EUROPEAN MILITARY AIRWORTHINESS REQUIREMENT

EMAR 145

AMC & GM

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MILITARY AIRWORTHINESS AUTHORITIES FORUM

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The following table identifies the persons who have approved this document

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1.1	25 Sep 2012	Approved	Initial Issue	All
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STATUS

The Status of the document can take 3 values:

Working Draft: First version provided during the elaboration of the document by Task Force.

Draft: Draft version when issued by Task Force and proposed to MAWA Forum.

Approved: The document is approved by the participating Member States at the MAWA Forum for release.

EDITION

Edition will have the following template: **Edition X.Y**

The value of **X** will change after a **major** modification of the document

The value of **Y** will change after a **minor** modification of the document

NOTE:

1. The AMC & GM associated with EMAR 145 was originally published in 2 documents: EMAR 145 Section A AMC & GM and EMAR 145 Section B AMC. All AMC and GM associated with EMAR 145 Ed 1.2 has been combined in this new document. Where the content of any of the paragraphs from the two previous documents has been amended, this is indicated by the use of a ‘sidebar’ in the margin. This can be readily cross-referenced using the table at the end of the document which details each change.

2. This EMAR AMC/GM relies on definitions laid down in EMAD 1. The Forms referred to in this document can be found in the EMAR Forms document.

3. EMAR M introduces a number of constructs that are possible in the relationship between an Operating Organisation, CAMO and EMAR 145 AMO. Within EMAR 145, where the terminology 'Operating Organisation/CAMO' is used, it is essential that the appropriate organisation that can provide the required authority/service/information is engaged as per the context of the EMAR 145 requirement.

4. Unless specified otherwise in the text, all references to 'maintenance organisation' within this document are to be understood to mean a maintenance organisation that already has an EMAR 145 approval and a maintenance organisation that is seeking an EMAR 145 approval. All references to 'AMO' within this document are to be understood to mean an 'Approved Maintenance Organisation' that already has an EMAR 145 approval.

TABLE OF CONTENTS

ACCEPTABLE MEANS OF COMPLIANCE & GUIDANCE MATERIAL

SECTION A

TECHNICAL REQUIREMENTS

AMC 145.A.10 Scope

1. (a) *Line Maintenance* is defined in EMAD 1.

(b) For temporary or occasional cases (Airworthiness Directives (ADs), SBs or national equivalent) the Quality Manager may accept base maintenance tasks to be performed by a line maintenance organisation provided all requirements are fulfilled as defined by the NMAA.

(c) *Base Maintenance* is defined in EMAD 1.

(d) Aircraft maintained in accordance with 'progressive' type maintenance programmes should be individually assessed in relation to this paragraph. In principle, the decision to allow some 'progressive' checks to be carried out should be determined by the assessment that all tasks within the particular check can be carried out safely to the required standards at the designated line maintenance station.

2. NOT APPLICABLE.

3. Within the scope of this EMAR, the meaning of the term 'military' may be extended to include all other State activities excluded by Regulation (EC) No 216/2008 (eg customs, police, search and rescue, firefighting, coastguard or similar activities or services) as determined by the NMAA's pMS.

GM 145.A.10 Scope

NOT APPLICABLE

AMC 145.A.15 Application

In a form and manner established by the NMAA means that the application should be made by using an EMAR Form 2.

AMC 145.A.20 Terms of approval

Table 1 in Appendix II of EMAR 145 identifies the S1000D Chapter Reference for the Category C component rating. If the maintenance manual (or equivalent document) does not follow the S1000D Chapter reference, the corresponding subjects still apply to the applicable C rating.

AMC 145.A.25(a) Facility requirements

1. Where the hangar is not owned by the maintenance organisation, it may be necessary to establish proof of tenancy. In addition, sufficiency of hangar space to carry out planned base maintenance should be demonstrated by the preparation of a projected aircraft hangar visit plan relative to the maintenance programme. The aircraft hangar visit plan should be updated on a regular basis.

2. Protection from the weather elements relates to the normal prevailing local weather elements that are expected throughout any twelve month period. Aircraft hangar and component workshop structures should prevent the ingress of rain, hail, ice, snow, wind and dust etc. as far as is militarily practicable. Aircraft hangar and component workshop floors should be sealed to minimise dust generation.

3. For line maintenance of aircraft, hangars are not essential but it is recommended that access to hangar accommodation be demonstrated for usage during inclement weather for minor scheduled work and lengthy defect rectification.

4. Aircraft maintenance staff should be provided with an area where they may study maintenance instructions and complete maintenance records in a proper manner.

AMC 145.A.25(b) Facility requirements

It is acceptable to combine any or all of the office accommodation requirements into one office subject to the staff having sufficient room to carry out the assigned tasks.

In addition, as part of the office accommodation, aircraft maintenance staff should be provided with an area where they may study maintenance instructions and complete maintenance records in a proper manner.

AMC 145.A.25(c) Facility requirements

Military operational needs should be taken into account when establishing a suitable working environment. However, as far as is practicable, the requirements should be adhered to.

AMC 145.A.25(d) Facility requirements

1. Storage facilities for serviceable aircraft components should be clean, well ventilated and maintained at a constant dry temperature to minimise the effects of condensation. Manufacturer's storage recommendations should be followed for those aircraft components identified in such published recommendations. With regards to deployed military operations these requirements should be met as far as practicable.

2. Storage racks should be strong enough to hold aircraft components and provide sufficient support for large aircraft components such that the component is not distorted during storage.

3. All aircraft components, wherever practicable, should remain packaged in protective material to minimise damage and corrosion during storage.

AMC 145.A.30(a) Personnel requirements

With regard to the Accountable Manager, it is normally intended to mean the Chief Executive Officer or senior military commander of the maintenance organisation, who by virtue of position has overall (including in particular resource allocation) responsibility for running the maintenance organisation. The Accountable Manager may be the Accountable Manager for more than one organisation and is not required to be necessarily knowledgeable on technical matters as the Maintenance Organisation Exposition (MOE) defines the maintenance standards. When the Accountable Manager is not the Chief Executive Officer or senior military commander, the NMAA will need to be assured that such an Accountable Manager has direct access to the Chief Executive Officer or senior military commander and has a sufficiency of 'maintenance resources' allocation.

AMC 145.A.30(b) Personnel requirements

1. Dependent upon the size of the maintenance organisation, the EMAR 145 functions may be subdivided under individual managers or combined in any number of ways.

2. The maintenance organisation should have, dependent upon the extent of approval, a base maintenance manager, a line maintenance manager, a workshop manager and a quality manager, all of whom should report to the Accountable Manager.

3. The base maintenance manager is responsible for ensuring that all required base maintenance, plus any defect rectification carried out during base maintenance, is carried out to the design and quality standards specified in EMAR 145.A.65(b). The base maintenance manager is also responsible for any corrective action resulting from the quality compliance monitoring of EMAR 145.A.65(c).

4. The line maintenance manager is responsible for ensuring that all line maintenance required to be carried out including line defect rectification is carried out to the standards specified in EMAR 145.A.65(b) and also responsible for any corrective action resulting from the quality compliance monitoring of EMAR 145.A.65(c).

5. The workshop manager is responsible for ensuring that all work on aircraft components is carried out to the standards specified in EMAR 145.A.65(b) and also responsible for any corrective action resulting from the quality compliance monitoring of EMAR 145.A.65(c).

6. The quality manager's responsibility is specified in EMAR 145.A.30(c).

7. Notwithstanding the example subparagraphs 2 – 6 titles, the maintenance organisation may adopt any title for the foregoing managerial positions but should identify to the NMAA the titles and persons chosen to carry out these functions.

8. Where an maintenance organisation chooses to appoint managers for all or any combination of the identified EMAR 145 functions because of the size of the undertaking, it is necessary that these managers report ultimately through either the base maintenance manager or line maintenance manager or workshop manager or quality manager, as appropriate, to the Accountable Manager.

Note: Certifying staff may report to any of the managers specified depending upon which type of control the maintenance organisation uses (for example licensed engineers/independent inspection/dual function supervisors etc.) as long as the quality compliance monitoring staff specified in EMAR 145.A.65(c)(1) remain independent.

AMC 145.A.30(c) Personnel requirements

Monitoring the quality system includes requesting remedial action as necessary by the Accountable Manager and the nominated persons referred to in EMAR 145.A.30(b).

AMC 145.A.30(d) Personnel requirements

1. 'Sufficient' means that the maintenance organisation employs or contracts/tasks competent staff, as detailed in the man-hour plan, of which at least half the staff that perform maintenance in each workshop, hangar or flight line on any shift should be employed to ensure organisational stability. For the purpose of meeting a specific operational necessity, a temporary increase of the proportion of contracted staff may be permitted to the maintenance organisation by the NMAA, in accordance with an approved procedure which should describe the extent, specific duties, and responsibilities for ensuring adequate organisation stability. For the purpose of this subparagraph, employed means the person is directly employed as an individual by the maintenance organisation whereas contracted/tasked means the person is employed by another organisation or military unit and contracted/tasked by that organisation to the maintenance organisation. In the case of MOD/Industrial partnered support arrangements, the MOD element of the maintenance organisation should be considered, for the purpose of this clause, as part of the industry workforce.

2. The maintenance man-hour plan should take into account all activities carried out outside the scope of the EMAR 145 approval.

The planned absence (for training, vacations, etc.) should be considered when developing the man-hour plan.

3. The maintenance man-hour plan should relate to the anticipated maintenance work load except that when the maintenance organisation cannot predict such workload, due to the short term nature of its contracts/tasking or unpredictable variations in operational military tasking, then such a plan should be based upon the minimum maintenance workload needed for organisational viability. Maintenance work load includes all necessary work such as, but not limited to, planning, maintenance record checks, production of worksheets/cards in paper or electronic form, accomplishment of maintenance, inspection and the completion of maintenance records.

4. In the case of aircraft base maintenance, the maintenance man-hour plan should relate to the aircraft hangar visit plan as specified in AMC EMAR 145.A.25(a).

5. In the case of aircraft component maintenance, the maintenance man-hour plan should relate to the aircraft component planned maintenance as specified in EMAR 145.A.25(a)(2).

6. The quality monitoring compliance function man-hours should be sufficient to meet the requirement of EMAR 145.A.65(c) which means taking into account AMC EMAR 145.A.65(c). Where quality monitoring staff perform other functions, the time allocated to such functions needs to be taken into account in determining quality monitoring staff numbers.

7. The maintenance man-hour plan should be reviewed at least every 3 months and updated when necessary.

8. Significant deviation from the maintenance man-hour plan should be reported through the appropriate manager to the quality manager and the Accountable Manager for review. Significant deviation means more than a 25% shortfall in available man-hours during a calendar month for any one of the functions specified in EMAR 145.A.30(d), or an inability to achieve military tasking due to personnel shortfalls.

AMC 1 145.A.30(e) Personnel requirements

Competence should be defined as a measurable skill or standard of performance, knowledge and understanding, taking into consideration attitude and behaviour.

The referenced procedure requires amongst others that planners, mechanics, specialised services staff, supervisors, certifying staff and support staff, whether employed or contracted, are assessed for competence before unsupervised work commences and competence is controlled on a continuous basis.

Competence should be assessed by evaluation of:

- on-the-job performance and/or testing of knowledge by appropriately qualified personnel; and

- records for basic, organisational, and/or product type and differences training; and

- experience records.

Validation of the above could include a confirmation check with the organisation(s) that issued such document(s). For that purpose, experience/training may be recorded in a document such as a log book or based on the suggested template in GM 3 to EMAR 145.A.30(e).

As a result of this assessment, an individual's qualification should determine:

- which level of ongoing supervision would be required or whether unsupervised work could be permitted.

- whether there is a need for additional training.

A record of the qualification and competence assessment should be kept.

This should include copies of all documents that attest to qualification, such as the MAML and/or any authorisation held, as applicable.

For a proper competence assessment of its personnel, the maintenance organisation should consider that:

1. In accordance with the job function, adequate initial and recurrent training should be provided and recorded to ensure continued competence so that it is maintained throughout the duration of employment/contract.

2. All staff should be able to demonstrate knowledge of and compliance with the maintenance organisation's procedures, as applicable to their duties.

3. All staff should be able to demonstrate an understanding of human factors and human performance issues in relation with their job function and be trained as per AMC 2 to EMAR 145.A.30(e).

4. To assist in the assessment of competence and to establish the training needs analysis, job descriptions are recommended for each job function in the maintenance organisation. Job descriptions should contain sufficient criteria to enable the required competence assessment.

5. Criteria should allow the assessment to establish that, among others (titles might be different in each organisation):

- Managers are able to properly manage the work output, processes, resources and priorities described in their assigned duties and responsibilities in a safe compliant manner in accordance with requirements and maintenance organisation procedures.

- Planners are able to interpret maintenance requirements into maintenance tasks, and have an understanding that they have no authority to deviate from the maintenance data.

- Supervisors are able to ensure that all required maintenance tasks are carried out and, where not completed or where it is evident that a particular maintenance task cannot be carried out to the approved maintenance data, then such problems should be reported to the EMAR 145.A.30(c) person for appropriate action. In addition, for those supervisors, who also carry out maintenance tasks, that they understand such tasks should not be undertaken when incompatible with their management responsibilities.

- Mechanics are able to carry out maintenance tasks to any standard specified in the maintenance data and should notify supervisors of defects or mistakes requiring rectification to re-establish required maintenance standards.

- Specialised services staff are able to carry out specialised maintenance tasks to the standard specified in the maintenance data. They should be able to communicate with supervisors and report accurately when necessary.

- Support staff are able to determine that relevant maintenance tasks have been carried out to the required standard.

- Certifying staff are able to determine when the aircraft or aircraft component is ready to release to service and when it should not be released to service.

- Quality audit staff are able to monitor compliance with EMAR 145 identifying non-compliance in an effective and timely manner so that the Approved Maintenance Organisation (AMO) may remain in compliance with EMAR 145.

Competence assessment should be based upon the procedure specified in GM 2 to EMAR 145.A.30(e).

AMC 2 145.A.30(e) Personnel requirements

In respect to the understanding of the application of human factors and human performance issues, all maintenance organisation personnel should have received an initial and continuation human factors training. This should concern to a minimum:

- Nominated persons, managers, supervisors;

- Certifying staff, support staff and mechanics;

- Technical support personnel such as planners, engineers, technical record staff;

- Quality control/assurance staff;

- Specialised services staff;

- Human factors staff/ human factors trainers;

- Store department staff, purchasing department staff;

- Ground equipment operators;

- Contracted/tasked staff in the above categories.

1. Initial human factors training should cover all the topics of the training syllabus specified in GM EMAR 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 maintenance organisation. The syllabus may also be adjusted to meet the particular nature of work for each function within the maintenance organisation. For example:

— small maintenance organisations not working in shifts may cover in less depth subjects related to teamwork and communication;
— planners may cover in more depth the scheduling and planning objective of the syllabus and in less depth the objective of developing skills for shift working.

All personnel, including personnel being recruited from any other organisation should receive initial human factors training compliant with the maintenance organisation's training standards prior to commencing actual job function, unless their competence assessment justifies that there is no need for such training. Newly directly employed personnel working under direct supervision may receive training within 6 months after joining the maintenance organisation.

2. The purpose of human factors continuation training is primarily to ensure that staff remain current in terms of human factors and also to collect feedback on human factors issues. Consideration should be given to the possibility that such training has the involvement of the quality department. There should be a procedure to ensure that feedback is formally passed from the trainers to the quality department to initiate action where necessary.

Human factors continuation training should be of an appropriate duration in each two year period in relation to relevant quality audit findings and other internal/external sources of information on human errors in maintenance available to the maintenance organisation.

3. Human factors training may be conducted by the maintenance organisation itself, or independent trainers, or any training organisations acceptable to the NMAA.

4. The human factors training procedures should be specified in the MOE.

AMC 3 145.A.30(e) Personnel requirements

Additional training in fuel tank safety as well as associated inspection standards and maintenance procedures should be required for maintenance organisations' technical personnel, especially technical personnel involved in the compliance of Critical Design Configuration Control Limitations (CDCCL) tasks (if applicable).

Guidance is provided for training to maintenance organisation personnel in Appendix IV to AMC EMAR 145.A.30(e) and AMC EMAR 145.B.10(c).

AMC 4 145.A.30(e) Personnel requirements

Competence assessment should include the verification for the need of additional EWIS training when relevant.

(Note: EASA guidance for an EWIS training programme to maintenance organisation personnel can be found in EASA AMC 20-22.)

GM 1 145.A.30(e) Personnel requirements (Training syllabus for initial human factors training)

The training syllabus below identifies the topics and subtopics to be addressed during the human factors training.

The maintenance organisation may combine, divide, change the order of any subject of the syllabus to suit its own needs, as long as all subjects are covered to a level of detail appropriate to the maintenance organisation and its personnel.

Some of the topics may be covered in separate training (health and safety, management, supervisory skills, etc.) in which case duplication of training is not necessary.

Where possible, practical illustrations and examples should be used, especially accident and incident reports.

Topics should be related to existing legislation, where relevant. Topics should be related to existing guidance/advisory material, where relevant (e.g. ICAO Human Factors (HF) Digests and Training Manual and appropriate military training).

Topics should be related to maintenance engineering where possible; too much unrelated theory should be avoided.

1. General/Introduction to human factors

    1.1 The need to take human factors into account;

    1.2 Statistics;

    1.3 Incidents attributable to human factors/human error;

    1.4 “Murphy’s Law”.

2. Safety Culture/Organisational factors

    2.1 “Culture” issues.

3. Human errors

    3.1 Error models and theories;

    3.2 Types of errors in maintenance tasks;

3.3 Violations;

3.4 Implications of errors (i.e. accidents);

3.5 Avoiding and managing errors;

3.6 Human reliability.

4. Human performance & limitations

4.1 Vision;

4.2 Hearing;

4.3 Information-processing;

4.4 Attention and perception;

4.5 Situational awareness;

4.6 Memory;

4.7 Claustrophobia and physical access;

4.8 Motivation and de-motivation;

4.9 Fitness/Health;

4.10 Stress: domestic and work related;

4.11 Workload management (overload and underload);

4.12 Sleep and fatigue;

4.13 Alcohol, medication, drug abuse;

4.14 Physical work;

4.15 Repetitive tasks/complacency.

5. Environment

5.1 Peer pressure;

5.2 Stressors;

5.3 Time pressure and deadlines;

5.4 Workload;

5.5 Shift Work;

5.6 Noise and fumes;

5.7 Illumination;

5.8 Climate and temperature;

5.9 Motion and vibration;

5.10 Complex systems;

5.11 Hazards in the workplace, recognising and avoiding hazards, dealing with emergencies;

5.12 Lack of manpower;

5.13 Distractions and interruptions;

5.14 Military environment and other military factors/Operational pressures.

6. Procedures, information, tools and practices

6.1 Visual Inspection;

6.2 Work logging and recording;

6.3 Procedure — practice/mismatch/norms;

6.4 Technical documentation — access and quality.

7. Communication

7.1 Shift/Task handover;

7.2 Dissemination of information;

7.3 Cultural differences;

7.4 Within and between teams.

8. Teamwork

8.1 Responsibility: individual and group;

8.2 Management, supervision and leadership;

8.3 Decision making.

9. Professionalism and integrity

9.1 Keeping up to date; currency;

9.2 Error provoking behaviour;

9.3 Assertiveness.

10. Maintenance organisation's HF program

10.1 Reporting errors;

10.2 Disciplinary policy;

10.3 Error investigation;

10.4 Action to address problems;

10.5 Feedback.

GM 2 145.A.30(e) – Competence assessment procedure

The maintenance organisation should develop a procedure describing the process of competence assessment of personnel. The procedure should specify:

— persons responsible for this process,

— when the assessment should take place,

— credits from previous assessments,

— validation of qualification records,

— means and methods for the initial assessment,

— means and methods for the continuous control of competence including feedback on personnel performance,

— competences to be observed during the assessment in relation with each job function,

— actions to be taken when assessment is not satisfactory,

— recording of assessment results.

For example, according to the job functions and the scope, size and complexity of the maintenance organisation, the assessment may consider the following (the table is not exhaustive):

	Managers	Planners	Supervisor	Certifying staff and support staff	Mechanics	Specialised Service staff	Quality audit staff
Knowledge of applicable officially recognised standards						X	X
Knowledge of auditing techniques: planning, conducting and reporting							X
Knowledge of human factors, human performance and limitations	X	X	X	X	X	X	X
Knowledge of logistics processes	X	X	X				
Knowledge of maintenance organisation capabilities, privileges and limitations	X	X	X	X		X	X
Knowledge of EMAR M, EMAR 145 and any other relevant regulations	X	X	X	X			X
Knowledge of relevant parts of the MOE and procedures	X	X	X	X	X	X	X
Knowledge of occurrence reporting system and understanding of the importance of reporting occurrences, incorrect maintenance data and existing or potential defects		X	X	X	X	X	
Knowledge of safety risks linked to the working environment	X	X	X	X	X	X	X
Knowledge on CDCCL when relevant	X	X	X	X	X	X	X
Knowledge on EWIS when relevant	X	X	X	X	X	X	X
Understanding of professional integrity, behaviour and attitude towards safety	X	X	X	X	X	X	X
Understanding of conditions for ensuring continuing airworthiness of aircraft and components				X			X
Understanding of his/her own human performance and limitations	X	X	X	X	X	X	X
Understanding of personnel authorisations and limitations	X	X	X	X	X	X	X
Understanding critical task		X	X	X	X		X
Ability to compile and control completed work cards		X	X	X			

	Managers	Planners	Supervisor	Certifying staff and support staff	Mechanics	Specialised Service staff	Quality audit staff
Ability to consider human performance and limitations.	X	X	X	X			X
Ability to determine required qualifications for task performance		X	X	X			
Ability to identify and rectify existing and potential unsafe conditions			X	X	X	X	X
Ability to manage third parties involved in maintenance activity		X	X				
Ability to confirm proper accomplishment of maintenance tasks			X	X	X	X	
Ability to identify and properly plan performance of critical task		X	X	X			
Ability to prioritise tasks and report discrepancies		X	X	X	X		
Ability to process the work requested by the operator		X	X	X			
Ability to promote the safety and quality policy	X		X				
Ability to properly process removed, uninstalled and rejected parts			X	X	X	X	
Ability to properly record and sign for work accomplished			X	X	X	X	
Ability to recognise the acceptability of parts to be installed prior to fitment				X	X		
Ability to split complex maintenance tasks into clear stages		X					
Ability to understand work orders, work cards and refer to and use applicable maintenance data		X	X	X	X	X	X
Ability to use information systems	X	X	X	X	X	X	X
Ability to use, control and be familiar with required tooling and/or equipment			X	X	X	X	
Adequate communication and literacy skills	X	X	X	X	X	X	X

	Managers	Planners	Supervisor	Certifying staff and support staff	Mechanics	Specialised Service staff	Quality audit staff
Analytical and proven auditing skills (for example, objectivity, fairness, open-mindedness, determination, …)							X
Maintenance error investigation skills							X
Resources management and production planning skills	X	X	X				
Teamwork, decision-making and leadership skills	X		X				

GM 3 145.A.30(e) – Template for recording experience/training

The following template may be used to record the professional experience gained in an maintenance organisation and the training received and be considered during the competence assessment of the individual in another maintenance organisation.

Aviation Maintenance personnel experience credential	
Name	Given name
Address Telephone	E-mail
Independent worker ☐ Trade Group: airframe ☐ engine ☐ electric ☐avionics ☐ other (specify) ☐.....	
Employer's details (when applicable) Name Address Telephone	
Maintenance organisation details Name Address Telephone Approval Number Period of employment From:	To:

Domain of employment		
☐ Planning	☐ Engineering	☐ Technical records
☐ Store department	☐ Purchasing	
Mechanics/Technician ☐ Line Maintenance ☐ Servicing ☐ Scheduled Maintenance ☐ Trouble-shooting A/C type	☐ Base Maintenance ☐ Removal/Installation ☐ Inspection ☐ Trouble-shooting ☐ Repair A/C type	☐ Component Maintenance ☐ Testing/inspection ☐ Repair ☐ Overhaul ☐ Re-treatment ☐ Reassembly Component type
Certifying Staff and support staff ☐ Cat. A ☐ Cat. B1 ☐ Cat. B2 ☐ Cat. C ☐ Component Type ☐ Other (e.g. NDT) A/C Type A/C Type A/C Type A/C Type Component Type Specify Certification Privileges: Yes ☐ / No ☐		
☐ Specialised Services	Speciality *(NDT, composites, welding, etc.)*:	
☐ Skilled personnel	Speciality *(sheet metal, structures, wireman, upholstery, etc.)*:	
☐ Ground equipment operation		
☐ Quality control	☐ Quality assurance	☐ Training
	Total number of check boxes ticked:	
Details of employment		

Training received from the contracting organisation Date Nature of training
Certified by: Name: Date: Position: Signature: Contact details: *Advisory note: A copy of the present credential should be kept for at least 3 years from its issuance by the maintenance organisation.*

AMC 145.A.30(f) Personnel requirements

1. NOT APPLICABLE.

2. Appropriately qualified means to levels of qualification and certification as defined by the European Standard EN 4179 (or national equivalent qualification) dependent upon the non-destructive testing function to be carried out.

3. Notwithstanding the fact that Level 3 personnel (or national equivalent qualification) may be qualified via EN 4179 to establish and authorise methods, techniques, etc., this does not permit such personnel to deviate from methods and techniques published by the (Military) Type Certificate Holder/manufacturer or NMAA in the form of continued airworthiness data, such as in non-destructive test manuals or Service Bulletins, unless the manual or Service Bulletin expressly permits such deviation.

4. Notwithstanding the general references in EN 4179 to a national aerospace non-destructive testing (NDT) board, all examinations should be conducted by personnel or organisations under the general control of such a board or as specified by the NMAA. In the absence of a national aerospace NDT board, the aerospace NDT board of another pMS should be used, as defined by the NMAA.

5. Moved to GM 145.A.30(f) Personnel requirements.

6. It should be noted that new methods are being and will be developed, which are not specifically addressed by EN 4179. Until the time this agreed standard is established, such methods should be carried out in accordance with the particular equipment manufacturer's recommendations including any training and examination process to ensure competence of the personnel in the process.

7. Any maintenance organisation that carries out NDT should establish NDT specialist qualification procedures detailed in the MOE and accepted by the NMAA.

8. Boroscoping and other techniques such as manual tap testing are non-destructive inspections rather than non-destructive testing. Notwithstanding such differentiation, the maintenance organisation should establish an MOE procedure accepted by the NMAA to ensure that personnel who carry out and interpret such inspections are properly trained and assessed for their competence in the process. Non-destructive inspections, not being considered as NDT by EMAR 145 are not listed in EMAR 145 Appendix II under class rating D1.

9. The referenced standards, methods, training and procedures should be specified in the MOE.

10. Any such personnel who intend to carry out and/or control a non-destructive test for which they were not qualified prior to the effective date of EMAR 145 should qualify for such non-destructive test in accordance with EN 4179 (or national equivalent qualification).

11. In this context officially recognised standard means those standards established or published by an official body whether having legal personality or not, which are widely recognised by the aerospace sector as constituting good practice, or those accepted by the NMAA.

GM 145.A.30(f) Personnel requirements

Particular non-destructive test means any one or more of the following; Penetrant Testing (PT), Magnetic Testing (MT), Eddy current Testing (ET), Ultrasonic Testing (UT), Radiographic Testing (RT), Thermographic Testing (TT) and Shearographic Testing (ST) methods.

AMC 145.A.30(g) Personnel requirements

1. For the purposes of EMAR 66.A.20(a)(1) and EMAR 66.A.20(a)(3)(ii) personnel, minor scheduled line maintenance means any minor scheduled inspection/check up to and including a weekly check specified in the Aircraft Maintenance Programme (AMP). For AMPs that do not specify a weekly check, the NMAA should determine the most significant check that is considered equivalent to a weekly check.

2. Typical tasks permitted after appropriate task training to be carried out by the EMAR 66.A.20(a)1) and the EMAR 66.A.20(a)(3)(ii) personnel for the purpose of these personnel issuing an aircraft Certificate of Release to Service (CRS) as specified in EMAR 145.A.50 as part of minor scheduled line maintenance or simple defect rectification are contained in the following list:

a. Replacement of wheel assemblies.

b. Replacement of wheel brake units.

c. Replacement of emergency equipment.

d. Replacement of ovens, boilers and beverage makers.

e. Replacement of internal and external lights, filaments and flash tubes.

f. Replacement of windscreen wiper blades.

g. Replacement of passenger and cabin crew seats, seat belts and harnesses.

h. Closing of cowlings and refitment of quick access inspection panels.

i. Replacement of toilet system components but excluding gate valves.

j. Simple repairs and replacement of internal compartment doors and placards but excluding doors forming part of a pressure structure.

k. Simple repairs and replacement of overhead storage compartment doors and cabin furnishing items.

l. Replacement of static wicks.

m. Replacement of aircraft main and APU aircraft batteries.

n. NOT APPLICABLE.

o. Routine lubrication and replenishment of all system fluids and gases.

p. The de-activation only of subsystems and aircraft components as permitted by the Operating Organisation's Minimum Equipment List (MEL) where relevant or national equivalent procedure, where such de-activation is agreed by the NMAA as a simple task.

q. Inspection for and removal of de-icing/anti-icing fluid residues, including removal/closure of panels, cowls or covers or the use of special tools.

r. Removal and installation of simple internal medical equipment.

s. Any other task agreed by the NMAA as a simple task for a particular aircraft type. This may include defect deferment when all the following conditions are met:

- There is no need for troubleshooting; and
- The task is in the MEL; and
- The maintenance action required by the MEL is agreed by the NMAA to be simple.

In the particular case of helicopters, and in addition to the items above, the following:

t. Removal and installation of external cargo provisions (i.e. external hook, mirrors) other than the hoist.

u. Removal and installation of quick release external cameras and search lights.

v. Removal and installation of emergency float bags, not including the bottles.

w. Removal and installation of external doors fitted with quick release attachments.

x. Removal and installation of snow pads/skid wear shoes/slump protection pads.

Any task on a military specific system agreed by the NMAA as a simple task for a particular aircraft type.

No task which requires troubleshooting should be part of the authorised maintenance actions. Release to service after rectification of deferred defects should be permitted as long as the task is listed above.

3. The requirement of having appropriate aircraft rated certifying staff qualified as Category B1 or B2 as appropriate, in the case of aircraft line maintenance does not imply that the maintenance organisation must have B1 or B2 personnel at every line station. The MOE should have a procedure on how to deal with defects requiring B1 or B2 certifying staff.

4. The NMAA may accept that in the case of aircraft line maintenance a maintenance organisation has only B1 or B2 certifying staff, as appropriate, provided that the NMAA is satisfied that the scope of work, as defined in the MOE, does not need the availability of all B1 or B2 certifying staff. Special attention should be taken to clearly limit the scope of scheduled and non-scheduled line maintenance (defect rectification) to only those tasks that can be certified by the available certifying staff Category.

AMC 145.A.30(h) Personnel requirements

In accordance with EMAR 145.A.30(h) and EMAR 145.A.35, the qualification requirements (MAML, Military Aircraft Type Ratings, recent experience and continuation training) are identical for certifying staff and for support staff. The only difference is that support staff cannot hold certification privileges when performing this role since during base maintenance the release to service will be issued by Category C certifying staff. Nevertheless, the maintenance organisation may use as support staff (for base maintenance) persons who already hold certification privileges for line maintenance.

AMC 145.A.30(j)(4) Personnel requirements

1. For the issue of a limited certification authorisation the aircraft commander or flight engineer should hold either a valid pilot or flight engineer licence/national military qualification (or civilian equivalent) acceptable to the NMAA on the aircraft type. In addition, the limited certification authorisation is subject to the MOE containing procedures to address the personnel requirements of EMAR 145.A.30(e) and associated AMC and GM. Such procedures should include as a minimum:

a. Completion of adequate national military airworthiness regulations training; and

b. Completion of adequate task training for the specific task on the aircraft. The task training should be of sufficient duration to ensure that the individual has a thorough understanding of the task to be completed and should involve training in the use of associated maintenance data; and

c. Completion of the procedural training as specified in EMAR 145.

The above procedures should be specified in the MOE and be accepted by the NMAA.

2. (i) Typical tasks that may be certified and/or carried out by the aircraft commander holding a valid licence/national military pilot qualification (or civilian equivalent) acceptable to the NMAA on the aircraft type are minor maintenance or simple checks included in the following list:

a. Replacement of internal lights, filaments and flash tubes.

b. Closing of cowlings and refitment of quick access inspection panels.

c. Simple configuration changes (e.g. stretcher fit, FLIR, doors, photographic equipment etc.)

d. Inspection for and removal of de-icing/anti-icing fluid residues, including removal/closure of panels, cowls or covers that are easily accessible but not requiring the use of special tools.

e. Any check/replacement involving simple techniques consistent with this AMC and as agreed by the NMAA.

2. (ii) Holders of a valid national military flight engineer licence/qualification, or equivalent, acceptable to the NMAA, on the aircraft type may only exercise this limited certification authorisation privilege when performing the duties of a flight engineer.

In addition to paragraph 2(i)(a) to (e), other typical minor maintenance or simple defect rectification tasks that may be carried out are included in the following list:

a. Replacement of wheel assemblies.

b. Replacement of simple emergency equipment that is easily accessible.

c. Replacement of ovens, boilers and beverage makers.

d. Replacement of external lights.

e. Replacement of passenger and cabin crew seats, seat belts and harnesses.

f. Simple replacement of overhead storage compartment doors and cabin furnishing items.

g. Replacement of static wicks.

h. Replacement of aircraft main and APU aircraft batteries.

i. NOT APPLICABLE.

j. The de-activation only of subsystems and aircraft components as permitted by the Operating Organisation's MEL where relevant or a national equivalent procedure, where such de-activation is agreed by the NMAA as a simple task.

k. Re-setting of tripped circuit breakers under the guidance of maintenance control.

l. Any other task agreed by the NMAA as a simple task for a particular aircraft type.

3. The authorisation should have a finite life of twelve months subject to satisfactory re-current training on the applicable aircraft type.

GM 145.A.30(j)(4) Personnel requirements (Flight crew)

For military aircrew, the theoretical knowledge is covered throughout flying training and, for specific aircraft types, during operational conversion training for the relevant aircraft type. Thereafter, the individual's level of knowledge is monitored by the pMS' aircrew standards organisation for that specific type.

AMC 145.A.30(j)(5) Personnel requirements

1. For the purposes of this subparagraph "unforeseen" means that the aircraft grounding could not reasonably have been predicted by the Operating Organisation because the defect was unexpected due to being part of a hitherto reliable system.

2. A one-off authorisation should only be considered for issue by the maintenance organisation after it has made a reasoned judgement that such a requirement is appropriate under the circumstances and at the same time maintaining the required airworthiness standards. The maintenance organisation should assess each situation individually prior to the issuance of a one-off authorisation. The maintenance organisation that issues this one-off authorisation retains responsibility for all work performed.

3. A one-off authorisation should not be issued where the level of certification required could exceed the knowledge and experience level of the person it is issued to. In all cases, due consideration should be given to the complexity of the work involved and the availability of required tooling and/or test equipment needed to complete the work.

AMC 145.A.30(j)(5)(i) Personnel requirements

In those situations where the requirement for a one-off authorisation to issue a CRS for a task on an aircraft type for which certifying staff does not hold a type-rated authorisation has been identified, the following procedure is recommended:

1. Flight crew should communicate full details of the defect to their maintenance organisation. If necessary, the maintenance organisation should consider the issue of a one-off authorisation.

2. When issuing a one-off authorisation, the maintenance organisation should verify that:

a) Full technical details relating to the work required to be carried out have been established and passed on to the certifying staff; and

b) The maintenance organisation has an approved procedure in place for coordinating and controlling the total maintenance activity undertaken at the location under the authority of the one-off authorisation; and

c) The person to whom a one-off authorisation is issued has been provided with all the necessary information and guidance relating to maintenance data and any special technical instructions associated with the specific task undertaken. A detailed step by step worksheet has been defined by the maintenance organisation, communicated to the one-off authorisation holder; and

d) The person holds authorisations of equivalent level and scope on other aircraft type of similar technology, construction and systems.

3. The one-off authorisation holder should sign-off the detailed step by step worksheet when completing the work steps. The completed tasks should be verified by visual examination and/or normal system operation upon return to an appropriately approved EMAR 145 maintenance facility.

AMC 145.A.30(j)(5)(ii) Personnel requirements

This paragraph addresses staff not employed by the maintenance organisation who meet the requirements of EMAR 145.A.30(j)(5). In addition to the items listed in AMC EMAR 145.A.30(j)(5)(i), paragraph 1, 2(a), (b) and (c) and 3 the maintenance organisation may issue such a one-off authorisation subject to full qualification details relating to the proposed certifying personnel being verified by the maintenance organisation and made available at the location.

AMC 145.A.35(a) Certifying staff and support staff

1. Holding a MAML with the relevant Military Aircraft Type/Group Rating, or a national qualification in the case of components, does not mean by itself that the holder is qualified to be authorised as certifying staff and/or support staff. The maintenance organisation is responsible to assess the competence of the holder for the scope of maintenance to be authorised.

2. The sentence *"the maintenance organisation shall ensure that certifying staff and support staff have an adequate understanding of the relevant aircraft and/or components to be maintained together with the associated maintenance organisation procedures"* means that the person has received training and has been successfully assessed on:

- the type of aircraft or component;
- the differences on:
    - the particular model/variant;
    - the particular configuration.

The maintenance organisation should specifically ensure that the individual competencies have been established with regard to:

- relevant knowledge, skills and experience in the product type and configuration to be maintained, taking into account the differences between the generic Military Aircraft Type Rating training that the person received and the specific configuration of the aircraft to be maintained;
- appropriate attitude towards safety and observance of procedures;
- knowledge of the associated maintenance organisation and Operating Organisation procedures (i.e. handling and identification of components, MEL use, Aircraft Technical Log use, independent checks, etc.).

3. Some special maintenance tasks may require additional specific training and experience, including but not limited to:

- in-depth troubleshooting;
- very specific adjustment or test procedures;
- rigging;
- engine run-up, starting and operating the engines, checking engine performance characteristics, normal and emergency engine operation, associated safety precautions and procedures;

- extensive structural/system inspection and repair;
- other specialised maintenance required by the AMP.

For engine run-up training, simulators and/or real aircraft should be used.

4. The satisfactory assessment of the competence should be conducted in accordance with a procedure approved by the NMAA (item 3.4 of the MOE, as described in AMC EMAR 145.A.70(a)).

5. The maintenance organisation should hold copies of all documents that attest the competence and recent experience for the period described in EMAR 145.A.35(j).

Additional information is provided in AMC EMAR 66.A.20(b)3.

AMC 145.A.35(b) Certifying staff and support staff

Moved to EMAR 145.A.35(b).

AMC 1 145.A.35(c) Certifying staff and support staff

For the interpretation of *"6 months of actual relevant aircraft maintenance experience in any consecutive 2-year period"*, the provisions of AMC EMAR 66.A.20(b)2 are applicable.

AMC 2 145.A.35(c) Certifying staff and support staff

Where unpredictable variations in operational military tasking require the use of personnel not meeting the six-month experience requirement, this should be approved by the Accountable Manager on a temporary basis only with the necessary precaution/mitigation put in place and both the Operating Organisation/CAMO for which work is being conducted and the NMAA should be informed.

AMC 145.A.35(d) Certifying staff and support staff

1. Continuation training is a two way process to ensure that certifying staff and support staff remain current in terms of procedures, human factors and technical knowledge and that the maintenance organisation receives feedback on the adequacy of its procedures and maintenance instructions. Due to the interactive nature of this training, the maintenance organisation should consider the involvement of the quality department to ensure that feedback is actioned. Alternatively, there should be a procedure to ensure that feedback is formally passed from the training department to the quality department to initiate action.

2. Continuation training should cover changes in relevant requirements such as EMAR 145, changes in maintenance organisation procedures and the modification standard of the products being maintained plus human factor issues identified from any internal or external analysis of incidents. It should also address instances where staff failed to follow procedures and the reasons why particular procedures are not always followed. In many cases the continuation training should reinforce the need to follow procedures and ensure that incomplete or incorrect procedures are identified to the maintenance

organisation in order that they can be corrected. This does not preclude the possible need to carry out a quality audit of such procedures.

3. Continuation training should be of sufficient duration in each 2 year period to meet the intent of EMAR 145.A.35(d) and may be split into a number of separate elements. EMAR 145.A.35(d) requires such training to keep certifying staff and support staff updated in terms of relevant technology, procedures and human factors issues which means it is one part of ensuring quality. Therefore sufficient duration should be related to relevant quality audit findings and other internal/external sources of information available to the maintenance organisation on human errors in maintenance. This means that in the case of a maintenance organisation that maintains aircraft with few relevant quality audit findings, continuation training could be limited to days rather than weeks, whereas a similar maintenance organisation with a number of relevant quality audit findings, such training may take several weeks. For an maintenance organisation that maintains aircraft components, the duration of continuation training would follow the same philosophy but should be scaled down to reflect the more limited nature of the activity. For example certifying staff who release hydraulic pumps may only require a few hours of continuation training whereas those who release turbine engines may require a few days of such training. The content of continuation training should be related to relevant quality audit findings and it is recommended that such training is reviewed at least once in every 24 month period.

4. The method of training is intended to be a flexible process and could, for example, include an EMAR 147 continuation training course, aeronautical college courses, internal short duration courses, seminars, etc. The elements, general content and length of such training should be specified in the MOE unless such training is undertaken by an EMAR 147 Maintenance Training Organisation (MTO) when such details may be specified under the approval and cross referenced in the MOE.

AMC 145.A.35(e) Certifying staff and support staff

The programme for continuation training should list all certifying staff and support staff and when training will take place, the elements of such training and an indication that it was carried out reasonably on time as planned. Such information should subsequently be transferred to the certifying staff and support staff record as required by EMAR 145.A.35(j).

AMC 145.A.35(f) Certifying staff and support staff

As stated in EMAR 145.A.35(f), except where any of the unforeseen cases of EMAR 145.A.30(j)(5) applies, all prospective certifying staff and support staff should be assessed for competence related to their intended duties in accordance with AMCs 1, 2, 3 and 4 to EMAR 145.A.30(e), as applicable.

AMC 145.A.35(j) Certifying staff and support staff

1. The following minimum information as applicable should be kept on record in respect of each certifying staff and support staff:

a. Name

b. Rank/Grade and Service Number (if applicable)

c. Date of Birth

d. Basic Training

e. Military Aircraft Type Training/Task Training

f. Continuation Training

g. Experience

h. Qualifications relevant to the authorisation

i. Scope of the authorisation

j. Date of first issue of the authorisation

k. If appropriate – expiry date of the authorisation

l. Identification Number of the authorisation

m. Security clearance (where applicable).

2. The record may be kept in any format and should be controlled by the maintenance organisation.

3. Persons authorised to access the system should be maintained at a minimum to ensure that records cannot be altered in an unauthorised manner or that such confidential records become accessible to unauthorised persons.

4. The NMAA or qualified entity acting on behalf of the NMAA is to be considered as an 'authorised person' when investigating the records system for initial and continued approval or when the NMAA has cause to doubt the competence of a particular person.

AMC 145.A.35(n) Certifying staff and support staff

1. It is the responsibility of the AMO issuing the Category A certifying staff authorisation to ensure that the task training received by this person covers all the tasks to be authorised. This is particularly important in those cases where the task training has been provided by an EMAR 147 MTO or by an AMO different from the one issuing the authorisation.

2. "Appropriately approved in accordance with EMAR 147" means an MTO holding an approval to provide Category A task training for the corresponding aircraft type.

3. "Appropriately approved in accordance with EMAR 145" means an AMO holding a maintenance organisation approval for the corresponding aircraft type.

AMC 145.A.35(o) Certifying staff and support staff

1. The privilege for a Category B2 MAML holder to release minor scheduled line maintenance and simple defect rectification in accordance with EMAR 66.A.20(a)(3)(ii) can only be granted by the AMO where the MAML holder is employed/contracted after meeting all the requirements specified in EMAR 145.A.35(o). This privilege cannot be transferred to another maintenance organisation.

2. When a Category B2 MAML holder already holds a certifying staff authorisation containing minor scheduled line maintenance and simple defect rectification for a particular aircraft type, new tasks relevant to Category A can be added to that type without requiring another 6 months of experience. However, task training (theoretical plus practical hands-on) and examination/assessment for these additional tasks is still required.

3. When the certifying staff authorisation intends to cover several aircraft types, the experience may be combined within a single 6-month period.

For the addition of new aircraft types to the certifying staff authorisation, another 6 months should be required unless the aircraft is considered similar per AMC EMAR 66.A.20(b)2 to the one already held.

4. The term "6 months of experience" can include either full-time employment or part-time employment. The important aspect is that the person has been involved during a period of 6 months (not necessarily every day) in those tasks which are going to be part of the authorisation.

GM 145.A.35(o) Certifying staff and support staff

'Unless approved otherwise by the NMAA' in this context means that the requirement can be waived by the NMAA in the case of military personnel that already hold this privilege when they are posted from one AMO to another.

AMC 145.A.40(a) Equipment, tools and material

Once the applicant for approval has determined the intended scope of approval for consideration by the NMAA, it should be necessary to show that all tools and equipment as specified in the maintenance data can be made available when needed. All such tools and equipment that require to be controlled in terms of servicing or calibration by virtue of being necessary to measure specified dimensions and torque figures etc, should be clearly identified and listed in a control register including any personal tools and equipment that the maintenance organisation agrees can be used.

AMC 145.A.40(b) Equipment, tools and material

1. The control of these tools and equipment requires that the maintenance organisation has a procedure to inspect/service and, where appropriate, calibrate such items on a regular basis and indicate to users that the item is within any inspection or service or calibration time-limit. A clear system of labelling all tooling, equipment and test equipment is therefore necessary giving information on when the next inspection or

service or calibration is due and if the item is unserviceable for any other reason where it may not be obvious. A register should be maintained for all precision tooling and equipment together with a record of calibrations and standards used.

2. Inspection, service or calibration on a regular basis should be in accordance with the equipment manufacturers' instructions unless approved otherwise by the NMAA.

3. In this context officially recognised standard means those standards established or published by an official body whether having legal personality or not, which are widely recognised by the aerospace sector as constituting good practice, or those accepted by the NMAA.

AMC 145.A.42(a) Acceptance of components

1. A document equivalent to an EMAR Form 1 may be:

a) NOT APPLICABLE.

b) NOT APPLICABLE.

c) NOT APPLICABLE.

d) NOT APPLICABLE.

e) NOT APPLICABLE.

f) An EASA Form 1 (if accepted by the NMAA, and not originating from an EASA Part M Subpart F approved organisation).

g) A national equivalent document recognized by the NMAA as declaring an item's serviceability and airworthiness.

h) A release document issued by an organisation accepted by the NMAA.

2. See AMC EMAR 145.A.42(a)4 and AMC EMAR 145.A.42(a)5.

GM 145.A.42(a) Acceptance of components

The reason that the EASA Form 1 must be issued by an EASA Part 145 maintenance organisation, not an EASA Part M Subpart F approved organisation is that a Subpart F organisation should not issue parts for 'complex motor-powered' or 'CAT' aircraft. Military aircraft are considered equivalent to 'complex motor-powered' aircraft and 'CAT' aircraft.

AMC 145.A.42(a)2 Acceptance of components

The maintenance organisation performing maintenance should ensure proper identification of any unserviceable components.

The unserviceable status of the component should be clearly declared on a tag or other suitable means together with the component identification data and any information useful to define actions necessary to be taken. Such information should state, as applicable, in-

service times, maintenance status, preservation status, failures, defects or malfunctions reported or detected, exposure to adverse environmental conditions or if the component has been involved in or affected by an accident/incident. Means should be provided to prevent unwanted separation of this tag from the component.

AMC 145.A.42(a)3 Acceptance of components

A maintenance organisation may choose, in consultation with the CAMO/Operating Organisation, to release an unsalvageable component for legitimate non-flight uses, such as for training and education, research and development. In such instances, mutilation may not be appropriate. The following methods should be used to prevent the component re-entering the aviation supply system:

(a) permanently marking or stamping the component, as “NOT SERVICEABLE.” (ink stamping is not an acceptable method);

(b) removing original part number identification;

(c) removing data plate identification;

(d) maintaining a tracking or accountability system, by serial number or other individualised data, to record transferred unsalvageable aircraft component;

(e) including written procedures concerning disposal of such components in any agreement or contract transferring such components.

NOTE: Unsalvageable components should not be released to any person or organisation that is known to return unsalvageable components back into the aviation supply system, due to the potential safety threat. Information about such organisations can be found, for example, in FAA Unapproved Parts Notifications, FAA Special Airworthiness Bulletins or EASA Safety Information Bulletins.

AMC 145.A.42(a)3(ii) Acceptance of components

1. Mutilation should be accomplished in such a manner that the components become permanently unusable for their original intended use. Mutilated components should not be able to be reworked or camouflaged to provide the appearance of being serviceable, such as by re-plating, shortening and re-threading long bolts, welding, straightening, machining, cleaning, polishing, or repainting.

2. Mutilation may be accomplished by one or a combination of the following procedures:

(a) grinding,

(b) burning,

(c) removal of a major lug or other integral feature,

(d) permanent distortion of parts,

(e) cutting a hole with a cutting torch or saw,

(f) melting,

(g) sawing into many small pieces,

(h) any other method accepted by the NMAA on a case by case basis.

3. The following procedures are examples of mutilation that are often less successful because they may not be consistently effective:

(a) stamping or vibro-etching,

(b) spraying with paint,

(c) small distortions, incisions or hammer marks,

(d) identification by tag or markings,

(e) drilling small holes,

(f) sawing in two pieces only.

4. Since manufacturers producing approved aircraft components should maintain records of serial numbers for 'retired' certified life-limited or other critical components, the organisation that mutilates a component should inform the original manufacturer unless directed otherwise by the NMAA.

AMC 145.A.42(a)4 Acceptance of components

STANDARD PARTS

(a) For a definition of 'Standard Parts' see EMAD 1.

(b) Documentation accompanying standard parts should clearly relate to the particular parts and contain a conformity statement plus both the manufacturing and supplier source (a Certificate of Conformity is sufficient). Some material is subject to special conditions such as storage condition or life limitation, etc. and this should be included on the documentation and/or material packaging.

(c) An EASA/EMAR Form 1 or equivalent is not normally issued and therefore none should be expected.

AMC 145.A.42(a)5 Acceptance of components

(a) Consumable material is any material which is only used once, such as lubricants, cements, compounds, paints, chemicals, dyes, and sealants, etc.

(b) Raw material is any material that requires further work to make it into a component part of the aircraft such as metals, plastics, fabric, etc.

(c) Material, both raw and consumable, should only be accepted when satisfied that it is to the required specification. To be satisfied, the material and/or its packaging should be marked with the specification and, where appropriate, the batch number.

(d) Documentation accompanying all material should clearly relate to the particular material and contain a conformity statement plus both the manufacturing and supplier source. Some material is subject to special conditions such as storage condition, or life limitation, etc., and this should be included on the documentation and/or material packaging.

(e) The material specification is normally identified in the M(S)TC holder's data except in the case where the NMAA has agreed otherwise. An EASA/EMAR Form 1 or equivalent should not be issued for such material, and, therefore, none should be expected.

(f) Items purchased in batches (fasteners, etc.) should be supplied in a package. The packaging should state the applicable specification/standard, P/N, batch number, and the quantity of the items. The documentation accompanying the material should contain the applicable specification/standard, P/N, batch number, supplied quantity, and the manufacturing sources. If the material is acquired from different batches, acceptance documentation for each batch should be supplied.

AMC 145.A.42(b) Acceptance of components

(a) The EMAR Form 1 (or other equivalent forms detailed at AMC EMAR 145.A.42(a)) identifies the status of an aircraft component. Block 12 'Remarks' on the EMAR Form 1 in some cases contains vital airworthiness related information which may need appropriate and necessary actions. The receiving maintenance organisation should be satisfied that the component in question is in satisfactory condition and has been appropriately released to service. In addition, the maintenance organisation should ensure that the component meets the approved data/standard, such as the required design and modification standard. This may be accomplished by reference to the manufacturer's parts catalogue or other approved data (i.e. Service Bulletin). Care should also be taken in ensuring compliance with applicable ADs, the status of any life-limited parts fitted to the aircraft component as well as CDCCLs (if applicable).

(b) To ensure a component is in a satisfactory condition, the maintenance organisation should perform checks and verifications.

(c) Performance of the above checks and verifications should take place before the component is installed on the aircraft.

(d) The following list, though not exhaustive, contains typical checks to be performed:

(i) verify the general condition of components and their packaging in relation to damages that could affect the integrity of the components;

(ii) verify that the shelf life of the component has not expired;

(iii) verify that items are received in the appropriate package in respect of the type of component: e.g. correct ATA 300 or electrostatic sensitive devices packaging, when necessary;

(iv) verify that the component has all plugs and caps appropriately installed in accordance with approved data to prevent damage or internal contamination.

AMC 145.A.42(c) Acceptance of components

1. The agreement by the NMAA for the fabrication of parts by the maintenance organisation should be formalised through the approval of a detailed procedure in the MOE. This AMC contains principles and conditions to be taken into account for the preparation of an acceptable procedure.

2. Fabrication, inspection, assembly and test should be clearly within the technical and procedural capability of the maintenance organisation.

3. All necessary data to fabricate the part should be approved either by the NMAA or the (Military) Type Certificate (TC) holder or EMAR 21 Design Organisation Approval holder, or (Military) Supplemental Type Certificate (STC) holder.

4. Items fabricated by a maintenance organisation may only be used by that maintenance organisation in the course of overhaul, maintenance, modifications, or repair of aircraft or components undergoing work within its own facility. The fabrication of parts for other facilities may only take place if approved by the NMAA. The permission to fabricate does not constitute approval for manufacture and the parts do not qualify for certification on EMAR Form 1. This prohibition also applies to the bulk transfer of surplus inventory, in that locally fabricated parts are physically segregated and excluded from any delivery certification. Fabricated parts are to be clearly labelled in a manner identified by the NMAA.

5. Fabrication of parts, modification kits etc for onward supply may not be conducted by an maintenance organisation, unless otherwise approved by the NMAA.

6. The data specified in paragraph 3 may include repair procedures involving the fabrication of parts. Where the data on such parts is sufficient to facilitate fabrication, the parts may be fabricated by an maintenance organisation. Care should be taken to ensure that the data includes details of part numbering, dimensions, materials, processes, and any special manufacturing techniques, special raw material specification or/and incoming inspection requirement and that the maintenance organisation has the necessary capability. That capability should be defined by way of MOE content. Where special processes or inspection procedures are defined in the approved data which are not available at the maintenance organisation, the maintenance organisation cannot fabricate the part unless the (Military) TC/STC-holder or EMAR 21 Design Organisation Approval holder gives an approved alternative.

7. Examples of fabrication under the scope of an EMAR 145 approval can include but are not limited to the following:

a) Fabrication of bushes, sleeves and shims.

b) Fabrication of secondary structural elements and skin panels.

c) Fabrication of control cables.

d) Fabrication of flexible and rigid pipes.

e) Fabrication of electrical cable looms and assemblies.

f) Formed or machined sheet metal panels for repairs.

All the above fabricated parts should be in accordance with data provided in overhaul or repair manuals, modification schemes and service bulletins, drawings or otherwise approved by the NMAA.

Note: It is not acceptable to fabricate any item to pattern unless an engineering drawing of the item is produced which includes any necessary fabrication processes and which is acceptable to the NMAA.

8. Where a (Military)TC/STC holder or an EMAR 21 Approved Production Organisation is prepared to make available complete data which is not referred to in aircraft manuals or service bulletins but provides manufacturing drawings for items specified in parts lists, the fabrication of these items is not considered to be within the scope of an approval unless agreed otherwise by the NMAA in accordance with a procedure specified in the MOE.

9. Inspection and Identification.

Any locally fabricated part should be subjected to an inspection stage before, separately, and preferably independently from, any inspection of its installation. The inspection should establish full compliance with the relevant manufacturing data, and the part should be unambiguously identified as fit for use by stating conformity to the approved data. Adequate records should be maintained of all such fabrication processes including heat treatment and the final inspections. Fabricated parts are to be clearly labelled in a manner identified by the NMAA. All parts, except those having not enough space, should carry a part number which clearly relates it to the manufacturing/inspection data. Additional to the part-number the maintenance organisation's identity should be marked on the part for traceability purposes.

AMC 145.A.42(d) Acceptance of components

1. The following types of components should typically be classified as unsalvageable:

a. Components with non-repairable defects, whether visible or not to the naked eye;

b. Components that do not meet design specifications, and cannot be brought into conformity with such specifications;

c. Components subjected to unacceptable modification, repair or rework that is irreversible;

d. Certified life-limited parts that have reached or exceeded their certified life limits, or have missing or incomplete records;

e. Components that cannot be returned to an airworthy condition due to exposure to extreme forces, heat or adverse environment;

f. Components for which conformity with an applicable AD cannot be accomplished;

g. Components for which maintenance records and/or traceability to the manufacturer/maintenance organisation cannot be retrieved.

2. Caution should be exercised to ensure that unsalvageable components are disposed of in a manner that does not allow them to be returned to service.

GM 145.A.42(d) Acceptance of components

It is common practice for possessors of aircraft components to dispose of unsalvageable components by selling, discarding, or transferring such items. In some instances, these items have reappeared for sale and in the active parts inventories of the aviation community. Misrepresentation of the status of components and the practice of making such items appear serviceable have resulted in the use of unsalvageable non-conforming components. Therefore organisations disposing of unsalvageable aircraft components should consider the possibility of such components later being misrepresented and sold as serviceable components.

AMC 145.A.45(b) Maintenance data

1. Except as specified in subparagraph 5, each AMO should have access to and use the following minimum maintenance data relevant to the AMO's approval class rating: all maintenance related requirements and associated AMCs, approval specifications and Guidance Material, all applicable national maintenance requirements and notices which have not been superseded by a NMAA requirement, procedure or directive and all applicable ADs as well as CDCCLs (if applicable).

2. In addition to subparagraph 1, an AMO with an approval class rating in Category A – Aircraft, should have access to and use the following maintenance data where published: the appropriate sections of the Aircraft Maintenance Programme, Aircraft Maintenance Manual, repair manual, supplementary structural inspection document, corrosion control document, Service Bulletins, service letters, service instructions, modification leaflets, NDT manual, parts catalogue, (Military) TC data sheet and any other specific document issued by the (Military) TC/STC holder or NMAA as maintenance data.

3. In addition to subparagraph 1, an AMO with an approval class rating in Category B — Engines/APUs, should have access to and use the following maintenance data where published: the appropriate sections of the engine/APU maintenance and repair manual, Service Bulletins, service letters, modification leaflets, non-destructive testing (NDT) manual, parts catalogue, (Military) Type Certificate data sheet and any other specific document issued by the (Military) TC/STC holder or NMAA as maintenance data.

4. In addition to subparagraph 1, an AMO with an approval class rating in Category C – Components other than complete engines/APUs, should have access to and use the following maintenance data where published: the appropriate sections of the component maintenance and repair manual, Service Bulletins and service letters plus any document issued by the (Military) TC/STC holder or NMAA as maintenance data on whose product the component may be fitted when applicable.

5. Appropriate sections of the subparagraphs 2 to 4 additional maintenance data means in relation to the maintenance work scope at each particular maintenance facility. For example, a base maintenance facility should have access to almost complete set(s) of the maintenance data whereas a line maintenance facility may need only the maintenance manual and the parts catalogue.

6. An AMO only approved in class rating Category D – Specialised services, should hold and use all applicable specialised service(s) process specifications.

AMC 145.A.45(c) Maintenance data

1. The referenced procedure should ensure that when maintenance personnel discover inaccurate, incomplete or ambiguous information in the maintenance data they should record the details. The procedure should then ensure that the maintenance organisation notifies the problem to the author of the maintenance data in a timely manner. A record of such communications to the author of the maintenance data should be retained by the maintenance organisation until such time as the (Military) TC/STC holder, EMAR 21 Design Organisation Approval holder or NMAA has clarified the issue by e.g. amending the maintenance data.

2. The referenced procedure should be specified in the MOE.

AMC 145.A.45(d) Maintenance data

The referenced procedure should address the need for a practical demonstration by the maintenance personnel to the quality personnel of the proposed modified maintenance instruction. When satisfied the quality personnel should approve the modified maintenance instruction and ensure that the (Military) TC/STC holder, EMAR 21 Design Organisation Approval holder or NMAA is informed of the modified maintenance instruction. The procedure should include a paper/electronic traceability of the complete process from start to finish and ensure that the relevant maintenance instruction clearly identifies the modification. Modified maintenance instructions should only be used in the following circumstances:

a. Where the (Military) TC/STC holder, EMAR 21 Design Organisation Approval holder or NMAA's original intent can be carried out in a more practical or more efficient manner.

b. Where the (Military) TC/STC holder, EMAR 21 Design Organisation Approval holder or NMAA's original intent cannot be achieved by following the maintenance instructions. For example, where a component cannot be replaced following the original maintenance instructions.

c. For the use of alternative tools/equipment.

Important Note: CDCCLs are airworthiness limitations. Any modification of the maintenance instructions linked to CDCCLs constitutes an aircraft modification that should be approved in accordance with EMAR 21.

AMC 145.A.45(e) Maintenance data

1. The maintenance organisation should:

a. Transcribe accurately the maintenance data onto such work cards or worksheets, or

b. Make precise reference to the particular maintenance task(s) contained in such maintenance data, which already identifies the task as a CDCCL where applicable.

2. Relevant parts of the maintenance organisation means with regard to aircraft base maintenance, aircraft line maintenance, engine workshops, mechanical workshops and avionic workshops. Therefore, engine workshops for example should have a common system throughout such engine workshops that may be different to that in the aircraft base maintenance.

3. The work cards should differentiate and specify, when relevant, disassembly, accomplishment of task, reassembly and testing. In the case of a lengthy maintenance task involving a succession of personnel to complete such a task, it may be necessary to use supplementary work cards or worksheets to indicate what was actually accomplished by each individual person.

GM 145.A.45(e) Maintenance Data

'Complex maintenance tasks' are neither minor scheduled line maintenance tasks nor simple defect rectification tasks. They therefore cannot be certified by a Category A MAML holder.

AMC 145.A.45(f) Maintenance data

1. Data being made available to personnel maintaining aircraft means that the data should be available in close proximity to the aircraft being maintained for supervisors, mechanics, certifying and support staff to study.

2. Where computer systems are used, the number of computer terminals or maintenance data access points should be sufficient in relation to the size of the work programme to enable easy access, unless the computer system can produce paper copies. Where microfilm or microfiche readers/printers are used, a similar requirement is applicable.

AMC 145.A.45(g) Maintenance data

1. To keep data up-to-date, a procedure should be set up to monitor the amendment status of all data and maintain a check that all amendments are being received by being a subscriber to any document amendment scheme. Special attention should be given to

(Military) TC/STC related data such as certification life-limited parts, airworthiness limitations and Airworthiness Limitation Items (ALI), etc.

2. If paper copies are printed from computer systems, a procedure should be in place to ensure the control or destruction of such copies after use.

AMC 145.A.47(a) Maintenance planning

1. Depending on the amount and complexity of work generally performed by the maintenance organisation, the planning system may range from a very simple procedure to a complex organisational set-up including a dedicated planning function in support of the maintenance function.

2. For the purpose of EMAR 145, the maintenance planning function should include two complementary elements:

- scheduling the maintenance work ahead, to ensure that it will not adversely interfere with other work as regards the availability of all necessary personnel, tools, equipment, material, maintenance data and facilities.

- during maintenance work, organising maintenance teams and shifts and provide all necessary support to ensure the completion of maintenance without undue time pressure.

3. When establishing the maintenance planning procedure, consideration should be given to the following:

- 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),

- co-ordination with contracted/tasked maintenance organisations, internal and external suppliers, etc.

- scheduling of safety critical tasks during periods when staff are likely to be most alert,

- military operational commitments,

- location (e.g. Main Operating Base, Deployed Operating Base).

AMC 145.A.47(b) Maintenance planning

Limitations of human performance, in the context of planning safety related tasks, refers to the upper and lower limits, and variations, of certain aspects of human performance (Circadian rhythm / 24 hours body cycle) which personnel should be aware of when planning work and shifts.

AMC 145.A.47(c) Maintenance planning

The primary objective of the changeover / handover information is to ensure effective communication at the point of handing over the continuation or completion of maintenance actions. Effective task and shift handover depends on three basic elements:

a. The outgoing person's ability to understand and communicate the important elements of the job or task being passed over to the incoming person.

b. The incoming person's ability to understand and assimilate the information being provided by the outgoing person.

c. A formalised process for exchanging information between outgoing and incoming persons and a planned shift overlap and a place for such exchanges to take place.

AMC 145.A.48(b) Performance of maintenance

(a) The manufacturer's Instructions for Continuing Airworthiness should be followed when determining the need for an independent inspection.

(b) In the absence of maintenance and inspection standards published by the organisation responsible for the type design, maintenance tasks that involve the assembly or any disturbance of a control system and that, if errors occurred, could result in a failure, malfunction, or defect endangering the safe operation of the aircraft should be considered as flight safety sensitive maintenance tasks needing an independent inspection. A control system is an aircraft system by which the flight path, attitude, or propulsive force of the aircraft is changed, including the flight, engine and propeller controls (but not limited to these systems), the related system controls and the associated operating mechanisms. Maintenance tasks associated with the crew escape and safety systems should also be considered as flight safety sensitive maintenance tasks.

(c) A maintenance task requiring an independent inspection consists of an authorised person signing the maintenance task/release, who assumes full responsibility for the satisfactory completion of the work, before being subsequently inspected by an independent competent and authorised person who attests to the satisfactory completion of the work recorded and that no deficiencies have been found.

(1) A maintenance task requiring an independent inspection should therefore involve at least two persons, to ensure correct assembly, locking and sense of operation. A technical record of the inspection should contain the signatures of both persons before the relevant certificate of release to service is issued.

(2) The independent competent and authorised person is not issuing a maintenance release, therefore, is not required to hold certification privileges. However, they should be suitably qualified to carry out the inspection and must not have been involved in the work.

(d) The maintenance organisation should have procedures to demonstrate that independent signatories have been trained, and have gained experience on the specific systems being inspected.

(e) The following maintenance tasks should primarily be considered when inspecting aircraft control and crew escape and safety systems that have been disturbed:

(1) installation, rigging, and adjustment of flight controls;

(2) installation of aircraft engines, propellers; and rotors; and

(3) overhaul, calibration or rigging of components such as engines, propellers, transmissions and gearboxes; and

(4) installation and maintenance carried out on ejection seats.

Consideration should also be given to:

(1) previous experience of maintenance errors, depending on the consequences of the failure; and

(2) information arising from an ‘occurrence reporting system’; and

(3) information arising from the Operating Organisation/CAMO.

(f) When inspecting control systems and crew escape and safety systems that have undergone maintenance, the person signing the maintenance release and the person performing the independent inspection should consider the following points independently:

(1) all those parts of the system that have actually been disconnected or disturbed, should be inspected for correct assembly and locking;

(2) the system as a whole should be inspected for full and free movement over the complete range;

(3) cables should be tensioned correctly with adequate clearance at secondary stops;

(4) the operation of the system as a whole should be observed to ensure that the controls are operating in the correct sense;

(5) if the system is duplicated to provide redundancy, each system should be inspected separately; and

(6) if different systems are interconnected so that they affect each other, all interactions should be inspected through the full range of the applicable controls.

AMC 145.A.48(c) Performance of maintenance

An assessment of both the cause and any potentially hazardous effect of any defect or combination of defects that could affect flight safety should be made in order to initiate any necessary further investigation and analysis necessary to identify the root cause of the defect and reported to the CAMO/Operating Organisation.

AMC 145.A.50(a) Certification of maintenance

'Endanger flight safety' means any instance where safe operation could not be assured or which could lead to an unsafe condition. It typically includes, but is not limited to, significant cracking, deformation, corrosion or failure of primary structure, any evidence of burning, electrical arcing, significant hydraulic fluid or fuel leakage and any emergency system or total system failure. An AD overdue for compliance is also considered a hazard to flight safety.

AMC 145.A.50(b) Certification of maintenance

1. The CRS for aircraft should contain the following statement:

'Certifies that the work specified, except as otherwise specified, was carried out in accordance with EMAR 145 and in respect to that work the aircraft/aircraft component is considered ready for release to service'.

Reference should also be made to the EMAR 145 approval number.

2. It is acceptable to use an alternate abbreviated CRS for aircraft consisting of the following statement 'EMAR 145 release to service' instead of the full certification statement specified in paragraph 1. When the alternate abbreviated CRS is used, the introductory section of the aircraft technical log should include an example of the full certification statement from paragraph 1.

3. The CRS should relate to the task specified in the (Military) TC/STC holder's or Operating Organisation's/CAMO's instructions or the Aircraft Maintenance Programme which itself may cross-refer to maintenance data.

4. The date such maintenance was carried out should include when the maintenance took place relative to any life or overhaul limitation in terms of date/flying hours/cycles/landings etc., as appropriate.

5. When extensive maintenance has been carried out, it is acceptable for the CRS to summarise the maintenance as long as there is a unique cross-reference to the work package containing full details of maintenance carried out. Dimensional information should be retained in the work-pack record.

AMC 1 145.A.50(d) Certification of maintenance

1. The purpose of the CRS is to release assemblies/items/components/parts (hereafter referred to as 'item(s)') after maintenance and to release maintenance work carried out on such items under the approval of a NMAA and to allow items removed from one aircraft/aircraft component to be fitted to another aircraft/aircraft component.

2. The CRS is to be used for export/import purposes, the transfer of items between pMS as well as for domestic purposes, and serves as an official certificate for items from the manufacturer/AMO to users.

3. It can only be issued by AMOs within the scope of their approval.

4. The CRS may be used as a rotable tag (if using EMAR Form 1 – national equivalents may be able to be used this way also) by utilising the available space on the reverse side of the certificate for any additional information and dispatching the item with two copies of the certificate so that one copy may be eventually returned with the item to the AMO. The alternative solution is to use existing rotable tags and also supply a copy of the certificate.

5. A CRS should not be issued for any item when it is known that the item is unserviceable except in the case of an item undergoing a series of maintenance processes at several AMOs and the item needs a certificate for the previous maintenance process carried out for the next AMO to accept the item for subsequent maintenance processes. In such a case, a clear statement of limitation should be endorsed in Block 12 of EMAR Form 1 (or equivalent).

AMC 2 145.A.50(d) Certification of maintenance

1. A component which has been maintained off the aircraft needs the issuance of a CRS for such maintenance and another CRS in regard to being installed properly on the aircraft when such action occurs.

2. In the case of the issue of EMAR Form 1 (or equivalent) for components in storage before EMAR 145 and EMAR 21 became effective and not released on an EMAR Form 1 or equivalent in accordance with EMAR 145.A.42(a) or removed serviceable from a serviceable aircraft or an aircraft which has been withdrawn from service the following applies:

2.1. An EMAR Form 1 (or equivalent) may be issued for an aircraft component which has been:

2.1.1 Maintained before EMAR 145 became effective or manufactured before EMAR 21 became effective.

2.1.2 Used on an aircraft and removed in a serviceable condition. Examples include leased and loaned aircraft components, or "cannibalised" components.

2.1.3 Removed from aircraft which have been withdrawn from service, or from aircraft which have been involved in abnormal occurrences such as accidents, incidents, heavy landings or lightning strikes.

2.1.4 Maintained by an unapproved maintenance organisation.

2.2. An appropriately rated AMO may issue an EMAR Form 1 (or equivalent) as detailed in this AMC subparagraph 2.5 to 2.9, as appropriate, in accordance with procedures detailed in the MOE as approved by the NMAA. The appropriately rated AMO is responsible for ensuring that all reasonable measures have been taken to ensure that only approved and serviceable aircraft components are issued an EMAR Form 1 (or equivalent) under this paragraph.

2.3. For the purposes of this AMC 2 only, 'appropriately rated' means an AMO with an approval class rating for the type of component or for the product in which it may be installed.

2.4. An EMAR Form 1 (or equivalent) issued in accordance with this paragraph 2 should be issued by signing in Block 14b and stating 'Inspected' in Block 11. In addition, Block 12 should specify:

2.4.1. When the last maintenance was carried out and by whom.

2.4.2. If the component is unused, when the component was manufactured and by whom with a cross-reference to any original documentation which should be included with the Form.

2.4.3. A list of all ADs, repairs and modifications known to have been incorporated. If no ADs or repairs or modifications are known to be incorporated, then this should be so stated.

2.4.4. Detail of life used for service life-limited parts being any combination of fatigue, overhaul or storage life.

2.4.5. For any aircraft component having its own maintenance history record, reference to the particular maintenance history record as long as the record contains the details that would otherwise be required in Block 12. The maintenance history record and acceptance test report or statement, if applicable, should be attached to the EMAR Form 1 (or equivalent).

2.5. New/unused aircraft components.

2.5.1 Any unused aircraft component in storage without an EMAR Form 1 (or equivalent) up to the effective date(s) for EMAR 21 that was manufactured by an organisation acceptable to the NMAA at that time may be issued with an EMAR Form 1 (or equivalent) by an appropriately rated AMO. The EMAR Form 1 (or equivalent) should be issued in accordance with the following subparagraphs which should be included in a procedure within the MOE.

Note: It should be understood that the release of a stored but unused aircraft component in accordance with this paragraph represents a maintenance release under EMAR 145 and not a production release under EMAR 21. It is not intended to by-pass the production release procedure agreed by the pMS for parts and subassemblies intended for fitment on the manufacturer's own production line.

(a) An acceptance test report or statement should be available for all used and unused aircraft components that are subjected to acceptance testing after manufacturing or maintenance as appropriate.

(b) The aircraft component should be inspected for compliance with the manufacturer’s instructions and limitations for storage and condition including any requirement for limited storage life, inhibitors, controlled climate and special storage containers. In addition or in the absence of specific storage instructions, the aircraft component should be inspected for damage, corrosion and leakage to ensure good condition. Where military operational circumstances have prevented storage in accordance with the manufacturer’s instructions, a procedure approved by the NMAA should be defined and adhered to.

(c) The storage life used of any storage life-limited parts should be established.

2.5.2. If it is not possible to establish satisfactory compliance with all applicable conditions specified in subparagraph 2.5.1 (a) to (c) inclusive, the aircraft component should be disassembled by an appropriately rated AMO and subjected to a check for incorporated ADs, repairs and modifications and inspected/tested in accordance with the maintenance data to establish satisfactory condition and, if relevant, all seals, lubricants and life-limited parts should be replaced. Upon satisfactory completion after reassembly, an EMAR Form 1 (or equivalent) may be issued stating what was carried out and the reference of the maintenance data included.

2.6. Used aircraft components removed from a serviceable aircraft.

2.6.1. Serviceable aircraft components removed from a pMS registered aircraft may be issued with an EMAR Form 1 (or equivalent) by an appropriately rated AMO subject to compliance with this subparagraph.

(a) The AMO should ensure that the component was removed from the aircraft by an appropriately qualified person.

(b) The aircraft component may only be deemed serviceable if the last flight operation with the component fitted revealed no faults on that component/related system.

(c) The aircraft component should be inspected for satisfactory condition including in particular damage, corrosion or leakage and compliance with any additional maintenance data.

(d) The aircraft record should be researched for any unusual events that could affect the serviceability of the aircraft component such as involvement in accidents, incidents, heavy landings or lightning strikes. Under no circumstances may an EMAR Form 1 (or equivalent) be issued in accordance with this paragraph 2.6 if it is suspected that the aircraft component has been subjected to extremes of stress, temperatures or immersion which could affect its operation.

(e) A maintenance history record should be available for all used serialised aircraft components.

(f) Compliance with known modifications and repairs should be established.

(g) The flight hours/cycles/landings as applicable of any service life-limited parts including time since overhaul should be established.

(h) Compliance with known applicable ADs should be established.

(i) Subject to satisfactory compliance with this subparagraph 2.6.1, an EMAR Form 1 (or equivalent) may be issued and should contain the information as specified in paragraph 2.4 including the aircraft from which the aircraft component was removed.

2.6.2. NOT APPLICABLE.

2.7. Used aircraft components removed from an aircraft withdrawn from service.

Serviceable aircraft components removed from an aircraft withdrawn from service may be issued with an EMAR Form 1 (or equivalent) by an AMO subject to compliance with this subparagraph.

(a) Aircraft withdrawn from service are sometimes dismantled for spares. This is considered to be a maintenance activity and should be accomplished under the control of an AMO, employing procedures approved by the NMAA.

(b) To be eligible for installation, components removed from such aircraft may be issued with an EMAR Form 1 (or equivalent) by an appropriately rated AMO following a satisfactory assessment.

(c) As a minimum, the assessment will need to satisfy the standards set out in paragraphs 2.5 and 2.6 as appropriate. This should, where known, include the possible need for the alignment of scheduled maintenance that may be necessary to comply with the maintenance programme applicable to the aircraft on which the component is to be installed.

(d) Irrespective of whether the aircraft holds a Military Certificate of Airworthiness or not, the AMO responsible for certifying any removed component should ensure that the manner in which the components were removed and stored are compatible with the standards required by EMAR 145.

(e) A structured plan should be formulated to control the aircraft disassembly process. The disassembly is to be carried out by an appropriately rated AMO under the supervision of certifying staff who will ensure that the aircraft components are removed and documented in a structured manner in accordance with the appropriate maintenance data and disassembly plan.

(f) All recorded aircraft defects should be reviewed and the possible effects these may have on both normal and standby functions of removed components are to be considered.

(g) Dedicated control documentation is to be used as detailed by the disassembly plan, to facilitate the recording of all maintenance actions and component removals performed during the disassembly process. Components found to be unserviceable are to be identified as such and quarantined pending a decision on the actions to be taken. Records of the maintenance accomplished to establish serviceability are to form part of the component maintenance history.

(h) Suitable EMAR 145 facilities for the removal and storage of removed components are to be used which include suitable environmental conditions, lighting, access equipment, aircraft tooling and storage facilities for the work to be undertaken. While it may be acceptable for components to be removed, given local environmental conditions, without the benefit of an enclosed facility, subsequent disassembly (if required) and storage of the components should be in accordance with the manufacturer's recommendations.

2.8. Used aircraft components maintained by maintenance organisations not approved in accordance with EMAR 145.

For used components maintained by a maintenance organisation not approved under EMAR 145, due care should be taken before acceptance of such components. In such cases an appropriately rated AMO should establish satisfactory conditions by:

(a) dismantling the component for sufficient inspection in accordance with the appropriate maintenance data;

(b) replacing all service life-limit components when no satisfactory evidence of life used is available and/or the components are in an unsatisfactory condition;

(c) reassembling and testing as necessary the component;

(d) completing all certification requirements as specified in EMAR 145.A.50.

2.9. Used aircraft components removed from an aircraft involved in an accident or incident.

Such components should only be issued with an EMAR Form 1 (or equivalent) when processed in accordance with paragraph 2.7 and a specific work order including all additional necessary tests and inspections deemed necessary by the accident or incident. Such a work order may require input from the NMAA/(Military) TC/STC holder or original manufacturer as appropriate. This work order should be referenced in Block 12.

AMC 145.A.50(e) Certification of maintenance

1. Being unable to establish full compliance with subparagraph EMAR 145.A.50(a) means that the maintenance required by the CAMO could not be completed due either to running out of available aircraft maintenance downtime for the scheduled check or by virtue of the condition of the aircraft requiring additional maintenance downtime.

2. The CAMO is responsible for ensuring that all required maintenance has been carried out before flight and therefore EMAR 145.A.50(e) requires the CAMO to be informed in the case where full compliance with EMAR 145.A.50(a) cannot be achieved. If the CAMO agrees to the deferment of full compliance, then the 'CRS for aircraft' may be issued subject to details of the deferment, including the CAMO's authority, being endorsed on the certificate.

Note: Whether or not the CAMO does have the authority to defer maintenance is an issue between the CAMO and the NMAA. In case of doubt concerning such a decision of the CAMO, the AMO should inform its NMAA on such doubt, before issuing the CRS. This should allow the NMAA to investigate the matter as appropriate.

3. The procedure should draw attention to the fact that EMAR 145.A.50(a) does not normally permit the issue of a 'CRS for aircraft' in the case of non-compliance and should state what action the mechanic, supervisor and certifying staff should take to bring the matter to the attention of the relevant department or person responsible for technical co-ordination with the CAMO so that the issue may be discussed and resolved. In addition, the appropriate person(s) as specified in EMAR 145.A.30(b) should be kept informed in writing of such possible non-compliance situations and this should be included in the procedure.

AMC 145.A.50(f) Certification of maintenance

1. 'Appropriate release certificate' means a certificate which clearly states that the aircraft component is serviceable and clearly specifies the AMO releasing this component together with details of the authority under whose approval the AMO works including the approval or authorisation reference.

2. 'Compliance with all other technical and operational requirements' means making an appropriate entry in the aircraft technical log, checking for compliance with type design standards, modifications, repairs, ADs, life limitations and condition of the aircraft component plus information on where, when and why the aircraft was grounded.

GM 145.A.55(a) Maintenance records

1. Properly executed and retained records provide CAMOs and maintenance personnel with information essential in controlling unscheduled and scheduled maintenance, and trouble-shooting to eliminate the need for re-inspection and rework to establish airworthiness.

The prime objective is to have secure and easily retrievable records with comprehensive and legible contents. The aircraft record should contain basic details of all serialised aircraft components and all other significant aircraft components installed, to ensure traceability to such installed aircraft component documentation and associated maintenance data as specified in EMAR 145.A.45.

2. Some gas turbine engines are assembled from modules and a true total time in service for a total engine is not kept. When CAMOs wish to take advantage of the modular design, then total time in service and maintenance records for each module are to be maintained. The maintenance records as specified are to be kept with the module and should show compliance with any mandatory requirements pertaining to that module.

3. Reconstruction of lost or destroyed records can be done by reference to other records which reflect the time in service, research of records maintained by repair facilities and reference to records maintained by individual mechanics etc. When these things have been done and the record is still incomplete, the CAMO may make a statement in the new record describing the loss and establishing the time in service based on the research and the best estimate of time in service. The reconstructed records should be submitted to the NMAA for acceptance.

Note: Additional maintenance may be required.

4. The maintenance record can be either a paper or computer system or any combination of both.

5. Paper systems should use robust material which can withstand normal handling and filing. The record should remain legible throughout the required retention period.

6 Computer systems may be used to control maintenance and/or record details of maintenance work carried out. Computer systems used for maintenance should have at least one backup system which should be updated at least within 24 hours of any maintenance. Each terminal is required to contain programme safeguards against the ability of unauthorised personnel to alter the database.

Note: An AMO's responsibility for recording all details of the maintenance work carried out ends with the completion of the CRS. It is the CAMO's responsibility to enter the information given in the CRS into the aircraft continuing airworthiness record system.

AMC 145.A.55(c) Maintenance records

Associated maintenance data is specific information such as repair and modification data. This does not necessarily require the retention of all Aircraft Maintenance Manual, Component Maintenance Manual, Illustrated Parts Catalogue etc. issued by the (Military) TC/ STC holder. Maintenance records should refer to the revision status of the data used.

AMC 145.A.60(a) Occurrence reporting

TO BE DEVELOPED IF REQUIRED.

GM 145.A.60(a) Occurrence reporting

TO BE DEVELOPED IF REQUIRED.

AMC 145.A.60(b) Occurrence reporting

1. The aim of occurrence reporting is to identify the factors contributing to incidents and to make the system resistant to similar errors.

2. An occurrence reporting system should enable and encourage free and frank reporting of any (potentially) safety related occurrence. This should be facilitated by the establishment of a "just culture". A maintenance organisation should ensure that personnel are not inappropriately punished for reporting or co-operating with occurrence investigations.

3. The internal reporting process should be closed-loop, ensuring that actions are taken internally to address safety hazards.

4. Feedback to reportees, both on an individual and more general basis, is important to ensure their continued support for the scheme.

GM 145.A.60(c) Occurrence reporting

Each report should contain at least the following information:

i) Maintenance organisation name and approval reference.

ii) Information necessary to identify the subject aircraft and / or component.

iii) Date and time relative to any life or overhaul limitation in terms of flying hours/cycles/landings etc. as appropriate.

iv) Details of the condition as required by EMAR 145.A.60(b).

v) Any other relevant information found during the evaluation or rectification of the condition.

AMC 145.A.65(a) Safety and quality policy, maintenance procedures and quality system

The safety and quality policy should as a minimum include a statement committing the maintenance organisation to:

- Recognise safety as a prime consideration at all times;

- Apply Human factors principles;

- Encourage personnel to report maintenance related errors/incidents;

- Recognise that compliance with procedures, quality standards, safety standards and regulations is the duty of all personnel;

- Recognise the need for all personnel to cooperate with the quality auditors.

AMC 145.A.65(b) Safety and quality policy, maintenance procedures and quality system

1. Maintenance procedures should be held current such that they reflect best practice within the maintenance organisation. It is the responsibility of all the maintenance organisation's personnel to report any differences via their maintenance organisation's internal occurrence reporting mechanisms.

2. All procedures, and changes to those procedures, should be verified and validated before use where practicable.

3. All technical procedures should be designed and presented in accordance with good human factors principles.

AMC 145.A.65(b)(2) Safety and quality policy, maintenance procedures and quality system

Specialised services include any specialised activity, such as but not limited to non-destructive testing requiring particular skills and/or qualification. EMAR 145.A.30(f) covers the qualification of personnel but, in addition, maintenance procedures should be established that cover the control of any specialised process.

AMC 145.A.65(b)(3) Safety and quality policy, maintenance procedures and quality system

1. See EMAR GM 145.A.65(b)(3)

2. Procedures should be established to detect and rectify maintenance errors that could, as minimum, result in a failure, malfunction, or defect endangering the safe operation of the aircraft if not performed properly ('Safety-Critical' tasks). These procedures should identify the method for capturing errors, and the maintenance tasks or processes concerned. In order to determine the work items to be considered, the following maintenance tasks should primarily be reviewed to assess their impact on safety:

- Installation, rigging and adjustments of flight controls;

- Installation of aircraft engines, propellers and rotors;

- Overhaul, calibration or rigging of components such as engines, propellers, transmissions and gearboxes;

- installation and maintenance carried out on ejection seats

but additional information should also be processed, such as:

- Previous experiences of maintenance errors, depending on the consequence of the failure;

- Information arising from the 'occurrence reporting system' required by EMAR 145.A.60;

- NMAA requirements for error capturing, if applicable.

3. In order to prevent omissions, every maintenance task or group of tasks should be signed-off. To ensure the task or group of tasks is completed, it should only be signed-off after completion. Work by unauthorised personnel (i.e. temporary staff, trainee,..) should be checked by authorised personnel before they sign-off. The grouping of tasks for the purpose of signing-off should allow critical steps to be clearly identified.

Note: A "sign-off" is a statement by the competent person performing or supervising the work, that the task or group of tasks has been correctly performed. A sign-off relates to one step in the maintenance process and is therefore different to the release to service of the aircraft. "Authorised personnel" means personnel formally authorised by the maintenance organisation to sign-off tasks. "Authorised personnel" are not necessarily "certifying staff".

4. The maintenance organisation should ensure that when carrying out a modification, repair or maintenance, CDCCL (if applicable) are not compromised; this should require the development of appropriate procedures where necessary by the maintenance organisation. The maintenance organisation should pay particular attention to possible adverse effects of any wiring change to the aircraft, even a change not specifically associated with the fuel tank system. For example, it should be common practice to identify segregation of fuel gauging system wiring as a CDCCL (if applicable).

Maintenance organisations can prevent adverse effects associated with wiring changes by standardising maintenance practices through training, rather than by periodic inspection. Training should be provided to prevent indiscriminate routing and splicing of wires and to provide comprehensive knowledge of critical design features of fuel tank systems that would be controlled by a CDCCL (if applicable). AMC is provided for training to maintenance organisation personnel in Appendix IV to AMC EMAR 145.A.30(e) and AMC EMAR 145.B.10(c).

GM 145.A.65(b)(3) Safety and quality policy, maintenance procedures and quality system

1. Critical Tasks might not jeopardise safety on their own, but there could be a cumulative effect if the same maintainer reproduces the same error when he does the same tasks on several systems. The purpose of this procedure is therefore to minimise the rare possibility of an error being repeated whereby the identical aircraft components are not reassembled thereby compromising more than one system. One example is the remote possibility of failure to reinstall engine gearbox access covers or oil filler caps on all engines of a multi-engined aircraft resulting in major oil loss from all engines. Another example is the case of removal and refitment of multiple oil filler caps on one aircraft/engine or component, which could require a re-inspection of all oil filler caps on that particular aircraft/engine or component after the last oil filler cap has supposedly been refitted.

2. The maintenance of ignition prevention features is necessary for the inherent safety and reliability of an aircraft's fuel tank system. The aircraft cannot be operated indefinitely with the failure of an ignition prevention feature. The failure will have a direct adverse effect on operational safety. It could prevent the continued safe flight and landing of the aircraft or cause serious or fatal injury to the occupants. The fuel system review required will identify ignition prevention features of the design. The failure of any of these features may not immediately result in an unsafe condition, but it may warrant certain maintenance to support continued airworthiness.

AMC 145.A.65(c)(1) Safety and quality policy, maintenance procedures and quality system.

1. The primary objectives of the quality system are to enable the maintenance organisation to ensure that it can deliver a safe product and that the maintenance organisation remains in compliance with the requirements.

2. An essential element of the quality system is the independent audit.

3. The independent audit is an objective process of routine sample checks of all aspects of the maintenance organisation's ability to carry out all maintenance to the required standards and includes some product sampling as this is the end result of the maintenance process. It represents an objective overview of the complete maintenance related activities and is intended to complement the EMAR 145.A.50(a) requirement for certifying staff to be satisfied that all required maintenance has been properly carried out before issue of the CRS for aircraft and components. Independent audits should include a percentage of random audits carried out on a sample basis when maintenance is being carried out. This means some audits during the night for those maintenance

organisations that work at night, and some audits while in an operational environment (if appropriate).

4. Except as specified in subparagraph 9, the independent audit should ensure that all aspects of EMAR 145 compliance are checked every 12 months and may be carried out as a complete single exercise or subdivided over the 12 month period in accordance with a scheduled plan. The independent audit does not require each procedure to be checked against each product line when it can be shown that the particular procedure is common to more than one product line and the procedure has been checked every 12 months without resultant findings. Where findings have been identified, the particular procedure should be rechecked against other product lines until the findings have been rectified after which the independent audit procedure may revert back to 12 monthly for the particular procedure.

5. The independent audit should sample check one product on each product line every 12 months as a demonstration of the effectiveness of maintenance procedures compliance. It is recommended that procedures and product audits be combined by selecting a specific product example, such as an aircraft or engine or instrument and sample checking all the procedures and requirements associated with the specific product example to ensure that the end result should be an airworthy product.

a. For the purpose of the independent audit, a product line includes any product under an EMAR 145 Appendix II approval class rating as specified in the approval schedule issued to the particular AMO.

b. It therefore follows for example that an maintenance organisation with a capability to maintain aircraft, repair engines, brakes and autopilots would need to carry out four complete audit sample checks each year except as specified otherwise in subparagraphs 5 or 9.

6. 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.

7. NOT APPLICABLE

8. Except as specified otherwise in subparagraph 9, where the maintenance organisation has line stations (such as but not limited to “out of area” locations, embarked operations if appropriate) listed as per EMAR 145.A.75(d) the quality system should describe how these are integrated into the system and include a plan to audit each listed line station at a frequency consistent with the extent of flight and maintenance activity at the particular line station. Except as specified otherwise in subparagraph 9 the maximum period between audits of a particular line station should not exceed 24 months.

9. Except as specified otherwise in subparagraph 5, the NMAA may agree to increase any of the audit time periods specified in AMC EMAR 145.A.65(c)(1) by up to 100% provided that there are no safety related findings and subject to being satisfied that the maintenance organisation has a good record of rectifying findings in a timely manner.

10. A report should be raised each time an audit is carried out describing what was checked and the resulting findings against applicable requirements, procedures and products.

11. The independence of the audit should be established by always ensuring that audits are carried out by personnel not responsible for the function, procedure or products being checked.

It therefore follows that a large maintenance organisation, being a maintenance organisation with more than about 500 maintenance staff should have a dedicated quality audit group whose sole function is to conduct audits, raise finding reports and follow up to check that findings are being rectified.

For the medium sized maintenance organisation, being a maintenance organisation with less than about 500 maintenance staff, it is acceptable to use competent personnel from one section/department not responsible for the maintenance function, procedure or product to audit the section/department that is responsible subject to the overall planning and implementation being under the control of the quality manager.

Maintenance organisations with a maximum of 10 maintenance staff actively engaged in carrying out maintenance may contract or delegate the independent audit element of the quality system to another organisation or a qualified and competent person, in both cases approved by the NMAA.

GM 145.A.65(c)(1) Safety and quality policy, maintenance procedures and quality system

1. The purpose of this GM is to give guidance on just one acceptable working audit plan to meet part of the needs of EMAR 145.A.65(c)1. There is any number of other acceptable working audit plans.

2. The proposed plan lists the subject matter that should be covered by the audit and attempts to indicate applicability in the various types of workshops and aircraft facilities. The list should therefore be tailored for the particular situation and more than one list may be necessary. Each list should be shown against a timetable to indicate when the particular item is scheduled for audit and when the audit was completed.

PARA	Comment	HANGAR	ENGINE Workshop	MECH Workshop	AVIONIC Workshop
145.A.25		Yes	Yes	Yes	Yes
145.A.30		Yes	Yes	Yes	Yes
145.A.35		Yes	Yes	Yes	Yes
145.A.40		Yes	Yes	Yes	Yes
145.A.42		Yes	Yes	Yes	Yes
145.A.45		Yes	Yes	Yes	Yes
145.A.47		Yes	Yes	Yes	Yes
145.A.48		Yes	Yes	Yes	Yes
145.A.50		Yes	Yes	Yes	Yes
145.A.55		Yes	Yes	Yes	Yes

145.A.60		Yes	Yes	Yes	Yes
145.A.65		Yes	Yes	Yes	Yes
2.1	MOE	Yes	Yes	Yes	Yes
2.2	MOE	Yes	Yes	Yes	Yes
2.3	MOE	Yes	Yes	Yes	Yes
2.4	MOE	Yes	Yes	Yes	Yes
2.5	MOE	Yes	Yes	Yes	Yes
2.6	MOE	Yes	Yes	Yes	Yes
2.7	MOE	Yes	Yes	Yes	Yes
2.8	MOE	Yes	Yes	Yes	Yes
2.9	MOE	Yes	Yes	Yes	Yes
2.10	MOE	Yes	No	No	No
2.11	MOE	Yes	Yes	Yes	Yes
2.12	MOE	Yes	Yes	Yes	Yes
2.13	MOE	Yes	Yes	Yes	Yes
2.14	MOE	Yes	Yes	Yes	Yes
2.15	MOE	Yes	No	No	No
2.16	MOE	Yes	Yes	Yes	Yes
2.17	MOE	if appl	if appl	if appl	if appl
2.18	MOE	Yes	Yes	Yes	Yes
2.19	MOE	Yes	Yes	Yes	Yes
2.20	MOE	Yes	Yes	Yes	Yes
2.21	MOE	if appl	if appl	if appl	if appl
2.22	MOE	Yes	Yes	No	No
2.23	MOE	Yes	No	No	No
2.24	MOE	Yes	Yes	Yes	Yes
2.25	MOE	Yes	Yes	Yes	Yes
2.26	MOE	Yes	Yes	Yes	Yes
2.27	MOE	Yes	Yes	Yes	Yes
2.28	MOE	Yes	Yes	Yes	Yes
L2.1	MOE	If appl	No	No	No
L2.2	MOE	If appl	No	No	No
L2.3	MOE	If appl	No	No	No
L2.4	MOE	If appl	No	No	No
L2.5	MOE	If appl	No	No	No
L2.6	MOE	If appl	No	No	No
L2.7	MOE	If appl	No	No	No
3.9	MOE	if appl	if appl	if appl	if appl
3.10	MOE	if appl	if appl	if appl	if appl
3.11	MOE	if appl	if appl	if appl	if appl
3.12	MOE	Yes	Yes	No	No
3.13	MOE	Yes	Yes	Yes	Yes
3.14	MOE	Yes	Yes	Yes	Yes
145.A.70		Yes	Yes	Yes	Yes
145.A.75		Yes	Yes	Yes	Yes
145.A.80		Yes	Yes	Yes	Yes
145.A.85		Yes	Yes	Yes	Yes
145.A.95		if appl	if appl	if appl	if appl

Note 1: 'if appl' means if applicable or relevant.

Note 2: In the line station case all line stations should be audited at the frequency agreed with the NMAA within the limits of AMC EMAR 145.A.65(c)(1).

AMC 145.A.65(c)(2) Safety and quality policy, maintenance procedures and quality system

1. An essential element of the quality system is the quality feedback system.

2. The quality feedback system should not be contracted to outside persons. The principal function of the quality feedback system is to ensure that all findings resulting from the independent quality audits of the maintenance organisation are properly investigated and corrected in a timely manner and to enable the Accountable Manager to be kept informed of any safety issues and the extent of compliance with EMAR 145.

3. The independent quality audit reports referenced in AMC EMAR 145.A.65(c)(1) subparagraph 10 should be sent to the relevant department(s) for rectification action giving target rectification dates. Rectification dates should be discussed with such department(s) before the quality department or nominated quality auditor confirms such dates in the report. The relevant department(s) are required by EMAR 145.A.65(c)(2) to rectify findings and inform the quality department or nominated quality auditor of such rectification.

4. The Accountable Manager should hold regular meetings with staff to check progress on rectification except that in the large maintenance organisations such meetings may be delegated on a day to day basis to the quality manager subject to the Accountable Manager meeting at least twice per year with the senior staff involved to review the overall performance and receiving at least a half yearly summary report on findings of noncompliance.

5. All records pertaining to the independent quality audit and the quality feedback system should be retained for at least 2 years after the date of clearance of the finding(s) to which they refer or for such periods as to support changes to the AMC EMAR 145.A.65(c)(1) subparagraph 9 audit time periods, whichever is the longer.

AMC 145.A.70(a) Maintenance Organisation Exposition (MOE)

1. The information specified in EMAR 145.A.70(a) subparagraphs (6) and (12) to (16) inclusive, whilst a part of the MOE, may be kept as separate documents or on separate electronic data files subject to the management part of this MOE containing a clear cross-reference to such documents or electronic data files.

2. The MOE should contain the information, as applicable, specified in this AMC. The information may be presented in any subject order as long as all applicable subjects are covered. Where an maintenance organisation uses a different format, for example, to allow the MOE to serve for more than one approval, then the MOE should contain a cross-reference annex using this list as an index with an explanation as to where the subject matter can be found in the MOE.

3. The MOE should contain information, as applicable, on how the maintenance organisation complies with CDCCL instructions (if applicable).

4. NOT APPLICABLE.

5. The maintenance organisation may use electronic data processing (EDP) for publication of the MOE. The MOE should be made available to the approving NMAA in a form acceptable to the NMAA. Attention should be paid to the compatibility of EDP publication systems with the necessary dissemination of the MOE, both internally and externally.

6. The following information should be included in the MOE:

PART 0 GENERAL ORGANISATION

This Section is reserved for:

1. A maintenance organisation seeking approval under EMAR 145, which is also part of an Operating Organisation.

2. An Original Equipment Manufacturer (OEM) seeking approval as a maintenance organisation under EMAR 145. For these organisations, among other organisational aspects, this section should illustrate how the maintenance organisation will be independent from other organisational functions (e.g. design and production/ engineering tasks, operations).

PART 1 MANAGEMENT

1.1 Corporate commitment by the Accountable Manager
1.2 Safety and quality policy
1.3 Management personnel
1.4 Duties and responsibilities of the management personnel
1.5 Management organisation chart
1.6 List of certifying staff and support staff
1.7 Manpower resources
1.8 General description of the facilities at each address intended to be approved
1.9 Organisations intended scope of work
1.10 Notification procedure to the NMAA regarding changes to the maintenance organisation's activities/approval/location/personnel
1.11 MOE amendment procedures including, if applicable, delegated procedures

PART 2 MAINTENANCE PROCEDURES

2.1 Supplier evaluation and contract/tasking control procedure
2.2 Acceptance/inspection of aircraft components and material from outside contractors/organisations
2.3 Storage, tagging and release of aircraft components and material to aircraft maintenance
2.4 Acceptance of tools and equipment
2.5 Calibration of tools and equipment
2.6 Use of tooling and equipment by staff (including alternative tools)
2.7 Cleanliness standards of maintenance facilities

2.8 Maintenance instructions and relationship to aircraft/aircraft component manufacturers' instructions including updating and availability to staff
2.9 Repair procedures
2.10 Aircraft Maintenance Programme compliance
2.11 Airworthiness Directives procedure
2.12 Optional modification procedure
2.13 Maintenance documentation in use and completion of same
2.14 Technical record control
2.15 Rectification of defects arising during base maintenance
2.16 Release to service procedure
2.17 Maintenance records for the CAMO
2.18 Reporting of defects to the NMAA/CAMO/(Military) TC/STC Holder
2.19 Return of defective aircraft components to store
2.20 Management of defective components with outside contractors/organisations
2.21 Control of computer maintenance record systems
2.22 Control of manhour planning versus scheduled maintenance work
2.23 Control of critical tasks
2.24 Reference to specific maintenance procedures such as:
- Engine running procedures
- Aircraft pressure run procedures
- Aircraft towing procedures
- Aircraft taxiing procedures
- Aircraft military specific systems procedures

2.25 Procedures to detect and rectify maintenance errors
2.26 Shift/task handover procedures
2.27 Procedures for notification of maintenance data inaccuracies and ambiguities, to the NMAA/(military) TC/STC holder
2.28 Maintenance planning procedures

PART L2 ADDITIONAL LINE MAINTENANCE PROCEDURES

L2.1 Line maintenance control of aircraft components, tools, equipment, etc.
L2.2 Line maintenance procedures related to servicing/fuelling/de-icing including inspection for/removal of de-icing/anti-icing fluid residues, etc.
L2.3 Line maintenance control of defects and repetitive defects
L2.4 Line procedure for completion of aircraft technical log
L2.5 Line procedure for pooled parts and loan parts
L2.6 Line procedure for return of defective parts removed from aircraft
L2.7 Line procedure control of critical tasks

PART 3 QUALITY SYSTEM PROCEDURES

3.1 Quality audit of organisation procedures
3.2 Quality audit of aircraft and components
3.3 Quality audit remedial action procedure
3.4 Certifying staff and support staff qualification and training procedures
3.5 Certifying staff and support staff records
3.6 Procedures for qualifying of quality audit personnel
3.7 Procedures for qualifying of supervisors
3.8 Procedures for qualifying of maintenance personnel
3.9 Aircraft or aircraft component maintenance tasks exemption process control

3.10 Concession control for deviation from organisations' procedures
3.11 Qualification procedure for specialised activities such as NDT, welding, etc.
3.12 Control of manufacturers' and other maintenance working teams
3.13 Human factors training procedure
3.14 Competence assessment of personnel
3.15 Training procedures for On-the-Job Training as per Section 6 of Appendix III to EMAR 66
3.16 Procedure for the issue of a recommendation to the NMAA for the issue of a MAML in accordance with EMAR 66.B.105

PART 4

This section is reserved for describing the procedures, paperwork and records associated with the CAMOs that place tasks on the maintenance organisation.

4.1 Contracting / tasking CAMO
4.2 CAMO procedures / paperwork
4.3 CAMO record completion

PART 5

5.1 Sample of documents
5.2 List of contractors/tasked organisations as per EMAR 145.A.75(b)
5.3 List of Line maintenance locations as per EMAR 145.A.75(d)
5.4 List of contracted/tasked organisations as per EMAR 145.A.70(a)(16)

PART 6 OPERATING ORGANISATION'S MAINTENANCE PROCEDURES

This section is reserved for those maintenance organisations who are also part of Operating Organisations.

PART 7 NOT APPLICABLE

PART 8 NOT APPLICABLE

GM 145.A.70(a) Maintenance Organisation Exposition (MOE)

1. The purpose of the MOE is to detail the procedures, means and methods of the maintenance organisation.

2. Compliance with its contents will assure compliance with the requirements of EMAR 145, which is a prerequisite to obtaining and retaining a maintenance organisation approval certificate.

3. EMAR 145.A.70(a)(1) to (a)(11) constitutes the 'management' part of the MOE and therefore could be produced as one document and made available to the person(s) specified under EMAR 145.A.30(b) who should be reasonably familiar with its contents. EMAR 145.A.70(a)(6) list of certifying staff and support staff may be produced as a separate document.

4. EMAR 145.A.70(a)(12) constitutes the working procedures of the maintenance organisation and therefore as stated in the requirement may be produced as any number of separate procedures manuals. It should be remembered that these documents should be cross-referenced from the management MOE.

5. Personnel are expected to be familiar with those parts of the MOE/manuals that are relevant to the maintenance work they carry out.

6. The maintenance organisation should specify in the MOE who should amend the MOE/manuals particularly in the case where there are several parts.

7. The quality manager should be responsible for monitoring the amendment of the MOE, unless otherwise agreed by the NMAA, including associated procedures manuals and submission of the proposed amendments to the NMAA. However, the NMAA may agree via a procedure stated in the amendment section of the MOE that some defined class of amendments may be incorporated without prior approval by the NMAA.

8. The MOE should cover four main parts:

a. The management MOE covering the parts specified earlier.

b. The maintenance procedures covering all aspects of how aircraft components may be accepted from outside sources and how aircraft, engines and or components will be maintained to the required standard.

c. The quality system procedures including the methods of qualifying mechanics, inspection, certifying staff, support staff and quality audit personnel.

d. Contracting/tasking procedures and paperwork.

9. The Accountable Manager's MOE statement as specified under EMAR 145.A.70(a)(1) should embrace the intent of the following paragraph and this statement may be used without amendment. Any modification to the statement should not alter the intent.

"This MOE and any associated referenced manuals define the organisation and procedures upon which the (NMAA –*see note below) EMAR 145 approval is based as required by EMAR 145.A.70. These procedures are approved by the undersigned and should be complied with, as applicable, when work orders are being progressed under the terms of the EMAR 145 approval.

It is accepted that these procedures do not override the necessity of complying with any new or amended regulation published by the (NMAA*) from time to time where these new or amended regulations are in conflict with these procedures.

It is understood that the (NMAA*) will approve this maintenance organisation whilst the (NMAA*) is satisfied that the procedures are being followed and work standards maintained. It is further understood that the (NMAA*) reserves the right to suspend, limit or revoke the approval of the maintenance organisation if the (NMAA*) has evidence that procedures are not followed or standards not upheld."

Signed .....

Dated .....

Accountable Manager and ..... (quote position) .....

For and on behalf of .....(quote maintenance organisation's name) .....

Note: Where it states (NMAA*) please insert the actual name of the pMS' NMAA, for example, MAA, DSAE, etc.

Whenever the Accountable Manager changes, it is important to ensure that the new Accountable Manager signs the paragraph 9 statement at the earliest opportunity.

Failure to carry out this action could invalidate the EMAR 145 approval.

10. When an organisation is approved against any other EMAR (or EASA equivalent Regulation) containing a requirement for an Exposition, an EMAR 145 MOE covering the differences will suffice to meet the requirements except that the EMAR 145 MOE should reference where those parts missing from this MOE are covered.

AMC 145.A.75(b) Privileges of the AMO

1. Working under the quality system of the AMO refers to the case of one maintenance organisation, not itself appropriately approved to EMAR 145 that carries out aircraft line maintenance or minor engine maintenance or maintenance of other aircraft components or a specialised service as a contractor/tasked maintenance organisation for a maintenance organisation appropriately approved under EMAR 145. To be appropriately approved to contract/task with a non-approved maintenance organisation, the AMO should have a procedure for the control of such contractors/tasked maintenance organisations as described below.

2. Maintenance of engines or engine modules other than a complete workshop maintenance check or overhaul is intended to mean any maintenance that can be carried out without disassembly of the core engine or, in the case of modular engines, without disassembly of any core module.

3. Fundamentals of contracting/tasking a non-approved maintenance organisation under EMAR 145.

3.1 The fundamental reasons for allowing an AMO to contract/task a non-approved maintenance organisation certain maintenance tasks are:

(a) To permit the acceptance of specialised maintenance services, such as, but not limited to, plating, heat treatment, plasma spray, fabrication of specified parts for minor repairs / modifications, etc., without the need for direct approval by the NMAA in such cases.

(b) To permit the acceptance of aircraft maintenance up to but not including a base maintenance check as specified in EMAR 145.A.75(b) by maintenance organisations not appropriately approved under EMAR 145 when it is unrealistic to expect direct approval by the NMAA. The NMAA should determine when it is unrealistic but in general it is considered unrealistic if only one or two AMOs intend to use the contracted/tasked maintenance organisation.

(c) To permit the acceptance of component maintenance.

(d) To permit the acceptance of engine maintenance up to but not including a workshop maintenance check or overhaul of an engine or engine module as specified in EMAR 145.A.75(b) by maintenance organisations not appropriately approved under EMAR 145 when it is unrealistic to expect direct approval by the NMAA. The determination of unrealistic is as per subparagraph (b).

3.2 When maintenance is carried out under the 'contract/task with a non-approved maintenance organisation' control system it means that for the duration of such maintenance, the EMAR 145 approval has been temporarily extended to include the non-approved contractor/tasked maintenance organisation. Consequently those parts of the non-approved contractor`s/tasked maintenance organisation's facilities, personnel and procedures involved with the AMO's products undergoing maintenance should meet EMAR 145 requirements for the duration of that maintenance and it remains the AMO's responsibility to ensure such requirements are satisfied.

3.3 For the criteria specified in subparagraph 3.1, the AMO is not required to have complete facilities for maintenance that it needs to contract/task. Nevertheless, it should have its own expertise to determine that the non-approved contractor/tasked maintenance organisation meets the necessary standards. However, a maintenance organisation cannot be approved unless it has the in-house facilities, procedures and expertise to carry out the majority of maintenance for which it wishes to be approved in terms of the number of class ratings.

3.4 The AMO may find it necessary to include several specialist non-approved contractors/tasked maintenance organisations to enable it to be approved to completely certify the release to service of a particular product. Examples could be specialist welding, electro-plating, painting etc. To authorise the use of such non-approved contractors/tasked maintenance organisations, the NMAA should be satisfied that the AMO has the necessary expertise and procedures to control such non-approved contractors/tasked maintenance organisations.

3.5 An AMO working outside the scope of its approval schedule is deemed to be not approved for this work. Such an AMO should in this circumstance operate only under the contracted/tasked control of another AMO.

3.6 Authorisation to contract/task non-approved maintenance organisations is indicated by the NMAA accepting the MOE containing a specific procedure on the control of non-approved contractors/tasked maintenance organisations.

4. Principal EMAR 145 procedures for the control of contractors/tasked maintenance organisations not approved under EMAR 145.

4.1 A pre-audit procedure should be established whereby the AMO's 'contract/task a non-approved maintenance organisation' control section, which may also be the EMAR 145.A.65(c) quality system independent audit section, should audit a prospective non-approved contractor/tasked maintenance organisation to determine whether those services of the non-approved contractor/tasked maintenance organisation that it wishes to use meet the intent of EMAR 145.

4.2 The AMO should assess to what extent it will use the non-approved contractor`s/tasked maintenance organisation's facilities. As a general rule the AMO should require its own paperwork, approved data and material/spare parts to be used, but it could permit the use of tools, equipment and personnel from the non-approved contractor/tasked maintenance organisation as long as such tools, equipment and personnel meet the requirements of EMAR 145. In the case of non-approved contractors/tasked maintenance organisations who provide specialised services it may, for practical reasons, be necessary to use their specialised services personnel, approved data and material subject to acceptance by the AMO.

4.3 Unless the contracted/tasked maintenance work can be fully inspected on receipt by the AMO, the AMO should supervise the inspection and release from the non-approved contractor/tasked maintenance organisation. Such activities should be fully described in the MOE. The AMO should consider whether to use its own staff or authorise the non-approved contractor's/tasked maintenance organisation's staff.

4.4 The CRS for components may be issued either at the non-approved contractor/tasked maintenance organisation or at the AMO facility by staff holding a certification authorisation in accordance with EMAR 145.A.30 as appropriate. Such staff would normally come from the AMO but may otherwise be a person from the non-approved contractor/tasked maintenance organisation who meets the AMO certifying staff standard which itself is approved by the NMAA via the MOE. The CRS for components and/or the EMAR Form 1 should always be issued under the AMO approval reference.

4.5 The ‘contract/task a non-approved maintenance organisation’ control procedure should record audits of the non-approved contractor/tasked maintenance organisation, to have a corrective action follow-up plan and to know when non-approved contractors/tasked maintenance organisations are being used. The procedure should include a clear revocation process for non-approved contractors/tasked maintenance organisations who do not meet the AMO’s requirements.

4.6 The AMO's quality audit staff should audit the ‘non-approved maintenance organisation contract/tasking control section’ and sample audit non-approved contractors/tasked maintenance organisations unless this task is already carried out by the quality audit staff as stated in subparagraph 4.1.

4.7 The contract between the AMO and the non-approved contractor/tasked maintenance organisation should contain a provision for the NMAA or a qualified entity acting on behalf of the NMAA to have right of access to the non-approved contractor/tasked maintenance organisation.

AMC 145.A.80 Limitations on the AMO

This paragraph is intended to cover the situation where an AMO may temporarily not hold all the necessary tools, equipment etc., for an aircraft type or variant specified in the AMO’s approval. This paragraph means that the NMAA need not amend the approval to delete the aircraft type or variants on the basis that it is a temporary situation and there is a commitment from the AMO to re-acquire tools, equipment etc. before maintenance on the type may recommence.

SECTION B

PROCEDURES FOR NATIONAL MILITARY AIRWORTHINESS AUTHORITIES

AMC 145.B.10(a) NMAA – General

1. In deciding upon the required organisational structure, the NMAA should review the number of certificates to be issued, the number and size of potential AMOs within that pMS, as well as the level of military aviation activity, number and complexity of aircraft and the size of the pMS's aviation industry.

2. The NMAA should retain effective control of important surveillance functions and not delegate them in such a way that AMOs, in effect, regulate themselves in airworthiness matters.

3. The set-up of the organisational structure should ensure that the various tasks and obligations of the NMAA are not relying on individuals. That means that a continuing and undisturbed fulfilment of these tasks and obligations of the NMAA should also be guaranteed in case of illness, accident or leave of individuals.

AMC 145.B.10(c) NMAA – Qualification and training

1. NMAA surveyors should have:

1.1 practical experience and expertise in the application of aviation safety standards and safe operating practices;

1.2 comprehensive knowledge of:

a. relevant parts of national implementing rules/regulations, certification specifications, airworthiness codes and guidance material;

b. the NMAA's procedures;

c. the rights and obligations of a surveyor;

d. quality systems;

e. continuing airworthiness management;

f. operational procedures when affecting the continuing airworthiness management of the aircraft or the maintenance.

1.3 training on auditing techniques.

1.4 five years relevant work experience to be allowed to work as a surveyor independently. This may include, but should not be limited to, experience gained during training to obtain the subparagraph 1.5 (below) qualification.

1.5 a relevant engineering degree or an aircraft maintenance technician qualification with appropriate additional education. 'Relevant engineering degree' means an engineering degree from aeronautical, mechanical, electrical, electronic, avionic or other studies relevant to the maintenance and continuing airworthiness of aircraft/aircraft components.

1.6 knowledge of maintenance standards, including Fuel Tank Safety (FTS) training as described in "Appendix IV to AMC EMAR 145.A.30(e) and AMC EMAR 145.B.10(c)".

1.7 knowledge and understanding of Human Factors, as described in EMAR 145.

2. In addition to technical competency, surveyors should have a high degree of integrity, be impartial in carrying out their tasks, be tactful, and have a good understanding of human nature.

3. A programme for continuation training should be developed ensuring that the surveyors remain competent to perform their allocated tasks.

AMC 145.B.10(d) NMAA – Procedures

The documented procedures should contain the following information:

(a) The pMS' designation of the NMAA.

(b) The title(s) and name(s) of the manager(s) of the NMAA and their duties and responsibilities.

(c) Organisation chart(s) showing associated chains of responsibility of the senior persons.

(d) A procedure defining the qualifications for staff together with a list of staff authorised to sign certificates.

(e) A general description of the facilities.

(f) Procedures specifying how the NMAA ensures compliance with EMAR 145.

AMC 145.B.20(a) Initial approval (*)

1. 'The NMAA shall formally indicate its acceptance of the personnel,' means that the EMAR Form 4 should be used for this activity. With the exception of the Accountable Manager, an EMAR Form 4 should be completed for each person nominated to hold a position as required by EMAR 145.A.30(b).

2. Formal indication of acceptance should be by use of the EMAR Form 4 or in the case of the Accountable Manager via approval of the MOE containing the Accountable Manager's commitment statement.

3. The NMAA may reject an Accountable Manager where there is clear evidence that they previously held a senior position in any other approved Organisation and abused that position by not complying with the particular requirements in force.

* See Appendix I to AMC EMAR 145.B.20(a): EMAR Form 4

AMC 145.B.20(b) Initial approval

Verification that the maintenance organisation complies with the MOE procedures should be established by the NMAA approving the MOE.

AMC 145.B.20(c) Initial approval

1. The NMAA should determine by whom, and how the audit should be conducted. For example, for a large maintenance organisation, it will be necessary to determine whether one large team audit or a short series of small team audits or a long series of single man audits are most appropriate for the particular situation.

2. It is recommended that the audit is carried out on a product line type basis in that, for example, in the case of an maintenance organisation with A400M and C-130 ratings, the audit be concentrated on one type only for a full compliance check and dependent upon the result, the second type may only require a sample check against those activities seen to be weak on compliance for the first type.

3. The NMAA auditing surveyor should always ensure that he/she is accompanied throughout the audit by a senior technical member of the maintenance organisation. Normally this is the quality manager. The reason for being accompanied is to ensure the maintenance organisation is fully aware of any findings during the audit.

4. The auditing surveyor should inform the senior technical member of the maintenance organisation at the end of the audit visit on all findings made during the audit.

AMC 145.B.20(e) Initial approval (*)

1. The audit report form should be the EMAR Form 6.

2. A quality review of the EMAR Form 6 audit report form should be carried out by a competent independent person nominated by the NMAA. The review should take into account the relevant paragraphs of EMAR 145, the categorisation of finding levels and the closure action taken. Satisfactory review of the audit form should be indicated by a signature on the audit form.

* See Appendix II to AMC EMAR 145.B.20(e): EMAR Form 6

AMC 145.B.20(f) Initial approval

1. The reports should include the date each finding was cleared together with reference to the NMAA report or letter that confirmed the clearance.

2. There may be occasions when the NMAA surveyor may find situations in the applicant's maintenance organisation on which he/she is unsure about compliance. In this case, the maintenance organisation should be informed about possible non-compliance at the time and the fact that the situation will be reviewed within the NMAA before a decision is made. If the decision is a finding of being in compliance then a verbal confirmation to the maintenance organisation should suffice.

3. Findings should be recorded on the audit report form with a provisional categorisation as a level 1 or 2. Subsequent to the audit visit that identified the particular findings, the NMAA should review the provisional finding levels, adjusting them if necessary and change the categorisation from "provisional" to "confirmed".

4. All findings should be confirmed in writing to the applicant maintenance organisation within 2 weeks of the audit visit.

AMC 145.B.25(a) Issue of approval

1. NOT APPLICABLE.

2. NOT APPLICABLE.

3. The NMAA should indicate approval of the MOE in writing.

AMC 145.B.25(b) Issue of approval

The validity of the EMAR 145 approval should be of unlimited duration.

AMC 145.B.25(c) Issue of approval

The numeric sequence should be unique to the particular AMO.

AMC 145.B.30(a) Continuing oversight

Credit may be claimed by the NMAA surveyor(s) for specific item audits completed during the preceding 23 month period subject to four conditions:

- the specific item audit should be the same as that required by EMAR 145 latest amendment; and

- there should be satisfactory evidence on record that such specific item audits were carried out and that all corrective actions have been taken; and

- the NMAA surveyor(s) should be satisfied that there is no reason to believe standards have deteriorated in respect of those specific item audits being granted a back credit; and

- the specific item audit being granted a back credit should be audited not later than 24 months after the last audit of the item.

AMC 145.B.30(b) Continuing oversight

1. Where the NMAA has decided that a series of audit visits are necessary to arrive at a complete audit of an AMO, the program should indicate which aspects of the approval will be covered on each visit.

2. It is recommended that part of an audit concentrates on two on-going aspects of the EMAR 145 approval, namely the AMO's internal self-monitoring quality reports produced by the quality monitoring personnel to determine if the AMO is identifying and correcting its problems and secondly the number of concessions granted by the quality manager.

3. At the successful conclusion of the audit including approval of the MOE, an audit report form should be completed by the auditing surveyor including all recorded findings, closure actions and recommendation. An EMAR Form 6 should be used for this activity.

4. The Accountable Manager should be seen at least once every 24 months to ensure he/she fully understands the significance of the approval.

5. In the case of line stations the NMAA can adopt a sampling program based upon the number of line stations and their complexity.

AMC 145.B.35 Changes

The NMAA should have adequate control over any changes to the management personnel specified in EMAR 145.A.30(a) and (b) and such changes in personnel should require an amendment to the MOE.

AMC 145.B.35(a) Changes

The applicable part(s) of the EMAR Form 6 should be used for the changes to the EMAR 145 approval.

AMC 145.B.35(b) Changes

The primary purpose of this paragraph is to enable the AMO to remain approved if agreed by the NMAA during negotiations about any of the specified changes. Without this paragraph the approval would automatically be suspended in all cases.

AMC 145.B.40 MOE amendments

1. It is recommended that a simple MOE status sheet is maintained which contains information on when an amendment was received by the NMAA and when it was approved.

2. The NMAA may define some class of amendments to the MOE which may be incorporated without prior authority approval. In this case a procedure should be stated in the amendment section of the MOE. The MOE chapter dealing with scope of work/approval should not be subject to this procedure.

3. The AMO should submit each MOE amendment to the NMAA whether it is an amendment for direct approval or an indirect approval amendment. Where the amendment requires approval by the NMAA, the NMAA should indicate its approval in writing when satisfied. Where the amendment has been submitted under the indirect approval procedure the NMAA should acknowledge receipt in writing.

AMC 145.B.50(a) Findings

In practical terms a level 1 finding is where a NMAA finds a significant non-compliance with EMAR 145. The following are examples of level 1 findings:

- Failure to gain access to the AMO during normal operating hours of the AMO in accordance with EMAR 145.A.90(a)(2) after two written requests.

- If the calibration control of equipment as specified in EMAR 145.A.40(b) had previously broken down on a particular type product line such that most "calibrated" equipment was suspect from that time then that would be a level 1 finding.

Note: A complete product line is defined as all the aircraft, engines or components of a particular type.

For a level 1 finding it may be necessary for the NMAA to ensure that further maintenance and re-certification of all affected products is accomplished, dependent upon the nature of the finding.

In practical terms where a NMAA surveyor finds a non-compliance with EMAR 145 against one product, it is deemed to be a level 2 finding. The following are examples of level 2 findings:

- One time use of a component without any serviceable tag.

- The training documents of the certifying staff or support staff are not completed.

AMC 145.B.50(b) Findings

Where the AMO has not implemented the necessary corrective action within that period it may be appropriate to grant a further period of up to three months, subject to the NMAA notifying the Accountable Manager. In exceptional circumstances and subject to a realistic action plan being in place, the NMAA may specifically vary the maximum 6 month corrective action period. However, in granting such a change the past performance of the AMO should be considered.

AMC 145.B.55 Record-keeping

1. The record-keeping system should ensure that all records are accessible whenever needed within a reasonable time. These records should be organised in a consistent way throughout the NMAA (chronological, alphabetical order, etc.).

2. All records containing sensitive data regarding applicants or AMOs should be stored in a secure manner with controlled access to ensure confidentiality of this kind of data.

3. All computer hardware used to ensure data backup should be stored in a different location from that containing the working data in an environment that ensures they remain in good condition. When hardware or software changes take place special care should be taken to ensure that all necessary data continues to be accessible at least through the full period specified in EMAR 145.B.55.

GM 145.B.55 Record-keeping

The NMAA may elect to use either a paper or computer system or any combination of both subject to appropriate controls.

AMC to Appendix I to EMAR 145

AMC to EMAR Form 1 is contained in the EMAR Forms document.

APPENDICES TO AMCs

Appendix I to AMC 145.B.20(a): EMAR Form 4

EMAR Form 4 is contained in the EMAR Forms document.

Appendix II to AMC 145.B.20(e): EMAR Form 6

EMAR Form 6 is contained in the EMAR Forms document.

Appendix III to EMAR AMC 145.A.15 EMAR Form 2

EMAR Form 2 is contained in the EMAR Forms document.

Appendix IV to EMAR AMC 145.A.30(e) and EMAR AMC 145.B.10(c)

Fuel Tank Safety training

This Appendix includes general instructions for providing training on Fuel Tank Safety (FTS) issues.

A) Applicability:

As nationally defined by the NMAA.

B) Affected organisations:

AMOs involved in the maintenance of aircraft specified in paragraph A) and fuel system components installed on such aircraft when the maintenance data are affected by CDCCL (if applicable).

CAMO's involved in the continuing airworthiness management of aeroplanes specified in paragraph A).

NMAA responsible as per EMAR 145.B.30 for the oversight of the AMOs specified in this paragraph B and as per EMAR M.B.704 for the oversight of CAMOs specified in this paragraph B).

C) Persons from affected organisations who should receive training:

Phase 1 only:

The group of persons representing the maintenance management structure of the AMO, the quality manager and the staff required to quality monitor the AMO.

Personnel of the NMAA responsible as per EMAR 145.B.30 for the oversight of AMOs specified in paragraph B) and as per EMAR M.B.704 for the oversight of CAMOs specified in paragraph B).

Phase 1 + Phase 2 + Continuation training:

Personnel of the AMO required to plan, perform, supervise, inspect and certify the maintenance of aircraft and fuel system components specified in paragraph A).

Personnel of the CAMO involved in the management and review of the continuing airworthiness of aircraft specified in paragraph A).

D) General requirements of the training courses

Phase 1 – Awareness

The training should be carried out before the person starts to work without supervision but not later than 6 months after joining the AMO.

Type: Should be an awareness course with the principal elements of the subject. It may take the form of a training bulletin, or other self-study or informative session. Signature of the reader is required to ensure that the person has passed the training.

Level: It should be a course at the level of familiarisation with the principal elements of the subject.

Objectives:

The trainee should, after the completion of the training:

1. Be familiar with the basic elements of the fuel tank safety issues.

2. Be able to give a simple description of the historical background and the elements requiring a safety consideration, using common words and showing examples of non-conformities.

3. Be able to use typical terms.

Content: The course should include:

- a short background showing examples of FTS accidents or incidents,

- the description of concept of fuel tank safety (and CDCCL if applicable),

- some examples of manufacturers documents showing CDCCL items (if applicable),

- typical examples of FTS defects,

- some examples of (Military) TC/ STC holders repair data,

- some examples of maintenance instructions for inspection.

Phase 2 – Detailed training

Type: Should be a more in-depth internal or external course. It should not take the form of a training bulletin, or other self-study. An examination should be required at the end, which should be in the form of a multi choice questionnaire, and the pass mark of the examination should be 75%.

Level: It should be a detailed course on the theoretical and practical elements of the subject.

The training may be made either:

- in appropriate facilities containing examples of components, systems and parts affected by FTS issues. The use of films, pictures and practical examples on FTS is recommended; or

- by attending a distance course (e-learning or computer based training) including a film when such film meets the intent of the objectives and content here below. An e-learning or computer based training should meet the following criteria:

  - A continuous evaluation process should ensure the effectiveness of the training and its relevance;

  - Some questions at intermediate steps of the training should be proposed to ensure that the trainee is authorized to move to the next step;

  - The content and results of examinations should be recorded;

  - Access to an instructor in person or at distance should be possible in case support is needed.

A duration of 8 hours for phase 2 is an acceptable compliance.

When the course is provided in a classroom, the instructor should be very familiar with the data in Objectives and Guidelines. To be familiar, an instructor should have attended himself a similar course in a classroom and made additionally some lecture of related subjects.

Objectives:

The attendant should, after the completion of the training:

- have knowledge of the history of events related to FTS issues and the theoretical and practical elements of the subject, have an overview of all relevant requirements and/or regulations as defined by the NMAA, be able to give a detailed description of the concept of fuel tank system Airworthiness Limitation Instructions (ALI) (including CDCCL if applicable), and using theoretical fundamentals and specific examples;

- have the capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner;

- have knowledge on how the above items affect the aircraft;

- be able to identify the components or parts or the aircraft subject to FTS from the manufacturer’s documentation,

- be able to plan the action or apply a Service Bulletin, an AD or national equivalent.

Content: Following the guidelines described in paragraph E.

Continuation training

The AMO/CAMO should ensure that the continuation training is required in each two years period. The syllabus of the training programme referred to in 3.4 of the

MOE or 0.3(e) of the CAME should include the additional syllabus for this continuation training.

The continuation training may be combined with the phase 2 training in a classroom or at distance.

The continuing training should be updated when new instructions are issued which are related to the material, tools, documentation and manufacturer's or NMAA's directives.

E) Guidelines for preparing the content of Phase 2 courses.

The following guidelines should be taken into consideration when the phase 2 training programme is being established:

a) understanding of the background and the concept of FTS;

b) how the mechanics can recognise, interpret and handle the improvements in the instruction for continuing airworthiness that have been made or are being made regarding the fuel tank system maintenance;

c) awareness of any hazards especially when working on the fuel system, and when the Flammability Reduction System (FRS) using nitrogen is installed.

Paragraphs a) b) and c) above should be introduced in the training programme addressing the following issues:

i) The theoretical background behind the risk of FTS: the explosions of mixtures of fuel and air, the behaviour of those mixtures in an aviation environment, the effects of temperature and pressure, energy needed for ignition etc, the 'fire triangle'.

Explain 2 concepts to prevent explosions:

(1) ignition source prevention and

(2) flammability reduction.

ii) The major accidents related to fuel tank systems, the accident investigations and their conclusions.

iii) ignition prevention program initiatives and goals, to identify unsafe conditions and to correct them, to systematically improve fuel tank maintenance.

iv) Explain briefly the concepts that are being used: the results of Special Federal Aviation Regulation 88 (SFAR 88) of the Federal Aviation Administration (FAA), Joint Aviation Authorities Temporary Guidance Leaflet 47(JAA TGL 47), Joint Aviation Authorities Interim Policy Letter 25/12 (JAA INT/POL 25/12) and any other unique NMAA initiatives: modifications, airworthiness limitations items and CDCCL (if applicable).

v) Where relevant information can be found and how to use and interpret this information in the instructions for continuing airworthiness (aircraft maintenance manuals, component maintenance manuals, Service Bulletins…).

vi) FTS during maintenance: fuel tank entry and exit procedures, clean working environment, what is meant by configuration control, wire separation, bonding of components etc.

vii) FRS when installed: reason for their presence, their effects, the hazards of an FRS using nitrogen for maintenance, safety precautions in maintenance/working with an FRS.

viii) Recording maintenance actions, recording measures and results of inspections.

The training should include a representative number of examples of defects and the associated repairs as required by the (Military) TC/ STC holder's maintenance data.

F) Approval of training

For AMOs/CAMOs, the approval of the initial and continuation training programme and the content of the examination can be achieved through the MOE/CAME.

EMAR 145 AMC & GM Ed 1.1* –vs – EMAR 145 AMC & GM Ed 1.2 TABLE OF CHANGES

In accordance with the direction received from the MAWA Forum, all amended paragraphs from EMAR 145 Edition 1.1 are indicated by the use of a 'sidebar' in the margin. This can be readily cross-referenced using this table which details each change.

Nomenclature Used:

Additions to the text introduced in Edition 1.2 are tabulated below in red. Deletions of text from Edition 1.1 are indicated by the use of ►◄. In both cases, the reason for the difference is clarified in the 'notes' column'.

If a paragraph is not included on the table, then no amendments have been made (but see 'Note' below).

Note: The following minor changes have been introduced throughout the document. If these are the *only* changes in a paragraph, then they are not included in this table and sidebars have not been used:

1. 'Maintenance Organisation Exposition' has been replaced by 'MOE'
2. 'Approved Maintenance Organisation' has been replaced by 'AMO'
3. Reference to 'B mil' removed (EMAR 66 does not contain the B mil rating).
4. 'or national equivalent qualification' removed because EMAR 66 has been published.
5. 'airworthiness directive' has been replaced by 'AD'.
6. 'aircraft maintenance licence' and 'Military Aircraft Maintenance Licence' have both been replaced by 'MAML'.
7. 'certificate of release to service' has been replaced by 'CRS'
8. 'Continuing Airworthiness Management Organisation' has been replaced by 'CAMO'.
9. 'service bulletin' has ben replaced by Service Bulletin.
10. 'critical design configuration control limitation' has been replaced by 'CDCCL'.
11. 'fuel tank safety' has been replaced by FTS.
12. 'sub-paragraph' has been replaced by 'subparagraph'.
13. 'organisation' has been replaced by 'maintenance organisation' or 'AMO' for clarity where appropriate (See Note 4, page 4)

* Note: EMAR 145 Sect A AMC & GM and EMAR 145 Sect B AMC were originally approved as two separate documents. For completeness, this Table of Changes compares the text within EMAR 145 AMC & GM Ed 1.2 with both previous documents as if they were a single document.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
145.A.15 Application		In a form and in a manner established by the NMAA means that the application should be made by using an EMAR Form 2 (refer to Appendix III to EMAR AMC 145).	In a form and ►◄ manner established by the NMAA means that the application should be made by using an EMAR Form 2 ►◄.	1. Wording changed to match that contained in the Requirement. 2. Unnecessary text - all EMAR Forms are contained ion the EMAR Forms document.
AMC 145.A.20 Terms of approval		Table 1 in Appendix II of EMAR 145 identifies the S1000D Chapter Reference for the category C component rating.	Table 1 in Appendix II of EMAR 145 identifies the S1000D Chapter Reference for the Category C component rating. If the maintenance manual (or equivalent document) does not follow the S1000D Chapter reference, the corresponding subjects still apply to the applicable C rating.	1. Category capitalised for correct use of nomenclature. 2. Second sentence added for clarity for those aircraft that do not use the S1000D Chapter Reference system.
AMC 145.A.30(b) Personnel requirements	3.	The base maintenance manager is responsible for ensuring that all maintenance required to be carried out in the hangar, plus any defect rectification carried out during base maintenance, is carried out to the design and quality standards specified in EMAR 145.A.65 (b). The base maintenance manager is also responsible for any corrective action resulting from the quality compliance monitoring of EMAR 145.A.65 (c).	The base maintenance manager is responsible for ensuring that all required base maintenance ►◄, plus any defect rectification carried out during base maintenance, is carried out to the design and quality standards specified in EMAR 145.A.65(b). The base maintenance manager is also responsible for any corrective action resulting from the quality compliance monitoring of EMAR 145.A.65(c).	1. Sentence reworded for clarity 2. 'in the hangar' deleted because not all base maintenance takes place in the hangar (eg compass swings)
	4.	The line maintenance manager is responsible for ensuring that all maintenance required to be carried out on the line including line defect rectification is carried out to the standards specified in EMAR 145.A.65 (b) and also responsible for any corrective action resulting from the quality compliance monitoring of EMAR 145.A.65 (c).	The line maintenance manager is responsible for ensuring that all line maintenance required to be carried out ►◄ including line defect rectification is carried out to the standards specified in EMAR 145.A.65(b) and also responsible for any corrective action resulting from the quality compliance monitoring of EMAR 145.A.65(c).	1. 'On the line' deleted because some line maintenance can take place in a hangar if required.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.30(d) Personnel requirements	1.	Has sufficient staff means that the organisation employs or contracts such staff of which at least half the staff that perform maintenance in each workshop, hangar or flight line on any shift should be employed to ensure organisational stability. Contract staff, being part time or full time should be made aware that when working for the organisation they are subjected to compliance with the organisation's procedures specified in the Maintenance Organisation Exposition relevant to their duties. For the purpose of this sub-paragraph, employed means the person is directly employed as an individual by the maintenance organisation approved under EMAR 145 whereas contracted means the person is employed by another organisation and contracted by that organisation to the maintenance organisation approved under EMAR 145. In the case of MOD/Industrial partnered support arrangements, the MOD element of the organisation should be considered, for the purpose of this clause, as part of the industry workforce.	►◄ 'Sufficient' means that the maintenance organisation employs or contracts/tasks competent staff, as detailed in the man-hour plan, of which at least half the staff that perform maintenance in each workshop, hangar or flight line on any shift should be employed to ensure organisational stability. ►◄ For the purpose of meeting a specific operational necessity, a temporary increase of the proportion of contracted staff may be permitted to the maintenance organisation by the NMAA, in accordance with an approved procedure which should describe the extent, specific duties, and responsibilities for ensuring adequate organisation stability. For the purpose of this sub-paragraph, employed means the person is directly employed as an individual by the maintenance organisation whereas contracted/tasked means the person is employed by another organisation or military unit and contracted/tasked by that organisation to the maintenance organisation. In the case of MOD/Industrial partnered support arrangements, the MOD element of the maintenance organisation should be considered, for the purpose of this clause, as part of the industry workforce.	1. 'maintenance' added for clarity 2. Start of sentence amended for improved readability. 3. Reference to 'contracts' also includes 'tasked', because military units may not be contracted but tasked by other military units. 4. 'as detailed in the man-hour plan' added by EASA at 2011/11/R. 5. 'For the purpose of....' added by EASA at 2011/11/R.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	2.	NOT APPLICABLE.	The maintenance man-hour plan should take into account all activities carried out outside the scope of the EMAR 145 approval. The planned absence (for training, vacations, etc.) should be considered when developing the man-hour plan.	This paragraph was amended at EASA amendment 2012/004/R. Paragraph was originally marked as 'NOT APPLICABLE' for military approvals. However, new text has been reviewed and has been reinserted, with amendments for military context (any military activities (eg military training etc) must be taken into account).
	3.	The maintenance man-hour plan should relate to the anticipated maintenance work load except that when the organisation cannot predict such workload, due to the short term nature of its contracts or unpredictable variations in operational military tasking, then such a plan should be based upon the minimum maintenance workload needed for commercial viability or to retain the military effectiveness of the organisation. Maintenance work load includes all necessary work such as, but not limited to, planning, maintenance record checks, production of worksheets/cards in paper or electronic form, accomplishment of maintenance, inspection and the completion of maintenance records.	The maintenance man-hour plan should relate to the anticipated maintenance work load except that when the maintenance organisation cannot predict such workload, due to the short term nature of its contracts/tasking or unpredictable variations in operational military tasking, then such a plan should be based upon the minimum maintenance workload needed for organisational viability ►◄. Maintenance work load includes all necessary work such as, but not limited to, planning, maintenance record checks, production of worksheets/cards in paper or electronic form, accomplishment of maintenance, inspection and the completion of maintenance records.	1. 'maintenance' added or clarity. 2. Reference to 'contracts' also includes 'tasked', because military units may not be contracted but tasked by other military units. 3. 'commercial' changed to 'organisational' for use in military context. This change negates the need for the expression 'to retain the military effectiveness of the organisation', which has been deleted.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 1 145.A.30(e) Personnel requirements		The referenced procedure requires amongst others that planners, mechanics, specialised services staff, supervisors and certifying staff are assessed for competence by _on the job' evaluation and/or by examination relevant to their particular job role within the organisation before unsupervised work is permitted.	Competence should be defined as a measurable skill or standard of performance, knowledge and understanding, taking into consideration attitude and behaviour. The referenced procedure requires amongst others that planners, mechanics, specialised services staff, supervisors, certifying staff and support staff, whether employed or contracted, are assessed for competence ►◄ before unsupervised work commences and competence is controlled on a continuous basis. Competence should be assessed by evaluation of: - on-the-job performance and/or testing of knowledge by appropriately qualified personnel; and - records for basic, organisational, and/or product type and differences training; and - experience records. Validation of the above could include a confirmation check with the organisation(s) that issued such document(s). For that purpose, experience/training may be recorded in a document such as a log book or based on the suggested template in GM 3 to EMAR 145.A.30(e).	Note: This section of AMC was replaced by 4 new paragraphs of AMC at EASA amendment 2011/11/R. These have been combined with the existing EMAR text. Changes are highlighted in red.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
		A record of the qualification and competence assessment should be kept.	As a result of this assessment, an individual's qualification should determine: - which level of ongoing supervision would be required or whether unsupervised work could be permitted. - whether there is a need for additional training. A record of the qualification and competence assessment should be kept. This should include copies of all documents that attest to qualification, such as the MAML and/or any authorisation held, as applicable. For a proper competence assessment of its personnel, the maintenance organisation should consider that: 1. In accordance with the job function, adequate initial and recurrent training should be provided and recorded to ensure continued competence so that it is maintained throughout the duration of employment/contract. 2. All staff should be able to demonstrate knowledge of and compliance with the maintenance organisation's procedures, as applicable to their duties.	Note: This section of AMC was replaced by 4 new paragraphs of AMC at EASA amendment 2011/11/R. These have been combined with the existing EMAR text. Changes are highlighted in red.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
			3. All staff should be able to demonstrate an understanding of human factors and human performance issues in relation with their job function and be trained as per AMC 2 to EMAR 145.A.30(e).	Note: This section of AMC was replaced by 4 new paragraphs of AMC at EASA amendment 2011/11/R. These have been combined with the existing EMAR text. Changes are highlighted in red.
		Adequate initial and recurrent training should be provided and recorded to ensure continued competence.	►◄	Deleted because text is included above.
		To assist in the assessment of competence, job descriptions are recommended for each job role in the organisation. Basically, the assessment should establish that:	4. To assist in the assessment of competence and to establish the training needs analysis, job descriptions are recommended for each job function in the maintenance organisation. Job descriptions should contain sufficient criteria to enable the required competence assessment. 5. Criteria should allow the assessment to establish that, among others (titles might be different in each organisation): - Managers are able to properly manage the work output, processes, resources and priorities described in their assigned duties and responsibilities in a safe compliant manner in accordance with requirements and maintenance organisation procedures.	
		Planners are able to interpret maintenance requirements into maintenance tasks, and have an appreciation that they have no authority to deviate from the maintenance data.	Planners are able to interpret maintenance requirements into maintenance tasks, and have an understanding that they have no authority to deviate from the maintenance data.	

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
			- Supervisors are able to ensure that all required maintenance tasks are carried out and, where not completed or where it is evident that a particular maintenance task cannot be carried out to the approved maintenance data, then such problems should be reported to the EMAR 145.A.30(c) person for appropriate action. In addition, for those supervisors, who also carry out maintenance tasks, that they understand such tasks should not be undertaken when incompatible with their management responsibilities.	Note: This section of AMC was replaced by 4 new paragraphs of AMC at EASA amendment 2011/11/R. These have been combined with the existing EMAR text. Changes are highlighted in red.
		Mechanics are able to carry out maintenance tasks to any standard specified in the maintenance data and will notify supervisors of mistakes requiring rectification to re-establish required maintenance standards.	Mechanics are able to carry out maintenance tasks to any standard specified in the maintenance data and should notify supervisors of defects or mistakes requiring rectification to re-establish required maintenance standards.	
		Specialised services staff are able to carry out specialised maintenance tasks to the standard specified in the maintenance data and will both inform and await instructions from their supervisor in any case where it is not possible to complete the specialised maintenance in accordance with the maintenance data.	Specialised services staff are able to carry out specialised maintenance tasks to the standard specified in the maintenance data. ►◄ They should be able to communicate with supervisors and report accurately when necessary.	

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
		Supervisors are able to ensure that all required maintenance tasks are carried out and where not completed or where it is evident that a particular maintenance task cannot be carried out to the maintenance data, then such problems will be reported to the EMAR 145.A.30 (c) person for appropriate action. In addition, for those supervisors who also carry out maintenance tasks, that they understand such tasks should not be undertaken when incompatible with their management responsibilities.	►◄	Note: This section of AMC was replaced by 4 new paragraphs of AMC at EASA amendment 2011/11/R. These have been combined with the existing EMAR text. Changes are highlighted in red. Text moved to paragraph above.
			- Support staff are able to determine that relevant maintenance tasks have been carried out to the required standard.	Text included above
		Certifying staff are able to determine when the aircraft or aircraft component is ready to release to service and when it should not be released to service.	Certifying staff are able to determine when the aircraft or aircraft component is ready to release to service and when it should not be released to service.	
		In the case of planners, specialised services staff, supervisors and certifying staff, a knowledge of organisation procedures relevant to their particular role in the organisation is important. The aforementioned list is not exclusive and may include other categories of personnel.	►◄	Text included above

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
		Quality audit staff are able to monitor compliance with EMAR 145 identifying non-compliance in an effective and timely manner so that the organisation may remain in compliance with EMAR 145.	Quality audit staff are able to monitor compliance with EMAR 145 identifying non-compliance in an effective and timely manner so that the Approved Maintenance Organisation (AMO) may remain in compliance with EMAR 145. Competence assessment should be based upon the procedure specified in GM 2 to EMAR 145.A.30(e).	

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 2 145.A.30(e) Personnel requirements		In respect to the understanding of the application of human factors and human performance issues, maintenance, management, and quality audit personnel should be assessed for the need to receive initial human factors training, but in any case all maintenance, management, and quality audit personnel should receive human factors continuation training. This should concern to a minimum: - Nominated persons, managers, supervisors; - Certifying staff, technicians, and mechanics; - Technical support personnel such as, planners, engineers, technical record staff; - Quality control/assurance staff; - Specialised services staff; - Human factors staff/ human factors trainers; - Store department staff, purchasing department staff; - Ground equipment operators; - Contract staff in the above categories.	In respect to the understanding of the application of human factors and human performance issues, all maintenance organisation ►◄personnel should have received an initial and continuation human factors training. This should concern to a minimum: - Nominated persons, managers, supervisors; - Certifying staff, support staff and mechanics; - Technical support personnel such as planners, engineers, technical record staff; - Quality control/assurance staff; - Specialised services staff; - Human factors staff/ human factors trainers; - Store department staff, purchasing department staff; - Ground equipment operators; - Contracted/tasked staff in the above categories.	Note: This section of AMC was replaced by 4 new paragraphs of AMC at EASA amendment 2011/11/R. These have been combined with the existing EMAR text. Changes are highlighted in red. Reference to ‘contracts’ also includes ‘tasked’, because military units may not be contracted but tasked by other military units. (Note: this phrase was removed by EASA at 2011/011/R, but was retained because of its applicability to the military domain.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	1.	Depending on the result of the evaluation as specified in paragraph 6, initial training should be provided to personnel within 6 months of joining the maintenance 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 maintenance organisation approved under either EASA Part-145 or EMAR 145, MOD personnel joining from another unit and temporary staff should be assessed for the need to receive any additional human factors training to meet the new maintenance organisation‘s approval under EMAR 145 human factors training standard.	All personnel, including personnel being recruited from any other organisation should receive initial human factors training compliant with the maintenance organisation’s training standards prior to commencing actual job function, unless their competence assessment justifies that there is no need for such training. Newly directly employed personnel working under direct supervision may receive training within 6 months after joining the maintenance organisation.	Paragraph significantly changed at EASA amendment 2011/011/R. Revised wording considered clearer.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	2.	The purpose of human factors continuation training is primarily to ensure that staff remain current in terms of human factors and also to collect feedback on human factors issues. Consideration should be given to the possibility that such training has the involvement of the quality department. There should be a procedure to ensure that feedback is formally passed from the trainers to the quality department to initiate action where necessary. Human factors continuation training should be of an appropriate duration in each two year period in relation to relevant quality audit findings and other internal/external sources of information available to the organisation on human errors in maintenance.	The purpose of human factors continuation training is primarily to ensure that staff remain current in terms of human factors and also to collect feedback on human factors issues. Consideration should be given to the possibility that such training has the involvement of the quality department. There should be a procedure to ensure that feedback is formally passed from the trainers to the quality department to initiate action where necessary. Human factors continuation training should be of an appropriate duration in each two year period in relation to relevant quality audit findings and other internal/external sources of information on human errors in maintenance available to the maintenance organisation.	Sentence reworded for clarity.
AMC 4 145.A.30(e) Personnel requirements			Competence assessment should include the verification for the need of additional EWIS training when relevant. (Note: EASA guidance for an EWIS training programme to maintenance organisation personnel can be found in EASA AMC 20-22.)	Paragraph added at EASA 2011/011/R. Reference to AMC 20-22 retained, but reformatted to retain this as a 'note'.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
GM 1 145.A.30(e) Personnel requirements (Training syllabus for initial human factors training)	1.	1.1 Need to address human factors 1.2 Statistics 1.3 Incidents	1.1 The need to take human factors into account; 1.2 Statistics; 1.3 Incidents attributable to human factors/human error; 1.4 “Murphy’s Law”.	Note: Title of paragraph amended at EASA 2011/011/R. Reworded to align with text used in EMAR 66 Module 9.1.
	2.1		2.1 “Culture” issues.	Added to align with text used in EMAR 66 Module 9.3
	3.	3.4 Implications of errors	3.4 Implications of errors (i.e. accidents);	Reworded to align with text used in EMAR 66 Module 9.8.
	4.	4.8 Motivation	4.8 Motivation and de-motivation;	Reworded to align with text used in EMAR 66 Module 9.3.
		4.10 Stress 4.11 Workload management 4.12 Fatigue 4.13 Alcohol, medication, drugs	4.10 Stress: domestic and work related; 4.11 Workload management (overload and underload); 4.12 Sleep and fatigue; 4.13 Alcohol, medication, drug abuse;	Reworded to align with text used in EMAR 66 Module 9.4.
	5.	5.11 Hazards in the workplace	5.11 Hazards in the workplace, recognising and avoiding hazards, dealing with emergencies;	Reworded to align with text used in EMAR 66 Module 9.9.
		5.14 Military Operational pressures	5.14 Military environment and other military factors/Operational pressures	Reworded to align with text used in EMAR 66 Module 9.3.
	7.		7.4 Within and between teams.	Added to align with text used in EMAR 66 Module 9.7.
	8.	8.1 Responsibility	8.1 Responsibility: individual and group;	Reworded to align with text used in EMAR 66 Module 9.3.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
GM 2 145.A.30(e) – Competence assessment procedure				This is a new paragraph of GM added by EASA at 2011.011/R. It has been reviewed and the references amended for use as GM to EMAR 145.A.30(e).
GM 3 145.A.30(e) – Template for recording experience/training				This is a new paragraph of GM added by EASA at 2011.011/R. It has been reviewed and the references amended for use as GM to EMAR 145.A.30(e).
AMC 145.A.30(f) Personnel requirements	2.	Appropriately qualified means to Level 1, 2 or 3 as defined by the European Standard EN 4179 (or national equivalent qualification) dependent upon the non-destructive testing function to be carried out.	Appropriately qualified means to levels of qualification and certification as defined by the European Standard EN 4179 (or national equivalent qualification) dependent upon the non-destructive testing function to be carried out.	Changed because latest issue of EN 4179 introduced further levels beyond just 1,2 &3.
	3.	Notwithstanding the fact that Level 3 personnel (or national equivalent qualification) may be qualified via EN 4179 to establish and authorise methods, techniques, etc., this does not permit such personnel to deviate from methods and techniques published by the (military) type certificate holder/manufacturer in the form of continued airworthiness data, such as in non-destructive test manuals or service bulletins, unless the manual or service bulletin expressly permits such deviation.	Notwithstanding the fact that Level 3 personnel (or national equivalent qualification) may be qualified via EN 4179 to establish and authorise methods, techniques, etc., this does not permit such personnel to deviate from methods and techniques published by the (Military) Type Certificate Holder/manufacturer or NMAA in the form of continued airworthiness data, such as in non-destructive test manuals or Service Bulletins, unless the manual or Service Bulletin expressly permits such deviation.	'or NMAA' added because the NMAA may wish to issue techniques applicable for the military environment or specific skills of their own tradesmen.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	6.	It should be noted that new methods are being and will be developed, such as, but not limited to thermography and shearography, which are not specifically addressed by EN 4179. Until the time this agreed standard is established, such methods should be carried out in accordance with the particular equipment manufacturer's recommendations including any training and examination process to ensure competence of the personnel in the process.	It should be noted that new methods are being and will be developed, ►◄ which are not specifically addressed by EN 4179. Until the time this agreed standard is established, such methods should be carried out in accordance with the particular equipment manufacturer's recommendations including any training and examination process to ensure competence of the personnel in the process.	'such as, but not limited to.....' deleted because these are now included in EN4179.
	8.	Boroscoping and other techniques such as delamination coin tapping are non-destructive inspections rather than non-destructive testing. Notwithstanding such differentiation, the maintenance organisation should establish an exposition procedure accepted by the NMAA to ensure that personnel who carry out and interpret such inspections are properly trained and assessed for their competence in the process. Non-destructive inspections, not being considered as NDT by EMAR 145 are not listed in Appendix II under class rating D1.	Boroscoping and other techniques such as manual tap testing are non-destructive inspections rather than non-destructive testing. Notwithstanding such differentiation, the maintenance organisation should establish an MOE procedure accepted by the NMAA to ensure that personnel who carry out and interpret such inspections are properly trained and assessed for their competence in the process. Non-destructive inspections, not being considered as NDT by EMAR 145 are not listed in EMAR 145 Appendix II under class rating D1.	1. 'delamination coin-tapping' replaced by 'manual tap-testing' to give procedure the correct title as used in EN4179. 2. 'organisation' added for clarity. 3. 'EMAR 145' added for clarity
GM 145.A.30 (f) Personnel requirements		Particular non-destructive test means any one or more of the following; Dye penetrant, magnetic particle, eddy current, ultrasonic and radiographic methods including X ray and gamma ray.	Particular non-destructive test means any one or more of the following; Penetrant Testing (PT), Magnetic Testing (MT), Eddy current Testing (ET), Ultrasonic Testing (UT), Radiographic Testing (RT), Thermographic Testing (TT) and Shearographic Testing (ST) methods ►◄.	Correct titles for NDT techniques as used in EN4179 inserted. X-ray and gamma ray deleted because these are included in Radiographic Testing.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.30(g) Personnel requirements	1.	For the purposes of category A, minor scheduled line maintenance means any minor scheduled inspection/check up to and including a weekly check specified in the approved aircraft maintenance programme. For aircraft maintenance programmes that do not specify a weekly check, the NMAA will determine the most significant check that is considered equivalent to a weekly check.	For the purposes of EMAR 66.A.20(a)(1) and EMAR 66.A.20(a)(3)(ii) personnel, minor scheduled line maintenance means any minor scheduled inspection/check up to and including a weekly check specified in the Aircraft Maintenance Programme (AMP). For AMPs that do not specify a weekly check, the NMAA should determine the most significant check that is considered equivalent to a weekly check.	1. Wording changed to align with EASA 2012/004/R, which is clearer following the release of EMAR 66. 2. 'will' changed to 'should' for correct use in the AMCs.
	2.	Typical tasks permitted after appropriate task training to be carried out by the category A for the purpose of the category A issuing an aircraft certificate of release to service as specified in EMAR 145.A.50 as part of minor scheduled line maintenance or simple defect rectification are contained in the following list:	Typical tasks permitted after appropriate task training to be carried out by the EMAR 66.A.20(a)1) and the EMAR 66.A.20(a)(3)(ii) personnel for the purpose of these personnel issuing an aircraft Certificate of Release to Service (CRS) as specified in EMAR 145.A.50 as part of minor scheduled line maintenance or simple defect rectification are contained in the following list:	Wording changed to align with EASA 2012/004/R, which is clearer following the release of EMAR 66.
	2n.	Replacement of in-flight entertainment system components but excluding public address.	NOT APPLICABLE.	Deleted because this has been removed from EMAR 66.
	2p.	The de-activation only of sub-systems and aircraft components as permitted by the operator's minimum equipment list where relevant or national equivalent procedure, where such de-activation is agreed by the NMAA as a simple task.	The de-activation only of sub-systems and aircraft components as permitted by the Operating Organisation's Minimum Equipment List (MEL) where relevant or national equivalent procedure, where such de-activation is agreed by the NMAA as a simple task.	'operator' changed to 'Operating Organisation' to align with usage in EMAR M.
	2r.		Removal and installation of simple internal medical equipment.	Added as an example of a typical military task.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	2s.	Replacement of any other component as agreed by the NMAA for a particular aircraft type only where it is agreed that the task is simple.	Any other task agreed by the NMAA as a simple task for a particular aircraft type. This may include defect deferment when all the following conditions are met: There is no need for troubleshooting; and The task is in the MEL; and The maintenance action required by the MEL is agreed by the NMAA to be simple.	Text amended by EASA at 2012/004/R

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
			In the particular case of helicopters, and in addition to the items above, the following: t. Removal and installation of external cargo provisions (i.e. external hook, mirrors) other than the hoist. u. Removal and installation of quick release external cameras and search lights. v. Removal and installation of emergency float bags, not including the bottles. w. Removal and installation of external doors fitted with quick release attachments. x. Removal and installation of snow pads/skid wear shoes/slump protection pads. Any task on a military specific system agreed by the NMAA as a simple task for a particular aircraft type. No task which requires troubleshooting should be part of the authorised maintenance actions. Release to service after rectification of deferred defects should be permitted as long as the task is listed above.	Text amended by EASA at 2012/004/R

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	3.		The requirement of having appropriate aircraft rated certifying staff qualified as Category B1 or B2 as appropriate, in the case of aircraft line maintenance does not imply that the maintenance organisation must have B1 or B2 personnel at every line station. The MOE should have a procedure on how to deal with defects requiring B1 or B2 certifying staff.	Text added by EASA at 2012/004/R
	4.		The NMAA may accept that in the case of aircraft line maintenance a maintenance organisation has only B1 or B2 certifying staff, as appropriate, provided that the NMAA is satisfied that the scope of work, as defined in the MOE, does not need the availability of all B1 or B2 certifying staff. Special attention should be taken to clearly limit the scope of scheduled and non-scheduled line maintenance (defect rectification) to only those tasks that can be certified by the available certifying staff Category.	Text added by EASA at 2012/004/R

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.30(h) Personnel requirements		The category B1, B2 and B mil support staff or national equivalent do not need to hold a certifying staff authorisation in accordance with EMAR 145.A.35 (b) but the organisation may use such appropriately authorised certifying staff to satisfy the requirement.	In accordance with EMAR 145.A.30(h) and EMAR 145.A.35, the qualification requirements (MAML, Military Aircraft Type Ratings, recent experience and continuation training) are identical for certifying staff and for support staff. The only difference is that support staff cannot hold certification privileges when performing this role since during base maintenance the release to service will be issued by Category C certifying staff. Nevertheless, the maintenance organisation may use as support staff (for base maintenance) persons who already hold certification privileges for line maintenance.	Paragraph changed by EASA at 2012/004/R. It has been amended for use in EMAR 145 AMC.
AMC 145.A.30 (j)(4) Personnel requirements	1.	For the issue of a limited certification authorisation the aircraft commander or flight engineer should hold either a valid pilot or flight engineer national military qualification (or civilian equivalent) acceptable to the NMAA on the aircraft type. In addition, the limited certification authorisation is subject to the MOE containing procedures to address the personnel requirements of EMAR 145.A.30(e) and associated AMC and GM. Such procedures should include as a minimum	For the issue of a limited certification authorisation the aircraft commander or flight engineer should hold either a valid pilot or flight engineer licence/national military qualification (or civilian equivalent) acceptable to the NMAA on the aircraft type. In addition, the limited certification authorisation is subject to the MOE containing procedures to address the personnel requirements of EMAR 145.A.30(e) and associated AMC and GM. Such procedures should include as a minimum	'licence' added to maintain consistency with the wording used in the requirement.
	1a	Completion of adequate maintenance airworthiness regulation training.	Completion of adequate national military airworthiness regulations training; and	'national military' inserted to align with EMAR 66 Module 10.1.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	1b.	Completion of adequate task training for the specific task on the aircraft. The task training should be of sufficient duration to ensure that the individual has a thorough understanding of the task to be completed and will involve training in the use of associated maintenance data.	Completion of adequate task training for the specific task on the aircraft. The task training should be of sufficient duration to ensure that the individual has a thorough understanding of the task to be completed and should involve training in the use of associated maintenance data; and	'will' replaced by 'should' for correct use in AMCs.
	2(i)	Typical tasks that may be certified and/or carried out by the aircraft commander holding a valid national military pilot qualification (or civilian equivalent) acceptable to the NMAA on the aircraft type are minor maintenance or simple checks included in the following list:	Typical tasks that may be certified and/or carried out by the aircraft commander holding a valid licence/national military pilot qualification (or civilian equivalent) acceptable to the NMAA on the aircraft type are minor maintenance or simple checks included in the following list:	'licence' added to maintain consistency with the wording used in the requirement.
	2(i)c.	NOT APPLICABLE	Simple configuration changes (e.g. stretcher fit, FLIR, doors, photographic equipment etc.)	EASA list reinserted. However, title changed from 'Role Change' to 'simple configuration changes' , and example of 'dual controls' has been removed.
	2(ii)	Holders of a valid national military flight engineer qualification, or equivalent, acceptable to the NMAA, on the aircraft type may only exercise this limited certification authorisation privilege when performing the duties of a flight engineer.	Holders of a valid national military flight engineer licence/qualification, or equivalent, acceptable to the NMAA, on the aircraft type may only exercise this limited certification authorisation privilege when performing the duties of a flight engineer.	'licence' added to maintain consistency with the wording used in the requirement.
	2(ii)i.	Replacement of inflight entertainment system components but excluding public address.	NOT APPLICABLE.	Example removed because it has been removed from EMAR 66.
	2(ii)j	The de-activation only of sub-systems and aircraft components as permitted by the operator's minimum equipment list where relevant or a national equivalent procedure, where such de-activation is agreed by the NMAA as a simple task.	The de-activation only of sub-systems and aircraft components as permitted by the Operating Organisation's MEL where relevant or a national equivalent procedure, where such de-activation is agreed by the NMAA as a simple task.	'operator' replaced by 'Operating Organisation' to align with terminology used in EMAR M.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	2(ii)l	Any other simple task as agreed by the NMAA for a particular aircraft type only where it is agreed that the task is simple.	Any other task agreed by the NMAA as a simple task for a particular aircraft type.	Amended by EASA at 2012/004/R.
AMC 145.A.30 (j)(5) Personnel requirements	2.	A one-off authorisation should only be considered for issue by the quality department of the military unit or the contracted organisation after it has made a reasoned judgement that such a requirement is appropriate under the circumstances and at the same time maintaining the required airworthiness standards. The organisation's quality department will need to assess each situation individually prior to the issuance of a one-off authorisation.	A one-off authorisation should only be considered for issue by the ►◄ maintenance organisation after it has made a reasoned judgement that such a requirement is appropriate under the circumstances and at the same time maintaining the required airworthiness standards. The maintenance organisation should assess each situation individually prior to the issuance of a one-off authorisation. The maintenance organisation that issues this one-off authorisation retains responsibility for all work performed.	1. Text amended to remove the statement that the Quality Department issues the authorisation. It is the person that manages the quality System that issues the Authorisation (145.A.35(i) refers). 2. 'will' replaced by should' for correct use in the EMARs. 3. final sentence added to stress that it is the maintenance organisation that retains responsibility for any work performed.
AMC 145.A.30 (j)(5)(i) Personnel requirements	1.	Flight crew should communicate full details of the defect to their supporting maintenance organisation. If necessary, the supporting maintenance organisation will then request the use of a one-off authorisation from its quality department.	Flight crew should communicate full details of the defect to their ►◄ maintenance organisation. If necessary, the ►◄ maintenance organisation should consider the issue of a one-off authorisation.	Text amended to remove the statement that the Quality Department issues the authorisation. It is the person that manages the quality System that issues the Authorisation (145.A.35(i) refers).
	2.	When issuing a one-off authorisation, the quality department of the organisation should verify that:	When issuing a one-off authorisation, the ►◄ maintenance organisation should verify that:	Text amended to remove the statement that the Quality Department issues the authorisation. It is the person that manages the quality System that issues the Authorisation (145.A.35(i) refers).

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.30 (j)(5)(ii) Personnel requirements		This paragraph addresses staff not employed by the maintenance organisation who meet the requirements of EMAR 145.A.30 (j) (5). In addition to the items listed in EMAR AMC 145.A.30 (j)(5)(i), paragraph 1, 2(a), (b) and (c) and 3 the quality department of the organisation may issue such a one-off authorisation subject to full qualification details relating to the proposed certifying personnel being verified by the quality department and made available at the location.	This paragraph addresses staff not employed by the maintenance organisation who meet the requirements of EMAR 145.A.30(j)(5). In addition to the items listed in AMC EMAR 145.A.30(j)(5)(i), paragraph 1, 2(a), (b) and (c) and 3 the ►◄ maintenance organisation may issue such a one-off authorisation subject to full qualification details relating to the proposed certifying personnel being verified by the maintenance organisation and made available at the location.	Text amended to remove the statement that the Quality Department issues the authorisation. It is the person that manages the quality System that issues the Authorisation (145.A.35(i) refers).
AMC 145.A.35(a) Certifying staff and ►◄ support staff				Note: Paragraph was completely rewritten at EASA amendment 2012/004/R. The amended text has been reviewed and amended for use in EMAR 145 AMC. It replaces the original text in Ed 1.1. Reference to 'B1, B2 and B mil' in paragraph title removed by EASA at M6 because support staff will, by definition, be MAML holders.
AMC 145.A.35(b) Certifying staff and ►◄ support staff		The organisation issues the certification authorisation when satisfied that compliance has been established with the appropriate paragraphs of EMAR 145 and EMAR 66. In granting the certification authorisation the maintenance organisation approved under EMAR 145 needs to be satisfied that the person holds a valid EMAR 66 Military Aircraft Maintenance Licence or national equivalent and may need to confirm such fact with the NMAA of the pMS that issued the licence**.**	Moved to EMAR 145.A.35(b).	Paragraph moved from AMC to Requirement.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 1 145.A.35(c) Certifying staff and support staff			For the interpretation of *"6 months of actual relevant aircraft maintenance experience in any consecutive 2-year period"*, the provisions of AMC EMAR 66.A.20(b)2 are applicable.	New text introduced by EASA 2012/004/R.
AMC 2 145.A.35(c) Certifying staff and support staff		Where unpredictable variations in operational military tasking require the use of personnel not meeting the six-month experience requirement, this should be approved by the Accountable Manager on a temporary basis only with the necessary precaution/mitigation put in place and both the CAMO for which work is being conducted and the NMAA should be informed.	Where unpredictable variations in operational military tasking require the use of personnel not meeting the six-month experience requirement, this should be approved by the Accountable Manager on a temporary basis only with the necessary precaution/mitigation put in place and both the Operating Organisation/CAMO for which work is being conducted and the NMAA should be informed.	'Operating Organisation' inserted because under EMAR M it is possible for an AMO to have a contract with either the Operating Organisation or a CAMO.
145.A.35(d) Certifying staff and support staff	1.	Continuation training is a two way process to ensure that certifying staff remain current in terms of procedures, human factors and technical knowledge and that the organisation receives feedback on the adequacy of its procedures and maintenance instructions. Due to the interactive nature of this training, the AMO should consider the involvement of the quality department to ensure that feedback is actioned. Alternatively, there should be a procedure to ensure that feedback is formally passed from the training department to the quality department to initiate action.	Continuation training is a two way process to ensure that certifying staff and support staff remain current in terms of procedures, human factors and technical knowledge and that the maintenance organisation receives feedback on the adequacy of its procedures and maintenance instructions. Due to the interactive nature of this training, the maintenance organisation should consider the involvement of the quality department to ensure that feedback is actioned. Alternatively, there should be a procedure to ensure that feedback is formally passed from the training department to the quality department to initiate action.	1. 'and support staff' added to align with Requirement that includes both 'Certifying staff' and 'support staff'. 2. 'maintenance' added for clarity.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	2.	Continuation training should cover changes in relevant requirements such as EMAR 145, changes in organisation procedures and the modification standard of the products being maintained plus human factor issues identified from any internal or external analysis of incidents. It should also address instances where staff failed to follow procedures and the reasons why particular procedures are not always followed. In many cases the continuation training will reinforce the need to follow procedures and ensure that incomplete or incorrect procedures are identified to the company in order that they can be corrected. This does not preclude the possible need to carry out a quality audit of such procedures.	Continuation training should cover changes in relevant requirements such as EMAR 145, changes in maintenance organisation procedures and the modification standard of the products being maintained plus human factor issues identified from any internal or external analysis of incidents. It should also address instances where staff failed to follow procedures and the reasons why particular procedures are not always followed. In many cases the continuation training should reinforce the need to follow procedures and ensure that incomplete or incorrect procedures are identified to the maintenance organisation in order that they can be corrected. This does not preclude the possible need to carry out a quality audit of such procedures.	1. 'maintenance' added for clarity. 2. 'will' changed to 'should' for correct use in AMC.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	3.	Continuation training should be of sufficient duration in each 2 year period to meet the intent of EMAR 145.A.35 (d) and may be split into a number of separate elements. EMAR 145.A.35 (d) requires such training to keep certifying staff updated in terms of relevant technology, procedures and human factors issues which means it is one part of ensuring quality. Therefore sufficient duration should be related to relevant quality audit findings and other internal/external sources of information available to the organisation on human errors in maintenance. This means that in the case of an organisation that maintains aircraft with few relevant quality audit findings, continuation training could be limited to days rather than weeks, whereas a similar organisation with a number of relevant quality audit findings, such training may take several weeks. For an organisation that maintains aircraft components, the duration of continuation training would follow the same philosophy but should be scaled down to reflect the more limited nature of the activity. For example certifying staff who release hydraulic pumps may only require a few hours of continuation training whereas those who release turbine engines may require a few days of such training. The content of continuation training should be related to relevant quality audit findings and it is recommended that such training is reviewed at least once in every 24 month period.	Continuation training should be of sufficient duration in each 2 year period to meet the intent of EMAR 145.A.35(d) and may be split into a number of separate elements. EMAR 145.A.35(d) requires such training to keep certifying staff and support staff updated in terms of relevant technology, procedures and human factors issues which means it is one part of ensuring quality. Therefore sufficient duration should be related to relevant quality audit findings and other internal/external sources of information available to the maintenance organisation on human errors in maintenance. This means that in the case of a maintenance organisation that maintains aircraft with few relevant quality audit findings, continuation training could be limited to days rather than weeks, whereas a similar maintenance organisation with a number of relevant quality audit findings, such training may take several weeks. For an maintenance organisation that maintains aircraft components, the duration of continuation training would follow the same philosophy but should be scaled down to reflect the more limited nature of the activity. For example certifying staff who release hydraulic pumps may only require a few hours of continuation training whereas those who release turbine engines may require a few days of such training. The content of continuation training should be related to relevant quality audit findings and it is recommended that such training is reviewed at least once in every 24 month period.	1. ‘and support staff’ added to align with Requirement that includes both ‘Certifying staff’ and ‘support staff’. 2. ‘maintenance’ added for clarity.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.35(f) Certifying staff and support staff		As stated in EMAR 145.A.35 (f), with one exception, all prospective certifying staff are required to be assessed for competence, qualification and capability related to intended certifying duties. There are a number of ways in which such assessment may be carried out but the following points need to be considered to establish an assessment procedure that fits the particular organisation.	As stated in EMAR 145.A.35(f), except where any of the unforeseen cases of EMAR 145.A.30(j)(5) applies, all prospective certifying staff and support staff should be assessed for competence related to their intended duties in accordance with AMCs 1, 2, 3 and 4 to EMAR 145.A.30(e), as applicable.	Note: AMC significantly rewritten by EASA at 2011/011/R. New paragraph introduced following the introduction of AMCs 1, 2, 3 and 4 to EMAR 145.A.30(e).
		Competence and capability can be assessed by working the person under the supervision of either another certifying person or a quality auditor for sufficient time to arrive at a conclusion. Sufficient time could be as little as a few weeks if the person is fully exposed to relevant work. It is not required to assess against the complete spectrum of intended duties. When the person has been recruited from another EMAR 145 Approved Maintenance Organisation and was a certifying person in that organisation then the organisation can accept a written confirmation from the person responsible for running the quality system about the person. (When the person has been recruited from an EASA Part 145 Approved Maintenance Organisation and was a certifying person in that organisation then the organisation may accept a written confirmation from the person responsible for running the quality system about the person.)	►◄	

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
		Qualification assessment means collecting copies of all documents that attest to qualification, such as the EMAR 66 Military Aircraft Maintenance Licence or national equivalent and/or any authorisation held. This should be followed by a confirmation check with the organisation(s) that issued such document(s) and finally a comparison check for differences between the product type ratings on the qualification documents and the relevant product types maintained by the organisation. This latter point may reveal a need for product type differences training.	►◄	
AMC 145.A.35(j) Certifying staff and support staff	1.	The following minimum information as applicable should be kept on record in respect of each certifying person or category B1, B2 or B mil support person:	The following minimum information as applicable should be kept on record in respect of each certifying staff ►◄ and support staff:	Amended at 2012/004/R
	1e.	Type Training	Military Aircraft Type Training/Task Training	1. 'Military aircraft' added for correct nomenclature. 2. 'Task Training' added because a Cat A MAML does not have type training, only task training.
	2.	The record may be kept in any format but should be controlled by the organisation's quality department. This does not mean that the quality department should run the record system.	The record may be kept in any format and should be controlled by the maintenance organisation ►◄.	Text amended to remove the statement that the Quality Department controls the authorisation - it does not matter who within the AMO carries out this task.
AMC 145.A.35(n) Certifying staff and support staff	1,2,3			Note: AMC added by 2012/004/R because of introduction of paragraph 145.A.35(n) into Requirement.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.35(o) Certifying staff and support staff	1,2,3,4			AMC added by 2012/004/R because of introduction of paragraph 145.A.35(o) into Requirement.
GM 145.A.35(o) Certifying staff and support staff			'Unless approved otherwise by the NMAA' in this context means that the requirement can be waived by the NMAA in the case of military personnel that already hold this privilege when they are posted from one AMO to another.	GM added for clarity to explain the addition of text applicable to the military environment.
AMC 145.A.40(a) Equipment, tools and material		Once the applicant for approval has determined the intended scope of approval for consideration by the NMAA, it will be necessary to show that all tools and equipment as specified in the maintenance data can be made available when needed. All such tools and equipment that require to be controlled in terms of servicing or calibration by virtue of being necessary to measure specified dimensions and torque figures etc, should be clearly identified and listed in a control register including any personal tools and equipment that the organisation agrees can be used.	Once the applicant for approval has determined the intended scope of approval for consideration by the NMAA, it should be necessary to show that all tools and equipment as specified in the maintenance data can be made available when needed. All such tools and equipment that require to be controlled in terms of servicing or calibration by virtue of being necessary to measure specified dimensions and torque figures etc, should be clearly identified and listed in a control register including any personal tools and equipment that the maintenance organisation agrees can be used.	1. 'will' replaced by 'should' for correct use of nomenclature in the AMCs. 2. 'maintenance' added for clarity.
AMC 145.A.40(b) Equipment, tools and material	2.	Inspection, service or calibration on a regular basis should be in accordance with the equipment manufacturers' instructions except where the organisation can show by results that a different time period is appropriate in a particular case.	Inspection, service or calibration on a regular basis should be in accordance with the equipment manufacturers' instructions unless approved otherwise by the NMAA ►◄.	1. 'unless approved otherwise by the NMAA' added to allow for military instances where there may be difficulty calibrating tooling (eg calibration in another country) 2. 'except where the organisation....' deleted because a military AMO does not have authority to alter the calibration periodicity of tooling.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.42 (a) Acceptance of components	1f.	An EASA Form 1 (where relevant)	An EASA Form 1 (if accepted by the NMAA, and not originating from an EASA Part M Subpart F approved organisation).	Additional text added for clarity (see also new GM 145.A.42(a).
	2.	NOT APPLICABLE.	See AMC EMAR 145.A.42(a)4 and AMC EMAR 145.A.42(a)5.	These paragraphs have now been included in the AMC to EMAR 145 so they are referenced here as a signpost.
GM 145.A.42 (a) Acceptance of components			The reason that the EASA Form 1 must be issued by an EASA Part 145 maintenance organisation, not an EASA Part M Subpart F approved organisation is that a Subpart F organisation should not issue parts for 'complex motor-powered' or 'CAT' aircraft. Military aircraft are considered equivalent to 'complex motor-powered' aircraft and 'CAT' aircraft.	New text added as GM following the amendment to AMC para 1f above.
AMC 145.A.42(a)2, (a)3, (a)3(ii), (a)4, (a)5,				Note: all these items of new AMC are taken from the AMC associated with EASA Part M Sub part E, suitably amended for use in the military context.
AMC 145.A.42(b) Acceptance of components	b,c,d			Note: all these items of new AMC are taken from the AMC associated with EASA Part M Sub part E, suitably amended for use in the military context.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.42(c) Acceptance of components	4.	Items fabricated by an AMO may only be used by that AMO in the course of overhaul, maintenance, modifications, or repair of aircraft or components undergoing work within its own facility. The fabrication of parts for other facilities may only take place if approved by the NMAA. The permission to fabricate does not constitute approval for manufacture and the parts do not qualify for certification on EMAR Form 1. Fabricated parts are to be clearly labelled in a manner identified by the NMAA. This prohibition also applies to the bulk transfer of surplus inventory, in that locally fabricated parts are physically segregated and excluded from any delivery certification.	Items fabricated by a maintenance organisation may only be used by that maintenance organisation in the course of overhaul, maintenance, modifications, or repair of aircraft or components undergoing work within its own facility. The fabrication of parts for other facilities may only take place if approved by the NMAA. The permission to fabricate does not constitute approval for manufacture and the parts do not qualify for certification on EMAR Form 1. ►◄ This prohibition also applies to the bulk transfer of surplus inventory, in that locally fabricated parts are physically segregated and excluded from any delivery certification. Fabricated parts are to be clearly labelled in a manner identified by the NMAA.	1. AMO replaced by 'maintenance organisation' added for clarity. 2. Sentence moved to end of paragraph where it is more logically located.
	8.	Where a (military)TC/STC-holder or an Approved Production Organisation is prepared to make available complete data which is not referred to in aircraft manuals or service bulletins but provides manufacturing drawings for items specified in parts lists, the fabrication of these items is not considered to be within the scope of an approval unless agreed otherwise by the NMAA in accordance with a procedure specified in the exposition.	Where a (Military)TC/STC-holder or an EMAR 21 Approved Production Organisation is prepared to make available complete data which is not referred to in aircraft manuals or service bulletins but provides manufacturing drawings for items specified in parts lists, the fabrication of these items is not considered to be within the scope of an approval unless agreed otherwise by the NMAA in accordance with a procedure specified in the MOE.	'EMAR 21' added for clarity

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.45(b) Maintenance data	1.	Except as specified in sub-paragraph 5, each maintenance organisation approved under EMAR 145 should hold and use the following minimum maintenance data relevant to the organisation's approval class rating. All maintenance related requirements and associated AMCs, approval specifications and Guidance Material, all applicable national maintenance requirements and notices which have not been superseded by a NMAA requirement, procedure or directive and all applicable airworthiness directives as well as Critical Design Configuration Control Limitations (if applicable).	Except as specified in sub-paragraph 5, each AMO should have access to and use the following minimum maintenance data relevant to the AMO's approval class rating: all maintenance related requirements and associated AMCs, approval specifications and Guidance Material, all applicable national maintenance requirements and notices which have not been superseded by a NMAA requirement, procedure or directive and all applicable ADs as well as CDCCLs (if applicable).	Reference to 'hold' has been amended to 'have access to' to align with Requirement.
	2.	In addition to sub-paragraph 1, an organisation with an approval class rating in category A – Aircraft, should hold and use the following maintenance data where published. The appropriate sections of the operator's aircraft maintenance programme, aircraft maintenance manual, repair manual, supplementary structural inspection document, corrosion control document, service bulletins, service letters, service instructions, modification leaflets, NDT manual, parts catalogue, (military) TC data sheet and any other specific document issued by the (military) TC/STC holder or NMAA as maintenance data.	In addition to sub-paragraph 1, an AMO with an approval class rating in Category A – Aircraft, should have access to and use the following maintenance data where published: the appropriate sections of the ►◄ Aircraft Maintenance Programme, Aircraft Maintenance Manual, repair manual, supplementary structural inspection document, corrosion control document, Service Bulletins, service letters, service instructions, modification leaflets, NDT manual, parts catalogue, (Military) TC data sheet and any other specific document issued by the (Military) TC/STC holder or NMAA as maintenance data.	1. Reference to 'hold' has been amended to 'have access to' to align with Requirement. 2. 'operator' removed for clarity. The important factor is that the AMO has access to relevant sections of the AMP, not whose AMP it is.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	3.	In addition to subparagraph 1, an organisation with an approval class rating in category B — Engines/APUs, should hold and use the following maintenance data where published. The appropriate sections of the engine/APU maintenance and repair manual, service bulletins, service letters, modification leaflets, non-destructive testing (NDT) manual, parts catalogue, type certificate data sheet and any other specific document issued by the (military) TC holder or NMAA as maintenance data.	In addition to subparagraph 1, an AMO with an approval class rating in Category B — Engines/APUs, should have access to and use the following maintenance data where published: the appropriate sections of the engine/APU maintenance and repair manual, Service Bulletins, service letters, modification leaflets, non-destructive testing (NDT) manual, parts catalogue, (Military) Type Certificate data sheet and any other specific document issued by the (Military) TC/STC holder or NMAA as maintenance data.	1. Reference to 'hold' has been amended to 'have access to' to align with Requirement. 2. STC added for clarity.
	4.	In addition to sub-paragraph 1, an organisation with an approval class rating in category C – Components other than complete engines/APUs, should hold and use the following maintenance data where published. The appropriate sections of the component maintenance and repair manual, service bulletins and service letters plus any document issued by the (military) TC holder or NMAA as maintenance data on whose product the component may be fitted when applicable.	In addition to sub-paragraph 1, an AMO with an approval class rating in Category C – Components other than complete engines/APUs, should have access to and use the following maintenance data where published: the appropriate sections of the component maintenance and repair manual, Service Bulletins and service letters plus any document issued by the (Military) TC/STC holder or NMAA as maintenance data on whose product the component may be fitted when applicable.	1. Reference to 'hold' has been amended to 'have access to' to align with Requirement. 2. STC added for clarity.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	5.	Appropriate sections of the sub-paragraphs 2 to 4 additional maintenance data means in relation to the maintenance work scope at each particular maintenance facility. For example, a base maintenance facility should have almost complete set(s) of the maintenance data whereas a line maintenance facility may need only the maintenance manual and the parts catalogue.	Appropriate sections of the sub-paragraphs 2 to 4 additional maintenance data means in relation to the maintenance work scope at each particular maintenance facility. For example, a base maintenance facility should have access to almost complete set(s) of the maintenance data whereas a line maintenance facility may need only the maintenance manual and the parts catalogue.	Reference to 'hold' has been amended to 'have access to' to align with Requirement.
GM 145.A.45(e) Maintenance Data			'Complex maintenance tasks' are neither minor scheduled line maintenance tasks nor simple defect rectification tasks. They therefore cannot be certified by a Category A MAML holder.	GM added to provide a definition of 'complex maintenance task' to provide clarity to Requirement.
AMC 145.A.45(f) Maintenance data	1.	Data being made available to personnel maintaining aircraft means that the data should be available in close proximity to the aircraft being maintained for supervisors, mechanics and certifying staff to study.	Data being made available to personnel maintaining aircraft means that the data should be available in close proximity to the aircraft being maintained for supervisors, mechanics, certifying and support staff to study.	'and support' added for full nomenclature.
	2.	Where computer systems are used, the number of computer terminals should be sufficient in relation to the size of the work programme to enable easy access, unless the computer system can produce paper copies. Where microfilm or microfiche readers/printers are used, a similar requirement is applicable.	Where computer systems are used, the number of computer terminals or maintenance data access points should be sufficient in relation to the size of the work programme to enable easy access, unless the computer system can produce paper copies. Where microfilm or microfiche readers/printers are used, a similar requirement is applicable.	'or maintenance data access points' added to cover use of PDAs etc.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.47(a) Maintenance planning	1.	Depending on the amount and complexity of work generally performed by the maintenance organisation, the planning system may range from a very simple procedure to a complex organisational set-up including a dedicated planning function in support of the production function.	Depending on the amount and complexity of work generally performed by the maintenance organisation, the planning system may range from a very simple procedure to a complex organisational set-up including a dedicated planning function in support of the maintenance function.	Text amended for clarity, because a maintenance organisation carries out maintenance, not production.
	2.	For the purpose of EMAR 145, the production planning function should include two complementary elements:	For the purpose of EMAR 145, the maintenance planning function should include two complementary elements:	Text amended for clarity, because a maintenance organisation carries out maintenance, not production.
	3.	When establishing the production planning procedure, consideration should be given to the following:	When establishing the maintenance planning procedure, consideration should be given to the following:	Text amended for clarity, because a maintenance organisation carries out maintenance, not production.
		- co-ordination with internal and external suppliers, etc.	- co-ordination with contracted/tasked maintenance organisations, internal and external suppliers, etc.	'contracted/tasked maintenance organisations' added for completeness of list
AMC 145.A.48(b) and (c) Performance of maintenance				Note: New AMC added because of introduction of new Requirement. Items of new AMC are taken from the AMC associated with EASA NPA 2013-01(C), suitably amended for use in the military context.
AMC 145.A.50(b) Certification of maintenance	2.	It is acceptable to use an alternate abbreviated certificate of release to service for aircraft consisting of the following statement _EMAR 145 release to service' instead of the full certification statement specified in paragraph 1. When the alternate abbreviated certificate of release to service is used, the introductory section of the technical log should include an example of the full certification statement from paragraph 1.	It is acceptable to use an alternate abbreviated CRS for aircraft consisting of the following statement 'EMAR 145 release to service' instead of the full certification statement specified in paragraph 1. When the alternate abbreviated CRS is used, the introductory section of the aircraft technical log should include an example of the full certification statement from paragraph 1.	'aircraft' added to align with nomenclature used in EMAR M.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	3.	The CRS should relate to the task specified in the (Military) TC/STC holder's or CAMO's instructions or the Aircraft Maintenance Programme which itself may cross-refer to maintenance data.	The CRS should relate to the task specified in the (Military) TC/STC holder's or Operating Organisation's/CAMO's instructions or the Aircraft Maintenance Programme which itself may cross-refer to maintenance data.	'Operating Organisation' inserted because under EMAR M it is possible for an AMO to have a contract/tasking with either the Operating Organisation or a CAMO.
AMC 1 145.A.50(d) Certification of maintenance	3.	It can only be issued by organisations approved by the particular NMAA within the scope of their approval.	It can only be issued by AMOs ►◄ within the scope of their approval.	'approved by the particular NMAA' deleted to avoid ambiguity. Issuing a CRS must be within the scope of the AMO's approval.
AMC 2 145.A.50(d) Certification of maintenance	1.	A component which has been maintained off the aircraft needs the issuance of a certificate of release to service for such maintenance and another certificate of release to service in regard to being installed properly on the aircraft when such action occurs. When an organisation maintains a component for use by the same organisation, an EMAR Form 1 (or equivalent) may not be necessary depending upon the organisation's internal release procedures defined in the Maintenance Organisation Exposition.	A component which has been maintained off the aircraft needs the issuance of a CRS for such maintenance and another CRS in regard to being installed properly on the aircraft when such action occurs. ►◄.	Note: This paragraph was determined to be GM in Ed 1.1. However, following review it has been re-written as AMC 2 to this Requirement. (Same as EASA). Sentence deleted because it is contained in the Requirement.
	2.3	Appropriately rated means an organisation with an approval class rating for the type of component or for the product in which it may be installed.	For the purposes of this AMC 2 only, 'appropriately rated' means an AMO with an approval class rating for the type of component or for the product in which it may be installed.	First sentence added for clarity.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	2.6.2	Serviceable aircraft components removed from a non pMS registered aircraft may only be issued with an EMAR Form 1 (or equivalent) if the components are leased or loaned from the maintenance organisation approved under EMAR 145 who retains control of the airworthiness status of the components. An EMAR Form 1 (or equivalent) may be issued and should contain the information as specified in paragraph 2.4 including the aircraft from which the aircraft component was removed.	NOT APPLICABLE.	Paragraph marked as NOT APPLICABLE because this scenario does not apply to the military environment.
	2.7	Serviceable aircraft components removed from a pMS registered aircraft withdrawn from service may be issued with an EMAR Form 1 (or equivalent) by a maintenance organisation approved under EMAR 145 subject to compliance with this subparagraph.	Serviceable aircraft components removed from an ►◄ aircraft withdrawn from service may be issued with an EMAR Form 1 (or equivalent) by an AMO subject to compliance with this subparagraph.	The EMARs will be implemented into the national regulation of each NMAA, so therefore the use of pMS registered is unnecessary.
	2.7(d)	Irrespective of whether the aircraft holds a certificate of airworthiness or not, the organisation responsible for certifying any removed component should ensure that the manner in which the components were removed and stored are compatible with the standards required by EMAR 145.	Irrespective of whether the aircraft holds a Military Certificate of Airworthiness or not, the AMO responsible for certifying any removed component should ensure that the manner in which the components were removed and stored are compatible with the standards required by EMAR 145.	'Military' added for correct use of nomenclature.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.50(e) Certification of maintenance	Note	Whether or not the CAMO does have the authority to defer maintenance is an issue between the CAMO and the NMAA. In case of doubt concerning such a decision of the CAMO, the Approved Maintenance Organisation should inform its NMAA on such doubt, before issuing the certificate of release to service. This will allow the NMAA to investigate the matter as appropriate.	Whether or not the CAMO does have the authority to defer maintenance is an issue between the CAMO and the NMAA. In case of doubt concerning such a decision of the CAMO, the AMO should inform its NMAA on such doubt, before issuing the CRS. This should allow the NMAA to investigate the matter as appropriate.	'will' replaced by 'should' for correct use of nomenclature in the AMCs.
GM 145.A.55 (a) Maintenance records	6 Note		An AMO's responsibility for recording all details of the maintenance work carried out ends with the completion of the CRS. It is the CAMO's responsibility to enter the information given in the CRS into the aircraft continuing airworthiness record system.	Note added for clarity to identify exactly what each organisation is responsible for to avoid any ambiguity.
AMC 145.A.60(a) Occurrence reporting		NOT APPLICABLE	TO BE DEVELOPED IF REQUIRED.	Changed from 'NOT APPLICABLE' because this will depend upon the future development of AMC 20-8
GM 145.A.60(a) Occurrence reporting		The organisation responsible for the design is normally the (Military) TC holder of the aircraft, engine or propeller and/or if known the (Military) STC holder.	TO BE DEVELOPED IF REQUIRED.	This GM does not provide any clarity to the Requirement. With the removal of the associated EASA AMC material 'to be developed later if required', this GM is annotated likewise.
AMC 145.A.60(b) Occurrence reporting	2.	An occurrence reporting system should enable and encourage free and frank reporting of any (potentially) safety related occurrence. This will be facilitated by the establishment of a —just culturell. An organisation should ensure that personnel are not inappropriately punished for reporting or co-operating with occurrence investigations.	An occurrence reporting system should enable and encourage free and frank reporting of any (potentially) safety related occurrence. This should be facilitated by the establishment of a "just culture". A maintenance organisation should ensure that personnel are not inappropriately punished for reporting or co-operating with occurrence investigations.	1. 'will' replaced by 'should' for correct use of nomenclature in the AMCs. 2. 'maintenance' added for clarity.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.65 (b)(3) Safety and quality policy, maintenance procedures and quality system	2.	Procedures should be established to detect and rectify maintenance errors that could, as minimum, result in a failure, malfunction, or defect endangering the safe operation of the aircraft if not performed properly (_Safety-Critical‘ tasks). The procedure should identify the method for capturing errors, and the maintenance tasks or processes concerned. In order to determine the work items to be considered, the following maintenance tasks should primarily be reviewed to assess their impact on safety: - Installation, rigging and adjustments of flight controls, - Installation of aircraft engines, propellers and rotors, - Overhaul, calibration or rigging of components such as engines, propellers, transmissions and gearboxes	Procedures should be established to detect and rectify maintenance errors that could, as minimum, result in a failure, malfunction, or defect endangering the safe operation of the aircraft if not performed properly (‘Safety-Critical’ tasks). These procedures should identify the method for capturing errors, and the maintenance tasks or processes concerned. In order to determine the work items to be considered, the following maintenance tasks should primarily be reviewed to assess their impact on safety: - Installation, rigging and adjustments of flight controls; - Installation of aircraft engines, propellers and rotors; - Overhaul, calibration or rigging of components such as engines, propellers, transmissions and gearboxes; - installation and maintenance carried out on ejection seats	Text amended to ‘These procedures’ because it is plural. Text added to align with EMAR 145.A.48(b) e(4)

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	4.	The AMO should ensure that when carrying out a modification, repair or maintenance, CDCCL (if applicable) are not compromised; this will require the development of appropriate procedures where necessary by the AMO. The AMO should pay particular attention to possible adverse effects of any wiring change to the aircraft, even a change not specifically associated with the fuel tank system. For example, it should be common practice to identify segregation of fuel gauging system wiring as a CDCCL (if applicable). AMOs can prevent adverse effects associated with wiring changes by standardising maintenance practices through training, rather than by periodic inspection. Training should be provided to prevent indiscriminate routing and splicing of wires and to provide comprehensive knowledge of critical design features of fuel tank systems that would be controlled by a CDCCL (if applicable). Guidance is provided for training to AMO personnel in Appendix IV to EMAR AMC 145.A.30 (e) and EMAR AMC 145.B.10 (c).	The maintenance organisation should ensure that when carrying out a modification, repair or maintenance, CDCCL (if applicable) are not compromised; this should require the development of appropriate procedures where necessary by the maintenance organisation. The maintenance organisation should pay particular attention to possible adverse effects of any wiring change to the aircraft, even a change not specifically associated with the fuel tank system. For example, it should be common practice to identify segregation of fuel gauging system wiring as a CDCCL (if applicable). Maintenance organisations can prevent adverse effects associated with wiring changes by standardising maintenance practices through training, rather than by periodic inspection. Training should be provided to prevent indiscriminate routing and splicing of wires and to provide comprehensive knowledge of critical design features of fuel tank systems that would be controlled by a CDCCL (if applicable). AMC is provided for training to maintenance organisation personnel in Appendix IV to AMC EMAR 145.A.30(e) and AMC EMAR 145.B.10(c).	1. ‘will’ replaced by ‘should’ for correct use of nomenclature in the AMCs. 2. ‘AMO’ replaced by ‘maintenance organisation’ for clarity. 3. ‘Guidance’ replaced by ‘AMC’ for accuracy.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
GM 145.A.65 (b)(3) Safety and quality policy, maintenance procedures and quality system	1.	The purpose of this procedure is to minimise the rare possibility of an error being repeated whereby the identical aircraft components are not reassembled thereby compromising more than one system. One example is the remote possibility of failure to reinstall engine gearbox access covers or oil filler caps on all engines of a multi-engined aircraft resulting in major oil loss from all engines. Another example is the case of removal and refitment of multiple oil filler caps on one aircraft/engine or component, which could require a re-inspection of all oil filler caps on that particular aircraft/engine or component after the last oil filler cap has supposedly been refitted.	Critical Tasks might not jeopardise safety on their own, but there could be a cumulative effect if the same maintainer reproduces the same error when he does the same tasks on several systems. The purpose of this procedure is therefore to minimise the rare possibility of an error being repeated whereby the identical aircraft components are not reassembled thereby compromising more than one system. One example is the remote possibility of failure to reinstall engine gearbox access covers or oil filler caps on all engines of a multi-engined aircraft resulting in major oil loss from all engines. Another example is the case of removal and refitment of multiple oil filler caps on one aircraft/engine or component, which could require a re-inspection of all oil filler caps on that particular aircraft/engine or component after the last oil filler cap has supposedly been refitted.	1. Text inserted at the beginning of the paragraph to clearly identify what constitutes a 'critical task'. 2. 'therefore' added for improved readability following the introduction of the first sentence.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.65 (c)(1) Safety and quality policy, maintenance procedures and quality system.	3.	The independent audit is an objective process of routine sample checks of all aspects of the organisation's ability to carry out all maintenance to the required standards and includes some product sampling as this is the end result of the maintenance process. It represents an objective overview of the complete maintenance related activities and is intended to complement the EMAR 145.A.50 (a) requirement for certifying staff to be satisfied that all required maintenance has been properly carried out before issue of the certificate of release to service for aircraft. Independent audits should include a percentage of random audits carried out on a sample basis when maintenance is being carried out. This means some audits during the night for those organisations that work at night, and some audits while in an operational environment (if appropriate).	The independent audit is an objective process of routine sample checks of all aspects of the maintenance organisation's ability to carry out all maintenance to the required standards and includes some product sampling as this is the end result of the maintenance process. It represents an objective overview of the complete maintenance related activities and is intended to complement the EMAR 145.A.50(a) requirement for certifying staff to be satisfied that all required maintenance has been properly carried out before issue of the CRS for aircraft and components. Independent audits should include a percentage of random audits carried out on a sample basis when maintenance is being carried out. This means some audits during the night for those maintenance organisations that work at night, and some audits while in an operational environment (if appropriate).	1. 'maintenance' added for clarity. 2. 'and components' added to align with EMAR 145.A.50(a)

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	8.	Except as specified otherwise in sub-paragraph 9, where the organisation has line stations (such as but not limited to —out of areall locations, embarked operations if appropriate) listed as per EMAR 145.A.75 (d) the quality system should describe how these are integrated into the system and include a plan to audit each listed line station at a frequency consistent with the extent of flight activity at the particular line station. Except as specified otherwise in sub-paragraph 9 the maximum period between audits of a particular line station should not exceed 24 months.	Except as specified otherwise in sub-paragraph 9, where the maintenance organisation has line stations (such as but not limited to “out of area” locations, embarked operations if appropriate) listed as per EMAR 145.A.75(d) the quality system should describe how these are integrated into the system and include a plan to audit each listed line station at a frequency consistent with the extent of flight and maintenance activity at the particular line station. Except as specified otherwise in sub-paragraph 9 the maximum period between audits of a particular line station should not exceed 24 months.	1. ‘maintenance’ added for clarity. 2. ‘and maintenance’ added because it is not only the flight activity that is important, but the quantity of maintenance activity also.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	11.	The independence of the audit should be established by always ensuring that audits are carried out by personnel not responsible for the function, procedure or products being checked. It therefore follows that a large maintenance organisation approved under EMAR 145, being an organisation with more than about 500 maintenance staff should have a dedicated quality audit group whose sole function is to conduct audits, raise finding reports and follow up to check that findings are being rectified. For the medium sized maintenance organisation approved under EMAR 145, being an organisation with less than about 500 maintenance staff, it is acceptable to use competent personnel from one section/department not responsible for the production function, procedure or product to audit the section/department that is responsible subject to the overall planning and implementation being under the control of the quality manager. Organisations with a maximum of 10 maintenance staff actively engaged in carrying out maintenance may contract or delegate the independent audit element of the quality system to another organisation or a qualified and competent person, in both cases approved by the NMAA.	The independence of the audit should be established by always ensuring that audits are carried out by personnel not responsible for the function, procedure or products being checked. It therefore follows that a large maintenance organisation, being a maintenance organisation with more than about 500 maintenance staff should have a dedicated quality audit group whose sole function is to conduct audits, raise finding reports and follow up to check that findings are being rectified. For the medium sized maintenance organisation, being a maintenance organisation with less than about 500 maintenance staff, it is acceptable to use competent personnel from one section/department not responsible for the maintenance function, procedure or product to audit the section/department that is responsible subject to the overall planning and implementation being under the control of the quality manager. Maintenance organisations with a maximum of 10 maintenance staff actively engaged in carrying out maintenance may contract or delegate the independent audit element of the quality system to another organisation or a qualified and competent person, in both cases approved by the NMAA.	1. ‘maintenance’ added for clarity. Text amended for clarity, because an AMO carries out maintenance, not production (see EMAR 145.A.47(a)

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
GM 145.A.65 (c)(1) Safety and quality policy, maintenance procedures and quality system	2.			Table has been updated to include Paragraph 145.A.48
AMC 145.A.70(a) Maintenance Organisation Exposition (MOE)	4.	Small maintenance organisations may combine the various items to form a simple exposition more relevant to their needs.	►◄ NOT APPLICABLE.	Reference to 'small 'AMOs removed from EMAR 145.
	6	1.6 List of certifying staff and B1,B2 and B mil support staff	1.6 List of certifying staff and ►◄ support staff	Text deleted at EASA 2012/004/R
		2.1 Supplier evaluation and subcontract control procedure	2.1 Supplier evaluation and contract/tasking control procedure	1. Reference to sub-contract removed. Contracts are either with approved or non-approved organisations. 2. 'tasking' added because military units will not be contracted but tasked.
		2.2 Acceptance/inspection of aircraft components and material from outside contractors	2.2 Acceptance/inspection of aircraft components and material from outside contractors/organisations	'organisations' added for the military context.
		2.24 Reference to specific maintenance procedures such as: - Engine running procedures - Aircraft pressure run procedures - Aircraft towing procedures - Aircraft taxiing procedures	2.24 Reference to specific maintenance procedures such as: - Engine running procedures - Aircraft pressure run procedures - Aircraft towing procedures - Aircraft taxiing procedures - Aircraft military specific systems procedures	'Aircraft military specific systems procedures' added for military context.
		2.28 Production planning procedures	2.28 Maintenance planning procedures	Amended to align with terminology used in EMAR 145.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
		L2.4 Line procedure for completion of technical log	L2.4 Line procedure for completion of aircraft technical log	'aircraft' added to align with nomenclature used in EMAR M.
		3.4 Certifying staff and category B1, B2 and B mil support staff qualification and training procedures	3.4 Certifying staff and ►◄ support staff qualification and training procedures	Category B1, B2...' deleted at EASA amendment 20012/004/R.
		3.5 Certifying staff and category B1, B2 and B mil support staff records	3.5 Certifying staff and ►◄ support staff records	Category B1, B2...' deleted at EASA amendment 20012/004/R.
			3.15 Training procedures for On-the-Job Training as per Section 6 of Appendix III to EMAR 66	Added by EASA at 2012/004/R (Note EASA words slightly amended because in a pMS's military environment there is only one regulator.)
			3.16 Procedure for the issue of a recommendation to the NMAA for the issue of a MAML in accordance with EMAR 66.B.105	Added by EASA at 2012/004/R (Note EASA words slightly amended because in a pMS's military environment there is only one regulator.)
		PART 4 This section is reserved for describing the procedures, paperwork and records associated with the CAMOs that place tasks on the AMO/Tasking CAMO.	PART 4 This section is reserved for describing the procedures, paperwork and records associated with the CAMOs that place tasks on the maintenance organisation ►◄.	1. ''AMO' replaced by 'maintenance organisation' for clarity. 2. '/Tasking CAMO' removed for clarity.
		5.2 List of Subcontractors as per EMAR 145.A.75 (b)	5.2 List of contractors/tasked organisations as per EMAR 145.A.75(b)	1. Reference to sub-contract removed. Contracts are either with approved or non-approved organisations. 2. 'tasked' added because military units will not be contracted but tasked.
		5.4 List of contracted organisations as per EMAR 145.A.70 (a)(16)	5.4 List of contracted/tasked organisations as per EMAR 145.A.70(a)(16)	'tasked' added because military units will not be contracted but tasked.
		PART 6 OPERATING ORGANISATION'S MAINTENANCE PROCEDURES This section is reserved for those maintenance organisations approved under EMAR 145 who are also operating organisations.	PART 6 OPERATING ORGANISATION'S MAINTENANCE PROCEDURES This section is reserved for those maintenance organisations who are also part of Operating Organisations.	'part of' added for clarity. The AMO is not in itself the Operating Organisation, but part of it.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
GM 145.A.70 (a) Maintenance Organisation Exposition (MOE)	3.	EMAR 145.A.70 (a)(1) to (a)(11) constitutes the _management' part of the MOE and therefore could be produced as one document and made available to the person(s) specified under EMAR 145.A.30 (b) who should be reasonably familiar with its contents. EMAR 145.A.70 (a)(6) list of certifying staff and B1, B2 and B mil support staff may be produced as a separate document.	EMAR 145.A.70(a)(1) to (a)(11) constitutes the 'management' part of the MOE and therefore could be produced as one document and made available to the person(s) specified under EMAR 145.A.30(b) who should be reasonably familiar with its contents. EMAR 145.A.70(a)(6) list of certifying staff and ►◄ support staff may be produced as a separate document.	'B1, B2...' deleted to align with the rest of the EMAR.
	5.	Personnel are expected to be familiar with those parts of the manuals that are relevant to the maintenance work they carry out.	Personnel are expected to be familiar with those parts of the MOE/manuals that are relevant to the maintenance work they carry out.	'MOE' added for clarity.
	6.	The organisation should specify in the MOE who should amend the manual particularly in the case where there are several parts.	The maintenance organisation should specify in the MOE who should amend the MOE/manuals particularly in the case where there are several parts.	1. 'maintenance' added for clarity. 2. 'MOE' added for clarity.
	8b.	The maintenance procedures covering all aspects of how aircraft components may be accepted from outside sources and how aircraft will be maintained to the required standard.	The maintenance procedures covering all aspects of how aircraft components may be accepted from outside sources and how aircraft, engines and or components will be maintained to the required standard.	'engines and/or components' added to align with EMAR 145 Annex II Table 1.
	8c.	The quality system procedures including the methods of qualifying mechanics, inspection, certifying staff and quality audit personnel.	The quality system procedures including the methods of qualifying mechanics, inspection, certifying staff, support staff and quality audit personnel.	'support staff' added to align with the rest of the document.
	8d.	Contracting procedures and paperwork.	Contracting/tasking procedures and paperwork.	'tasking' added because military units will not be contracted but tasked.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.A.75(b) Privileges of the AMO	1.	Working under the quality system of an organisation appropriately approved under EMAR 145 (sub-contracting) refers to the case of one organisation, not itself appropriately approved to EMAR 145 that carries out aircraft line maintenance or minor engine maintenance or maintenance of other aircraft components or a specialised service as a subcontractor for an organisation appropriately approved under EMAR 145. To be appropriately approved to subcontract, the organisation should have a procedure for the control of such subcontractors as described below. Any Approved Maintenance Organisation that carries out maintenance for another Approved Maintenance Organisation within its own approval scope is not considered to be subcontracting for the purpose of this paragraph.	Working under the quality system of the AMO ►◄ refers to the case of one organisation, not itself appropriately approved to EMAR 145 that carries out aircraft line maintenance or minor engine maintenance or maintenance of other aircraft components or a specialised service as a contractor/tasked maintenance organisation for a maintenance organisation appropriately approved under EMAR 145. To be appropriately approved to contract/task with a non-approved maintenance organisation, the AMO should have a procedure for the control of such contractors/tasked maintenance organisations as described below. ►◄	1. Paragraph rewritten to avoid ambiguity with contracting and sub-contracting. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked. 3. maintenance' added for clarity. Last sentence is unnecessary due to the rewritten text above, because there is no reference to sub-contracting in EMAR 145.
	3.	Fundamentals of sub-contracting under EMAR 145	Fundamentals of contracting/tasking a non-approved maintenance organisation under EMAR 145.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasking' added because military units will not be contracted but tasked.
	3.1	The fundamental reasons for allowing an organisation approved under EMAR 145 to sub-contract certain maintenance tasks are:	The fundamental reasons for allowing an AMO to contract/task a non-approved maintenance organisation certain maintenance tasks are:	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'task' added because military units will not be contracted but tasked.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	3.1(b)	To permit the acceptance of aircraft maintenance up to but not including a base maintenance check as specified in EMAR 145.A.75 (b) by organisations not appropriately approved under EMAR 145 when it is unrealistic to expect direct approval by the NMAA. The NMAA will determine when it is unrealistic but in general it is considered unrealistic if only one or two organisations intend to use the sub-contract organisation.	To permit the acceptance of aircraft maintenance up to but not including a base maintenance check as specified in EMAR 145.A.75(b) by maintenance organisations not appropriately approved under EMAR 145 when it is unrealistic to expect direct approval by the NMAA. The NMAA should determine when it is unrealistic but in general it is considered unrealistic if only one or two AMOs intend to use the contracted/tasked maintenance organisation.	1. 'maintenance' added for clarity. 2. 'will' replaced by 'should' for correct nomenclature in the AMCs. 3. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 4. 'tasked' added because military units will not be contracted but tasked.
	3.2	When maintenance is carried out under the sub-contract control system it means that for the duration of such maintenance, the EMAR 145 approval has been temporarily extended to include the sub-contractor. Consequently those parts of the sub-contractor`s facilities, personnel and procedures involved with the maintenance organisation's products undergoing maintenance should meet EMAR 145 requirements for the duration of that maintenance and it remains the organisation's responsibility to ensure such requirements are satisfied.	When maintenance is carried out under the 'contract/task with a non-approved maintenance organisation' control system it means that for the duration of such maintenance, the EMAR 145 approval has been temporarily extended to include the non-approved contractor/tasked maintenance organisation. Consequently those parts of the non-approved contractor`s/tasked maintenance organisation's facilities, personnel and procedures involved with the AMO's products undergoing maintenance should meet EMAR 145 requirements for the duration of that maintenance and it remains the AMO's responsibility to ensure such requirements are satisfied.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	3.3	For the criteria specified in sub-paragraph 3.1, the organisation is not required to have complete facilities for maintenance that it needs to sub-contract. Nevertheless, it should have its own expertise to determine that the sub-contractor meets the necessary standards. However, an organisation cannot be approved unless it has the in-house facilities, procedures and expertise to carry out the majority of maintenance for which it wishes to be approved in terms of the number of class ratings.	For the criteria specified in sub-paragraph 3.1, the AMO is not required to have complete facilities for maintenance that it needs to contract/task. Nevertheless, it should have its own expertise to determine that the non-approved contractor/tasked maintenance organisation meets the necessary standards. However, a maintenance organisation cannot be approved unless it has the in-house facilities, procedures and expertise to carry out the majority of maintenance for which it wishes to be approved in terms of the number of class ratings.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked. 3. 'maintenance' added for clarity.
	3.4	The organisation may find it necessary to include several specialist sub-contractors to enable it to be approved to completely certify the release to service of a particular product. Examples could be specialist welding, electro-plating, painting etc. To authorise the use of such subcontractors, the NMAA should be satisfied that the organisation has the necessary expertise and procedures to control such sub-contractors.	The AMO may find it necessary to include several specialist non-approved contractors/tasked maintenance organisations to enable it to be approved to completely certify the release to service of a particular product. Examples could be specialist welding, electro-plating, painting etc. To authorise the use of such non-approved contractors/tasked maintenance organisations, the NMAA should be satisfied that the AMO has the necessary expertise and procedures to control such non-approved contractors/tasked maintenance organisations.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	3.5	An organisation working outside the scope of its approval schedule is deemed to be not approved. Such an organisation should in this circumstance operate only under the sub-contracted control of another organisation approved under EMAR 145.	An AMO working outside the scope of its approval schedule is deemed to be not approved for this work. Such an AMO should in this circumstance operate only under the contracted/tasked control of another AMO.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked. 3. 'for this work' added for clarity
	3.6	Authorisation to sub-contract is indicated by the NMAA accepting the Maintenance Organisation Exposition containing a specific procedure on the control of sub-contractors.	Authorisation to contract/task non-approved maintenance organisations is indicated by the NMAA accepting the MOE containing a specific procedure on the control of non-approved contractors/tasked maintenance organisations.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked.
	4.	Principal EMAR 145 procedures for the control of sub-contractors not approved under EMAR 145	Principal EMAR 145 procedures for the control of contractors/tasked maintenance organisations not approved under EMAR 145.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked.
	4.1	A pre-audit procedure should be established whereby the maintenance organisation's subcontract control section, which may also be the EMAR 145.A.65(c) quality system independent audit section, should audit a prospective subcontractor to determine whether those services of the subcontractor that it wishes to use meet the intent of EMAR 145.	A pre-audit procedure should be established whereby the AMO's 'contract/task a non-approved maintenance organisation' control section, which may also be the EMAR 145.A.65(c) quality system independent audit section, should audit a prospective non-approved contractor/tasked maintenance organisation to determine whether those services of the non-approved contractor/tasked maintenance organisation that it wishes to use meet the intent of EMAR 145.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	4.2	The EMAR 145 Approved Maintenance Organisation (AMO) should assess to what extent it will use the sub-contractor`s facilities. As a general rule the EMAR 145 AMO should require its own paperwork, approved data and material/spare parts to be used, but it could permit the use of tools, equipment and personnel from the subcontractor as long as such tools, equipment and personnel meet the requirements of EMAR 145. In the case of sub-contractors who provide specialised services it may, for practical reasons, be necessary to use their specialised services personnel, approved data and material subject to acceptance by the EMAR 145 AMO.	The AMO should assess to what extent it will use the non-approved contractor`s/tasked maintenance organisation's facilities. As a general rule the AMO should require its own paperwork, approved data and material/spare parts to be used, but it could permit the use of tools, equipment and personnel from the non-approved contractor/tasked maintenance organisation as long as such tools, equipment and personnel meet the requirements of EMAR 145. In the case of non-approved contractors/tasked maintenance organisations who provide specialised services it may, for practical reasons, be necessary to use their specialised services personnel, approved data and material subject to acceptance by the AMO.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked.
	4.3	Unless the sub-contracted maintenance work can be fully inspected on receipt by the EMAR 145 AMO such an organisation should supervise the inspection and release from the sub-contractor. Such activities should be fully described in the MOE. The EMAR 145 AMO should consider whether to use its own staff or authorise the sub-contractor's staff.	Unless the contracted/tasked maintenance work can be fully inspected on receipt by the AMO, the AMO should supervise the inspection and release from the non-approved contractor/tasked maintenance organisation. Such activities should be fully described in the MOE. The AMO should consider whether to use its own staff or authorise the non-approved contractor's/tasked maintenance organisation's staff.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	4.4	The certificate of release to service for components may be issued either at the sub-contractor or at the EMAR 145 AMO facility by staff holding a certification authorisation in accordance with EMAR 145.A.30 as appropriate. Such staff would normally come from the EMAR 145 AMO but may otherwise be a person from the sub-contractor who meets the Approved Maintenance Organisation certifying staff standard which itself is approved by the NMAA via the Maintenance Organisation Exposition. The certificate of release to service for components and the EMAR Form 1 will always be issued under the maintenance organisation approval reference.	The CRS for components may be issued either at the non-approved contractor/tasked maintenance organisation or at the AMO facility by staff holding a certification authorisation in accordance with EMAR 145.A.30 as appropriate. Such staff would normally come from the AMO but may otherwise be a person from the non-approved contractor/tasked maintenance organisation who meets the AMO certifying staff standard which itself is approved by the NMAA via the MOE. The CRS for components and/or the EMAR Form 1 should always be issued under the AMO approval reference.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked. 3. 'and/or the EMAR Form 1' added to clarify that it may be the CRS or an EMAR Form 1 for any specific work carried out. 4. 'will' replaced by 'should' for correct use of nomenclature in the AMCs.
	4.5	The sub-contract control procedure should record audits of the sub-contractor, to have a corrective action follow-up plan and to know when sub-contractors are being used. The procedure should include a clear revocation process for subcontractors who do not meet the EMAR 145 AMO's requirements.	The 'contract/task a non-approved maintenance organisation' control procedure should record audits of the non-approved contractor/tasked maintenance organisation, to have a corrective action follow-up plan and to know when non-approved contractors/tasked maintenance organisations are being used. The procedure should include a clear revocation process for non-approved contractors/tasked maintenance organisations who do not meet the AMO's requirements.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	4.6	The EMAR 145 AMO's quality audit staff should audit the sub-contract control section and sample audit sub-contractors unless this task is already carried out by the quality audit staff as stated in sub-paragraph 4.1.	The AMO's quality audit staff should audit the 'non-approved maintenance organisation contract/tasking control section' and sample audit non-approved contractors/tasked maintenance organisations unless this task is already carried out by the quality audit staff as stated in sub-paragraph 4.1.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked.
	4.7	The contract between the EMAR 145 AMO and the sub-contractor should contain a provision for the NMAA or a qualified entity acting on behalf of the NMAA to have right of access to the sub-contractor.	The contract between the AMO and the non-approved contractor/tasked maintenance organisation should contain a provision for the NMAA or a qualified entity acting on behalf of the NMAA to have right of access to the non-approved contractor/tasked maintenance organisation.	1. In EMAR 145 there is only contracting with an approved organisation or contracting with a non-approved organisation. 2. 'tasked' added because military units will not be contracted but tasked.
AMC 145.A.80 Limitations on the AMO		This paragraph is intended to cover the situation where a large organisation may temporarily not hold all the necessary tools, equipment etc., for an aircraft type or variant specified in the organisation's approval. This paragraph means that the NMAA need not amend the approval to delete the aircraft type or variants on the basis that it is a temporary situation and there is a commitment from the organisation to re-acquire tools, equipment etc. before maintenance on the type may recommence.	This paragraph is intended to cover the situation where ►◄ an AMO may temporarily not hold all the necessary tools, equipment etc., for an aircraft type or variant specified in the AMO's approval. This paragraph means that the NMAA need not amend the approval to delete the aircraft type or variants on the basis that it is a temporary situation and there is a commitment from the AMO to re-acquire tools, equipment etc. before maintenance on the type may recommence.	'a large organisation' replaced by 'AMO' because this should apply to all AMOs within the Military environment.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.B.20(a) Initial approval	1.	'Formally indicated by the NMAA in writing' means that the EMAR Form 4 should be used for this activity. With the exception of the Accountable Manager, an EMAR Form 4 should be completed for each person nominated to hold a position as required by EMAR 145.A.30(b).	'The NMAA shall formally indicate its acceptance of the personnel,' means that the EMAR Form 4 should be used for this activity. With the exception of the Accountable Manager, an EMAR Form 4 should be completed for each person nominated to hold a position as required by EMAR 145.A.30(b).	Text changed to accurately reflect the text used in the Requirement.
AMC 145.B.20(f) Initial approval	2.	There may be occasions when the NMAA surveyor may find situations in the applicant's organisation on which he/she is unsure about compliance. In this case, the organisation should be informed about possible non-compliance at the time and the fact that the situation will be reviewed within the NMAA before a decision is made. If the decision is a finding of being in compliance then a verbal confirmation to the organisation will suffice.	There may be occasions when the NMAA surveyor may find situations in the applicant's maintenance organisation on which he/she is unsure about compliance. In this case, the maintenance organisation should be informed about possible non-compliance at the time and the fact that the situation will be reviewed within the NMAA before a decision is made. If the decision is a finding of being in compliance then a verbal confirmation to the maintenance organisation should suffice.	1. 'maintenance' added for clarity. 2. 'will' changed to 'should' for correct use of nomenclature in the AMCs.
AMC 145.B.35 Changes		The NMAA should have adequate control over any changes to the management personnel specified in EMAR 145.A.30 (a) and (b) and such changes in personnel will require an amendment to the MOE.	The NMAA should have adequate control over any changes to the management personnel specified in EMAR 145.A.30(a) and (b) and such changes in personnel should require an amendment to the MOE.	'will' changed to 'should' for correct use of nomenclature in the AMCs.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
AMC 145.B.40 MOE amendments	3.	The organisation should submit each MOE amendment to the NMAA whether it is an amendment for approval or a delegated approval amendment. Where the amendment requires approval by the NMAA, the NMAA should indicate its approval in writing when satisfied. Where the amendment has been submitted under the delegated approval procedure the NMAA should acknowledge receipt in writing.	The AMO should submit each MOE amendment to the NMAA whether it is an amendment for direct approval or an indirect approval amendment. Where the amendment requires approval by the NMAA, the NMAA should indicate its approval in writing when satisfied. Where the amendment has been submitted under the indirect approval procedure the NMAA should acknowledge receipt in writing.	Changes made to paragraph to align with wording used in Requirement.
AMC 145.B.50(a) Findings		- Failure to gain access to the organisation during normal operating hours of the organisation in accordance with EMAR 145.A.90(2) after two written requests.	- Failure to gain access to the AMO during normal operating hours of the AMO in accordance with EMAR 145.A.90(a)(2) after two written requests.	EMAR 145.A.90(a)(2) is the correct reference.
		- The training documents of the certifying staff are not completed.	- The training documents of the certifying staff or support staff are not completed.	1. Amended to align with nomenclature used throughout EMAR 145.
GM 145.B.55 Record-keeping			The NMAA may elect to use either a paper or computer system or any combination of both subject to appropriate controls.	Text moved from EMAR 145.B.55 (because it is considered as GM material.
AMC to Appendix I to EMAR 145			AMC to EMAR Form 1 is contained in the EMAR Forms document.	All EMAR Forms are now contained in the EMAR Forms document.
Appendix I to AMC 145.B.20(a): EMAR Form 4			EMAR Form 4 is contained in the EMAR Forms document.	All EMAR Forms are now contained in the EMAR Forms document.
Appendix II to AMC 145.B.20(e): EMAR Form 6			EMAR Form 6 is contained in the EMAR Forms document.	All EMAR Forms are now contained in the EMAR Forms document.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
Appendix III to EMAR AMC 145.A.15 EMAR Form 2			EMAR Form 2 is contained in the EMAR Forms document.	All EMAR Forms are now contained in the EMAR Forms document.
Appendix IV to EMAR AMC 145.A.30(e) and EMAR AMC 145.B.10(c)	B	Affected organisations: EMAR 145 Approved Maintenance Organisations involved in the maintenance of aircraft specified in paragraph A) and fuel system components installed on such aircraft when the maintenance data are affected by CDCCL (if applicable). NMAAs responsible as per EMAR 145.B.30 for the oversight of the EMAR 145 approved organisations specified in this paragraph B).	Affected organisations: AMOs involved in the maintenance of aircraft specified in paragraph A) and fuel system components installed on such aircraft when the maintenance data are affected by CDCCL (if applicable). CAMO's involved in the continuing airworthiness management of aeroplanes specified in paragraph A). NMAAs responsible as per EMAR 145.B.30 for the oversight of the AMOs specified in this paragraph B) and as per EMAR M.B.704 for the oversight of CAMOs specified in this paragraph B).	1. Additional text taken from EASA Part M which also has this Appendix. A single Appendix for Fuel Tank Safety Training is included in EMAR 145 - EMAR M references are therefore included in this Appendix. 2. Additional text added because this Appendix applies also to CAMOs. 3. Additional text added because this Appendix applies also to NMAAs overseeing CAMOs.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	C	Persons from affected organisations who should receive training: Phase 1 only: The group of persons representing the maintenance management structure of the organisation, the quality manager and the staff required to quality monitor the organisation. Personnel of the NMAA responsible as per EMAR 145.B.30 for the oversight of EMAR 145 Approved Maintenance Organisations specified in paragraph B). Phase 1 + Phase 2 + Continuation training: Personnel of the EMAR 145 Approved Maintenance Organisation required to plan, perform, supervise, inspect and certify the maintenance of aircraft and fuel system components specified in paragraph A).	Persons from affected organisations who should receive training: Phase 1 only: The group of persons representing the maintenance management structure of the AMO, the quality manager and the staff required to quality monitor the AMO. Personnel of the NMAA responsible as per EMAR 145.B.30 for the oversight of AMOs specified in paragraph B) and as per EMAR M.B.704 for the oversight of CAMOs specified in paragraph B). Phase 1 + Phase 2 + Continuation training: Personnel of the AMO required to plan, perform, supervise, inspect and certify the maintenance of aircraft and fuel system components specified in paragraph A). Personnel of the CAMO involved in the management and review of the continuing airworthiness of aircraft specified in paragraph A).	Additional text taken from EASA Part M which also has this Annex. A single Annex for Fuel Tank Safety Training is included in EMAR 145 - EMAR M references are therefore included in this Annex.

Paragraph	Sub-Para	EMAR 145 Ed 1.1 wording	EMAR 145 Ed 1.2 revised wording	Notes
	D	Continuation training The AMO should ensure that the continuation training is required in each two years period. The syllabus of the training programme referred to in 3.4 of the MOE should include the additional syllabus for this continuation training.	Continuation training The AMO/CAMO should ensure that the continuation training is required in each two years period. The syllabus of the training programme referred to in 3.4 of the MOE or 0.3(e) of the CAME should include the additional syllabus for this continuation training.	Additional text added because this Appendix applies also to CAMOs. Reference to the correct section of the CAME is also included.
	E c)	awareness of any hazards especially when working on the fuel system, and when the Flammability Reduction System using nitrogen is installed.	awareness of any hazards especially when working on the fuel system, and when the Flammability Reduction System (FRS) using nitrogen is installed.	Acronym 'RFS' introduced because this is the first use.
	E vii)	Flammability Reduction Systems (FRS) when installed: reason for their presence, their effects, the hazards of an FRS using nitrogen for maintenance, safety precautions in maintenance/working with an FRS,	►◄ FRS when installed: reason for their presence, their effects, the hazards of an FRS using nitrogen for maintenance, safety precautions in maintenance/working with an FRS.	'flammability Reduction Systems' replaced by 'FRS' because acronym is explained in previous paragraph.
	F	Approval of training For AMOs the approval of the initial and continuation training programme and the content of the examination can be achieved through the MOE.	Approval of training For AMOs/CAMOs, the approval of the initial and continuation training programme and the content of the examination can be achieved through the MOE/CAME.	Additional text added because this Appendix applies also to CAMOs. Reference to the CAME is also included.