions affecting aircraft components, the organisation shall report to the person or organisation requesting maintenance.  All maintenance personnel are responsible for reporting occurrences using the internal safety reporting system described in MOE 3.2. The scheme will identify the occurrences to be reported according to the list and method described in this chapter.  The Basic Regulation has a requirement in Annex II in NBR for the organisations to implement and maintain a management system to ensure compliance with the essential requirements for airworthiness and aim for continuous improvement of the system.  Continuous Improvement requires:   * an open mind, the commitment of all; * objective analyses of relevant data; and * perseverance to implement improvements   The said Annexe states that the organisation must establish an occurrence reporting and handling system, which the management system must use to contribute to the aim of continuous improvement of the safety of products (the system). Therefore, review relevant incidents, accidents, and occurrences to learn, improve, and strengthen the system. | *145.A.45(c) AMC 145.A.47(b)2 145.A.50(a) 145.A.60(a)(b)(c)(d) 145.A.70(a)12 145.A.202 AMC 20-8 (EU) No 376/2014 (EU) 2015/1018 (EU) 216/2008 (EU) 2018/1139* |  |
|  | 2.19 Return of defective aircraft components to store   * Aircraft component received in serviceable status but found “defective/faulty” at installation, i.e. bad from stock   + Involvement of compliance monitoring for investigation, possible need to report the occurrence as per MOE 2.18 * Labelling and handling of unserviceable components * Labelling and identification of defective/faulty components (required information) * Handling and movement of components (the link between involved departments) * Storage of defective components * Components on hold (quarantine) pending determination of serviceability status * Labelling and handling of unsalvageable components   This paragraph should refer to the process of parts/components returned to the store by maintenance staff. A defective/faulty component means a component removed from the A/C for any reason | *145.A.42(a)(c) 145.A.70(a)12* |  |
|  | 2.20 Defective components to outside contractors   * Dispatch of components for maintenance (e.g. repair, overhaul, modification, calibration) * Identification of required work * Return of the serviceable component after maintenance at the contractor/subcontractor facility * Control of dispatch, location and return * Return of unserviceable loan parts * Management of the packaging and special transportation conditions (e.g. wheels and oxygen bottles)   This procedure should refer to the process of sending components to outside contractors, for example, for repair, overhaul, modification or calibration.  Contracted EASA Part-145 approved organisation. This fact shall be reflected in MOE 2.1 and the contracted organisation(s) listed in MOE chapter 5.4.  Subcontracted organisation not holding an EASA Part-145 approval. This fact shall be reflected in the MOE 2.1 and the “Subcontractors” listed in the MOE chapter 5.2. | *145.A.42(a)(b) 145.A.70(a)12, 14, 16 145.A.75(b) 145.A.205(a)(b)* |  |
|  | 2.21 Control of computer maintenance records system   * Description of the computer records system in use and related objectives (e.g. software to track ongoing maintenance in the hangar, etc.) * Information retrieval * Back-up systems (frequency, means, delay) and second-site storage (frequency, means, delay) * Security and safeguards to unauthorised access   This chapter shall refer to the computer systems used to manage and record information regarding the maintenance tasks carried out.  This chapter shall not be confused with chapter 2.14, “Technical record control”, which is intended to cover the record-keeping requirement addressed in 145.A.55. | *145.A.25(a) 145.A.45(e)(f)(g) 145.A.55(a)* |  |
|  | 2.22 Control of man-hour planning versus scheduled maintenance work   * The management system of company planning versus time available (e.g. aircraft line/base, components maintenance activity, etc.) * Type of planning (man-hours’ availability versus workload) * A variety of factors taken into account in the production planning:   + Human performance limitations, including fatigue of maintenance personnel   + Complexity of work   + Employed vs contracted staff   + Covering all staff (CS, SS, II, authorised/unauthorised staff, planners, auditors etc.)   + All activities carried out outside the scope of the Part-145 approval   + Aircraft hangar visit plan     - The "hangar visit plan" shall be made available to demonstrate the sufficiency of hangar space to carry out planned base maintenance and other activities. The relation between the hangar visit plan and the man-hour plan shall be described.   + Additional factors * Planning revision process * Organisation of shifts * Review at least every 3 months and update when necessary * Notification to the accountable and compliance manager of deviations exceeding 25% between the workload and the man-hour availability   + Review by the accountable and compliance manager * Man-hour planning for compliance monitoring * Procedure to manage risks of workload force unbalances   + Actual staff available at lower than the planned level for any shift or period   + Temporary increase of contracted staff for specific operational needs   The man-hour plan must relate to the anticipated maintenance workload versus the man-hour available. Maintenance workload includes all necessary work such as, but not limited to, quality monitoring, planning, maintenance record checks, production of worksheets/cards in paper or electronic format, the accomplishment of maintenance, inspection, the completion of maintenance records, component storage as well as all work outside the scope of the Part-145 approval.  The organisation must ensure and demonstrate organisational stability relevant to workload.  Particular attention shall be given to the situation when the same person is acting with different roles during a particular maintenance check (e.g. a person acting at the same time as a category C certifying staff and B1 support staff during a particular base maintenance check, a person acting simultaneously as component certifying staff and sign-off staff during a particular component workshop maintenance, etc.). In such cases, the man-hour plan for the particular maintenance check should consider this aspect to ensure the person is allocated enough time to carry out the necessary activities required for each of their different roles and appropriate consideration is given to human performance limitations. | *145.A.25(a)(b) 145.A.30(d) 145.A.47(a)(b) 145.A.70 (a)12(b)* |  |
|  | 2.23 Critical maintenance tasks and error-capturing methods   * Definition of critical maintenance tasks * Identification of the list of critical maintenance tasks * The data source used to identify and amend the list of critical maintenance tasks * The person responsible for the control/amendments of the list of critical maintenance tasks * Procedure to review/continuously evaluate critical maintenance tasks and assess their impact on flight safety * Assessment of work ordered to identify critical maintenance tasks * Clear identification of critical maintenance tasks, e.g. on task cards/worksheets. * Procedure to describe which data sources are used to identify and amend the list of critical maintenance tasks * Identification of error-capturing methods to be used   + What is independent inspection (primary method)   + What is an “independent qualified person.”   + Responsibility “independent qualified person.”   + What is reinspection and when used (only in unforeseen circumstances) * Independent inspection procedure * Personnel authorised for the independent inspections   + The qualification of this personnel is expected in the MOE 3.13 Independent inspection staff qualification * How to perform an independent inspection (the main procedure)   + What has to be inspected   + Notifying the independent qualified person before work commences to enable the person to familiarise himself with the job to be performed   + What to look for during the inspection   + How a task requiring independent inspection is signed-off   + Consistency has to be ensured with MOE 2.13 * Reinspection procedure   + Only in unforeseen circumstances   + Definition of reinspection   + How to perform a reinspection by the same person   + How to record the identification and the details of the reinspection   IMPORTANT: Do not mix/confuse:   * Critical maintenance tasks of this Chapter 2.23 in point 145.A.48(c)(2)) with * the risk of multiple errors in point 145.A.48(c)(3) contained in Chapter 2.25 (repeated errors in identical maintenance tasks/systems).   The circumstances cannot be considered unforeseen if the person or organisation has not assigned a suitable ‘independent qualified person’ to that particular line station or shift, i.e. poor production planning is not unforeseen (AMC4 145.A.48(c)(2) par. (d)(2)) and AMC1 145.A.48(c)(3) par. (d).  Maintenance errors may also be detected as part of the occurrence reporting system, for example, following internal or external occurrence reports investigation; this process is expected to be described in the MOE chapter 2.18  When the operator/customer defines its list of critical maintenance tasks, the independent inspection for critical maintenance tasks must be carried out as per the MOE, in addition to the ones required/requested by the customer/operator. | *145.A.48(c)(2) 145.A.48(a)(3) (see 2.25) 145.A.70 (a)12* |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2.24 Reference to specific procedures   * Work away from base or workshop, including occasional Line maintenance as per 145.A.75(c) * Engine (rotors) run-up * Aircraft pressure run * Aircraft towing * Aircraft taxiing (see also CAT.GEN.MPA.125, NCC.GEN.120 and NCO.GEN.115) * Maintenance check flights (MCF)   + Coordination with owner/CAMO/CAO   + Release of work before MCF (see 2.16)   + Post MCF processes * Technical wash * Control/ supervision of de-icing systems * Handling and control of waste materials * Scrapping of parts * Procedure to ensure that after completion of maintenance, a general verification is carried out and signed for to ensure that the aircraft or component is clear of all tools, equipment and any extraneous parts or material and that all access panels removed have been refitted (point 145.A.48(C)(1)) * Manufacturing of alternative tooling (145.A.40(a)(i) & EASA UG) | *145.A.40(a) 145.A.42(b) 145.A.48(c)(1) 145.A.50(e) AMC1 145.A.50(e)4. 145.A.65 (b) 145.A.70(a)12 145.A.75(c) M.A.301(i) GM.301(i) ML.301(f) GM1 ML.A.301(f) ML.A.301 CAT.GEN.MPA.125 NCC.GEN.120 NCO.GEN.115 EASA UG.CAO.00132-001 EASA UG.CAO.00131-001* |  |
|  | 2.25 Procedures to detect and rectify maintenance errors   * Procedure to minimising multiple errors (145.A.48(c)(3)) * These are not critical tasks as in 145.A.48(c)(2) – do not mix * the procedure should specify the following:   + Planning method to plan the performance by different persons of the same task in different systems (GM1 145.A.48(c)(3))   + That every maintenance task is signed off only after the completion   + How croup of tasks for the purpose of sign-off allows critical steps to be clearly identified   + Work performed by personnel under supervision (i.e. temporary staff, trainees) is checked and signed off by an authorised person   + Reference to production planning procedure 2.28 * Procedure for unforeseen cases when only one person is available   + What can be considered unforeseen (poor production planning is not unforeseen)   + What cannot be regarded as unforeseen   + Reinspection   Note that identical maintenance tasks compromising more than one system or function may also be listed as critical tasks, requiring independent inspections as per MOE 2.23 above. | *145.A.48(c)(3) 145.A.60(a)(b)(c)(d) 145.A.70 (a)12* |  |
|  | 2.26 Shift/task handover procedures   * Aims and objectives of the shift handover * Training of personnel in shift/task handover processes * Recording of shift/task handover * Description of the shift handover process and required information   + Facility status   + Work status   + Manning status   + Outstanding issues   + Other possible information * Responsible person for managing and filling up the shift/task handover * Handover, taking into consideration critical maintenance tasks * Handover, taking into consideration identical maintenance tasks | *Part 145.A.47(c) 145.A.48(c) 145.A.70 (a)12* |  |
|  | 2.27 Procedures for notification of maintenance data inaccuracies and ambiguities   * Definitions of maintenance data ambiguities * Method of internal (2.18) reporting of maintenance data ambiguities * Process of external reporting of maintenance data ambiguities to the authors of that data * Feedback to staff and implementation of TC Holder/Manufacturer corrections * Impact of the data ambiguity on the ongoing maintenance task   The authors are:   * Aircraft/component design organisation (AMM, SB, SRM.) * The competent authority * The organisation itself, in the case of organisation job cards * The customers in the case of job cards issued and furnished by the customers | *145.A.45(c) 145.A.70 (a)12 145.A.202 AMC 20-8 (EU) No 376/2014* |  |
|  | 2.28 Production planning and organising of maintenance activities   * Decision-making process * Analysis of the work order to ensure a clear work order or contract * Analysis that the work requested remains within the approved scope of approval   + Work not on the scope of work cannot be accepted, e.g. NDT * Procedures for establishing all necessary resources are available before the commencement of work (manpower with required capabilities, tools, equipment, parts, material, maintenance data, documentation, facilities, etc.) * Risk assessment (and mitigation actions) to address cases where the working hours are to be significantly increased or when the shift pattern is to be significantly modified, such as for urgent operational reasons (AMC 145.A.47(d)) * Procedures for organising maintenance personnel without undue time pressure and providing all necessary support during maintenance * Considering human performance limitations (Circadian rhythm / 24-hour body cycle etc.) * Consideration of fatigue in the planning of maintenance (part of the management system) * Planning of shift and shift/task handover * Sharing of shift schedule with the maintenance staff sufficiently in advance (AMC 145.A.47(c))   + shift durations should not be exceeded regardless of staff willing to work overtime * Planning of critical tasks, tasks that need independent inspection (145.A.48(c)2) * Planning of tasks that are at risk of multiple errors during maintenance and the risk of errors being repeated in identical maintenance tasks (145.A.48(c)3) * Factors to consider in the planning:   + logistics   + inventory control   + square meters of accommodation   + man-hours estimation   + man-hours availability   + preparation of work   + hangar availability   + environmental conditions (access, lighting standards and cleanliness)   + coordination with internal and external suppliers, etc.   + safety hazards associated with external working teams carrying out maintenance at the organisation’s facilities   + scheduling of critical maintenance tasks during periods when staff are likely to be most alert   + fatigue   + organising shifts and shift handover   + scheduling of identical tasks to more than one system on the same aircraft during a particular maintenance check     - Minimising the possibility of an error being repeated in identical tasks, compromising more than one system or function. Thus, the procedures should ensure that no person is required to perform a maintenance task involving removal/installation or assembly/disassembly of several components of the same type fitted to more than one system, a failure of which could have an impact on safety, on the same aircraft or component during a particular maintenance check. However, in unforeseen circumstances, when only one person is available, the organisation may make use of reinspection as described in point (d) of AMC4 145.A.48(c)(2).     - What are unforeseen cases (poor production planning is not unforeseen)     - What are not unforeseen cases   Particular attention shall be given to the situation when the same person is acting with different roles during a particular maintenance check (e.g. a person acting at the same time as a category C certifying staff and B1 support staff during a particular base maintenance check, a person acting simultaneously as component certifying staff and sign-off staff during a particular component workshop maintenance, etc.). In such cases, the man-hour plan for the particular maintenance check should consider this aspect to ensure the person is allocated enough time to carry out the necessary activities required for each of their different roles and appropriate consideration is given to human performance limitations. | *145.A.10 145.A.47(a)(b)(c)(d) 145.A.48(a)(c) 145.A.65(a)(b) 145.A.70 (a)12 ICAO Doc. 9824 Human Factors Guidelines for Aircraft Maintenance Manual* |  |
|  | 2.29 Airworthiness review procedures and records  Documented review of aircraft records   * The same AR staff performing the physical survey of the aircraft * Aircraft records to review, including the depth of sampling * The level of detail that needs to be reviewed * Number of records * The checklist used for the review * Etc.   Physical survey of the aircraft   * The same AR staff reviewing aircraft records * How to perform the physical review, including the depth of sampling – in detail * Topics that need to be reviewed * The physical area that needs to be inspected * Which document on board needs to be reviewed * The checklist used for the survey * Etc.   Issuance of an ARC   * Issuance of ARC (EASA Form 15c) after AR has been properly carried out * Airworthiness of the aircraft when ARC is issued * Record keeping * Distribution of the ARC copies * Copy of the ARC sent to the competent authority of the Member State of Registry of the aircraft within 10 days of the date of issue   Note: ARC can only be issued when all findings are closed and the aircraft is considered airworthy by complying with the relevant requirements.  Review of the effectiveness of the aircraft maintenance programme   * By the same person who performs the airworthiness review * What to review (AMC1 ML.A:302(c)(9) * Deficiencies of the aircraft linked with deficiencies in the content of the AMP * AMP amendment * Inform the competent authority of the Member State of Registry if AR staff does not agree with the measures amending the AMP taken by the owner, CAMO or CAO | *145.A.30(k) 145.A.37 145.A.70(a)6, 12 145.A.75(f) ML.A.302(c)(9) ML.A.903 ML.A.904* |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2.30 Fabrication of parts  This procedure can only be included when the possibility of fabricating a restricted range of parts is included in the MOE 1.9 chapter.   * It can only be for parts within the technical and procedural capability of the organisation * Approved data for the fabrication (direct authorisation), i.e. EASA, (S)TC holder or DOA * It may only be used by the organisation in the course overhaul, maintenance, modifications, or repair of aircraft or components, performing work at its own facilities for a restricted range of parts   + Cannot be supplied externally; no onward supply or sale   + EASA Form 1 cannot be issued   + It cannot be a bulk transfer of surplus inventory   + Physically segregated from any delivery certification   + It is not acceptable to fabricate any item to pattern unless an engineering drawing of the item is produced which includes any necessary fabrication process and which is acceptable to ICETRA   + Reverse engineering not authorised * List of parts that may be fabricated– may be in MOE 1.9 scope of work   + Where special processes or inspection procedures are defined in the approved data that are unavailable at the organisation, the organisation cannot fabricate the part unless the TC/STC holder gives an approved alternative. * Owner/CAMO/CAO/operator acceptance * Each time justify why the fabrication of a part is used instead of the normal acquisition of an original part.   + Keep records of the decision on file * Fabrication process   + Work card/worksheet system   + Linked to product or component undergoing maintenance   + Marking (p/n and maintenance organisation)   + Final inspection and conformity statement     - Independently from the fabrication itself     - Before installation and recorded * Fabrication records * List of parts fabricated (paper register, database etc.)   + The organisation must be able to demonstrate a register/summary list of all parts fabricated and products or components installed in and for what customer | *145.A.42(b)(iii) EASA UG.CAO.00131-002 or later revisions* |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2.31 Procedure for component maintenance under aircraft or engine rating  The procedure can only be included when the possibility of using component maintenance data under aircraft or engine ratings is included in the MOE 1.9 chapter.   * Condition to use these privileges   + Justification to ICETRA on the need for this privilege and confirmation that it is a simple component maintenance as defined in the following paragraph   + The procedure to assess the task is within the technical capability of the maintenance organisation (e.g. staff, tools, maintenance data, materials, etc.)   This assessment can be considered met without further demonstration, where the organisation holds the relevant Cx/Bx rating and performs a task included in the already approved capability at the P/N level, however, using workshop staff „on-wing“ under the Ax rating.   * Assessment of the need to develop maintenance instructions for using the particular maintenance data to precisely record the part of the maintenance task effectively carried out (e.g. a B1-rated maintenance organisation (MO) using the AMM will not take care of circuit breaker deactivation in the cockpit and should not record this task as being done by the MO) * Where applicable, the procedure to liaise with the Ax-rated MO being responsible for some parts of the task when a Cx or Bx MO are working on-wing (e.g. circuit breaker deactivation, etc.) * Procedure entailing possible CRS limitations (e.g. leak test needed by the Ax MO following a task carried out by the Cx or Bx MO) * Procedure to cover cases where the same maintenance task is available in different maintenance data with different allowed defects. In such cases, the MO can only use the particular maintenance data if clearly specified in the work order (e.g. a Bx shall not use the AMM under its own decision when the same task is available in EMM) * The need for training in the use of maintenance data and in the particular maintenance environment (e.g. a Cx or Bx-rated MO working on-wing in an aircraft line or base maintenance environment) * Access to the maintenance data   Definition of simple component maintenance  This definition is to be customised to the organisation's scope of work. It is not intended to define simple tasks which do not apply to the organisation. The criteria below are only intended to address the case of an Ax-rated organisation wishing to use component maintenance data.  The tasks to be carried out are:   * Not requiring any specific workshop environment (e.g. special temperature/humidity requirements, particular cleanness standard) or workshop test bench * Limited to cabin-related maintenance tasks, such as:   + - Cosmetic repairs (e.g. seats, galleys, lavatories, stowage, partitions)     - Minor inspection (e.g. fire extinguisher weighing, seats inspection)     - Minor repairs (e.g. seats subpart replacement) * The component may be temporarily removed from the aircraft to improve access to that component, except when such removal generates the need for additional maintenance. The component shall be reinstalled back to the same aircraft, and the related repair recorded in the aircraft maintenance work package * Amendment status of component maintenance data used under this procedure shall be controlled as per MOE chapter 2.8 | *145.A.20 145.A.45(b) GM1 145.A.45(b) 145.A.48(a) M.A.401(b) ML.A.401(b) M.A.502 ML.A.502 Appendix II to Part-145* |  |
|  | 2.32 Maintenance away from approved location  This procedure can only be included when the possibility of performing maintenance outside the approved locations is included in the MOE 1.9 chapter scope of work.  The privilege to perform maintenance in a non-approved location means that the organisation is issuing a CRS outside the approved locations as per 145.A.50 (aircraft/engine/component/NDT certificate of release to service as applicable, depending on the class rating held by the organisation).  It must be noted that an organisation that has been granted these privileges should not be understood as if any maintenance task could be performed at any location or that such locations become “approved locations”.   * Risk assessment to evaluate the risk associated with the task(s) and implement mitigating measures. * Limitations that should also be included in MOE 1.9 * Assessments/production planning   + Tasks to be performed   + Location   + Support at the location   + Possible facility for staff, i.e. for paperwork, rest, etc.   + Staff needed and qualifications/authorisations     - B1, B2, NDT CS, etc.     - Critical tasks - independent inspection (2.23)     - Tasks subject to multiple errors (2.25)   + Tools and equipment   + Components, parts and material   + Data   + Paperwork   + Length of work expected, etc. * Notification to the compliance manager   + The use of the privilege is subject to compliance monitoring (auditing) | *145.A.75(c) EASA UG.CAO.00134-005 or later revisions* |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | 2.33 Procedure for assessment of work scope as line or base maintenance  The content of the chapter may be included in chapter 2.28, “Production planning and organising of maintenance activities”, which describes the “decision-making process” (in this case, MOE 2.33 should cross-refer to MOE 2.28).  The process described in the title of this MOE 2.33 chapter applies to all types of organisations holding Ax ratings; therefore, the assessment of work scope as a line or base maintenance is only one particular case of the larger “decision-making process” intended to assess any work scope.  The maintenance organisation is responsible for ensuring the correct assessment of the work scope being requested. Therefore, the proper approval (line or base) is used regardless of the customer's request. The customer may request some work being performed in a line environment that is subject to base maintenance. All line maintenance work scope can be performed in base maintenance environment/procedures as long as it is within the scope of work of the maintenance organisation. | *145.A.10 AMC1 145.A.10 145.A.47(a) 145.A.48(a)(b)* |  |
|  | PART L2 – ADDITIONAL LINE MAINTENANCE PROCEDURES |  |  |
|  | L2.1 Line maintenance control of aircraft components, tools, equipment, etc.   * Component / Material acceptance – (required documentation, condition, “Quarantine” procedure) * Parts and appliances referred to in point 21.A.307(c) (New parts and appliances without an EASA Form 1 for European Light Aircraft (ELA). Reference to EASA Certification Memorandum: EASA CM–21.A–K–001 Issue: 02 or later revision * Components removed serviceable from aircraft (issue EASA Form 1) Procedures to maintain satisfactory storage conditions – (routable, perishables, flammable fluids, engines, bulky assemblies, special storage requirements) * System for control of shelf life, modification standard and ADs * Tagging/labelling system (serviceable, unserviceable, scrap, etc.) * Release of components to the maintenance process * Free-issue dispensing (self-service) of standard parts (control, identification, segregation) * Tools and test equipment, servicing and calibration programme/equipment register * Identification of servicing/calibration due dates   This paragraph must describe the additional/special procedures of the management of the facilities, materials/ ingredients and tools/ equipment, technical documentation, and staff associated with the line maintenance activity of a workshop carrying out base and line maintenance.  See also information in 2.4, 2.5 and 2.6 regarding tools and equipment. | *145.A.25(d) 145.A.40(a)(b) 145.A.42(a)(b)(c) 145.A.70(a)12, 15 145.A.75 (b)(c)(d)* EASA Certification Memorandum: EASA CM–21.A–K–001 Issue: 02 or later revision |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | L2.2 Line maintenance procedures related to servicing/fuelling/de-icing, including inspection for/removal of de-icing/anti-icing fluid residues, etc.   * Technical and maintenance documentation management (control and amendment) * Company Technical Procedures / Instructions Management * Fuel supply quality monitoring (bulk storage/aircraft re-fuelling) * Ground de-icing (procedures/monitoring of subcontractors) * Maintenance of ground support equipment * Monitoring of sub-contracted ground handling and servicing | *145.A.70(a)12, 15 145.A.75(b)(c)(d) GM M.A.201(e) AMC M.A.301(a)(1)(f)* |  |
|  | L2.3 Line maintenance control of defects and repetitive defects   * Reportable defects – PIREPS – Engineering entries – Cabin   + Procedure on how to deal with defects requiring A, B1, B2, B2L, B3 and L certifying staff (AMC 145.A.30(g))   + Procedure on how to identify and deal with defects requiring B2 certifying staff in the case of line stations where such staff is not permanently available   + Procedure on how to deal with defects requiring B2 certifying staff in the case the organisation's scope of work is limited to B1 task only * Rules for deferring (periods, review, permitted personnel, conformity with MEL /CDL provisions) * Awareness of deferred defects carried by aircraft – (monitoring of repetitive defects, communication with the main base) * Analysis of tech log (repetitive defects, crew complaints, analysis and transfer of cabin log items as required) * Coordination with the operator   This chapter must describe the organisation's general procedures for rectifying line maintenance defects. Identifying and managing repetitive defects is an operator's responsibility; however, the maintenance organisation may also identify such repetitive defects or be involved by the operator in related rectification actions, and this MOE chapter is also intended to describe this area of activity. | *145.A.30(g) 145.A.70 (a)12, 15 145.A.75(b)(c)(d))* |  |
|  | L2.4 Line procedure for completion of technical log   * Technical Log system:   + Taking into account operator procedure   + Completion of sector record page   + Distribution of copies * Training on customer operator's procedures and maintenance record completion (logbook, etc.) * Certification / Sign-off (maintenance statements) * Maintenance independent inspections (145.A.48(c)(2)) * ETOPS certification * Retention of records   + Periods   + Methods and security   This paragraph must describe the additional management procedures/completion of the technical log(s) in use. It must also cover the practices for ETOPS release where applicable. These procedures must be associated with paragraphs 2.13 and 2.16 of the MOE.  This paragraph must include how compliance with point 145.A.48(c)(1) is ensured after line maintenance. See also 2.24. | *145.A.70(a)12, 15 145.A.75(b)(c)(d) 145.A.48(c)* |  |
|  | L2.5 Line procedure for pooled parts and loaned parts   * Verification of approved sources of parts (sources, conformity with company requirements, modification standard and AD compliance, records) * Compliance with loan and contract requirements   + Tracking and control   + Required documentation * Processing removed loan parts for return to the source (service records) * Component removed as serviceable from aircraft (issuance of EASA Form 1)   + Control procedures   + Authority   This paragraph must describe the additional management procedures for pooled or loaned parts specific to the line maintenance activity. It should also cover removing serviceable parts from aircraft for use on another aircraft. These procedures must be associated with paragraphs 2.2, 2.3, 2.19, and 2.20 of the MOE. | *145.A.42 145.A.50(d) 145.A.70(a)12, 15 145.A.75(b)(c)(d)* |  |
|  | L2.6 Line procedure for return of defective parts removed from aircraft   * Required documentation * Service record * Processing advice of removal (W/O) and dispatch to technical records * Dispatch of the part for rectification   This paragraph must describe the additional management procedures for the treatment of defective components associated with the line maintenance activity. These procedures must cover the same subjects specified in paragraphs 2.19 and 2.20 of the MOE (return of removed components, sending components, etc.). | *145.A.70(a)12,15 145.A.75(b)(c)(d)* |  |
|  | L2.7 Line procedure for critical maintenance tasks and error-capturing methods  This chapter is the equivalent of chapter 2.23 of the MOE for the line maintenance activity.  It is intended to describe peculiarities, if any, for managing the critical maintenance tasks in the line maintenance environment and any associated error-capturing method. | *145.A.48(c)(2) 145.A.70(a)12* |  |
|  | L2.8 Line procedures to detect and rectify maintenance errors  This paragraph is the equivalent of chapter 2.25 of the MOE for the line maintenance activity. | *145.A.48(c)(3) 145.A.60(a)(b)(c)(d)  145.A.70(a)12* |  |
|  | L2.9 Procedure to open a new line maintenance station   * Facility requirements * Maintenance staff and A, B1, B2, B3 etc. CS staff * Equipment, tools and material * Maintenance data * Amendment to MOE * Liaison with the compliance department * Inspection and audit by the compliance personel (department) * Recommendation to ICETRA (if applicable and approved in the MOE. See the text below. * The application process to ICETRA   The new line maintenance station requires prior approval by ICETRA as per 145.A.85(a). However, a procedure to set up the line station, followed by an internal inspection and audit performed in all cases by the compliance department, may be acceptable. In this case, a recommendation with documentation supporting the change will be sent to ICETRA, which will perform a desktop audit and directly approve the location. Regardless of this provision, ICETRA may decide to audit the line station before approving it or soon after to monitor the organisation's usage of this provision.  Note: This method will not be valid if there are open findings on the same area of the quality system. ICETRA can withdraw this procedure if unacceptable control is revealed. | *145.A.75(c)(d) 145.A.85* |  |
|  | L2.10 Maintenance at the unlisted location due to unserviceability or to support occasional line maintenance  This procedure should be set up to list the conditions and ensure adequate control in case maintenance is needed at an unlisted location arising from an aircraft's unserviceability (AOG) or from the necessity of supporting occasional line maintenance. See also Chapter 2.32.  The organisation shall inform ICETRA and the quality department each time maintenance is intended to be performed outside the listed location, including the work order from the operator or holder as applicable. ICETRA recommend the creation of a form for this purpose.  Note: ICETRA may perform an audit when this procedure is used.  The procedure is a “privilege” that can be withdrawn if unacceptable control is revealed. | *145.A.75(c) EASA UG.CAO.00134-005 or later revisions* |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | PART 3 – MANAGEMENT SYSTEM PROCEDURES | |  |  |
|  | 3.1 Hazard identification and safety risk management schemes  This chapter should describe the identification of safety hazards associated with the maintenance activities, the assessment of the associated safety risks and the investigation process, and the mitigation actions to monitor their effectiveness  Hazard identification process   * Process for safety data collection; proactive and reactive methods * Identification of data sources, external and internal * Approach for safety data analysis * Procedure(s) for the identification and classification of hazards relevant to the Organisation/activity * Records management (hazard log/register) * Responsibilities and management of the hazard log * Internal communication process   Safety risk management  The Organisation should describe in detail the risk assessment process in place.  Once hazards are identified, the risk of their consequences should be assessed and analysed, and mitigation actions should be implemented accordingly. A formal safety risk management process should be developed and maintained considering the following:   * Analysis process (e.g. in terms of the probability and severity of the consequences of hazards and occurrences)   + Severity should evaluate the seriousness of the consequences   + Likelihood should identify the possibility (and frequency) of the occurrence   + The likelihood and severity should be clearly defined   + Regardless of the method used (ICAO safety risk matrix, ARMS, BOW-TIE, etc.), it is essential to customise the risk assessment matrix to reflect the operational profile * Tolerability assessment   + The organisation should assess the acceptability of the potential consequences associated with the potential occurrences and hazards identified. This should be done in accordance with the organisation’s defined safety performance criteria * Mitigation actions   + Control (in terms of mitigation) of risks to an acceptable level   + The decision-making process, including responsibilities   + Implementation of actions   + Monitoring of the effectiveness of the implemented actions   Mitigation is incorporating risk barrier controls (for example, preventive controls or recovery controls) to reduce the severity and the likelihood of the identified hazard, therefore reducing the risk to an acceptable level and, if possible, eliminating the risk.  Those risk controls should be specific, measurable, agreed upon, realistic and time constrained. Human Factors should be considered as part of the development of risk controls.    The responsible person/position in charge of implementing and managing mitigation measures should be identified (including follow-up procedure).  The effectiveness of the mitigations should be monitored. Risk controls should be changed as a result of that assessment when necessary. | | *145.A.200(a)(3)* |  |
|  | 3.2 Internal safety reporting and investigations  Safety reporting scheme   * Part of its management system   + Internal safety reporting scheme, as detailed in Chapter 2.18   + Identify the causes of and contributing factors to any errors, near misses, and hazards reported and address them as part of the safety risk management process   + Ensure evaluation of all known, relevant information relating to errors, the inability to follow procedures, near misses, and hazards, and a method to circulate the information as necessary   + Confidentiality and safety promotion   + Clearly identified aims and objectives with a demonstrable corporate commitment   + A just culture policy as part of the safety policy (as defined in MOE 1.2), and related just culture implementation procedures   Safety investigation process   * Description of the process to investigate occurrences (e.g. criteria to identify occurrences to be investigated, investigation report format, methods of maintenance errors investigation such as “maintenance errors decision aid-MEDA” process, corrective actions in response to investigation findings, follow-up system, feedback to staff, etc.) * Maintenance errors identified to be used for internal human factors training and for amendment of the procedure for critical maintenance tasks (may cross-refer to MOE chapter 2.23)   The scope of internal investigations should extend beyond the scope of the occurrences required to be reported to the competent authority in MOE 2.18.  The internal safety reporting scheme should include a detailed process to:   * Identify those reports which require further investigation * Classify occurrences against the mandatory reportable criteria established in MOE 2.18 and decide on further actions accordingly * Investigate all the causal and contributing factors, including any technical, organisational, managerial, or Human Factor issues, or any other contributing factors related to the occurrence, incident, error or near miss * Analyse the collective data showing the trends and frequencies of the contributing factor * To identify, implement and monitor the effectiveness of the appropriate corrective and preventive actions based on the findings of investigations   Additional considerations for this chapter include:   * Initial and recurrent training requirements for staff involved in internal investigations * Coordination and cooperation with the customer/operator on occurrence investigations by exchanging relevant information to improve aviation safety * Recurrent training updates, per the established training policy and procedures, whilst maintaining appropriate confidentiality * Feedback loop to reporters and other maintenance staff | | *145.A.202(a)(b)(c)(d)* |  |
|  | 3.3 Safety action planning  This chapter should describe the safety action planning process in place, describing the Safety Review Board (SRB) and Safety Action Group (SAG), when applicable, composition, meetings and functions.  The SRB should be a high-level committee that considers matters of strategic safety to support the accountable manager’s safety accountability. The board should be chaired by the accountable manager and composed of the Nominated Persons.  The SRB should monitor the following:   * Safety performance against the safety policy and objectives * That any safety action is taken in a timely manner * The effectiveness of the organisation’s management system processes * The procedure should also specify when and how often SRB meetings take place   The SRB may also be tasked with:   * Reviewing the results of compliance monitoring * Monitoring the implementation of related corrective and preventive actions   Depending on the size of the organisation and the nature and complexity of its activities, a Safety Action Group (SAG) may be established as a standing group or as an ad hoc group to assist or act on behalf of the Safety Manager or the SRB.    More than one SAG may be established, depending on the scope of the task and the specific expertise required. The SAG usually reports to and takes strategic direction from the SRB and may be composed of managers, supervisors and personnel from operational areas.    The SAG may be tasked with or assist in the following:   * Monitoring safety performance * Defining actions to control risks to an acceptable level * Assessing the impact of organisational changes on safety * Ensuring that safety actions are implemented within agreed timescales * Reviewing the effectiveness of previous safety actions and safety promotion * The procedure should also specify when and how often SAG meetings take place | | *145.A.200(a)* |  |
|  | 3.4 Safety performance monitoring  The procedure may include, as appropriate to the size, nature and complexity of the organisation:   * Safety reporting * Status of compliance with the applicable requirements * Safety reviews, including trend reviews * Safety audits that focus on the integrity of the organisation’s management system and on periodically assessing the status of safety risk controls * Staff safety surveys examine particular elements or procedures in a specific area, such as identified problem areas or bottlenecks in daily maintenance activities * Evaluation of safety performance indicators (SPI) * Other indicators relevant to safety performance, which may be generated by automated means * The identification of lessons learned   Chapters 3.3 and 3.4 are connected. However, chapter 3.4 should be used further to develop the safety performance monitoring process within the organisation, including SPI. | | *145.A.200(a)* |  |
|  | 3.5 Change management  The change management process should consider:   * Identification and description of the change * Assessment of the criticality and impact * Existing controls and implementation of new controls * Change implementation and transition period * Monitoring the effectiveness of the change implementation   Changes may introduce new hazards or threaten existing safety risk controls. The management of change should be a documented process established by the organisation to identify external and internal changes that may have an adverse effect on the safety of its maintenance activities. It should make use of the organisation’s existing hazard identification, risk assessment and mitigation processes.  The Organisation shall develop and maintain a process to identify and assess changes that may affect the safety risk associated with its services and to identify and manage the safety risks that may arise from those changes. The management of change should be a documented process to identify external and internal changes that may have an adverse effect on the safety and compliance of its continuing airworthiness management activities.  The introduction of a change triggers the organisation to perform its hazard identification and risk management process. Some examples of change include, but are not limited to:   * Changes to the organisational structure * The inclusion of a new aircraft type in the scope of approval * The addition of aircraft of the same or a similar type * Significant changes in personnel (affecting key personnel or large numbers of personnel, high turnover) * New or amended regulations * Changes in the security arrangements * Changes in the economic situation of an organisation (e.g. commercial or financial pressure) * New schedule(s), location(s), equipment, and/or operational procedures * The addition of new subcontractors   Regardless of the magnitude of the change, large or small, its safety implications should always be proactively considered. This is primarily the team's responsibility that proposes and implements the change.  The magnitude of a change, its safety criticality, and its potential impact on human performance should be assessed in any change management process. A change may have the potential to introduce new or to exacerbate pre-existing human factors issues. The purpose of integrating human factors into the management of change is to minimise potential risks by explicitly considering the impact of the change on the people within a system.  The process should also consider business-related changes (organisational restructuring, resources, IT projects, etc.) and interfaces with other organisations/departments. Responsibilities and timelines should be defined. | | *145.A.200(a) 145.A.85 AMC2 145.A.85* |  |
|  | 3.6 Safety training (including human factors) and promotion   * Safety training programme Safety training, combined with safety communication and information sharing, forms part of safety promotion. The organisation should ensure that:   + All staff are able to demonstrate an understanding of safety management principles, including Human Factors, related to their job function.   + All staff are familiar with the safety policy and the procedures and tools that can be used for internal safety reporting.   + Staff who have been designated safety management responsibilities are familiar with the relevant processes in terms of hazard identification, risk management, and the monitoring of safety performance.   For that purpose, personnel involved in the basic maintenance service of the organisation should receive both initial and recurrent safety training appropriate for their responsibilities. This should include at least the following staff members:   * + Nominated persons, line managers   + Certifying staff, support staff and mechanics (authorised staff)   + Technical support personnel such as planners, engineers, and technical record staff;   + Persons involved in compliance monitoring and safety management-related processes and tasks, including the application of human factors principles, internal investigations and safety training;   + Specialised services staff;   + Stores department staff, purchasing department staff;   + Ground equipment operators.   Initial safety training should cover all the topics of the training syllabus specified in GM1 145.A.30(e) either as a dedicated course or else integrated within other training. The syllabus may be adjusted to reflect the particular nature of the organisation. The syllabus may also be adjusted to suit the particular nature of work for each function within the organisation.  Initial safety training should be provided within 6 months of joining the organisation, but temporary staff may need to be trained shortly after joining the organisation to cope with the duration of employment. Personnel being recruited from another organisation, and temporary staff should be assessed for the need to receive any additional safety training. Training should be provided to management and staff at least:   * + During the initial implementation of safety management processes;   + For all new staff or personnel recently allocated to any safety management related task;   + On a regular basis to refresh their knowledge and to understand changes to the management system;   + When changes in personnel affect safety management roles, and related accountabilities/responsibilities; and   + When performing dedicated safety functions in domains such as safety risk management, compliance monitoring, internal investigations.   Recurrent safety training should be delivered either as a dedicated course or else integrated within other training. It should be of an appropriate duration in each 2-year period, in relation to the relevant compliance monitoring audit findings and other internal/external sources of information available to the organisation on safety and HF issues. Recurrent training should take into account certain information reported through the internal safety reporting scheme.   * System of maintaining perfonnel trained and competent to perform their tasks The purpose of recurrent safety training is primarily to ensure that staff remain current in terms of SMS principles and HF, and also to collect feedback on safety and HF issues. Consideration should be given to involving compliance monitoring staff and key safety management personnel in this training to provide a consistent presence and facilitate feedback. There should be a procedure to ensure that feedback is formally reported by the trainers through the internal safety reporting scheme to initiate action where necessary.   The organisation should establish communication about safety matters that:   * + Ensures that all personnel are aware of the safety management activities, as appropriate, for their safety responsibilities;   + Conveys safety-critical information, especially related to assessed risks and analysed hazards;   + Explains why particular actions are taken; and   + Explains why safety procedures are introduced or changed. * Communication means/information sharing related to safety matters   Significant events, changes and investigation outcomes should be communicated. Safety policy and objectives should be known by staff.  Regular meetings with personnel at which information, actions, and procedures are discussed, may be used to communicate safety matters. Safety bulletins, communications, newsletters, emails, etc. are other means used to share safety information.  The process should describe what, when, and how safety information needs to be communicated. Subcontracted/Contracted organisations should be included in the communication where appropriate.  The means of communication should be adapted to the audience and the significance of what is being communicated   * Safety Training (including Human Factors) Procedure.   This chapter shall refer the human factors training for the organisation personnel, except certifying staff and support staff. The Initial training to Human Factors for certifying staff and support staff is defined in Chapter 3.9.  Initial training   * Aims and objectives * Categories of staff to be trained * Implementation time frame Training methods and syllabus: {refer to GM 1 - 145.A.30 (e)} * Duration of training * Validation of the training courses (syllabus and duration) * Requirements for trainers Training Records   + Duration / location   + Type of documents   All Maintenance staff Recurrent training   * Aims and objectives * Categories of staff to be trained * Training methods and syllabus: tailored to the audience / audit findings /feedback in relation to relevant quality audit findings and other internal/external sources of information available to the organisation on human errors in maintenance * Duration of training * Validation of the training courses (syllabus and duration) * Requirements for trainers * Training Records   + Duration / location   + Type of documents   Human factors training could be adjusted to reflect the particular nature of the organisation (size, scope of work).Human factors recurrent training shall be of an appropriate duration in each two year period. | | *145.A.202 145.A.200(a)(4) 145.A.30(e)*  *145.A.35(d) 145.A.65(b)* |  |
|  | 3.7 Immediate safety action and coordination with the operator’s emergency response plan (ERP)   * Immediate safety action  A procedure should be implemented to enable the organisation to act promptly when it identifies safety concerns with the potential to have an immediate effect on flight safety, including clear instructions on who to contact at the owner/customer/operator and how to contact them, including outside normal business hours.    + Identification responsibilities for contacting owner/operator/CAMO in case of safety concerns with potential immediate effect on flight safety are identified.   + Internal and external coordination, including contact details of key functions and personnel within the Maintenance Organisation (manager, Nominated Postholder, etc.) and within the operator/CAMO (Maintenance Control Centre, operator/CAMO contact person, etc.). * Coordination with the operator’s ERP. A procedure should be implemented to enable the organisation to act promptly when the Emergency Response Plan (ERP) is triggered by the operator, and it requires the support of the Part-145 organisation, including clear instructions on who to contact at the owner/customer/operator, and how to contact them, including outside normal business hours.   + Identification of responsibilities for the implementation and management of the ERP   + Procedure(s) for the transition from normal to emergency operations   + Procedure(s) for the transition from emergency to normal operations   + Internal and external coordination, including contact details of key functions and personnel   + ERP training requirements   + ERP training/simulations (scope, frequency) | | *145.A.155* |  |
|  | 3.8 Compliance monitoring   * Audit plan and audit procedures   This chapter must explain how the audit of internal procedures is organised and managed i.a.w. Regulatory requirements. In particular, this chapter shall describe how the requirements for system/procedure audit are complied with and the methodology of the audit. Small organisations may subcontract the audits to another organisation or an outside person with satisfactory technical knowledge and audit experience (link to chapter 3.12).   * + Definition of the “system/procedure” audit     - Single exercise audit or subdivided over 12 months     - Definition of remote audit methodology and applicability. When remote audit methodology is used, it should be clearly stated in the related audit reports * System/procedure audit programme   + - System/procedure audit plan. The audit plan shall ensure that all aspects of Part-145 compliance are checked every 12 months.     - Principles of annual audit procedure planning       * Audit plan     - Grouping of audits     - Dates and timescales     - Independence     - Access to the accountable manager     - Composition and functions of management quality group     - Creation and management of the audit plan     - Audit plan to show all subparagraphs     - The audit plan is to show all areas, base, line, shop(s), different locations, product audits, subcontractors, MOE, quality procedures, etc. * Audit of the Compliance Monitoring by an independent auditor   + A person employed by the maintenance organisation and working in another department (e.g. production), or;   + A person contracted by the maintenance organisation (part-time basis or short time contract based on the 145.A.30 (d) contracted personnel) to perform audits on the compliance monitoring procedures. This case does not mean subcontracting the compliance monitoring. * Audit of contracted organisations /subcontractors/suppliers, as applicable, depending on the monitoring criteria defined in MOE chapter 2.1. * Scheduled audits and unannounced audits to be carried out during maintenance, including night shifts * Validation/internal approval of the audit programme and management of changes to the programme * Follow up of the audit program: scheduled, performed, audit report issued, open/close * Company audit policy, including compliance audit   + Audit notification   + Audit reports (documents used, writer, issue, points checked and deviations noted, deadline for rectification)   + Allocation of resources to the audit (audit team, team leader, etc.)   + Principles when deviations are noted on a line of product * Quality audit reports retention   + Duration and location   + Type of documents (notification, audit reports, check list, audit programs etc.) * Product audits and inspections This chapter must describe the procedures related to the product audits (aircraft, aircraft component, engine, specialised service) according to Part-145. Small organisation may choose to subcontract the audits to another organisation or an outside person with satisfactory technical knowledge and satisfactory audit experience (link to chapter 3.12).     + Definition of “Product” audit The sample check of a product means to witness any relevant testing and visually inspect the product and associated documentation. The sample check should not involve repeat disassembly or testing unless the sample check identifies findings requiring such action   + Company “Product” Audit Policy     - A dedicated “Product” audit policy may be added, provided it does not conflict with the one describe in the previous chapter. The Company audit procedure shall include the quality audit of aircraft (and/or component)   + “Product” Audit programme     - Product samples for each line of product (aircraft and / or components and/or engines and/or specialised services)     - Dates and timescales   + “Product” Auditing methods     - Sampling     - "Trail" / “investigation” audits   + Records of “Product” audit reports   + Duration (At least duration of 5 years from the date of the findings closure) / location   + Type of documents (notification, audit reports, check list, audit programs, …) * Audit findings – corrective action procedure This chapter must describe the procedures of follow up of corrective actions   + Notification to the accountable manager and ICETRA in case of level 1 finding identified by the internal audit and immediate actions to self-limit the approval/privileges as necessary * Management of finding due dates   + Alert system, finding database   + Extension of the due date   + Procedure describing the organisation actions when the corrective action deadline has to be postponed or when the answer has not been received on time. * Corrective action process   + Root cause analysis and associated generation of Corrective Action Plan and Corrective Action   + Corrective action planning and follow-up (e.g. notified, answered, corrective action accepted, open/closed)     - Finding follow-up should describe the actions taken by the auditor or auditing manager to verify the implementation of corrective actions   + The corrective action plan shall be designed in a way which allows identifying and recording the finding, the root cause, the relevant immediate and long term preventive action with the appropriate timescales   + Management responsibilities for corrective action and follow-up   + Process of corrective actions following findings from the ICETRA (the same principles indicated above in the root cause and CAP/CA generation are expected. The CAP/CA shall be performed within the period specified by ICETRA. * Observation issued by ICETRA   + Where observations are issued by ICETRA, the organisation shall give them due consideration and record the decisions taken in respect to those observations   + Analysing the related issues   + Determine when actions are needed   + Recording the analysis and the outputs   + Recording the actions taken or the reasons for not taking actions   + Record-keeping * Description of the quality feedback reporting system   + Access to Accountable Manager   + Review of the Compliance Monitoring overall results   + Meeting with the Accountable Manager. (including record of meeting procedure)   + Regular meetings to check the progress of corrective actions     A procedure is expected detailing the methodology in use for the root cause analysis, and associated generation of CAP and CA. It is important that the analysis does not primarily focus on establishing who or what caused the noncompliance, but on why it was caused. Establishing the root cause or causes of a non-compliance often requires an overarching view of the events and circumstances that led to it, to identify all the possible systemic and contributing factors (regulatory, human factors, organisational factors, technical, etc.) in addition to the direct factors. This is an essential element of the compliance monitoring function to avoid recurrent findings. The following describes a typical step by step process   * Collecting information (environment in which the finding was found, staff involved, associated paperwork, etc.) * Identify the root causes and contributing factors (this means not only identifying and confirming the finding, but also assessing its impact in other areas of the organisations to detect same or similar non compliance and investigating related causes and contributing factors. The 5 whys or fishbone methodologies could be used to explore the root causes which brings to the non-compliance) * Define a corrective action plan (the plan should indicate the intended corrective actions and related timing for their implementation, within the due date of each finding. It should address not only the immediate identified non-compliance, but all non-compliances identified as part of the root cause analysis) * Demonstrate the implementation of corrective actions (it means providing evidences that the corrective actions have been effectively implemented. This evidence cannot be based on promises or statement related to events not yet completed. For example, a statement that a certain training will be completed or is on-going is not acceptable as evidence of corrective action implementation). | | *145.A.200(a)(6) 145.A.65(a) 145.A.55 145.A.95* |  |
|  | | 3.9 Certifying staff and support staff qualifications, authorisation and training procedures  This chapter shall describe qualification procedures for the certifying staff and category B1, B2, and B3 support staff qualification. Clear differentiation is expected for each rating in the scope of work (e.g. aircraft, engines, components, specialised services). Initial and recurrent training for each job function needs to be specified.   * Aircraft certifying staff (CS) and support staff (SS)   + The minimum age for certifying staff and support staff (21 years)   + Experience, training and competency requirements   + CS & SS individual authorisation. Requirements for initial issue, extension, renewal, and withdrawal procedure of the authorisation, including, as applicable:     - Authorisation issuance for line maintenance CS (B1, B2, B3 etc.)     - Authorisation issuance for base maintenance CS (C)   + Authorisation issuance for base maintenance SS (B1, B2, B3 etc.)   + Recurrent training procedures - organisation procedures, new technology, human factor issues, etc.   + Demonstration of 6/24 months maintenance experience, including a table of similar aircraft types (relevant to the scope of work held by the maintenance organisation) to be used for the demonstration of 6/24 months requirement     - Documented assessment of the 6/24 month maintenance experience   + One-off certification authorisation     - Maintenance release procedure following one-off authorisation to be included in MOE 2.16 * Engines and components certifying staff   + The minimum age for certifying staff (21 years)   + Experience, training and competency requirements   + CS individual authorisation. Requirement for initial issue, extension, renewal, and withdrawal procedures of the authorisation   + Recurrent training procedures - organisation procedures, new technology, human factor issues, etc.     - Demonstration of 6/24 months maintenance experience, including criteria to define the similarity of engines/APUs/components relevant to the scope of work held by the maintenance organisation, to be used for the demonstration of 6/24 months requirement       * Documented assessment of the 6/24 month maintenance experience * Specialised Services, D1 NDT certifying staff   + The minimum age for certifying staff (21 years)   + Experience, training and competency requirements   + CS individual authorisation. Requirment for initial issue, extension, renewal, withdrawal procedures of the authorisation   + Recurrent training procedures - organisation procedures, new technology, human factor issues, etc.     - Demonstration of 6/24 months maintenance experience including criteria to define similarity of engines/APUs/components, relevant to the scope of work held by the maintenance organisation, to be used for the demonstration of 6/24 months requirement       * Documented assessment of the 6/24 month maintenance experience   + Compliance with EN 4179 * Flight crew commander (limited authorisation) CS staff, if applicable * Recurrent training procedures, including   + Programme (MOE, Part-145, Part M(L), Safety management, HF, FTS, EWIS, special technical requirements, etc.   + Procedures * Qualifying subcontractor's personnel CS (if applicable) * Authorisations issue, renewal or withdrawal procedures   + Compliance manager responsible   + Licence validity control (when applicable)   + Evaluation, assessment, test etc.   \* For component staff requirements, refer to Icelandic Regulation nr. 400/2008, as amended, Chapter IV, paragraphs 4.1 and 4.2.  It could also be used for the independent qualified person as per 145.A.48(C)(2)  NOTE: The authorisation issued to staff, in particular, certification authorisation to certifying staff (CS), must be in a style that makes its scope and limits clear to the CS and any authorised person who may require to examine the authorisation (145.A.35(g) and (h)).  The competency assessment process for issuance, extension, and renewal of the CS and SS individual authorisation is expected to be described in the MOE 3-19 “Competency Assessment”. | *145.A.30(e)(f)(g)(h)(i)(j) 145.A.35(a) to (h) to (n) 145.A.48(b) AMC4 145.A.48(b) M.A.901(l) Appendix IV AMC 66.A.20(b)3 Icelandic Regulation No 400/2008 EN 4179 (NDT)* |  |
|  | | 3.10 Certifying staff and support staff records   * Management of certifying staff and support staff records * Content of the records and types of documents * Type of records, i.e. electronic or hardcopy or both * Retention of records   + Duration   + Location * Format of the CS and SS individual authorisation document and authorisation codes * Procedure to ensure certifying staff can produce their certification authorisation to any authorised person within 24 hours (including line maintenance locations, activities outside the approved locations, etc.) * Control of certifying staff records   + Authorised persons   + Authorised managers   + Delivery of a copy of their CS and SS individual authorisation in a documented or electronic format. The scope of work has to be detailed, including limitations when applicable * Access to records   + Access control   + CS and SS shall be given access on request to their personal records   + Upon request, the maintenance organisation shall furnish CS and SS with a copy of their personal record on leaving the organisation | *145.A.55(d) 145.A.35(h)(j)(k)* |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | 3.11 Airworthiness review staff qualification, authorisation and records  This chapter only applies to aircraft on the scope of work operated under the Part-ML. Mark this chapter N/A if airworthiness review is not part of the privilege.   * Qualification, knowledge, experience and competence requirements   + Including Part-66 licence with CS authorisation for the corresponding aircraft * Training requirement and recurrent training * Assessment of AR staff * Formal acceptance by the competent authority – review under supervision * Issuance of authorisation * Staff records * Maintaining the AR authorisation by:   + Being involved in continuing airworthiness management activities for at least 6 months in every two-year period or   + Conducted at least one airworthiness review in the last 12-month period. * Restore the staff lost validity of AR authorisation   The first AR staff has to be assessed by ICETRA, i.e. perform AR under the supervision of ICETRA. For others, after that, it can be delegated to the organisation according to a procedure.  Formal acceptance by the competent authority  The approval by the competent authority of the MOE, containing, as specified in point, the nominative list of AR personnel, constitutes the formal acceptance by ICETRA of the airworthiness review staff.  If the airworthiness review is performed under the supervision of existing airworthiness review staff, evidence should be provided to the competent authority.  The inclusion of an airworthiness review staff member in such a MOE list also constitutes formal authorisation by the organisation. | *145.A.37* |  |
|  | 3.12 Compliance monitoring and safety management personnel  This chapter must describe how the compliance monitoring and safety personnel are managed. Initial and recurrent training in relation to each job function needs to be specified.   * Nominated personnel * Required experience * Required training, e.g. relevant legislation, quality system theory and auditing techniques, MOE procedures, on-the-job training, etc. * Required competence * Required minimum work under supervision before authorised, e.g. audits * Required recurrent training, including safety management/safety training, HF and, if applicable, EWIS, CDCCL & FTS * Examination, test and assessment procedures (as necessary – can refer to 3.19) * Assessment must ensure adequate knowledge and competence of the quality audit personnel to perform the allocated tasks effectively, including monitoring compliance with Part-145 and identifying non-compliance effectively and promptly so that the organisation may remain in compliance with Part-145. * Independence of quality audit personnel when the organisation uses skilled personnel working within another department than that of the quality department * Issuance of authorisations and scope for auditors, extension, renewal and withdrawal * Retention of records   + Duration and location   + Type of documents   This paragraph must describe how the compliance monitoring and safety personnel are managed and competency is ensured and assessed.  Allocated man-hours (if not full-time) should be addressed. The number of qualified personnel should be adapted to the maintenance activity to be supervised (see 2.22). | *145.A.30(c))ca)(cc)(e) 145.A.55(d)* |  |
|  | 3.13 Independent inspection staff qualification  This chapter is dedicated to the qualification and authorisation of an “independent qualified person” who performs the independent inspection of critical maintenance tasks and attests to the satisfactory completion of the task and that no deficiencies have been found. Initial and recurrent training in relation to the function needs to be specified.   * Qualification as per AMC4 145.A.48(c)(2) * Required experience (duration and technical) * Training requirements, including safety management/safety training, HF, FTS, CDCCL, EWIS) * Issue of authorisation and identification of the scope of tasks allowed to independent inspect * Competence requirements * Examination, test and assessment procedures, including practical assessment (refer to 3.19) * Recurrent training procedures, including   + Training Programme (MOE and associated procedures, Part-145, safety management, Human Factors, special requirements, etc.)   + Training setting up   + Duration, intervals * Retention of records   + Duration and location   + Type of documents   The competency assessment process for issuance, extension, and renewal as an authorised independent qualified person is expected to be described in the MOE 3.19 “Competency assessment of personnel”. | *145.A.30(e) 145.A.48(c)(2)* |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | 3.14 Mechanics qualification and records  This chapter shall refer to the different authorised staff and mechanics (e.g. airframe, powerplant, avionics, sheet metal, cabin, fuel, engines, painters, cleaners, components, composites, line maintenance, production planner, etc.) applicable to the organisation.  Specialised activities staff, such as NDT and welding, are addressed in chapter 3.17.  Those personnel must be considered authorised by the maintenance organisation approved under Part-145 to sign off tasks they have personally performed. Consistency shall be ensured with the sign-off policy described in MOE chapter 2.13.  An authorised mechanic is not authorised to issue a release to service for aircraft or component or engine or NDT unless they also hold a “certifying staff privilege”.  Initial and recurrent training concerning each job function needs to be specified.   * Required experience (duration and technical), training and competence requirements (including safety training, HF, FTS, CDCCL, EWIS) * Examination, test and assessment procedures, including practical assessment (refer to 3.19) * Recurrent training procedures, including   + Training programme (MOE and associated procedures, Part-145, human factors, special requirements etc.).   + Training setting up   + Duration, intervals * Authorisation issue, extension, renewal or withdrawal procedures, including the scope of authorisation * Retention of records   + Duration and location (at least 3 years after the person has left the organisation)   + Type of documents | *145.A.30(e)(f) 145.A.55(d)* |  |
|  | 3.15 Process for exemption from aircraft/aircraft component maintenance tasks  This chapter must describe the organisation's procedures regarding exceptional authorisations related to maintenance tasks.  Deviations must be requested by the operator to its competent authority or granted by the operator in accordance with a procedure acceptable to its competent authority.  The contract between the operator and the maintenance organisation shall specify the support the Part-145 approved organisation may provide to the operator to substantiate the deviation request.  This chapter is to be considered applicable only under these circumstances.  Deviations from the maintenance programme have to be managed by the CAMO. The contract between the maintenance organisation and the CAMO should specify the support expected by the maintenance organisation in this regard.  This MOE chapter is to be used to detail the policy in place on this matter, while dedicated procedures applicable to each customer operator should be included in MOE Part 4.   * Support the maintenance organisation may provide to the operator/customer in order to substantiate a deviation request   + Relations with the operator/ customer in case of derogation for an intervention in progress by the workshop   + Supply information to the customer/ operator, enabling them to write out requests for exceptional authorisation applications.   + Control of the approval by the competent authority (linked with maintenance release)   The difference between the activity study/ preparation/ redaction/ submission of exceptional authorisation application related to maintenance tasks on behalf of customers/operators and the  Part-145 activity here above should be kept in mind. | *145.A.65(b)(1) GM2 145.A.65(b)(1)* |  |
|  | 3.16 Concession control for deviations from the organisation’s procedures  This chapter must describe the procedures followed by the maintenance organisation in order to deviate from the approved MOE procedures.  It shall be understood that any request for a concession to deviate from an MOE procedure shall be in any way in compliance with any regulatory requirement with particular reference to EASA Part-145.  Under no circumstances this chapter may be used to deviate from regulatory requirements.   * Concession criteria   + Object, procedures involved, justifications, compensatory conditions, period of validity, etc. * Concession management procedure   + Internal evaluation   + Drafting process   + Response   + Internal validation process and follow-up * System of internal approval and control of the concession * System for ICETRA approval – ICETRA shall approve any concession * Retention of records   + Duration   + Location   + Type of documents * Feedback from the compliance monitoring to ICETRA | *145.A.65(a)(b)* |  |
|  | 3.17 Qualification procedure for specialised activities such as NDT, welding, etc.  This chapter shall refer to the qualifications of specialised services staff, such as defined in AMC 145.A.30(f). It shall apply to all the specialised services mentioned in MOE paragraph 1.9 (e.g. NDT, painting, welding, machining, NDI). It is recommended to structure this chapter to provide qualification requirements for each group of specialised services staff in a separate paragraph. Initial and recurrent training in relation to each job function needs to be specified.  This chapter may also be used for production planners, cleaners, receiving inspectors, store and tool room staff, etc.   * NDT staff   + List of non-destructive testing personnel   + Levels of qualification and authorisation   + Role and privileges of these staff (including responsible level 3 person who should approve the organisation’s NDT procedures and written practice for training and certification of NDT personnel.) * Experience & qualification   + Criteria regarding experience, training and skills   + Experience required by the NDT method for each level of authorisation * Training   + Basic NDT training for each level of authorisation   + Training on the NDT procedures of the organisation * Examination   + The procedure of skills assessment (practical assessment and examination related to the job card)   + General examination of the fundamentals of the NDT methods   + Specific examination by NDT method   + Practical examination by the level of authorisation   + Medical examination   + Eyesight testing * Continuation training and testing * Auditing of staff and system * Authorisations issue, renewal, and withdrawal procedures * Retention of NDT staff records   + Duration/location   + Type of documents   + Contract arrangement   + Other speciliced services     - Welders     - Painters     - Machinists     - Store and tool room personnels     - Receiving inspectors     - Production planners     - Cleaners     - Etc.   + Qualification requirement   + Experience requirements   + Training and recurrent training, including Safety training, HF, EWIS, FTS, MOE, etc.   + Assessmnt (refere to 3.19)   + Authorisation issue, renewal, and withdrawal procedures   This paragraph should refer to the qualification of specialised services staff such as defined in AMC 145.A.30(f). It should also apply to welders, painters, machinest, NDI, etc.  The certifying staff authorised by subcategory B1 of Part-66 can carry out or control colour contrast dye penetrant tests.  When an organisation uses NDT methods defined by EN 4179 paragraph 6.4 as “emerging NDT method”, the organisation's related requirements for personnel training, experience and examination should be established in accordance with EN 4179 and the particular equipment manufacturers’ recommendations.  Note: Iceland does not have a national aerospace NDT board (NANDTB). ICETRA is a co-opted observer member of the Irish NANDTB; therefore, all NDT staff training and examination must be conducted by personnel or organisations under the general control of the Irish NANDTB. The arrangement will be approved through the MOE procedure. | *145.A.30(e)(f) 145.A.55(d) 145.A.65(b)(2)  EN 4179* |  |
|  | 3.18 Management of external working teams  This chapter shall refer to the role of outside teams acting on the organisation's premises to carry out a maintenance task on an aircraft/engine/component in the scope of a task under the organisation's responsibility.  The organisation shall ensure the contracted or subcontracted activities performed by an external working team will be subject to hazard identification and safety risk management (link with chapter 3.1). The organisation shall describe the management of the arrangements/contracts with the external organisations.  The external team is working under their own EASA Part-145 approval. In this case, at the end of the work, the external team will issue their own maintenance release for the work done (aircraft maintenance release or EASA Form 1, as applicable)   * Segregation between the two maintenance organisations working on the same premises * Clear work order provided to the external working team * Type of support (tools/equipment, facilities, etc.) made available to the external team working * Management of the progress of work (meetings, etc.) * EASA Part-145 maintenance release to be expected from the working team   An external working team not holding an EASA Part-145 approval. In this case, the external working team shall be considered as a “subcontractor”, and the applicable procedures developed in MOE chapter 2.1 shall be followed. The organisation shall be listed in MOE 5.2 together with the scope of authorisation.   * Source of work (manufacturer team, another Part-145 MO team) and authorisation of personnel * Control of the subcontractor (refer to control procedure to be in chapter2.1) * System for control of materials, tools, working instructions and procedures * System for control of documentation such as drawings, modification, repairs instructions * Management of the progress of work (meetings, etc.) * Certification procedure for work performed by the outside team such as: repair, replacement, modification, overhaul, test, inspection * Environmental conditions * Final maintenance release * Training on the internal procedures to external staff   This paragraph should refer to the role of outside teams acting on the organisation's premises to carry out maintenance tasks on an aircraft/engine/equipment in the scope of a task under the organisation's responsibility. | *145.A.47(d) 145.A.55(a) 145.A.65(a)(b) 145.A.75(b) 145.A.205(a)(b)* |  |
|  | 3.19 Competency assessment of personnel  This chapter applies to all maintenance personnel involved in the EASA Part-145 activities (e.g. management personnel, certifying staff, support staff, mechanics, independent inspectors, compliance auditor, engineering staff, production planning staff, store staff, tools administrators, purchasers, subcontractors, etc.).  The qualification requirements to be assessed for each category of staff (being different from one to the other staff category) are expected to be found in the relevant MOE chapter (e.g. chapter 3.9 in case of certifying/support staff, chapter 3.12 for compliance and safety staff, chapter 3.13 for independent inspectors, chapter 3.14 for mechanics and 3.17 for NDT staff, etc.)  Ensure all elements in the AMC/GM to 145.A.30(e).   * Personnel to be assessed per Part 145.A.30(e) * Assessment procedures/ evaluation system   + Review of personnel records   + Interview   + Training, including the need for EWIS (various categories) and FTS   + Category A task training   + Qualifications   + Supervision   + Evaluation of competency on-the-job performance and testing of knowledge by appropriately qualified personnel   + Assessors   + Commission/ examination * Management of competence assessment   + Assessment procedures for initial, extension and renewal of an authorisation (process/method used)   + The person responsible for this process on behalf of the organisation   + When the assessment shall take place   + Assessors   + Commission/ examination   + Actions to be taken when the assessment is not satisfactory * The competency assessment shall include:   + Verification that all the applicable qualification requirements for the specific category of staff as detailed in the relevant MOE chapter/Job Description are met   + Verification of the competencys listed in the GM2 145.A.30 (e) and include verification of:     - Relevant knowledge skills and experience on the product/technical area as applicable to the job function     - Appropriate attitude towards safety and observance of procedures     - Knowledge of the procedures (e.g. handling and identification of components, MEL use, etc.) as applicable to the job function * Assessment records   + Duration   + Location   + Type of documents   One of the requirements is to understand safety management principles including the safety training  To assist in the assessment of competence before unsupervised work commences, include job descriptions are in the MOE for each job role in the organisation. | *145.A.(a)(3) 145.A.30(cc) 145.A.30(e) 145.A.30(f) 145.A.35 145.A.37(a)(b)(c) 145.A.48(c)(2)  Appendix IV to AMC5 to  145.A.30(e) and AMC2 145.B200(a)(3) 66.A.20(a)(b)* |  |
|  | 3.20 Training procedure for on-the-job training as per Section 6 of Appendix III to Part-66  This chapter is limited to cases where the competent authority for the Part-145 approval and the Part-66 licence are the same. | *Section 6 of Appendix III to Part-66* |  |
|  | 3.21 Procedure for the issue of a recommendation to the competent authority for the issue of a Part-66 licence in accordance with 66.B.105 (limited to the case where the competent authority for the Part-145 approval and the Part-66 licence is the same.  This procedure is not likely to apply to organisations approved by ICETRA. | *66.B.105* |  |
|  | 3.22 Management system record-keeping  This paragraph should describe the management system record-keeping process that includes records of the management system key processes and contracts, both for contracting and subcontracting.  The management system records shall be kept for a minimum period of 5 years and should include the following details:   * Definition of records to be stored and format * Storage type, location and accessibility * Responsibilities * Access to records * Retention periods (minimum 5 years) * Storage procedure and preservation of records * Subcontracting record storage * Facility management, including third-party facilities * Storage of electronic records * Electronic safeguards and remote servers * Transfer of records * Management of records in specific circumstances (e.g. accidents) | *145.A.55(a)(3) 145.A.55(c) 145.A.200(a)(b)(c)* |  |
|  | PART 4 - RELATIONSHIP WITH CUSTOMER/ OPERATORS |  |  |
|  | 4.1 List of the commercial operators to which the organisation provides regular aircraft maintenance services  This chapter must list those operators for whom maintenance is provided regularly, with details of the types of aircraft (and/or engines/APU) and the scope of work undertaken, e.g. base maintenance, line maintenance, defect rectification, etc., with any limitations | *145.A.70(a)(13)* |  |
|  | 4.2 Customer interface procedures and paperwork  For each contracting operator, this paragraph must describe the particular mode of operation (procedures/ documents/ exchange of information, planning meetings, technical, quality, reliability) between the organisation and its customer.   * Customer interface procedures   For each contracting operator, this paragraph must describe the particular mode of operation (procedures, documents, exchange of information, planning meetings, technical, quality, reliability) between the organisation and its customer.   * + The need to receive training on customer operator procedures   + The procedure to ensure correct completion of customer-provided work cards (e.g., training on customer paperwork) * Customer paperwork   This paragraph must describe (for each contracted operator) how the organisation:   * Completes operator's log books * Keeps the operator's technical records (if applicable) * Retains records on behalf of the operators (if applicable) * Communicate with the operator | *145.A.45(e) 145.A.55(a)(2)(3) 145.A.65(b)(1) 145.A.70(a)13* |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | PART 5 - SUPPORTING DOCUMENTS |  |  |
|  | 5.1 Sample of documents  This chapter must list all the documents and forms the organisation uses. Each form shall be uniquely identified with a number and revision date to allow traceability of changes   * Sample of all forms used and referred to in the procedures * EASA forms exactly as per IR, e.g. EASA Form 1 and ARC 15c * Example of forms:   + Request to ICETRA for approval of an exposition amendment   + MOE revision acknowledgement form   + Request to ICETRA for acceptance of a capability list change   + Material tags:     - Serviceable     - Unserviceable     - Quarantine     - Unsalvageable / Scrap labels     - Component/part removal tag during maintenance   + Tooling identification and calibration due tag   + Register of calibrated and special tools   + Register of equipment   + AD control card/record   + Maintenance task card (scheduled maintenance)   + Maintenance task card (defects, non-routine)   + Base maintenance release   + Line maintenance release   + NDT maintenance release (under D1 rating)   + EASA Form 1   + Un-airworthy conditions report form (inc. MOR)   + Compliance audit report form   + Compliance audit remedial/corrective action report form   + Personnel training record   + Certifying staff authorisation record   + Certifying staff authorisation   + Authorised staff authorisations   + One-off certification authorisation   + Airworthiness review staff records   + Airworthiness review staff authorisation   + Airworthiness review record compliance report   + Airworthiness review physical compliance report   + EASA Form 15c (or refer to the form on the ICETRA website)   + Concession application and approval   + Staff assessment form * All forms should have form number and revision status.   This is a typical List of company forms and is not intended to be exhaustive or to represent the forms required for any particular organisation. The approved organisation must include the forms it controls and records its maintenance work, airworthiness review and procedures. | *145.A.70(a)12 AMC1 145.A.70(a) GM1 145.A.70* |  |
|  | 5.2 List of subcontractors as per point 145.A.75(b)  This chapter must list the subcontractors (not holding an EASA Part-145 approval) - linked with MOE chapter 2.1, 2.2. The list of subcontractors list shall include the following minimum information for each subcontracted organisation:   * Name of the subcontracted organisation * Locations(s) where the subcontracted activities are carried out * Activities which are subcontracted   Any approved maintenance organisation that carries out maintenance for another approved maintenance organisation within its approval scope is not considered to be subcontracting.  The MOE must contain a procedure for the control of subcontractors in 2.1. | *145.A.70(a)14 145.A.75(b)* |  |
|  | 5.3 List of line maintenance locations as per point 145.A.75(d)   * This paragraph must list the line station locations – linked with chapters 1.8 and 1.9   + Airport   + Address * Organisations that are not adding or deleting line stations frequently must list the line stations in this part, i.e. cannot refer to a separate list or a document | *145.A.70(a)15 145.A.75(d)* |  |
|  | 5.4 List of contracted organisations as per point 145.A.70(a)(16)  This chapter must provide the list of contracted organisations (holding an EASA Part-145 approval relevant to the maintenance activity contracted) - linked with MOE chapter 2.1, 2.2. E.g.:   * NDT contractors | *145.A.70(a)16* |  |
|  | 5.5 List of used alternative means of compliance as per point 145.A.70(a)(17)  This chapter should include the list of alternative means of compliance (AltMoC) that are currently approved and used. It only applies when the MOE chapter 1.12 consists of a procedure to develop an AltMoC.   * Content of the list. This list must include at least the following main information, as applicable:   + Title of the approved AltMoC   + Reference of the approved AltMoC   + Date of approval   + Procedure(s) affected by the particular AltMoC | *145.A.70(a)(17) 145.A.120(a)(b)* |  |

Appendix I

***1.9 Scope of Work***

This paragraph must show the range of work carried out at each approved site within the scope of the approval (EASA Form 3 – Schedule of Approval). This section should also relate to paragraphs 1.8 & 5.3 so that it can be seen which specific tasks are performed at which locations.

***Aircraft Maintenance***

**Example:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Rating** | **TC HOLDER** | **AIRCRAFT MODEL** | **LIMITATION** | **MAINTENANCE Level \*\*** | **Base** | **Line** |
| A1 | AIRBUS | A300 B2-202  A300 B4-102 | Airbus A300 basic model (GE CF6) | Up to and including C\* checks | X | X |
| A1 | AIRBUS | A300 C4-203 | Airbus A300 basic model (GE CF6) | Daily /weekly / defect rectification |  | X |
| A1 | AIRBUS | A300 B2-320 | Airbus A300 basic model (PW JT9D) | Daily/Weekly/defect rectifications |  | X |
| A1 | The BOEING COMPANY | Boeing 767-200 | BOEING 767-200 (PW 4000) | Up to C checks\* excluding C4C, S4C and multiples | X | X |
| A2 | PILATUS AIRCRAFT | PC-12  PC-2/45  PC-12/47E | Pilatus PC 12 (PW PT6) | Up to and including weekly checks |  | X |
| A2 | LAVIA ARGENTINA S.A. (LAVIASA) | - | Piper PA-25 (Lycoming) | Up to and including 100H/Annual checks\* | X |  |
| A3 | EUROCOPTER | AS355 E AS355 F1  AS355 F2 | Eurocopter AS 355 (RR Corp 250) | Defect rectification, Daily |  | X |
| A4 |  | NIL |  |  |  |  |

Should be mentioned in this table for each approved site:

- in columns TC holder and limitation: the information from columns 1 and 3 of the table in Appendix I to AMC to Part-66, respectively, as specified in ED DECISION 2011/003/R and its successive issues, except that the word “Series” should be deleted. The limitation must include the engine type.

- in column Aircraft Model: the data from column 2, “Aeroplane Model” or „Helicopter Model” from the same Appendix I

- in column Maintenance level: the scope of maintenance activity at each location or station as agreed by the ICETRA.

- in the case of group rating, each aircraft composing the group should be listed.

*\*: The limitation relative to the maintenance checks/tasks should be addressed as referenced in TC Holder data (i.e. MRB/MPD).*

*\*\*In case of unforeseen maintenance, such as but not limited to major repairs and modifications that are not already described within this chapter, the AMO shall contact the competent authority.*

***Engine maintenance***

**Example:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Rating** | **ENGINE/APU MODEL** | **Limitation** | **Maintenance level** |
| B1 | TFE 731-20 | TFE 731- 20AR | Modules turbine exchange |
| B1 | GE CF6 80 E1 | GE CF6-80E1A1  GE CF6-80E1A2 | All Modules repair |
| B1 | PWC 545 | PWC 545A PWC 545C | Repairs IAW CMM Hot Section Inspection |
| B2 | Continental IO-360 | IO-360-A IO-360-AES | O/H |
| B3 | Honeywell GTCP 85 | GTCP 85-H | Minor repair i.a.w CMM 49- XX-XX |

For engines only should be mentioned in this table for each approved site:

- In column Engine / APU Model: the engine type as listed in the engine TCDS,

- In the column Limitation: the engine variant as defined in the engine TCDS,

- In the column Maintenance level: the scope of work agreed by the Competent Authority, reference to the relevant maintenance data should be made;

- When the maintenance performed under a B1 or B3 rating is limited to boroscoping inspections, the

MOE should specify the engine/APU types associated with the boroscoping technique limitation,

- For piston engines, the column Engine Model and Limitation should contain the data: Continental and Continental IO-360 series, respectively,

- As STC may also install some engines, only the engine agreed for installation should be added as per the approved STC list on the EASA website (Certification).

For APU only should be mentioned in the table:

- in column Engine / APU Model: the APU type

- in the column Limitation: the APU variant as defined by the OEM,

- in the column Maintenance level: the scope of work agreed by the ICETRA, reference to the relevant maintenance data should be made.

***Component maintenance***

This section shall specify the component manufacturer or the particular component and cross-reference to a referenced capability list. The part number and the level of work performed should be included. The reference of the relevant CMM should also be added.

**Example:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Rating** | **ATA** | **P/N** | **Designation** | **Reference of the CMM** | **Level of maintenance** | **Work Shop** |
| C1 | 21 |  |  |  |  |  |
| C2 | 22 |  |  |  |  |  |
| C3 | 34 |  |  |  |  |  |
| C4 | 52 |  |  |  |  |  |
| C5 |  |  |  |  |  |  |
| C6 |  |  |  |  |  |  |
| C7 |  |  |  |  |  |  |
| C8 |  |  |  |  |  |  |
| C9 |  |  |  |  |  |  |
| C10 |  |  |  |  |  |  |
| C11 |  |  |  |  |  |  |
| C12 |  |  |  |  |  |  |
| C13 | 31 |  |  |  |  |  |
| C13 | 42 |  |  |  |  |  |
| C13 | 46 |  |  |  |  |  |
| C14 |  |  |  |  |  |  |
| C15 |  |  |  |  |  |  |
| C16 |  |  |  |  |  |  |
| C17 |  |  |  |  |  |  |
| C18 |  |  |  |  |  |  |
| C19 |  |  |  |  |  |  |
| C20 |  |  |  |  |  |  |
| C21 | 41 |  |  |  |  |  |
| C22 | 84 |  |  |  |  |  |

Should be mentioned for each approved site and workshop:

- in the column Rating: the relevant class C rating, if some C ratings are not used, the line remains empty,

- in the column ATA, the ATA 2200 reference defined in AMC 145.A.20,

- in the column P/N and Designation: the detailed reference number and designation of the component as per CMM, respectively,

- in the column CMM: the reference of the component maintenance manual (or an equivalent document),

- in the column Level of maintenance: the scope agreed by the ICETRA

- in the column Workshop: the base maintenance shop where maintenance takes place.

When an Organisation is managing a separate “capability list”, the information addressed above should be mentioned in this list. In this case, paragraph 1.9 should only address the rating, the ATA and the Designation and should refer to the capability list reference (see example below).

|  |  |  |  |
| --- | --- | --- | --- |
| **Rating** | **ATA** | **Designation** | **P/N** |
| C1 |  |  | Components in accordance with the capability list reference XXXX |
| C2 |  |  |
| C3 |  |  |
| C4 |  |  |

***Specialised services maintenance***

**Example:**

|  |  |  |
| --- | --- | --- |
| **Rating** | **Limitation** | **Detail of limitation** |
| D1 | Liquid Penetrant Inspection (PT) | List techniques and refer to the approved NDT manual/written practices manual |
| Magnetic Particle Inspection (MT) |
| Eddy Current Inspection (ET) |
| Ultrasonic Inspection (UT) |
| Radiographic Inspection (RT) |
| Thermography Inspection (IRT) |
| Shearography Inspection (ST) |

**Should be mentioned for each approved site and workshop:**

**- in column Rating: D1,**

**- in column Limitation: should be quoted the NDT method (strikethrough as necessary)**

**- in column Detail of limitation: the detailed test method when applicable or the relevant exception.**

**Where an Organisation does not hold a D1 rating but carries out NDT tasks in the “course of maintenance” under A, B and C ratings, the scope of the NDT and techniques must be detailed in this paragraph.**

**Each specialised maintenance task, such as but not limited to welding, shall be detailed in this chapter (not a D1 rating).**

Appendix II

**Can "Field Loadable Software" be delivered with an EASA Form 1, and is an EASA Form 1 required for installation?**

First of all, it should be clear that the definition of "parts" (Refer to Article 3 of Regulation (EU) No 2018/1139 does not exclude software from being a part. Even without using the term "software" in this definition, there is software that meets the definition. This is software that is installed in an aircraft and used to operate or control that aircraft. The rest of this response only refers to this type of software.

Secondly, "Subpart K - Parts and appliances" from Part-21 addressing installation, approval and release applies to this software and, therefore:

1. This software must be part of the design data, and
2. The installation of this software in a type-certified aircraft is only accepted when it is accompanied by an EASA Form 1 and properly marked, and
3. the installation is approved. (Refer to 21A.303).

To achieve 1) and 2), the organisation that manufactures and releases the software must meet the requirements of Subpart F or G from Part-21. This means that the software must be part of the scope of that production organisation, and there must be a link between the design and production organisations.

The conclusion for Field Loadable Software is, therefore, that this software can be delivered with an EASA Form 1 when:  
- it is part of design data for which approval has been applied or granted; and.  
- it is produced by and within the scope of a production organisation that meets the requirements of Subpart F or G.

Marking of this Field Loadable Software must be in accordance with Subpart Q of Part-21. The marking could be on the software "container" (e.g., the CD carrying the software) for practical reasons.

Appendix III

**NDT task CRS**

1. **Summary table for the release and qualification of NDT tasks**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Part-145 organisation** | **Certifying staff required** | **Qualification system** | **Release procedure** | **Release procedure for NDT task** |
| Aircraft - Class A | The release of the works carried out on aircraft has to be performed by certifying staff holding a Part-66 license | Licensing of personnel has to follow Part-66 regulation | The release is either in the aircraft technical log or in issuing an aircraft release to service statement | A Part-145 organisation holding an A approval rating on a particular aircraft type and having NDT for this aircraft type in its approved scope of work.  This organisation needs to have Part-66 certifying staff (B, C) and NDT personnel qualified in accordance with 145.A.30(f) (EN 4179).  In this case, the NDT-qualified staff perform the NDT task and signs the task card/work order/engineering order to accomplish the task. The aircraft maintenance released is issued by appropriately qualified B1 or C certifying staff as applicable under the organisation’s A rating.  Note that the aircraft maintenance release would generally include the NDT task and the associated tasks (removal of panels, blankets, wires, re-installation, etc.). |
| Engines - Class B | The release of the works carried out on engines has to be performed by engines certifying staff | The certifying staff is qualified per the organisation's established procedure. Part-66 license not necessarily required. | The release of works performed under class B is done on an EASA Form 1 | The Part-145 organisation holds a B-rating approval on a particular engine type and has in its approved scope of work NDT for this engine type.  This organisation needs to have “engine” certifying staff (qualified in accordance with company procedures) and NDT personnel qualified in accordance with 145.A.30(f) (EN 4179).  In this case, the NDT-qualified staff perform the NDT task and sign the task card/work order/engineering order for the accomplishment of the task. The engine certifying staff releases the works performed on the engine (including the NDT task) on an EASA Form 1. |
| Components - Class C | The release of the works carried out on components has to be performed by components certifying staff | The certifying staff is qualified per the organisation's established procedure. Part-66 license not necessarily required. | The release of works performed under class C is done on an EASA Form 1 | The Part-145 organisation holds a C-rating approval on a particular component and has NDT for this component in its approved scope of work.  This organisation needs to have “component” certifying staff (qualified in accordance with company procedures) and NDT personnel qualified in accordance with 145.A.30(f) (EN 4179).  In this case, the NDT-qualified staff perform the NDT task and signs the task card/work order/engineering order. The component certifying staff releases the works performed on the component (including the NDT task) on an EASA Form 1. |
| Specialised services -  Class D | The release of the works carried out has to be performed by “specialised services” certifying staff | The certifying staff is qualified per the organisation's procedure in compliance with EN 4179. Part-66 license not necessarily required. | The work performed under class D is released on an EASA Form 1 for components and parts. See also “other release to service” below | The Part-145 organisation holding a D1 approval on a particular NDT method. Its approved scope of work will be NDT testing on this method.  This organisation needs to have “NDT” certifying staff qualified in accordance with 145.A.30(f) (EN 4179).  In this case, the NDT certifying staff performs and releases the NDT task on an EASA Form 1.  Note: aircraft are NOT to be released using the EASA Form 1 Certificate (Appendix II to Part-M, point 1.5) |

1. **Other releases to service**

Part 145.A.50 (a) specifies a certificate of release to service shall be issued by appropriately authorised certifying staff on behalf of the organisation when it has been verified that all maintenance ordered has been properly carried out by the organisation in accordance with the procedures specified in point 145.A.70, taking into account the availability and use of the maintenance data specified in point 145.A.45 and that there are no non-compliances which are known to endanger flight safety.

This also applies to D1-rated organisations, which should be able to release service after work is performed, in this case, NDT.

Part-145 does not establish a specific format to be used for the release to service by D1-rated organisations. AMC 145.A.50 (b) provides the release to service statement and basic elements to be taken into account for the issue of the maintenance release.

Each D1-rated organisation may define its maintenance release procedure for NDT work performed on aircraft provided it satisfies 145.A.50. EASA Form 1 format is recommended to establish a standard approach. EASA Form 1 cannot be used for maintenance release on aircraft, i.e. blocks 7, 8 and 10 cannot be used to list aircraft, aircraft type and aircraft S/N.

The completion and use of the EASA Form 1 are well known; it saves time for maintenance organisations, operators/owners/CAMO and the competent authorities. This does not mean that organisations may not define another maintenance release format acceptable to the competent authority, provided they comply with 145.A.50.

Example of maintenance release issued following NDT work performed on installed component/aircraft:

1. NDT performed on nose landing gear: EASA Form 1 issued stating NLG in block 7, the NLG P/N in block 8 and NLG S/N in block 10. Block 12 should state, in addition to the required information as per Appendix II to Part-M, the aircraft registration and S/N; the gear was installed while performing the NDT.
2. NDT was performed on a fuselage dent. P/N is not available, so EASA Form 1 cannot be used. A form with a format similar to EASA Form 1 can be used, as well as another release form or release in the technical log (see below).
3. **Aircraft Technical Log**

The aircraft technical log is an "operator" (CAMO) document. This means it is the operator who defines the use of it. Neither the Implementing Rule nor the AMC/GM prevents a D-rated organisation from issuing a maintenance release in the technical log after the accomplishment of NDT maintenance on an aircraft. Similar to what an A-rated organisation could do after the performance of a component replacement.

On the other hand, the D-rated organisation needs to define the maintenance release procedure they will use. If a specific operator/client is going to use the technical log, then this should be included in the MOE (Part 4). The D-rated organisation may also define a standard maintenance release procedure and format for the release of NDT maintenance work for other clients; this would save them from having to include in the MOE the procedures for the use of the technical log of every client.

Something that needs to be considered in the case of D-rated organisations performing inspections on aircraft is that the NDT inspection may require other associated tasks such as removal/installation of panels, opening/ closing of access, etc.; these tasks are NOT part of the D-rated organisation capability and therefore cannot be released by the D-rated organisation, and they would require the appropriate release by an A rated organisation.

1. **Further considerations:**

Part-145 maintenance organisations need to have an MOE approved by the competent authority. This MOE needs to describe, amongst other things, the procedures for maintenance release used by the organisation. This also applies to D1-rated organisations; they need to specify how the maintenance release under the D1-rating is issued.

It is the operator responsible for the aircraft's continuing airworthiness and has to ensure proper liaison with the D-rated and A-rated organisations when needed. The Part-145 organisation is responsible for only performing work for which it is approved. Still, the operator is also responsible for ensuring that maintenance organisations selected or contracted are approved for the work to be performed (CAME Part 3.1) and accept the maintenance release issued (CAMO.A.315(b)(5) and (6)).

Part-145 organisations with both A- and D-ratings must establish under which approval the aircraft NDT task will be released before work is performed. Organisations with only an A rating cannot release an NDT task performed by another Part-145 organisation, whether or not the organisation performing the NDT task holds an A rating for the type with NDT capability or a D rating.