EUROPEAN MILITARY AIRWORTHINESS REQUIREMENT

EMAR 145

AMC & GM

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2.1	27 May 2025	Approved	Missing text added in first paragraph	AMC1 145.A.30(cc) item (f)

DOCUMENT STATUS

The Status of the document can take 3 values:

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Approved: Final version approved by the participating Member States for publication.

EDITION

The Edition value of document will have the following template: **Edition X.YY**

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

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

NOTE:

1. Where the content of any of the paragraphs from the previous document has been amended, this is indicated by the use of a ‘sidebar’ in the margin.

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. 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. This EMAR AMC & GM relies on the EASA “Easy Access Rules for Continuing Airworthiness (Regulation (EU) No 1321/2014)” published in December 2022.

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ACCEPTABLE MEANS OF COMPLIANCE & GUIDANCE MATERIAL

GENERAL

GM1 to EMAR 145 Definitions

For the purpose of the AMC & GM to EMAR 145, the following definitions are used:

Audit	refers to a systematic, independent, and documented process for obtaining evidence, and evaluating it objectively to determine the extent to which requirements are complied with. Note: Audits may include inspections.
Alternative means of compliance	are those means that propose an alternative to an existing AMC or those that propose new means to establish compliance with EMARs for which no associated AMC have been adopted by the NMAA.
Assessment	in the context of management system performance monitoring, continuous improvement and oversight, refers to a planned and documented activity performed by competent personnel to evaluate and analyse the achieved level of performance and maturity in relation to the organisation's policy and objectives. Note: An assessment focuses on desirable outcomes and the overall performance, looking at the organisation as a whole. The main objective of the assessment is to identify the strengths and weaknesses to drive continual improvement. Remark: For 'risk assessment', please refer to the definition below.
Base maintenance	Ref. AMC1 145.A.10
Base maintenance hangar	refers to a closed facility that can house an aircraft and protect it from environmental conditions.
Competency	is a combination of individual skills, practical and theoretical knowledge, attitudes, training, and experience.
Correction	is the action to eliminate a detected non-compliance.
Corrective action	is the action to eliminate or mitigate the root cause(s) and prevent the recurrence of an existing detected non-compliance, or other undesirable conditions or situations. Proper determination of the root cause(s) is crucial for defining effective corrective actions to prevent reoccurrence.
Error	is an action or inaction by a person that may lead to deviations from accepted procedures or regulations. Note: Errors are often associated with occasions where a planned sequence of mental or physical activities either fails to achieve its

	intended outcome, or is not appropriate with regard to the intended outcome, and when results cannot be attributed purely to chance
Fatigue	is a physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness, circadian phase, or workload (mental and/or physical activity) that can impair a person's alertness and ability to safely perform his or her tasks.
Hazard	is a condition or an object with the potential to cause or contribute to an aircraft incident or accident.
Human factors	is anything that affects human performance, which means principles that apply to aeronautical activities, and which seek safe interface between the human and other system components by proper consideration of human performance.
Human performance	refers to human capabilities and limitations which have an impact on the safety and efficiency of aeronautical activities.
Inspection	in the context of compliance monitoring and oversight, refers to an independent documented conformity evaluation by observation and judgement accompanied, as appropriate, by measurement, testing or gauging, in order to verify compliance with applicable requirements. Note: Inspection may be part of an audit (e.g. product audit), but may also be conducted outside the normal audit plan; for example, to verify closure of a particular finding.
Just Culture	means a culture in which front-line operators or other persons are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but in which gross negligence, wilful violations and destructive acts are not tolerated.
Line maintenance	Ref. AMC1 145.A.10
Near-miss	is an event in which an occurrence to be mandatorily reported according to national regulations was narrowly averted or avoided. Example: A mechanic on rechecking his or her work at the end of a task realises that one work card step was not properly carried out.
Organisational factor	is a condition that affects the effectiveness of safety risk controls, related to the culture, policies, processes, resources, and workplace of an organisation.
Oversight planning cycle	refers to the time frame within which all areas of the approval and all processes should be reviewed by the NMAA by means of audits and inspections.
Oversight programme	refers to the detailed oversight schedule that defines the number of audits and inspections, the scope and duration of each audit and inspection, including details of product audits and locations, as appropriate, to be performed by the NMAA, and the tentative time frame for performing each audit and inspection.

Post holder(s)	means the person(s) nominated in accordance with EMAR 145.A.145(b).
Preventive action	is the action to eliminate the cause of a potential non-compliance, or other undesirable potential situation.
Risk assessment	is an evaluation based on engineering and operational judgement and/or analysis methods in order to establish whether the achieved or perceived risk is acceptable or tolerable.
Safety Culture	is an enduring set of values, norms, attitudes, and practices within an organisation concerned with minimising the exposure of the workforce and the general public to dangerous or hazardous conditions. In a positive safety culture, a shared concern for, commitment to, and accountability for safety is promoted.
Safety risk	refers to the predicted probability and severity of the consequences or outcomes of a hazard.
Safety training	refers to dedicated training to support safety management policies and processes, including human factors training. Note: The main purpose of the safety training programme is to ensure that personnel at all levels of the organisation maintain their competency to fulfil their roles safely. Safety training should, in particular, consider the safety knowledge derived from hazard identification and risk management processes, and support the fostering of a positive safety culture. Note: Safety management training refers to specific training for the staff involved in safety management functions in accordance with EMAR 145.A.30(ca) or EMAR 145.A.200(a)(3).

SECTION A – TECHNICAL AND ORGANISATION REQUIREMENTS

AMC1 145.A.10 Scope

(a) Line Maintenance refers to limited maintenance for the aircraft suitable to be carried out whilst the aircraft remains in the air operation environment.

Line maintenance may include:

- trouble shooting;
- defect rectification;
- component replacement with use of external test equipment if required. Component replacement may include components such as engines and propellers;
- maintenance that will detect obvious unsatisfactory conditions / discrepancies / malfunctions, but does not require extensive in-depth inspection. It may also include internal structure, systems and powerplant items which are visible through quick opening access panels/doors/ports;
- repairs, modifications and other maintenance tasks which do not require extensive disassembly and can be accomplished by simple means.

(b) 'Base maintenance' refers to any maintenance for the aircraft other than line maintenance.

(c) Organisations maintaining aircraft should have a procedure to determine whether the tasks or groups of tasks to be carried out fall under the line maintenance or base maintenance scope of the organisation, with due regard to the expected duration of the maintenance, number and type of tasks, shifts and disciplines involved, work environment, etc.

For temporary or occasional cases, the organisation may also have a procedure which allows, subject to a task assessment (including all relevant aspects and conditions), to conduct a base maintenance task under line maintenance environment.

(d) In particular, maintenance tasks of aircraft subject to 'progressive' or 'equalised' maintenance programmes should be individually assessed in respect of such procedure to ensure that all the tasks within the particular check can be carried out safely and to the required standards at the designated line maintenance station.

GM1 145.A.10 Scope

NOT APPLICABLE

AMC1 145.A.15 Application for an organisation certificate

An application should be made on an EMAR Form 2 (refer to Appendix III to AMC1 145.A.15) or an equivalent form that is acceptable to the NMAA.

EMAR Form 2 is also valid for the application of EMAR CAMO approval. Organisations that apply for both certificates may do so using a single EMAR Form 2.

AMC2 145.A.15 Application for an organisation certificate

GENERAL

(a) Draft documents should be submitted at the earliest opportunity so that the assessment of the application can begin. The initial certification or approval of changes cannot take place until the NMAA has received the completed documents.

(b) This information, including the results of the pre-audit specified in EMAR 145.A.15(b)(1), will enable the NMAA to conduct its assessment in order to determine the volume of certification and oversight work that is necessary and the locations where it will be carried out.

(c) The intent of the internal pre-audit referred to in EMAR 145.A.15(b)(1) is to ensure that the organisation has internally verified its compliance with the applicable EMARs. This should allow the organisation to demonstrate to the NMAA the extent to which the applicable requirements are complied with, and to provide assurance that the organisation management system (including compliance monitoring system) is established to a level that is sufficient to perform maintenance activities.

AMC1 145.A.20 Terms of approval and scope of work

Table 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.

AMC2 145.A.20 Terms of approval and scope of work

Facilities such as stores, line stations, component or subcontractors workshops that are not located together with the main facilities of the organisation may be covered by the organisation approval without being identified on the organisation certificate, provided that the MOE identifies these facilities and contains procedures to control such facilities, and the NMAA is satisfied that they form an integral part of the approved maintenance organisation (MO).

AMC1 145.A.25(a) Facility requirements

1. Where the hangar is not owned by the 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 intended maintenance activities. 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. Subject to a risk assessment and agreement by the NMAA, the organisation may use facilities at the approved location other than a base maintenance hangar for certain aircraft

base maintenance tasks, provided that those facilities offer levels of weather and environmental protection that are equivalent to those of a base maintenance hangar, as well as a suitable working environment for the particular work package. This does not exempt an organisation from the requirement to have a base maintenance hangar in order to be approved to conduct base maintenance at a given location.

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(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.
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.

AMC1 145.A.30(a) Personnel requirements

ACCOUNTABLE MANAGER

Accountable manager is normally intended to mean the Chief Executive Officer or senior military commander of the approved MO, who by virtue of his or her position has overall (including in particular resource allocation) responsibility for running the organisation. The accountable manager may be the accountable manager for more than one organisation and is not necessarily required to be knowledgeable on technical matters as the MOE defines the maintenance standards. When the accountable manager is not the Chief Executive Officer or senior military commander, the organisation should demonstrate to the NMAA that the accountable manager has direct access to the Chief Executive Officer or senior military commander and has the necessary 'resource allocation' for the intended maintenance activities.

AMC1 145.A.30(b) Personnel requirements

MANAGEMENT STRUCTURE FOR MAINTENANCE

The person or group of persons nominated under EMAR 145.A.30(b), with the responsibility to ensure that the organisation works in accordance with the MOE and approved procedures (i.e. responsibility for ensuring compliance) should represent the management structure of the organisation and be responsible for the daily operation of the organisation, in respect of all maintenance-related functions.

1. Dependent upon the size of the MO, the EMAR 145 maintenance functions may be divided under nominated persons or combined in any number of ways. However, a maintenance function cannot be combined with the compliance monitoring function.

The maintenance functions include maintenance/safety training, performance and certification of maintenance, equipment and component procurement, facility management, man-hour plan, etc., and it should be ensured that each EMAR 145 maintenance function is attributed to one nominated person.

2. Dependent upon the extent of approval, the organisation structure should normally include a base maintenance manager, a line maintenance manager and a workshop manager, all of whom should report to the accountable manager except in a small EMAR 145 organisation where any one manager may also be the accountable manager, as determined by the NMAA.

3. The base maintenance manager is responsible for ensuring that all base maintenance, plus any defect rectification carried out during base maintenance, is carried out in the base maintenance hangar (or facility as provided for in point 4 of AMC1 145.A.25(a)) and to the standards specified in EMAR 145.A.65. The base maintenance manager is also responsible for base maintenance-related corrective actions resulting from the compliance monitoring of EMAR 145.A.200(a)(6).

4. The line maintenance manager is responsible for ensuring that all line maintenance including line defect rectification is carried out to the standards specified in EMAR 145.A.65. This manager is also responsible for line maintenance-related corrective actions resulting from the compliance monitoring of EMAR 145.A.200(a)(6).

5. The workshop manager is responsible for ensuring that all work on aircraft components in the workshop is carried out to the standards specified in EMAR 145.A.65. This manager is also responsible for workshop-related corrective actions resulting from the compliance monitoring of EMAR 145.A.200(a)(6).

6. (reserved).

7. Notwithstanding the examples of titles provided in points 2 - 5, the organisation may adopt any title for the foregoing managerial positions but it should identify to the NMAA the titles and persons chosen to carry out these functions.

8. Where an organisation chooses to appoint managers for all or any combination of the identified maintenance functions because of the size of the undertaking, these managers should report to the accountable manager through the nominated persons.

GM1 145.A.30(b) Personnel requirements

RESPONSIBILITY FOR ENSURING COMPLIANCE

The person(s) nominated in accordance with EMAR 145.A.30(b) are responsible, in the day-to-day maintenance activities, for ensuring that the organisation personnel work in accordance with the applicable procedures and regulatory requirements.

These nominated persons should demonstrate a complete understanding of the applicable regulatory requirements and ensure that the organisation’s processes and standards accurately reflect these requirements. It is their role to ensure that compliance is proactively managed, and that early warning signs of non-compliance are documented and acted upon.

AMC1 145.A.30(c);(ca) Personnel requirements

SAFETY MANAGEMENT AND COMPLIANCE MONITORING FUNCTION

(a) Safety management

If more than one person is designated for the development, administration and maintenance of effective safety management processes, the accountable manager should identify the person who acts as the unique focal point, i.e. the 'safety manager'.

The functions of the safety manager should be to:

(i) facilitate hazard identification, risk assessment and management;

(ii) monitor the implementation of actions taken to mitigate risks, as listed in the safety action plan, unless action follow-up is addressed by the compliance monitoring function;

(iii) provide periodic reports on safety performance to the safety review board (the functions of the safety review board are those defined in AMC1 145.A.200(a)(1));

(iv) ensure the maintenance of safety management documentation;

(v) ensure that there is safety training available, and that it meets acceptable standards;

(vi) provide advice on safety matters; and

(vii) ensure the initiation and follow-up of internal occurrence investigations.

(b) Compliance monitoring function

If more than one person is designated for the compliance monitoring function, the accountable manager should identify the person who acts as the unique focal point, i.e. the 'compliance monitoring manager'.

(1) The role of the compliance monitoring manager should be to ensure that:

(i) the activities of the organisation are monitored for compliance with the applicable requirements and any additional requirements as established by the organisation, and that these activities are carried out properly under the supervision of the nominated persons referred to in points (b), (c) and (ca) of EMAR 145.A.30;

(ii) DE any maintenance contracted to another MO is monitored for compliance with the contract or work order;

(iii) an audit plan is properly implemented, maintained, and continually reviewed and improved; and

(iv) corrections and corrective actions are requested as necessary.

(2) The compliance monitoring manager should:

(i) not be one of the persons referred to in EMAR 145.A.30(b);

(ii) be able to demonstrate relevant knowledge, background and appropriate experience related to the activities of the organisation, including knowledge and experience in compliance monitoring; and

(iii) have access to all parts of the organisation, and as necessary, any subcontracted organisation.

(c) If the functions related to compliance monitoring or safety management are combined with other duties, the organisation should ensure that this does not result in any conflicts of interest. In particular, the compliance monitoring function should be independent from the maintenance functions.

(d) If the same person is designated to manage both the compliance monitoring function and safety management-related processes and tasks, the accountable manager, with regard to his or her direct accountability for safety, should ensure that sufficient resources are allocated to both functions, taking into account the size of the organisation, and the nature and complexity of its activities.

(e) Subject to a risk assessment and/or mitigation actions, and agreement by the NMAA, with due regard to the size of the organisation and the nature and complexity of its activities, the compliance monitoring manager role and/or safety manager role may be exercised by the accountable manager, provided that he or she has demonstrated the related competency.

GM1 145.A.30(ca) Personnel requirements

SAFETY MANAGER

(a) Depending on the size of the organisation and the nature and complexity of its activities, the safety manager may be assisted by additional safety personnel in performing all the safety management tasks defined in AMC1 145.A.200(a)(1).

(b) Regardless of the organisational set-up, it is important that the safety manager remains the unique focal point for the development, administration, and maintenance of the organisation's safety management processes.

GM1 145.A.30(cb) Personnel requirements

RESPONSIBILITY OF THE NOMINATED PERSONS TO THE ACCOUNTABLE MANAGER

There are different ways to set up the organisation including the possibility to have managerial layers between the accountable manager and the nominated person. But the key principle is that, regardless of the arrangement, there is one nominated person responsible for each EMAR 145 function, this responsibility is recognised by that nominated person and the accountable manager, and a direct communication channel exists between them. The nominated person's responsibility should not be diluted into the various levels of management and should be free of conflicts of interest.

AMC1 145.A.30(cc) Personnel requirements

KNOWLEDGE, BACKGROUND AND EXPERIENCE OF NOMINATED PERSON(S)

The person or persons to be nominated in accordance with points (b), (c) and (ca) of EMAR 145.A.30 should have:

(a) practical experience and expertise in the application of aviation safety standards and safe operating practices;

(b) knowledge of:

(1) human factors principles;

(2) safety management systems based on the principles detailed in Appendix I to Annexes B and C – Policy on Safety Management System (SMS) of Basic Framework Document (BFD) as well as compliance monitoring;

(c) 5 years of relevant work experience, of which at least 2 years should be from the aeronautical environment in an appropriate position;

(d) a relevant engineering or technical degree, or an aircraft technician or maintenance engineer qualification with additional education that is acceptable to the NMAA. 'Relevant engineering or technical degree' means a degree from aeronautical, mechanical, electrical, electronic, avionics or other studies that are relevant to the maintenance and/or continuing airworthiness of aircraft/aircraft components.

The provision set out in the first paragraph of point (d) may be replaced by 2 years of experience in addition to those already recommended by paragraph (c) above. These 2 years should cover an appropriate combination of experience in tasks/activities related to maintenance and/or continuing airworthiness management and/or the surveillance of such tasks.

For the person to be nominated in accordance with point (c) or (ca) of EMAR 145.A.30, in the case where the organisation holds one or more additional organisation certificates within the scope of EMARs and that person has already an equivalent position (i.e. compliance monitoring manager, safety manager) under the additional certificate(s) held, the provisions set out in the first two paragraphs of point (d) may be replaced by the completion of a specific training programme acceptable to the NMAA to gain an adequate understanding of maintenance standards and continuing airworthiness concepts and principles;

(e) thorough knowledge of the organisation's MOE and safety policy;

(f) knowledge of a relevant sample of the type(s) of aircraft or components gained through a formalised training course. These courses could be provided by an EMAR 147 organisation, by the manufacturer, by the EMAR 145 organisation or by any other organisation accepted by the NMAA. Aircraft/engine type training courses should be at least at a level equivalent to the EMAR 66 Appendix III Level 1 General Familiarisation.

'Relevant sample' means that these courses should cover typical aircraft or components that are within the scope of work of the organisation.

(g) knowledge of the relevant maintenance methods (and how they are applied in the organisation) and/or specific knowledge relevant to the area for which the person will be nominated;

(h) knowledge of the applicable regulations;

(i) adequate language and communication skills.

For the presentation to the NMAA of the knowledge, background and experience of the nominated personnel the organisation may consider using the EMAR Form 4 that is contained in the EMAR Forms document.

AMC1 145.A.30(d) Personnel requirements

SUFFICIENT NUMBER OF PERSONNEL

1. Has Sufficient staff means that the organisation employs or contracts 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 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 MO approved under EMAR 145, whereas contracted means the person is employed by another organisation and contracted by that organisation to the MO approved under EMAR 145.

2. The maintenance man-hour plan should take into account all maintenance 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 workload 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 organisational viability. Maintenance workload 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. For aircraft base maintenance, the maintenance man-hour plan should relate to the aircraft hangar visit plan as specified in AMC1 145.A.25(a).

5. For 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 man-hours allocated to the compliance monitoring function should be sufficient to meet the requirement of EMAR 145.A.200(a)(6) which means taking into account the AMC 145.A.200(a)(6). Where compliance monitoring staff perform other functions, the time allocated to those functions needs to be taken into account in determining the number of compliance monitoring staff.

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 compliance monitoring manager and the accountable manager for review. It may also be reported through the internal safety reporting scheme. A significant deviation means that there is 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.

9. In addition, as part of its management system in accordance with EMAR 145.A.200, the organisation should have a procedure to assess and mitigate the risks:

(1) if the actual number of staff available is less than the planned staffing level for any particular work shift or period;

(2) if there is a temporary increase in the proportion of contracted staff in order to meet specific operational needs.

AMC1 145.A.30(e) Personnel requirements

COMPETENCY ASSESSMENT OBJECTIVES

The procedure referred to in EMAR 145.A.30(e) should require amongst others that planners, mechanics, specialised services staff, supervisors, certifying staff and support staff, whether employed or contracted, are assessed for competency before unsupervised work commences and competency is controlled on a continuous basis.

Competency should be assessed by the evaluation of:

- on-the-job performance and/or testing of knowledge by appropriately qualified personnel, and
- records for basic, organisational, or tasks training 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 the 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:

- the scope of tasks this individual is authorised to perform and/or supervise and/or sign off (as applicable) or which level of ongoing supervision would be required;
- whether there is a need for additional training.

A record should be kept of each individual's qualifications and competency assessment (refer also to point EMAR 145.A.55(d)). This should include copies of all documents that attest to their qualifications, such as a MAML and/or any authorisation held, as applicable.

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

1. In accordance with the job function, adequate initial and recurrent training has been received by the staff and recorded to ensure continued competency 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 MO's procedures, as applicable to their duties.
3. All staff should be able to demonstrate an understanding of the safety management principles, including human factors related to their job function and be trained as per AMC4 145.A.30(e).
4. To assist in the assessment of competency and to establish the training needs analysis, job descriptions are recommended for each job function in the organisation. Job descriptions should contain sufficient criteria to enable the required competency assessment.
5. Criteria should allow the assessment to establish that, among other aspects (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, accountabilities and responsibilities in accordance with the safety policy and objectives and in compliance with the applicable requirements.
- 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. They are able to organise maintenance activities in an effective manner and in consideration of human performance limitations.
- Supervisors are able to ensure that all the required maintenance tasks are carried out and, if they are not completed or it is evident that a particular maintenance task cannot be carried out according to the maintenance data, that these problems will be adequately addressed to eliminate the non-compliance, and reported through the internal safety reporting scheme to prevent their reoccurrence. In addition, for those supervisors, who also carry out maintenance tasks, the assessment should ensure that they understand that such tasks should not be undertaken if they are incompatible with their management responsibilities.
- Mechanics are able to carry out maintenance tasks to any standard specified in the maintenance data and will notify their supervisors of any defects or mistakes requiring rectification to re-establish the 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 their supervisors and report accurately when necessary.
- Support staff are able to determine that the relevant tasks or inspections have been carried out to the required standard.
- Certifying staff are able to determine when the aircraft or aircraft component maintenance is ready to be released to service and when it should not be released to service.
- Compliance monitoring staff are able to monitor compliance with continuing airworthiness EMARs and to identify non-compliances in an effective and timely manner so that the organisation may remain in compliance with continuing airworthiness EMARs.
- Staff who have safety management responsibilities are familiar with the relevant processes in terms of hazard identification, risk management, and the monitoring of safety performance.
- All staff are familiar with the safety policy and the procedures and tools that can be used for internal safety reporting.

The competency assessment should be based upon the procedure specified in GM2 145.A.30(e).

AMC2 145.A.30(e) Personnel requirements

COMPETENCY ASSESSMENT PROCEDURE

(a) The organisation should develop a procedure that describes the process for conducting competency assessments of personnel. The procedure should specify:

(1) the persons who are responsible for this process;

(2) when the assessments should take place;

(3) how to give credit from previous assessments;

(4) how to validate qualification records;

(5) the means and methods to be used for the initial assessment;

(6) the means and methods to be used for the continuous control of competency, including how to gather feedback on the performance of personnel;

(7) the aspects of competencies to be observed during the assessment in relation to each job function;

(8) the actions to be taken if the assessment is not satisfactory; and

(9) how to record the assessment results.

(b) Competency may be assessed by having the person work under the supervision of another qualified person for a sufficient time to arrive at a conclusion. Sufficient time could range from several days to several weeks depending on the complexity of the task(s) and the work exposure. The person need not be assessed against the complete spectrum of their intended duties. If the person has been recruited from another approved MO, a written confirmation from the previous organisation could be taken into consideration to reduce the duration of the assessment.

(c) All prospective maintenance staff should be assessed for their competency related to their intended duties.

AMC3 145.A.30(e) Personnel requirements

INITIAL AND RECURRENT TRAINING

(a) Adequate initial and recurrent training should be provided in relation to the job function to ensure that staff remain competent. Completion of such training should be recorded.

(b) Recurrent training should take into account the information reported through the internal safety reporting scheme (see point (c)(3) of AMC1 145.A.202).

(c) Those responsible for managing the compliance monitoring function should receive training on this task. Such training should cover the requirements of compliance monitoring, manuals and procedures related to the task, audit techniques, reporting, and recording.

AMC4 145.A.30(e) Personnel requirements

SAFETY TRAINING (INCLUDING HUMAN FACTORS)

(a) With respect to the understanding of the application of safety management principles (including human factors), all MO personnel should be assessed for the need to receive initial safety training.

Personnel involved in the delivery of the basic maintenance service of the organisation should receive both initial and recurrent safety training, appropriate for their responsibilities. This should include at least the following staff members:

- Nominated persons, line managers, supervisors;
- Certifying staff, support staff and mechanics;
- Technical support personnel such as planners, engineers, technical record staff;

- Persons involved in compliance monitoring and/or safety management-related processes and tasks, including the application of human factors principles, internal investigations and safety training;
- Specialised services staff;
- Stores department staff, purchasing department staff;
- Ground equipment operators.

The generic term 'line managers' refers to departmental heads or persons responsible for operational departments or functional units that are directly involved in the delivery of the basic maintenance services of the organisation.

(b) Initial safety training should cover all the topics of the training syllabus specified in GM1 145.A.30(e) either as a dedicated course or else integrated within other training. The syllabus may be adjusted to reflect the particular nature of the organisation. The syllabus may also be adjusted to suit the particular nature of work for each function within the organisation. For example:

- small 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 objectives of the syllabus, and in less depth the objective of developing skills for shift working.

All personnel identified in accordance with point (a) of this AMC, including personnel being recruited from any other organisation should receive initial safety training compliant with the organisation's training standards prior to commencing the actual job function, unless their competency assessment justifies that there is no need for such training. New, directly employed personnel working under direct supervision may receive training within 6 months after joining the MO.

(c) The purpose of recurrent safety training is primarily to ensure that staff remain current in terms of SMS principles and human factors and also to collect feedback on safety and human factors issues. Consideration should be given to involving compliance monitoring staff and the key safety management personnel in this training to provide a consistent presence and facilitate feedback. There should be a procedure to ensure that feedback is formally reported by the trainers through the internal safety reporting scheme to initiate action where necessary.

Recurrent safety training should be delivered either as a dedicated course or integrated within other training. It should be of an appropriate duration in each 2-year period in relation to the relevant compliance monitoring audit findings and other internal/external sources of information available to the organisation on safety and human factors maintenance issues.

(d) Safety training may be conducted by the MO itself, independent trainers, or any training organisations acceptable to the NMAA.

(e) The safety training procedures should be specified in the MOE.

AMC5 145.A.30(e) Personnel requirements

OTHER TRAININGS

(a) The organisation should assess the need for particular trainings, for example with regard to the 'Electrical Wiring Interconnection System' (EWIS) or 'Critical Design Configuration Control Limitations' (CDCCL).

(b) Guidance on EWIS training programme for MO personnel is provided in AMC 20-22.

(c) Guidance on Fuel Tank Safety training is provided in 'Appendix IV to AMC5 145.A.30(e) and AMC2 145.B.200(a)(3)'.

GM1 145.A.30(e) Personnel requirements

TRAINING SYLLABUS FOR INITIAL SAFETY TRAINING (INCLUDING HUMAN FACTORS)

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

The MO may combine, divide, or change the order of any subject in the syllabus to suit its own needs, as long as all the subjects are covered to a level of detail appropriate to the organisation and its personnel, including the varying level of seniority of that personnel.

Some of the topics may be covered in separate training courses (e.g. 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 the maintenance activities of the organisation to the greatest extent possible; too much unrelated theory should be avoided.

1. General/Introduction to safety management and human factors
    - 1.1 Need to address safety management and human factors
    - 1.2 Statistics
    - 1.3 Incidents
    - 1a. Safety risk management
        - 1a.1. Hazard identification
        - 1a.2. Safety risk assessment
        - 1a.3. Risk mitigation and management
        - 1a.4. Effectiveness of safety risk management
2. Safety Culture/Organisational factors
    - 2.1 Justness/trust
    - 2.2 Commitment to safety
    - 2.3 Adaptability

- 2.4 Awareness
- 2.5 Behaviour
- 2.6 Information

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
   - 4.9 Fitness/Health
   - 4.10 Stress
   - 4.11 Workload management
   - 4.12 Fatigue
   - 4.13 Alcohol, medication, drugs
   - 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 Other hazards in the workplace
- 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
   - 6.5 Critical maintenance tasks and error-capturing methods (independent inspection, reinspection, etc.)
7. Communication
   - 7.1 Shift/Task handover
   - 7.2 Dissemination of information
   - 7.3 Cultural differences
8. Teamwork
   - 8.1 Responsibility
   - 8.2 Management, supervision and leadership
   - 8.3 Decision making
9. Professionalism and integrity
   - 9.1 Keeping up to date; currency
   - 9.2 Avoiding error provoking behaviour
   - 9.3 Assertiveness
10. Organisation’s safety programme
    - 10.1 Safety policy and objectives, just culture principles
    - 10.2 Reporting errors and hazards, internal safety reporting scheme
    - 10.3 Investigation process
    - 10.4 Action to address problems
    - 10.5 Feedback and safety promotion

GM2 145.A.30(e) Personnel requirements

COMPETENCY ASSESSMENT ELEMENTS

An example of elements that may be considered during a competency assessment according to the job functions and the scope, size and complexity of the organisation, is given in the following table (not exhaustive):

	Managers	Planners	Supervisor	Certifying staff and support staff	Mechanics	Specialised Service staff	Compliance monitoring staff	Safety management personnel
Knowledge of applicable officially recognised standards						X	X	
Knowledge of auditing techniques: planning, conducting and reporting							X	X
Knowledge of safety management, human factors, human performance and limitations, and just culture	X	X	X	X	X	X	X	X
Knowledge of logistics processes	X	X	X					
Knowledge of organisation capabilities, privileges and limitations	X	X	X	X		X	X	X
Knowledge of EMAR M, EMAR 145 and any other relevant regulations	X	X	X	X			X	X
Knowledge of relevant parts of the MOE and procedures	X	X	X	X	X	X	X	X
Knowledge of occurrence reporting (mandatory and voluntary), internal reporting scheme and understanding of the importance of reporting occurrences, incorrect maintenance data and existing or potential defects	X	X	X	X	X	X		X
Knowledge of safety risks linked to the working environment	X	X	X	X	X	X	X	X
Knowledge of CDCCL when relevant	X	X	X	X	X	X	X	X
Knowledge of EWIS when relevant	X	X	X	X	X	X	X	X
Understanding of professional integrity, behaviour and attitude towards safety	X	X	X	X	X	X	X	X

	Managers	Planners	Supervisor	Certifying staff and support staff	Mechanics	Specialised Service staff	Compliance monitoring staff	Safety management personnel
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	X
Understanding of personnel authorisations and limitations	X	X	X	X	X	X	X	
Understanding critical maintenance tasks	X	X	X	X	X		X	X
Ability to compile and control completed work cards		X	X	X				
Ability to consider human performance and limitations	X	X	X	X			X	X
Ability to determine the required qualifications for task performance		X	X	X				
Ability to identify and rectify existing and potential unsafe conditions	X		X	X	X	X	X	X
Ability to manage third parties involved in maintenance activity	X	X	X					
Ability to confirm proper accomplishment of maintenance tasks			X	X	X	X		
Ability to identify and properly plan performance of critical maintenance tasks		X	X	X				
Ability to prioritise tasks and report discrepancies		X	X	X	X			
Ability to process the work requested by the CAMO		X	X	X				
Ability to promote the safety policy	X		X					X
Ability to properly process removed, uninstalled and rejected parts			X	X	X	X		

	Managers	Planners	Supervisor	Certifying staff and support staff	Mechanics	Specialised Service staff	Compliance monitoring staff	Safety management personnel
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	X			
Ability to split complex maintenance tasks into clear stages		X	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	X
Ability to use, control and be familiar with the required tooling and/or equipment			X	X	X	X		
Adequate communication and literacy skills	X	X	X	X	X	X	X	X
Analytical and proven auditing skills (for example, objectivity, fairness, open- mindedness, determination, …)							X	X
Maintenance error investigation skills							X	X
Resources management and production planning skills	X	X	X					
Teamwork, decision-making and leadership skills	X		X	X			X	X
Ability to encourage a positive safety culture and apply a just culture	X		X				X	X

GM3 145.A.30(e) Personnel requirements

TEMPLATE FOR RECORDING EXPERIENCE/TRAINING

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

<table>
<tr><td colspan="3">Aviation Maintenance personnel experience credential</td></tr>
<tr><td colspan="3">Name Given name
Address

Telephone E-mail</td></tr>
<tr><td colspan="3">Trade Group: airframe ☐ engine ☐ electric ☐avionics ☐ other (specify) ☐.....</td></tr>
<tr><td colspan="3">Employer’s details (when applicable)
Name
Address

Telephone</td></tr>
<tr><td colspan="3">Maintenance organisation details
Name
Address

Telephone
Approval Number
Period of employment From: To:</td></tr>
<tr><td colspan="3">Domain of employment</td></tr>
<tr><td>☐ Planning</td><td>☐ Engineering</td><td>☐ Technical records</td></tr>
<tr><td>☐ Store department</td><td>☐ Purchasing</td><td></td></tr>
<tr><td>Mechanics/Technician
☐ Line Maintenance
☐ Servicing
☐ Scheduled Maintenance
☐ Trouble-shooting

A/C type</td><td>
☐ Base Maintenance
☐ Removal/Installation
☐ Inspection
☐ Trouble-shooting
☐ Repair

A/C type</td><td>
☐ Component Maintenance
☐ Testing/inspection
☐ Repair
☐ Overhaul
☐ Re-treatment
☐ Reassembly

Component type</td></tr>
</table>

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

☐ Supervision ☐ Compliance monitoring

☐ Safety investigation ☐ Safety management ☐ 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 credentials will be kept for at least 3 years from their issuance by the maintenance organisation.

GM4 145.A.30(e) Personnel requirements

COMPETENCY OF THE SAFETY MANAGER

The competency of a safety manager should include, but not be limited to, the following:

(a) knowledge of ICAO standards and safety management systems based on the principles detailed in Appendix I to Annexes B and C - Policy on Safety Management System (SMS) of Basic Framework Document (BFD);

(b) an understanding of management systems, including compliance monitoring systems;

(c) an understanding of risk management;

(d) an understanding of safety investigation techniques and root cause methodologies;

(e) an understanding of human factors;

(f) understanding and promotion of a positive safety culture;

(g) operational experience related to the activities of the organisation;

(h) safety management experience;

(i) interpersonal and leadership skills, and the ability to influence staff;

(j) oral and written communications skills;

(k) data management, analytical and problem-solving skills.

GM5 145.A.30(e) Personnel requirements

SAFETY TRAINING (INCLUDING HUMAN FACTORS)

(a) The scope of the safety training and the related training programme will vary significantly depending on the size and complexity of the organisation. Safety training should reflect the evolving management system, and the changing roles of the personnel who make it work.

(b) In recognition of this, training should be provided to management and staff at least:

(1) during the initial implementation of safety management processes;

(2) for all new staff or personnel recently allocated to safety management-related tasks;

(3) on a regular basis to refresh their knowledge and to understand changes to the management system;

(4) when changes in personnel affect safety management roles, and related accountabilities,responsibilities, and authorities; and

NOTE: In the context of safety management, the term ‘authority’ is used in relation to thelevel of management in the organisation that is necessary to make decisions related to risk tolerability.

(5) when performing dedicated safety functions in domains such as safety risk management, compliance monitoring, and internal investigations.

(c) Safety training is subject to the record-keeping requirements in EMAR 145.A.55(d).

AMC 145.A.30(f) Personnel requirements

1. Non-destructive testing means such testing specified by the (M)TC/(M)STC or major repair holder / aircraft or engine or propeller manufacturer in accordance with the maintenance

data as specified in EMAR 145.A.45 for in service aircraft/aircraft components for the purpose of determining the continued fitness of the product to operate safely.

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.

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 in the maintenance data, unless the maintenance data the 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. For particular non-destructive test, refer to European Standard EN 4179 (or national equivalent qualification).

6. It should be noted that new methods are 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.

7. Any MO approved under EMAR 145 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 delamination coin tapping are non-destructive inspections rather than non-destructive testing. Notwithstanding such differentiation, the MO should establish a 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 air transport sector as constituting good practice, or those accepted by the NMAA.

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) Replacement of in-flight entertainment system components other than public address, if 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) 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:

(s) removal and installation of Helicopter Emergency Medical Service (HEMS) simple internal medical equipment.

(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 organisation must have B1 or B2 personnel at every line station. The MOE should have a procedure on how to deal with defects requiring those categories of certifying staff.

4. The NMAA may accept that in the case of aircraft line maintenance an 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.

AMC1 145.A.30(h) Personnel requirements

In accordance with EMAR 145.A.30(h) and EMAR 145.A.35, the qualification requirements (MAML, aircraft ratings, recent experience and recurrent 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 organisation may use as support staff (for base maintenance) persons who already hold certification privileges for line maintenance.

AMC1 145.A.30(j)4. Personnel requirements

1. For the issue of a limited certification authorisation, the pilot 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.

2. In addition, the limited certification authorisation is subject to the MOE containing procedures to address the personnel requirements of EMAR 145.A.30(e). The procedures should be accepted by the NMAA and should include as a minimum:

(a) Completion of adequate continuing airworthiness regulation training as related to maintenance;

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

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

2.(i) Typical tasks that may be certified and/or carried out by the pilot or flight engineer holding a valid licence/national military pilot or flight engineer qualification (or civilian equivalent) acceptable to the NMAA on the aircraft type are the 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 installation, 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 that do not require the use of special tools.

(e) Any check/replacement involving simple techniques that are consistent with this AMC and that have been agreed by the NMAA.

3. The validity of the authorisation should be limited to twelve months and may be renewed if there has been satisfactory recurrent training on the task(s) for which the pilot or flight engineer holds an authorisation.

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.

AMC1 145.A.30(j)5. Personnel requirements

1. For the purposes of EMAR 145.A.30(j)5., "unforeseen" means that the grounding of the aircraft 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. Issuing a one-off authorisation should only be considered under the responsibility of the compliance monitoring manager after a reasoned judgement has been made that such an authorisation is appropriate under the circumstances, while at the same time it maintains the required airworthiness standards. The organisation's compliance monitoring personnel should assess each situation individually prior to issuing a one-off authorisation and may request contribution from technical and safety management personnel. The MO that issues this one-off authorisation retains responsibility for all work performed.

3. A one-off authorisation should not be issued if 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 case it is necessary to issue a one-off certification authorisation to a certifying staff on an aircraft type for which he or she does not hold a type-rated authorisation, the following procedure is recommended:

1. The flight crew should communicate full details of the defect to their MO. If necessary, the MO will then request the use of a one-off authorisation from the compliance monitoring personnel.

2. When issuing a one-off authorisation, the compliance monitoring personnel 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;

   (b) The 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;

   (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 organisation, and has been communicated to the holder of the one-off authorisation;

   (d) The person holds authorisations of equivalent levels and scopes on other aircraft types that have similar technology, construction and systems.

3. The holder of the one-off authorisation 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.

AMC1 145.A.30(j)5.(ii) Personnel requirements

EMAR 145.A.30(j)5.(ii) addresses the requirements for staff who are not employed by the MO but who meet the requirements of EMAR 145.A.30(j)5.. In addition to the items listed in points 1., 2.(a), (b), (c) and 3. of AMC1 145.A.30(j)5.(i), the compliance monitoring personnel of the organisation may issue such a one-off authorisation provided that full details relating to the qualifications of the proposed certifying personnel are verified by the compliance monitoring personnel and made available at the location.

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

1. Holding an EMAR 66 licence with the relevant type 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 organisation is responsible for assessing the competency of the holder for the scope of the maintenance to be authorised.

2. The sentence “the 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 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 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 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 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 assessment of the competency of the holder should be conducted in accordance with a procedure approved by the NMAA (item 3.9 of the MOE, as described in AMC1 145.A.70(a)).

5. The organisation should hold copies of all the documents that attest to the competency and recent experience of the holder for the period described in EMAR 145.A.55(d)(4).

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

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 MO approved under EMAR 145 needs to be satisfied that the person holds a valid EMAR 66 aircraft maintenance licence.

AMC1 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 66.A.20(b)2 are applicable.

AMC2 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.

AMC1 145.A.35(d) Certifying staff and support staff

1. Recurrent training is a two way process to ensure that certifying staff and support staff remain current in terms of the necessary technical knowledge, procedures, and safety management (including human factors), and that the organisation receives feedback on the adequacy of its procedures and maintenance instructions. Due to the interactive nature of this training, consideration should be given to involving the compliance monitoring staff and the key safety management personnel in this training to provide a consistent presence and facilitate feedback. There should be a procedure to ensure that feedback is formally reported by the trainers through the internal safety reporting scheme to initiate action where necessary.

2. Recurrent training should cover changes made to the modification standard of the products being maintained, to the relevant continuing airworthiness EMARs, to the organisation's procedures, safety policy and objectives, as well as human factors and safety issues identified from internal or external analysis of incidents and compliance monitoring results. It should also address instances in which staff failed to follow the procedures and the reasons why particular procedures were not always followed. In many cases, the recurrent training will reinforce the need to follow the procedures and will ensure that incomplete or incorrect procedures are identified to the organisation so that they can be corrected. It may be necessary to carry out an audit of these procedures.

3. Recurrent 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 a training to keep certifying staff and support staff updated in terms of relevant technology, procedures, safety management and human factors issues which means it is one part of ensuring compliance. Therefore, sufficient duration should be related to relevant audit findings and other internal/external sources of information available to the organisation on human errors and safety issues in maintenance.

   This means that in the case of an organisation that maintains aircraft with limited relevant audit findings, hazards and related safety risks identified, such a training may take several weeks.

   For an organisation that maintains aircraft components, the duration of recurrent 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 recurrent training whereas those who release turbine engines may only require a few days of such a training. The content of recurrent training should be related to relevant audit findings, hazards and related safety risks identified. 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 this training could, for example, be provided by an EMAR 147 organisation, an aeronautical college, the EMAR 145 organisation, or another training or MO. 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.

AMC1 145.A.35(e) Certifying staff and support staff

The programme for recurrent training should list all certifying staff and support staff and when the training will take place, the elements of such a training and an indication that it was carried out on time as planned. Such information should subsequently be transferred to the certifying staff and support staff records as required by EMAR 145.A.55(d)(3).

AMC1 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 their competency related to their intended duties. Said assessment should be conducted in accordance with AMC 1, 2, 3, 4 and 5 145.A.30(e), as applicable.

AMC1 145.A.35(m) Certifying staff and support staff

1. It is the responsibility of the EMAR 145 organisation 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 organisation or by an EMAR 145 organisation different from the one issuing the authorisation.
2. “Approved in accordance with EMAR 147” means an MTO holding an approval to provide category A task training for the corresponding aircraft type.
3. “Approved in accordance with EMAR 145” means a MO holding a MO approval for the corresponding aircraft type.

AMC1 145.A.35(n) Certifying staff and support staff

1. The privilege for a category B2 licence 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 EMAR 145 approved organisation where the licence holder is employed/contracted after meeting all the requirements specified in EMAR 145.A.35(n). This privilege cannot be transferred to another EMAR 145 approved organisation.
2. When a category B2 licence 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.
4. 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 66.A.20(b)2 to the one already held.
5. The term “6 months of experience” may include 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(n) 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 MO to another.

AMC1 145.A.37 Airworthiness review staff

NOT APLICABLE.

GM1 145.A.37(b) Airworthiness review staff

NOT APLICABLE.

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

Once the applicant for approval has determined the intended scope of work 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.

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

1. The control of these tools and equipment requires that the 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 except where the organisation can show by results that a different time period is appropriate in a particular case.
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 air transport sector as constituting good practice, or those accepted by the NMAA.

AMC1 145.A.42(a)(i) Components

EASA FORM 1 OR EQUIVALENT

A document equivalent to an EMAR Form 1 may be:

(a) NOT APPLICABLE.

(b) NOT APPLICABLE.

(c) NOT APPLICABLE.

(d) In the case of new aircraft components that were released from manufacturing prior to the EMAR 21 implementation date, the component should be accompanied by a release document accepted by the NMAA.

(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) In the case of aircraft components that were released from maintenance prior to the EMAR 145 implementation date, the component should be accompanied by a release document accepted by the NMAA.

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

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

GM1 145.A.42(a)(i) Components

EMAR 21.A.307 (d) specifies the new parts and appliances that do not need an EMAR Form 1 or equivalent to be eligible for installation.

AMC1 145.A.42(a)(ii) Components

UNSERVICEABLE COMPONENTS

(a) The organisation should ensure the 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 that is 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, and whether the component is installed on an aircraft that was involved in an accident or incident. Means should be provided to prevent unintentional separation of this tag from the component.

(b) Unserviceable components should typically undergo maintenance due to:

(1) expiry of the service life limit as defined in the AMP;

(2) non-compliance with the applicable airworthiness directives and other continuing airworthiness requirements mandated by the NMAA;

(3) absence of the necessary information to determine the airworthiness status or eligibility for installation;

(4) evidence of defects or malfunctions; or

(5) being installed on an aircraft that was involved in an incident or accident likely to affect the component's serviceability.

AMC1 145.A.42(a)(iii) Components

UNSALVAGEABLE COMPONENTS

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 or rework that is irreversible;

(d) parts with mandatory life limitations that have reached or exceeded these limitations, or have missing or incomplete records;

(e) components whose airworthy condition cannot be restored due to exposure to extreme forces, heat or adverse environmental conditions;

(f) components for which conformity with an applicable airworthiness directive cannot be accomplished;

(g) components for which maintenance records and/or traceability to the manufacturer cannot be retrieved.

AMC1 145.A.42(a)(iv) Components

STANDARD PARTS

(a) Standard parts are parts that are manufactured in complete compliance with an established industry, EASA, NMAA or other government specification which includes design, manufacturing, test and acceptance criteria, and uniform identification requirements. The specification should include all the information that is necessary to produce and verify conformity of the part. It should be published so that any party may manufacture the part. Examples of specifications are National Aerospace Standards (NAS), Army-Navy Aeronautical Standard (AN), Society of Automotive Engineers (SAE), SAE Sematec, Joint Electron Device Engineering Council, Joint Electron Tube Engineering Council, and American National Standards Institute (ANSI), EN Specifications, etc.

(b) To designate a part as a standard part, the (M)TC/(M)STC holder may issue a standard parts manual accepted by the NMAA of the original (M)TC/(M)STC holder or may make reference in the parts catalogue to the specification to be met by the standard part. Documentation that accompanies standard parts should clearly relate to the particular parts and contain a conformity statement plus both the manufacturing and supplier source. Some materials are subject to special conditions, such as storage conditions or life limitation, etc., and this should be included in the documentation and/or the material's packaging.

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

AMC2 145.A.42(a)(iv) Components

STANDARD PARTS

NOT APPLICABLE.

AMC1 145.A.42(a)(v) Components

MATERIAL

(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 metal, plastic, wood, 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 applicable specification and, where appropriate, the batch number.

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

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

GM1 145.A.42(b) Components

NOT APPLICABLE.

AMC1 145.A.42(b)(i) Components

ACCEPTANCE OF COMPONENTS FOR INSTALLATION

(a) The procedures for the acceptance of components, standard parts and materials should have the objective of ensuring that the components, standard parts and materials are in satisfactorycondition and meet the organisation's requirements. These procedures should be based upon incoming inspections which include:

(1) physical inspection of the components, standard parts and materials;

(2) review of the accompanying documentation and data, which should be acceptable in accordance with EMAR 145.A.42(a).

(b) For the acceptance of components, standard parts and materials from suppliers, the above procedures should include supplier evaluation procedures.

GM1 145.A.42(b)(i) Components

INCOMING PHYSICAL INSPECTION

(a) To ensure that components, standard parts and materials are in satisfactory condition, the organisation should perform incoming physical inspections.

(b) The incoming physical inspection should be performed before the component is installed on the aircraft.

(c) The following list, although not exhaustive, contains typical checks to be performed:

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

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

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

(4) verify that the component has all plugs and caps appropriately installed to prevent

damage or internal contamination. Care should be taken when tape is used to cover electrical connections or fluid fittings/openings because adhesive residues can insulate electrical connections and contaminate hydraulic or fuel units.

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

GM2 145.A.42(b)(i) Components

EXAMPLES OF SUPPLIERS

A supplier could be any source that provides components, standard parts or materials to be used for maintenance. Possible sources could be: EMAR 145 organisations, EMAR 21 Subpart G organisations, Operating Organisations, distributors, brokers, lessees, etc.

GM3 145.A.42(b)(i) Components

SUPPLIER EVALUATION

(a) The following elements should be considered for the initial and recurrent evaluation of a supplier's quality system to ensure that the component and/or material is supplied in satisfactory condition:

(1) availability of appropriate up-to-date regulations, specifications (such as component handling/storage data) and standards;

(2) standards and procedures for the training of personnel and competency assessment;

(3) procedures for shelf-life control;

(4) procedures for handling of electrostatic sensitive devices;

(5) procedures for identifying the source from which components and materials were received;

(6) purchasing procedures that identify documentation to accompany components and materials for subsequent use by approved EMAR 145 MOs;

(7) procedures for incoming inspection of components and materials;

(8) procedures for control of measuring equipment that provide for appropriate storage, usage, and for calibration when such equipment is required;

(9) procedures to ensure appropriate storage conditions for components and materials that are adequate to protect the components and materials from damage and/or deterioration. Such procedures should comply with the manufacturers' recommendations and relevant standards;

(10) procedures for adequate packing and shipping of components and materials to protect them from damage and deterioration, including procedures for proper shipping of dangerous goods (e.g. ICAO and ATA specifications);

(11) procedures for detecting and reporting of suspected unapproved components;

(12) procedures for handling unsalvageable components in accordance with applicable regulations and standards;

(13) procedures for batch splitting or redistribution of lots and handling of the related documents;

(14) procedures for notifying purchasers of any components that have been shipped and have later been identified as not conforming to the applicable technical data or standard;

(15) procedures for recall control to ensure that components and materials shipped can be traced and recalled if necessary;

(16) procedures for monitoring the effectiveness of the quality system.

(b) Suppliers which are certified to officially recognised standards that have a quality system that includes the elements specified in (a) may be acceptable; e.g.:

(1) EN/AS9120 and listed in the OASIS database;

(2) ASA-100;

(3) EASO 2012;

(4) FAA AC 00-56.

The use of such suppliers does not exempt the organisation from its obligations under EMAR 145.A.42 to ensure that supplied components and materials are in satisfactory condition and meet the applicable criteria of EMAR 145.A.42.

(c) Supplier evaluation may depend on different factors, such as the type of component, whether or not the supplier is the manufacturer of the component, the (M)TC holder or a MO, or even specific circumstances such as aircraft on ground. This evaluation may be limited to a questionnaire from the EMAR 145 organisation to its suppliers, a desktop evaluation of the supplier's procedures or an on-site audit, if deemed necessary.

GM1 145.A.42(b)(ii) Components

INSTALLATION OF COMPONENTS

Components, standard parts and materials should only be installed when they are specified in the applicable maintenance data as specified in EMAR 145.A.45(b). So, the installation of a component, standard part or material can only be done after checking the applicable maintenance data.

This check should ensure that the part number, modification status, limitations, etc., of the component, standard part or material are the ones specified in the applicable maintenance data of the particular aircraft or component where the component, standard part or material is going to be installed. The organisation should establish procedures to ensure that this check is performed before installation.

AMC1 145.A.42(b)(iii) Components

FABRICATION OF PARTS FOR INSTALLATION

(a) The agreement of the NMAA on the fabrication of parts by the approved MO 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.

(b) Fabrication, inspection, assembly and test should be clearly within the technical and procedural capability of the organisation.

(c) 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.

(d) Items fabricated by an organisation approved under EMAR 145 may only be used by that organisation in the course of overhaul, maintenance, modifications, or repair of aircraft or components performing work at its own facilities. 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, or to supply externally, and the parts do not qualify for EMAR Form 1 certification. 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 accepted by the NMAA.

(e) Fabrication of parts, modification kits, etc. for onward supply and/or sale may not be conducted by an organisation that is approved under EMAR 145.

(f) The data specified in (c) may include repair procedures that involve the fabrication of parts. Where the data on such parts is sufficient to facilitate fabrication, the parts may be fabricated by an organisation that is approved under EMAR 145. 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 approved organisation has the necessary capability to fabricate those parts. 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 organisation, the organisation cannot fabricate the part unless the (Military) TC/STC holder or EMAR 21 Design Organisation Approval holder gives an approved alternative.

(g) Examples of fabrication within the scope of an EMAR 145 approval may include but are not limited to the following:

(1) Fabrication of bushes, sleeves and shims.

(2) Fabrication of secondary structural elements and skin panels.

(3) Fabrication of control cables.

(4) Fabrication of flexible and rigid pipes.

(5) Fabrication of electrical cable looms and assemblies.

(6) Formed or machined sheet metal panels for repairs.

All the above-mentioned fabricated parts should be in accordance with the data provided in the overhaul or repair manuals, modification schemes and service bulletins, drawings or should be 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 process and which is acceptable to the NMAA.

(h) Where a (Military)TC/STC holder or an approved Production Organisation is prepared to make available complete data which is not referred to in the 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.

(i) Inspection and Identification.

Any locally fabricated part should be subject to an inspection 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 final inspections. All parts, except those that do not have enough space, should carry a part number which clearly relates it to the manufacturing/inspection data. In addition to the part's number the organisation's identity should be marked on the part for traceability purposes.

AMC1 145.A.42(c) Components

SEGREGATION OF COMPONENTS

(a) Unserviceable components should be identified and stored in a secure location that is under the control of the MO until a decision is made on the future status of such components. The organisation that declared the component to be unserviceable may transfer its custody after identifying it as unserviceable to the Operating Organisation/CAMO provided that such transfer is reflected in the aircraft logbook, or engine logbook, or component logbook.

(b) 'Secure location under the control of an approved MO' refers to a secure location whose security is the responsibility of the approved MO. This may include facilities that are established by the organisation at locations different from the main maintenance facilities. These locations should be identified in the relevant procedures of the organisation.

(c) In the case of unsalvageable components, the organisation should:

(1) retain such component in the secure location referred to in paragraph (b);

(2) arrange for the component to be mutilated in a manner that ensures that they are beyond economic salvage or repair before disposing it; or

(3) mark the component indicating that it is unsalvageable, when in agreement with the component owner, the component is disposed of for legitimate non-flight uses (such as training and education aids, research and development), or for non-aviation applications, mutilation is often not appropriate. Alternatively to marking, the original part number or data plate information can be removed or a record kept of the disposal of the components.

GM1 145.A.42(c)(i) Components

MUTILATION OF COMPONENTS

(a) Mutilation should be accomplished in such a manner that the components become permanently unusable for their originally intended use. Mutilated components should not be able to be reworked or camouflaged to provide the appearance of being serviceable, such as by replating, shortening and rethreading long bolts, welding, straightening,

machining, cleaning, polishing, or repainting.

(b) Mutilation may be accomplished by one or a combination of the following procedures:

(1) grinding;

(2) burning;

(3) removal of a major lug or other integral feature;

(4) permanent distortion of parts;

(5) cutting a hole with cutting torch or saw;

(6) melting;

(7) sawing into many small pieces; and

(8) any other method accepted by the NMAA.

(c) The following procedures are examples of mutilation that are often less successful because they may not be consistently effective:

(1) stamping or vibro-etching;

(2) spraying with paint;

(3) small distortions, incisions, or hammer marks;

(4) identification by tags or markings;

(5) drilling small holes; and

(6) sawing in two pieces only.

GM1 145.A.45(b) Maintenance data

(a) The maintenance data may have been prepared by various organisations, but in any case it needs to be issued by, referenced by, or acceptable to the organisation responsible for the design in accordance with EMAR 21 (e.g. type certificate holder (TCH), supplemental type certificate holder (STCH), Military Technical Standard Order (MTSO) holder, repair design approval holder).

(b) Depending on the product or component subject to maintenance and depending on how this maintenance is released, different maintenance data may be needed during the performance of maintenance.

(c) With respect to aircraft maintenance, applicable maintenance data typically includes the following documents issued by the aircraft TCH or the design approval holder (DAH): manufacturer recommended maintenance programme (e.g. Maintenance Planning Document, Maintenance Review Board Report), aircraft maintenance manual including the airworthiness limitations section, repair manual, supplemental structural inspection document, corrosion prevention and/or control document, service bulletins, wiring diagram manuals, troubleshooting manual, service letter/instructions, illustrated parts catalogue, and any other specific maintenance instruction issued by the aircraft TCH or by the DAH.

(d) With respect to engine maintenance, applicable maintenance data typically includes the engine maintenance and/or overhaul manual including the airworthiness limitations section, wiring diagrams, parts catalogue, troubleshooting manual issued by the engine TCH (or aircraft TCH if the engine is certified as part of the aircraft) or by the DAH.

(e) With respect to APU maintenance, applicable maintenance data typically includes APU maintenance and/or overhaul manual, wiring diagrams, parts catalogue, troubleshooting manual issued by the aircraft TCH, or issued by the APU manufacturer and acceptable to the TCH of the aircraft on which it is installed or to the DAH.

(f) When in compliance with EMAR M.A.502(b), it is possible to conduct maintenance on the engine or APU while installed on the aircraft or temporarily removed to gain access. In such case, the applicable maintenance data may also include aircraft maintenance data.

(g) With respect to maintenance of components other than engine/APU, applicable maintenance data typically includes the component maintenance (and/or repair) manual, troubleshooting manual and other maintenance instructions produced by the component manufacturer, when they are acceptable to the TCH of the product in which the component is to be installed or to the DAH, or when they form part of (or are referenced together with) the product Instructions for Continuing Airworthiness (ICA). In the case of propellers, maintenance data includes its ICA.

(h) When in compliance with EMAR M.A.502(b) or EMAR M.A.502(c), it is possible to conduct maintenance on the component while installed on the aircraft or engine or APU, or temporarily removed to gain access. In such case, the applicable maintenance data may also include, as applicable, aircraft maintenance data or engine/APU maintenance data.

(i) With respect to maintenance considered to be specialised services (such as non-destructive testing (NDT)), applicable maintenance data typically includes non-destructive testing or inspection manual, and all applicable specialised service(s) process instructions issued or specified by the DAH.

GM1 145.A.45(b)(4) Maintenance data

COMPONENT MANUFACTURER MAINTENANCE INSTRUCTIONS

The maintenance instructions published by the component manufacturers may be considered acceptable to the DAH – and hence may be used as maintenance data for maintenance on components approved for installation by the DAH – when they are referenced as additional or optional maintenance information together with the ICA, or when documented by a list by that DAH.

AMC1 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 as part of the internal safety reporting scheme specified in EMAR 145.A.202. The procedure should then ensure that the EMAR 145 approved MO 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 EMAR 145 approved organisation until such time as the author of the maintenance data has clarified the issue by e.g. amending the maintenance data.
2. The referenced procedure should be specified in the MOE.

AMC1 145.A.45(d) Maintenance data

The referenced procedure should address the need for a practical demonstration by the maintenance personnel proposing the change to the compliance monitoring personnel, of the modified maintenance instruction. Depending on the nature of the maintenance instruction

modification, a risk assessment may be required to demonstrate that an equivalent or improved maintenance standard is reached. When satisfied, the compliance monitoring personnel should approve the modified maintenance instruction and ensure that the author of the maintenance instruction 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 original intent of the maintenance instruction can be carried out in a more practical or more efficient manner.

(b) Where the original intent of the maintenance instruction cannot be achieved when 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 a change to a (restricted) Type Certificate that should be approved in accordance with EMAR 21.

AMC1 145.A.45(e) Maintenance data

1. 'The relevant parts of the organisation' means, as appropriate, aircraft base maintenance, aircraft line maintenance, specialised services, component workshops such as engine workshops, mechanical workshops or avionics workshops. Therefore, a common system should be used, for example, throughout the engine workshops, which may be different from that in the aircraft base maintenance.

2. The work cards should differentiate and specify, when relevant, disassembly, accomplishment of tasks, reassembly and testing as well as the error-capturing method (e.g. independent inspection). 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.

3. With reference to EMAR 145.A.65(a), human factors should be taken into account during the development of work cards and worksheets.

4. 'Complex or long maintenance tasks' refers to tasks involving multiple disciplines or multiple shifts, or multiple zones/access opening, special tools, etc., or a combination of these.

   The stages into which the work cards are to be subdivided should refer to where work can be interrupted. Subdivision should also indicate when a different discipline continues to work if no separate work cards are provided.

5. Where required by the Operating Organisation/CAMO to use their work card or worksheet system, the MO should assess the system for compliance with the MO procedures, for example, the subdivision of complex or long maintenance tasks.

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.

AMC1 145.A.45(g) Maintenance data

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 mandatory instructions and associated airworthiness limitations published by design approval holders.

AMC 145.A.47(a) Production planning

1. Depending on the amount and complexity of work generally performed by the MO, 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.
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 production 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 internal and external suppliers, etc.
   - scheduling critical maintenance tasks during periods when staff are likely to be most alert,
   - other military commitments,
   - location (e.g. Main Operating Base, Deployed Operating Base).

AMC1 145.A.47(b) Production planning

CONSIDERATION OF FATIGUE IN THE PLANNING OF MAINTENANCE

(a) The way and the extent to which the organisation should consider the threat of fatigue in the planning of tasks and organising of shifts will vary from one organisation to another

and from one maintenance event to another, depending on what maintenance is to be carried out, how, where, when and by whom.

(b) Fatigue is one example of human factors issues which should be taken into account by the management system, particularly for the planning activity. In this respect, where the organisation activity is prone to fatigue issues, the organisation should:

(1) ensure that the safety policy required by EMAR 145.A.200(a) gives due consideration to the aspects of fatigue;

(2) ensure that the internal safety reporting scheme required by EMAR 145.A.202 enables the collection of fatigue issues;

(3) ensure that the threat of fatigue is adequately taken into account by the management system key processes (e.g. assessment, management, monitoring);

(4) provide safety promotion material and adapt safety training accordingly.

(c) The organising of shifts should consider good practices in the maintenance domain and applicable rules. The resulting shift schedule should be shared with the maintenance staff sufficiently in advance so they can plan adequate rest.

The established shift durations should not be exceeded merely for management convenience even when staff is willing to work extended hours.

(d) The organisation should have a procedure (including mitigations) to address cases where the working hours are to be significantly increased, or when the shift pattern is to be significantly modified, such as for urgent operational reasons. In cases not covered by that procedure, the organisation should perform a specific risk assessment and define additional mitigation actions, as applicable. Basic mitigations may include:

(1) additional supervision and independent inspection;

(2) limitation of maintenance tasks to non-critical tasks;

(3) use of additional rest breaks.

GM1 145.A.47(b) Production planning

CONSIDERATION OF FATIGUE IN THE PLANNING OF MAINTENANCE

(a) Fatigue may be induced by:

(i) the environment and conditions (e.g. noise, humidity, temperature, closed section, working overhead) in which the work is carried out;

(ii) excessive hours of duty and shift working, particularly with multiple shift periods or patterns, additional overtime or night work;

(iii) travel to the maintenance location (e.g. jetlag, duration).

Fatigue is one of the factors that may contribute towards maintenance errors when it is not properly considered as part of planning activities.

(b) Taking into account the threat of fatigue in the planning of maintenance tasks and organising of shifts refers to setting up the maintenance and the shifts in a way that enables the maintenance staff to remain sufficiently free from fatigue so they can perform the planned maintenance safely, including:

– providing rest periods of sufficient time to overcome the effects of the previous shift

and to be rested by the start of the following shift;

- avoiding shift patterns that cause a serious disruption of an established sleep/work pattern, such as alternating day/night duties;
- planning recurrent extended rest periods and notifying staff sufficiently in advance.

AMC 145.A.47(c) Production 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.

GM1 145.A.47(d) Production planning

'External working teams' refers to an organisation that does not belong to the EMAR 145 organisation in whose facility the maintenance is being carrying out, and which is, for example (this list is not exhaustive):

- contracted by the EMAR 145 MO; or
- subcontracted by the EMAR 145 MO; or
- contracted by the CAMO.

The objective of EMAR 145.A.47(d) is to manage the risk involved in the actual execution of maintenance by the various organisations at the same location.

Example: The need for one organisation to be informed that they should not put the aircraft in a certain configuration (regarding, for instance, electrical power) if this is could contribute to an error in the maintenance performed by another organisation.

Note: Refer to GM2 145.A.205 for the difference between contracting and subcontracting maintenance activities.

GM 145.A.48 Performance of maintenance

AUTHORISED PERSON

An 'authorised person' is a person formally authorised by the MO to perform or supervise a maintenance task. An 'authorised person' is not necessarily 'certifying staff'.

SIGN-OFF

A 'sign-off' is a statement issued by the 'authorised person' which indicates 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 a certificate of release to service.

AMC1 145.A.48(a) Performance of maintenance

When the organisation temporarily does not hold all the necessary tools, equipment, material, maintenance data, etc. for an aircraft type/model, or component specified in the organisation's scope of work, the NMAA need not amend the approval to delete the aircraft type/model, or component 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 related aircraft or component may recommence.

GM1 145.A.48(c) Performance of maintenance

CRITICAL DESIGN CONFIGURATION CONTROL LIMITATIONS (CDCCL)

The organisation should ensure that when performing maintenance the CDCCL are not compromised. The organisation should pay particular attention to possible adverse effects of any change to the wiring of the aircraft, even of a change not specifically associated with the fuel tank system. For example, it should be common practice to identify the segregation of fuel gauging system wiring as a CDCCL. The organisation can prevent adverse effects associated with changes to the wiring by standardising maintenance practices through training, and not through periodic inspections. Training should be provided to avoid 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. Guidance on the training of MO personnel is provided in Appendix IV to AMC5 145.A.30(e) and AMC2 145.B.200(a)(3).

AMC1 145.A.48(c)(2) Performance of maintenance

The organisation should have a procedure to identify the error-capturing methods, the critical maintenance tasks, the training and the qualifications of staff applying error-capturing methods, and how the organisation ensures that its staff is familiar with critical maintenance tasks and error- capturing methods.

AMC2 145.A.48(c)(2) Performance of maintenance

CRITICAL MAINTENANCE TASKS

(a) The procedure should ensure that the following maintenance tasks are reviewed to assess their impact on flight safety:

  (1) tasks that may affect the control of the aircraft flight path and attitude, such as installation, rigging and adjustments of flight controls;

  (2) aircraft stability control systems (autopilot, fuel transfer);

  (3) tasks that may affect the propulsive force of the aircraft, including installation of aircraft, engines, propellers and rotors; and

  (4) overhaul, calibration or rigging of engines, propellers, transmissions and gearboxes.

(b) The procedure should describe which data sources are used to identify critical maintenance tasks. Several data sources may be used, such as:

  (1) information from the design approval holder;

  (2) accident reports;

(3) investigation and follow-up of incidents;

(4) occurrence reporting;

(5) flight data analysis, where this is available from CAMO;

(6) results of audits and independent inspections;

(7) monitoring schemes for normal operations, where these are available from the CAMO;

(8) feedback from training.

AMC3 145.A.48(c)(2) Performance of maintenance

ERROR-CAPTURING METHODS

(a) Error-capturing methods are those actions defined by the organisation to detect maintenance errors that are made while performing maintenance.

(b) The organisation should ensure that the error-capturing methods are adequate for the work and the disturbance of the system. A combination of several actions (e.g. visual inspection, operational check, functional test, rigging check) may be necessary in some cases.

AMC4 145.A.48(c)(2) Performance of maintenance

INDEPENDENT INSPECTION

Independent inspection is one possible error-capturing method.

(a) What is an independent inspection

An independent inspection is an inspection performed by an ‘independent qualified person’ of a task carried out by an ‘authorised person’, taking into account that:

(1) the ‘authorised person’ is the person who performs the task or supervises the task and they assume the full responsibility for the completion of the task in accordance with theapplicable maintenance data;

(2) the ‘independent qualified person’ is the person who performs the independent inspection and attests the satisfactory completion of the task and that no deficiencies have been found. The ‘independent qualified person’ does not issue a certificate of release to service, therefore they are not required to hold certification privileges;

(3) the ‘authorised person’ issues the certificate of release to service or signs off the completion of the task after the independent inspection has been carried out satisfactorily;

(4) the work card system used by the organisation should record the identification of both persons and the details of the independent inspection as necessary before the certificate of release to service or sign-off for the completion of the task is issued.

(b) Qualifications of persons performing independent inspections

The organisation should have procedures to demonstrate that the ‘independent qualified person’ has been trained and has gained experience in the specific inspection to be performed.The organisation could consider making use of, for example:

(1) staff holding a certifying staff or support staff or sign-off authorisation or equivalent necessary to release or sign off the critical maintenance task;

(2) staff holding a certifying staff or support staff or sign-off authorisation or equivalent necessary to release or sign off similar task in a product of similar category and having received specific practical training in the task to be inspected; or

(3) a pilot and/or flight engineer holding a limited certification authorisation in accordance with 145.A.30(j)(4) and having received adequate practical training and having enough experience in the specific task to be inspected and on how to perform independent inspection.

(c) How to perform an independent inspection

An independent inspection should ensure correct assembly, locking and sense of operation. When inspecting control systems that have undergone maintenance, the independent qualified person 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 control system as a whole should be observed to ensure that the controls are operating in the correct sense;

(5) if different control systems are interconnected so that they affect each other, all the interactions should be checked through the full range of the applicable controls; and

(6) software that is part of the critical maintenance task should be checked, for example: version, compatibility with aircraft configuration.

(d) What to do in unforeseen cases when only one person is available

REINSPECTION:

(1) Reinspection is an error-capturing method subject to the same conditions as an independent inspection is, except that the 'authorised person' performing the maintenance task is also acting as 'independent qualified person' and performs the inspection.

(2) Reinspection, as an error-capturing method, should only be performed in unforeseen circumstances when only one person is available to carry out the task and perform the independent inspection. The circumstances cannot be considered unforeseen if the person or organisation has not assigned a suitable 'independent qualified person' to that particular line station or shift.

(3) The certificate of release to service is issued after the task has been performed by the 'authorised person' and the reinspection has been carried out satisfactorily. The work card system used by the organisation should record the identification and the details of the reinspection before the certificate of release to service for the task is issued.

AMC1 145.A.48(c)(3) Performance of maintenance

The procedures should be aimed at:

(a) minimising errors and preventing omissions. Therefore, the procedures should specify:

(1) that every maintenance task is signed off only after completion;

(2) how the grouping of tasks for the purpose of sign-off allows critical steps to be clearly identified; and

(3) that work performed by personnel under supervision (i.e. temporary staff, trainees) is checked and signed off by an authorised person;

(b) minimising the possibility of an error being repeated in identical tasks and, therefore, compromising more than one system or function. Thus, the procedures should ensure that no person is required to perform a maintenance task involving removal/installation or assembly/disassembly of several components of the same type fitted to more than one system, a failure of which could have an impact on safety, on the same aircraft or component during a particular maintenance check. However, in unforeseen circumstances when only one person is available, the organisation may make use of reinspection as described in point (d) of AMC4 145.A.48(c)(2).

GM1 145.A.48(c)(3) Performance of maintenance

To minimise the risk of errors during maintenance and the risk of errors being repeated in identicalmaintenance tasks, the organisation may implement:

- procedures to plan the performance by different persons of the same task in different systems;
- independent inspection or re-inspection procedures.

AMC 145.A.50 Certification of maintenance after embodiment of a Standard Change or Standard Repair (SC/SR)

NOT APPLICABLE.

GM1 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 that is overdue for compliance is also considered to be a hazard to flight safety.

However, the intent is not to require the MO to find or become responsible for hidden non-compliances which are not expected to be discovered during the ordered maintenance.

A certificate of release to service issued by a MO certifies that the performed maintenance work, as agreed in the work order or the contract, has been completed in accordance with the applicable requirements and the MO's approved procedures. In the case of aircraft maintenance, it does not necessarily mean that the aircraft is in airworthy condition. Ensuring that the aircraft is airworthy before each flight always remains the responsibility of the CAMO.

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 is considered ready for release to service'.

   Reference should also be made to the EMAR 145 approval number and the identity of the person who issued the release.

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.

AMC1 145.A.50(d) Certification of maintenance

The purpose of the CRS is to certify maintenance work carried out on assemblies/items/components/parts (hereafter referred to as 'item(s)'). It also allows the removal from aircraft/aircraft component of items in a "serviceable" condition in accordance with AMC2 145.A.50(d) in order to fit them to another aircraft/aircraft component.

The CRS serves as an official certificate for items from the MO to users.

It can only be issued by organisations approved by the NMAA within the scope of the approval.

The CRS may be used as a rotable tag 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 MO. The alternative solution is to use existing rotable tags and also supply a copy of the certificate.

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 MOs approved under EMAR 145 and the item needs a certificate for the previous maintenance process carried out for the next MO approved under EMAR 145 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.

AMC2 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.

   When an organisation maintains a component for use by the same organisation, an EMAR Form 1 may not be necessary depending upon the organisation's internal release procedures defined in the MOE.

2. In the case of the issue of EMAR Form 1 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/aircraft component or an aircraft/aircraft component which has been withdrawn from service the following applies:

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

   - Maintained before EMAR 145 became effective or manufactured before EMAR 21 became effective.
   - Used on an aircraft/aircraft component and removed in a serviceable condition. Examples include leased and loaned aircraft components, or "cannibalised" components.
   - Removed from aircraft/aircraft component which have been withdrawn from service, or from aircraft/aircraft component which have been involved in abnormal occurrences such as accidents, incidents, heavy landings or lightning strikes.
   - Maintained by an unapproved MO.

   2.2. An appropriately rated MO approved under EMAR 145 may issue an EMAR Form 1 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 organisation 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 under this paragraph.

   2.3. For the purposes of this AMC 2 only, '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.

   2.4. An EMAR Form 1 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 1.

   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 life-limited parts and time-controlled components 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.

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 by an appropriately rated MO. The EMAR Form 1 should be issued in accordance with the following subparagraphs which should be included in a procedure within the MOE.

Note1: 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 organisation 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 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/aircraft component.

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

(a) The organisation should ensure that the component was removed from the aircraft/aircraft component 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/aircraft component 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 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 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 may be issued and should contain the information as specified in paragraph 2.4 including the aircraft/aircraft component from which the component was removed.

2.6.2. NOT APPLICABLE.

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

Serviceable aircraft components removed from an aircraft/aircraft component withdrawn from service may be issued with an EMAR Form 1 by a MO approved under EMAR 145 subject to compliance with this subparagraph.

(a) Aircraft/aircraft component 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 organisation approved under EMAR 145 employing procedures approved by the NMAA.

(b) To be eligible for installation, components removed from such aircraft/aircraft component may be issued with an EMAR Form 1 by an appropriately rated organisation 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/aircraft component on which the component is to be installed.

(d) Irrespective of whether the aircraft holds a Military 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.

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

(f) All recorded aircraft/aircraft component 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 organisations not approved in accordance with EMAR 145.

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

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

(b) replacing all life-limited parts and time-controlled 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 components removed from an aircraft/aircraft component involved in an accident or incident.

Such components should only be issued with an EMAR Form 1 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/(M)TC/STC holder or original manufacturer as appropriate. This work order should be referenced in Block 12.

GM 145.A.50(d) EMAR Form 1 block 12 'Remarks'

Examples of data to be entered in this block as appropriate:

- Maintenance documentation used, including the revision status, for all work performed and not limited to the entry made in block 11.
- A statement such as 'in accordance with the CMM' is not acceptable.
- NDT methods with appropriate documentation used when relevant.
- Compliance with airworthiness directives or service bulletins.
- Repairs carried out.
- Modifications carried out.
- Replacement parts installed.
- Life-limited parts status.
- Shelf-life limitations.
- Deviations from the CAMO work order.
- Information needed to support shipment with shortages or re-assembly after delivery.
- References to aid traceability, such as batch numbers.

AMC1 145.A.50(e) Certification of maintenance

1. Being unable to establish full compliance with 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, or because the maintenance data requires a flight to be performed as part of the maintenance, as described in paragraph 4.

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 within the relevant limitations. If the CAMO agrees to the deferment of full compliance, then the 'CRS for aircraft' may be issued subject to details of the deferment, 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 approved MO should inform its NMAA of 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.

4. .Certain maintenance data issued by the design approval holder (e.g. aircraft maintenance manual (AMM)) requires that a maintenance task be performed in flight as a necessary condition to complete the maintenance ordered. Within the aircraft limitations, an appropriately authorised certifying staff should release the incomplete maintenance before the flight on behalf of the MO. GM M.A.301(i) describe the relations with the Operating Organisation, which retains the responsibility for the maintenance check flight (MCF). After performing the flight and any additional maintenance necessary to complete the maintenance ordered, a certificate of release to service should be issued in accordance with EMAR 145.A.50(a).

AMC1 145.A.50(f) Certification of maintenance

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

2. 'Compliance with all applicable maintenance and operational requirements' means, in particular, making an appropriate entry in the aircraft technical log system, checking the compatibility of the component with the aircraft approved design, including modifications, repairs, ADs, life limitations and condition of the aircraft component plus information on where, when and why the aircraft was grounded.

AMC1 145.A.55 Record-keeping

GENERAL

(a) The record-keeping system should ensure that all records are accessible within a reasonable time whenever they are needed. These records should be organised in a manner that ensures their traceability and retrievability throughout the required retention period.

(b) Records should be kept in paper form, or in electronic format, or a combination of the two. Records that are stored on microfilm or in optical disc formats are also acceptable. The records should remain legible throughout the required retention period. The retention period starts when the record is created or was last amended.

(c) Paper systems should use robust materials which can withstand normal handling and filing. Computer record systems should have at least one backup system, which should be updated within 24 hours of any new entry. Computer record systems should include safeguards to prevent unauthorised personnel from altering the data.

(d) All computer hardware that is used to ensure the backup of data should be stored in a

different location from the one that contains the working data, and in an environment that ensures that the data remains in a good condition. When hardware or software changes take place, special care should be taken to ensure that all the necessary data continues to be accessible through at least the full period specified in the relevant provision. In the absence of any such indications, all records should be kept for a minimum period of 3 years.

GM1 145.A.55 Record-keeping

RECORDS

Microfilming or optical storage of records may be carried out at any time. The records should be as legible as the original record and remain so for the required retention period.

GM1 145.A.55(a)(1) Record-keeping

MAINTENANCE RECORDS

1. Properly executed and retained records provide:

   (i) CAMOs responsible for aircraft continuing airworthiness with information essential in establishing the airworthiness status of aircraft or component, and in particular, in controlling unscheduled and scheduled maintenance;

   (ii) maintenance personnel with information essential for troubleshooting eliminating the need for re-inspection and rework.

   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 during the maintenance performed, to ensure traceability to such installed aircraft component documentation, associated maintenance data and data for modifications and repairs.

Note: An MO'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.

AMC1 145.A.55(a)(3) Record-keeping

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

AMC1 145.A.55(d) Record-keeping

RECORDS OF CERTIFYING STAFF AND SUPPORT STAFF

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

   (a) Name;

   (b) Date of birth;

   (c) Basic training;

(d) Task training or product/type training;

(e) Initial & recurrent training;

(f) Experience;

(g) Qualifications relevant to the authorisation;

(h) Scope of the authorisation (role, product, level of maintenance, etc.);

(i) Date of first issue of the authorisation;

(j) Expiry date of the authorisation (if appropriate); and

(k) Identification number of the authorisation.

2. The record may be kept in any format but should be controlled by the organisation's compliance monitoring function. This does not mean that the compliance monitoring manager should run the record system.

3. The number of persons authorised to access the system should be kept to a minimum to ensure that records cannot be altered in an unauthorised manner, and that such confidential records do not become accessible to any unauthorised persons.

4. The NMAA is authorised to access personal records when investigating the records system for initial certification and oversight, or when the NMAA has cause to doubt the competency of a particular person.

AMC2 145.A.55(d) Record-keeping

RECORDS OF AIRWORTHINESS REVIEW STAFF

NOT APPLICABLE.

AMC1 145.A.60 Occurrence reporting

GENERAL

(a) Where the organisation holds one or more additional organisation certificates within the scope of EMARs:

(1) the organisation may establish an integrated occurrence reporting system covering all certificate(s) held; and

(2) single reports for occurrences should only be provided if the following conditions are met:

(i) the report includes all relevant information from the perspective of the different organisation certificates held;

(ii) the report addresses all relevant specific mandatory data fields and clearly identifies all certificate holders for which the report is made; and

(iii) the NMAA for all certificates is the same and such single reporting was agreed with that NMAA.

(b) The organisation should assign responsibility to one or more suitably qualified persons with clearly defined authority, for coordinating action on airworthiness occurrences and for initiating any necessary further investigation and follow-up activity.

(c) If more than one person are assigned such responsibility, the organisation should identify a single person to act as the main focal point for ensuring that a single reporting channel is

established to the accountable manager. This should in particular apply to organisations holding one or more additional organisation certificates within the scope of EMARs where the occurrence reporting system is fully integrated with that required under the additional certificate(s) held.

AMC2 145.A.60 Occurrence reporting

The organisation should share relevant safety-related occurrence reports with the design approval holder of the aircraft or component in order to enable it to issue appropriate service instructions and recommendations to all relevant parties (e.g. Operating Organisations, CAMO). Liaison with the design approval holder is recommended to establish whether published or proposed service information will resolve the problem or to obtain a solution to a particular problem.

GM1 145.A.60 Occurrence reporting

MANDATORY REPORTING — GENERAL

(a) NOT APPLICABLE.

(b) EMAD-20 ‘General Acceptable Means of Compliance for Airworthiness of Products, Parts and Appliances’ provides further details on occurrence reporting (EMAD 20-8).

GM1 145.A.60(b) Occurrence reporting

Depending on the case, the ‘design approval holder’ will be the holder of a (Military) type certificate, a restricted type certificate, a supplemental type certificate, a MTSO authorisation, a major repair design approval, a major change design approval or any other relevant approval or authorisation for products, parts and appliances deemed to have been issued under EMAR 21.

AMC1 145.A.65 Maintenance procedures

GENERAL

1. Maintenance procedures should be held up to date such that they reflect the current best practices within the organisation, while being compliant with EMARs. All organisation’s employees should report differences via their organisation’s internal safety reporting scheme.

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

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

GM1 145.A.65 Maintenance procedures

HUMAN FACTORS PRINCIPLES

The following key points should be considered when designing and presenting technical procedures in accordance with good human factors principles:

(a) The design of procedures and changes should involve maintenance personnel who have a good working knowledge of the tasks;

(b) Ensuring that the procedures are accurate, appropriate and usable, and reflect best practices;

(c) Taking account of the level of expertise and experience of the user;

(d) Taking account of the environment in which the procedures are to be used;

(e) Ensuring that all the key information is included without the procedure being unnecessarily complex;

(f) Where appropriate, explaining the reasons for the procedure;

(g) The order of the tasks and the steps should reflect best practices, with the procedure clearly stating where the order of steps is critical, and where changes to the order are acceptable;

(h) Ensuring consistency in the design of procedures and the use of terminology, abbreviations, references, etc.

(i) For documents produced in the English language, using 'simplified English'.

GM2 145.A.65(b)(1) Maintenance procedures

Appendix IV to AMC1 CAMO.A.315(c) provide guidance on the elements that need to be considered for the maintenance contract between the CAMO and the MO. The EMAR 145 organisation should take into account these elements to ensure that a clear contract or work order has been concluded before providing maintenance services.

AMC1 145.A.65(b)(2) Maintenance procedures

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, there is a need to establish maintenance procedures that cover the control of any specialised process.

AMC1 145.A.70 Maintenance organisation exposition (MOE)

(a) Personnel should be familiar with those parts of the MOE that are relevant to their tasks.

(b) The organisation should designate the person responsible for monitoring and amending the MOE, including associated procedures or manuals, in accordance with EMAR 145.A.70(c).

(c) The organisation may use electronic data processing (EDP) for the publication of the MOE. Attention should be paid to the compatibility of the EDP systems with the necessary dissemination, both internally and externally, of the MOE.

(d) When information is provided by reference (e.g. separate document, manual or electronic data file), the organisation should establish clear cross-reference to such documents or files in the MOE and have procedures for the management of these document or files.

GM1 145.A.70 Maintenance organisation exposition (MOE)

1. The purpose of the MOE is to:

   - specify the scope of work and show how the organisation intends to comply with EMAR 145; and
   - provide all the necessary information and procedures for the personnel of the organisation to perform their duties.

2. Complying with its contents will ensure that the organisation remains in compliance with EMAR 145 and EMAR M.

AMC1 145.A.70(a) Maintenance Organisation Exposition (MOE)

This AMC provides an outline of the layout of an acceptable MOE. Where an organisation uses a different format, for example, to allow the exposition to serve for more than one approval within the scope of EMARs, then the exposition should contain an index that shows where the subject matter can be found in the exposition.

The MOE should contain the information, as applicable, specified in this AMC and in the appendix V to AMC 145.A.70. The information may be presented in any subject order as long as all applicable subjects are covered. The MOE should contain a cross-reference list with an explanation as to where each EMAR 145 Section A requirement is addressed in the MOE.

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.

PART 1 - GENERAL

1.1 Statement by the accountable manager

1.2 Safety policy and objectives

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 Organisation’s intended scope of work

1.10 Procedures for changes (including MOE amendment) requiring prior approval

1.11 Procedures for changes (including MOE amendment) not requiring prior approval

1.12 Procedure for alternative means of compliance (AltMoC)

PART 2 - MAINTENANCE PROCEDURES

2.1 Supplier evaluation and subcontractor control procedure

2.2 Acceptance/inspection of aircraft components and material, and installation

2.3 Storage, tagging and delivery of components and material to 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 alternate tools)

2.7 Procedure for controlling working environment and facilities

2.8 Maintenance data and relationship to aircraft/aircraft component manufacturers' instructions including updating and availability to staff

2.9 Acceptance, coordination and performance of repair works

2.10 Acceptance, coordination and performance of scheduled maintenance works

2.11 Acceptance, coordination and performance of airworthiness directives works

2.12 Acceptance, coordination and performance of modification works

2.13 Maintenance documentation development, completion and sign-off

2.14 Technical record control

2.15 Rectification of defects arising during maintenance

2.16 Release to service procedure

2.17 Records for the organisation that ordered maintenance

2.18 Occurrence reporting

2.19 Return of defective aircraft components to store

2.20 Defective components to outside contractors

2.21 Control of computer maintenance record systems

2.22 Control of man-hour planning versus scheduled maintenance work

2.23 Critical maintenance tasks and error-capturing methods

2.24 Reference to specific procedures such as:

- Engine running procedures
- Aircraft pressure run procedures
- Aircraft towing procedures
- Aircraft taxiing 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

2.28 Production planning and organising of maintenance activities

2.29 NOT APPLICABLE

2.30 Fabrication of parts

2.31 Procedure for component maintenance under aircraft or engine rating

2.32 Maintenance away from approved locations

2.33 Procedure for assessment of work scope as line or base maintenance

PART L2 - ADDITIONAL LINE MAINTENANCE PROCEDURES

(Part L2 may complement where necessary, procedures established in Part 2)

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 technical logs

L2.5 Line procedure for pooled parts and loaned parts

L2.6 Line procedure for return of defective parts removed from aircraft

L2.7 Line procedure for critical maintenance tasks and error-capturing methods

PART 3 - MANAGEMENT SYSTEM PROCEDURES

3.1 Hazard identification and safety risk management schemes

3.2 Internal safety reporting and investigations

3.3 Safety action planning

3.4 Safety performance monitoring

3.5 Change management

3.6 Safety training (including human factors) and promotion

3.7 Immediate safety action and coordination with Operating Organisation

3.8 Compliance monitoring

3.8.1 Audit plan and audit procedures

3.8.2 Product audit and inspections

3.8.3 Audit findings — corrective action procedure

3.9 Certifying staff and support staff qualifications, authorisation and training procedures

3.10 Certifying staff and support staff records

3.11 NOT APPLICABLE

3.12 Compliance monitoring and safety management personnel

3.13 Independent inspection staff qualification

3.14 Mechanics qualification and records

3.15 Process for exemption from aircraft/aircraft component maintenance tasks

3.16 Concession control for deviations from the organisation’s procedures

3.17 Qualification procedure for specialised activities such as NDT, welding, etc.

3.18 Management of external working teams

3.19 Competency assessment of personnel

3.20 Training procedures for on-the-job training as per Section 6 of Appendix III to EMAR 66

3.21 Procedure for the issue of a recommendation to the NMAA for the issue of an EMAR 66 licence in accordance with EMAR 66.B.105

3.22 Management system record-keeping

PART 4 - RELATIONSHIP WITH OPERATING ORGANISATION(S)/CAMO(S)

4.1 List of the Operating Organisation(s)/CAMO(s) to which the organisation provides regular maintenance services

4.2 Operating Organisation(s)/CAMO(s) interface procedures and paperwork

4.3 [Reserved]

PART 5 - SUPPORTING DOCUMENTS

5.1 Sample documents

5.2 List of subcontractors 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 organisations as per EMAR 145.A.70(a)(16)

5.5 List of used AltMoC as per EMAR 145.A.70(a)(17)

PART 6 - RESERVED

PART 7 - FAA SUPPLEMENTARY PROCEDURES FOR A TITLE 14 CFR PART 145 REPAIR STATION

NOT APPLICABLE

PART 8 - TRANSPORT CANADA CIVIL AVIATION (TCCA) SUPPLEMENTARY PROCEDURES FOR A CAR 573MAINTENANCE ORGANISATION

NOT APPLICABLE.

PART 9 - ANAC SUPPLEMENTARY PROCEDURES FOR AN RBAC 145 MAINTENANCE ORGANISATION

NOT APPLICABLE.

AMC1 145.A.70(a)(1) Maintenance Organisation Exposition (MOE)

ACCOUNTABLE MANAGER STATEMENT

Part 1 of the MOE should include a statement signed by the accountable manager (and countersigned by the chief executive officer or senior military commander, if different), confirming that the MOE and any associated manuals will be complied with at all times.

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 EMAR 145 approval certificate is issued by the NMAA.

These procedures are endorsed by the undersigned and must be complied with, as applicable, when contracts or work orders are being progressed under the organisation approval certificate.

These procedures do not override the necessity of complying with any new or amended regulation published from time to time where these new or amended regulations are in conflict with these procedures.

It is understood that the approval of the organisation is based on the continuous compliance of the organisation with EMAR 145 and EMAR M and with the organisation's procedures described in this exposition. The NMAA is entitled to limit, suspend, or revoke the approval certificate if the organisation fails to fulfil the obligations imposed by EMAR 145 and EMAR M or any conditions according to which the approval was issued.

Signed .....

Dated .....

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

Chief Executive Officer/senior military commander …

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 statement at the earliest opportunity.

AMC1 145.A.75(b) Privileges of the organisation

SUBCONTRACTING

1. Working under the management system of an organisation appropriately approved under EMAR 145 (subcontracting) refers to the case of one organisation, whether or not it is approved under EMAR 145,that carries out certain maintenance (see paragraph 3.1) under the approval certificate of an EMAR 145. In order to subcontract, the EMAR 145 organisation should have a procedure for the control of such subcontractors as described below. Any approved MO that carries out maintenance under its own approval certificate for another

approved MO is not considered to be subcontracted for the purpose of this paragraph, but contracted by that other organisation (see GM2 145.A.205).

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 subcontracting under EMAR 145.

3.1 The most common reasons for allowing an organisation approved under EMAR 145 to subcontract is to permit acceptance of certain maintenance tasks carried out by subcontractors when approvals by the NMAA of those subcontractors are not justified (e.g. limited scope of work, limited volume of maintenance activities, limited number of potential customers, limited need in time) or when the subcontractors cannot demonstrate compliance with all elements of EMARs (e.g. no maintenance facilities, specialised staff not covering all maintenance scope).
This subcontracting option permits the acceptance of the following maintenance:

(a) specialised maintenance services, such as, but not limited to, surface treatment (e.g. plating, plasma spraying), fabrication of specified parts for repairs / modifications, welding, etc.;

(b) aircraft maintenance (e.g. line maintenance, leaks detection in fuel tanks, special repairs/modifications, complete aircraft painting) up to but not including a complete base maintenance check as specified in EMAR 145.A.75(b);

(c) component maintenance;

(d) engine maintenance up to but not including a complete workshop maintenance check or overhaul of an engine or engine module as specified in EMAR 145.A.75(b).

3.2 When maintenance is carried out under the management system of an EMAR 145 organisation, it means that for the duration of such maintenance, the EMAR 145 approval has been temporarily extended to include the subcontractor. It therefore follows that all parts of the subcontractor (facilities, personnel, equipment and tools, components, maintenance data and procedures) involved with the MO's products undergoing maintenance should meet EMAR 145 requirements and the EMAR 145 organisation's MOE for the duration of that maintenance and it remains the EMAR 145 organisation's responsibility to ensure such requirements are satisfied.

3.3 When subcontracting, the EMAR 145 organisation is not required to have complete facilities for maintenance that it needs to subcontract, but it should have its own expertise to determine whether the subcontractor meets the necessary standards. However, an EMAR 145 organisation cannot be approved unless it has in-house the facilities, personnel, equipment and tools, components, maintenance data, procedures and expertise to carry out the majority of the maintenance for which it wishes to receive the terms of approval.

3.4 The organisation may find it necessary to include specialised subcontractors to enable it to be approved to issue the certificate of release to service of a particular maintenance. Examples are provided in point 3.1(a). To authorise the use of such subcontractors, the NMAA will need to be satisfied that the EMAR 145 organisation has the necessary expertise and procedures to control such subcontractors.

3.5 A MO working outside the scope of its terms of approval is deemed to be not approved for the work considered. Such an organisation may in this circumstance operate only as a subcontractor under the management system and control of another organisation appropriately approved under EMAR 145.

3.6 Authorisation to sub-contract is indicated by the NMAA approving the MOE containing a specific procedure on the control of subcontractors as well as a list of subcontractors.

4. EMAR 145 procedures for the control of subcontractors

4.1 A pre-audit procedure should be established whereby the EMAR 145 organisation should audit a prospective subcontractor to determine whether those services of the subcontractor that it wishes to use meet the intent of EMAR 145. This audit should be performed under the responsibility of the compliance monitoring function.

4.2 The EMAR 145 organisation need to assess to what extent it will use the subcontractor resources (facilities included). The contract between the EMAR 145 organisation and the subcontractor will determine whether the EMAR 145 organisation requires its own paperwork, maintenance data and components to be used or, provided that they meet the requirements of EMAR 145, if the facilities, equipment and tools from the subcontractor will be used. In the case of subcontractors who provide specialised services, it may for practical reasons, be necessary to use their specialised services paperwork, maintenance data and components subject to acceptance by the EMAR 145 organisation.

4.3 Unless the sub-contracted maintenance work can be fully inspected on receipt by the EMAR 145 organisation, it will be necessary for the EMAR 145 organisation to establish an MOE procedure to control the subcontracted maintenance work (and associated supporting documents). The organisation will need to consider whether to use its own personnel or to authorise the subcontractor personnel for that control.

4.4 The CRS may be issued either by subcontractor staff holding a certification authorisation issued by the EMAR 145 organisation in accordance with EMAR 145.A.30 and EMAR 145.A.35 as appropriate or by the EMAR 145 organisation certifying staff.

4.5 The subcontractor control procedure will need to address the relevant management system key processes such as safety risk management and compliance monitoring (see EMAR 145.A.205). The procedure should ensure that records of all subcontractor audits and inspections, and the corresponding actions are kept, and provide information on when subcontractors are used. The procedure should include a clear revocation process for subcontractors that do not meet the EMAR 145 MO's requirements.

4.6 The EMAR 145 compliance monitoring staff will need to audit the subcontractor control function of the EMAR 145 organisation and to audit the subcontractors unless this task is already carried out by the subcontractor control function on behalf of the compliance monitoring function.

4.7 The contract between the EMAR 145 organisation and the subcontractor should contain a provision to ensure that access to the subcontractor is granted to any person authorised by the NMAAs specified in EMAR 145.A.140.

AMC1 145.A.85 Changes to the organisation

APPLICATION TIME FRAMES

(a) The application for a change to an organisation certificate should be submitted at least 30 working days before the date of the intended changes.

(b) In the case of a planned change of a nominated person, the organisation should inform the NMAA at least 20 working days before the date of the proposed change.

(c) Unforeseen changes should be notified at the earliest opportunity, in order to enable the NMAA to determine whether there is continued compliance with the applicable requirements, and to amend, if necessary, the organisation certificate and the related terms of approval.

AMC2 145.A.85 Changes to the organisation

MANAGEMENT OF CHANGES

The organisation should manage changes to the organisation in accordance with point (e) of AMC1 145.A.200(a)(3). For changes requiring prior approval, it should conduct a risk assessment and provide it to the NMAA upon request.

GM1 145.A.85 Changes to the organisation

CHANGES REQUIRING OR NOT REQUIRING PRIOR APPROVAL

EMAR 145.A.85 is structured as follows:

- Point (a) introduces an obligation of prior approval (by the NMAA) for specific cases listed under (1) to (5);
- Point (b) address all instances (including (a)) where EMAR 145 explicitly requires an approval by the NMAA (e.g. procedure for use of alternative tooling or equipment, ref. EMAR 145.A.40(a)(i)). Changes relevant to these instances should be considered as changes requiring a prior approval (see list in GM1 145.A.85(b)), unless otherwise specified by EMAR 145).

  Point (b) also indicates how all changes requiring prior approval should be handled;
- Point (c) introduces the possibility for the organisation to agree with the NMAA that certain changes to the organisation (other than those covered by (a) or (b)) can be implemented without prior approval depending on the compliance and safety performance of the organisation, and in particular, on its capability to apply change management principles.

GM1 145.A.85(a)(1) Changes to the organisation

CHANGE OF THE NAME OF THE ORGANISATION

A change of the name requires the organisation to submit an application as a matter of urgency for a re-issue of their certificate.

If this is the only change to report, the application can be accompanied by a copy of the documentation that was previously submitted to the NMAA under the previous name, as a means of demonstrating that the organisation complies with the applicable requirements.

GM1 145.A.85(a)(2) Changes to the organisation

CHANGE OF A NOMINATED PERSON

In accordance with EMAR 145.A.85(a)(2), a change of a nominated person (ref. EMAR 145.A.30) requires a prior approval. In case of a unplanned/unanticipated change, a deputy (such as the deputy referred to in EMAR 145.A.30(b)) may ensure continuity during the approval process of the new nominated person.

GM1 145.A.85(b) Changes to the organisation

CHANGES REQUIRING PRIOR APPROVAL (OTHER THAN THOSE COVERED BY EMAR 145.A.85(a))

The following are examples of changes that require prior approval by the NMAA (other than those covered by EMAR 145.A.85(a)):

(a) changes to the AltMoC (EMAR 145.A.120(b));

(b) changes to the MOE procedure for the use of alternative tooling or equipment (EMAR 145.A.40(a)(i));

(c) changes to the MOE procedure allowing a B-rated organisation to carry out maintenance on an installed engine during ‘base’ and ‘line’ maintenance (EMAR Appendix II, point (f));

(d) changes to the MOE procedure allowing a C-rated organisation to carry out maintenance on an installed component (other than a complete engine/APU) during ‘base’ and ‘line’ maintenance or at an engine/APU maintenance facility (EMAR Appendix II, point (g));

(e) changes to the procedures to establish and control the competency of personnel (EMAR 145.A.30(e));

(f) changes to the system for reporting to the NMAA on the safety performance and regulatory compliance of the organisation (in the case of an extension of the oversight planning cycle beyond 36 months) (EMAR 145.B.305(d)).

AMC1 145.A.95 Findings and observations

FINDING-RELATED CORRECTIVE ACTION PLAN AND IMPLEMENTATION

After receiving the notification of findings, the organisation should identify and define the actions for all findings to address the effects of the non-compliance and its root cause(s) and contributing factor(s).

Depending on the issues, the organisation may need to take immediate corrections. The corrective action plan should:

- include the correction of the issue, corrective actions and preventive actions, as well as the planning to implement these actions;
- be timely submitted to the NMAA for acceptance before it is effectively implemented.

After receiving from the NMAA the acceptance of the corrective action plan, the organisation should implement the associated actions.

Within the agreed period, the organisation should inform the NMAA that the corrective action plan has been completed and should send the associated evidence, as requested by the NMAA.

AMC2 145.A.95 Findings and observations

DUE CONSIDERATION TO OBSERVATIONS

For each observation notified by the NMAA, the organisation should analyse the related issues and determine when actions are needed.

The handling of the observations may follow a process similar to the handling of the findings by the organisation.

The organisation should record the analysis and the outputs, such as the actions taken or the reasons for not taking actions.

GM1 145.A.95 Findings and observations

ROOT CAUSE ANALYSIS

(a) It is important that the analysis does not primarily focus on establishing who or what caused the non-compliance, but on why it was caused. Establishing the root cause(s) often requires an overarching view of the events and circumstances that led to it, to identify all the possible systemic and contributing factors (regulatory, technical, human factors, organisational factors, etc.) in addition to the direct factors.

(b) A narrow focus on single events or failures, or the use of a simple, linear model, such as a fault tree, to identify the chain of events that led to the non-compliance, may not properly reflect the complexity of the issue, and therefore there is a risk that important factors that must be addressed in order to prevent a reoccurrence will be ignored.

Such an inappropriate or partial root cause analysis often leads to defining ‘quick fixes’ that only address the symptoms of the non-conformity. A peer review of the results of the root cause analysis may increase its reliability and objectivity.

GM1 145.A.120 Means of compliance

GENERAL

(a) Acceptable means of compliance (AMC) are a tool to standardise the demonstration of compliance and facilitate the verification activities of the NMAA with EMARs. They are published by the NMAA to achieve these objectives. Whereas the NMAA and the regulated entities are not legally bound to use them, applying them is recommended.

(b) If an organisation wishes to use means to comply with EMARs different from the AMC established by the NMAA, that organisation may need to demonstrate compliance with EMARs by using alternative means of compliance (AltMoC):

(1) established by the NMAA — see GM1 145.B.120; or

(2) established by that organisation and approved by the NMAA — see point (c) below.

An AltMoC does not allow deviation from EMARs.

(c) AltMoC established by an organisation and approved by the NMAA:

An organisation wishing to use a different means of compliance than the one published by the NMAA, can propose and implement an AltMoC only after the NMAA approves it. In this case, the organisation is responsible for demonstrating how that AltMoC establishes compliance with EMARs.

This approval will be granted by the NMAA on an individual basis and restricted to that specific applicant. Other organisations wishing to use the same means of compliance should follow the AltMoC process (demonstrating compliance with EMARs) and obtain individual approval from the NMAA.

GM2 145.A.120 Means of Compliance

WHEN AN ALTERNATIVE MEANS OF COMPLIANCE IS NEEDED

When there is no AMC for a certain requirement in continuing airworthiness EMARs, the means of compliance proposed by the organisation to that point of continuing airworthiness EMARs do not need to go through the AltMoC process. It is the responsibility of the NMAA to verify that compliance with continuing airworthiness EMARs is met. However, in certain cases the organisation may propose, and the NMAA may agree, to have such means of compliance follow the AltMoC process.

When there is an AMC, the AltMoC process is needed in the following (not exhaustive) cases:

- a means to comply with continuing airworthiness EMARs is technically different in character to the AMC published by the NMAA;
- A Form is significantly different from the one proposed in EMARs and/or AMC.

Examples of issues not considered to require an AltMoC process include, but are not limited to:

- editorial changes to an AMC, as long as it does not change the intent of the AMC;
- transposing an AMC into the organisational structure, organisational processes, or standard operating procedures with different wording and terminology customised to the organisation's environment, if this does not change the intent of the AMC and its associated level of safety.

AMC1 145.A.120(b) Means of compliance

DESCRIPTION SUPPORTING THE ALTERNATIVE MEANS OF COMPLIANCE

(a) The description of the AltMoC should include:

- a summary of the AltMoC;
- the content of the AltMoC;
- a statement that compliance with the continuing airworthiness EMARs is achieved; and
- in support of that statement, an assessment demonstrating that the AltMoC reaches an acceptable level of safety, taking into account the level of safety provided by the corresponding AMC.

(b) All these elements describing the AltMoC form an integral part of the management system records to be kept in accordance with EMAR 145.A.55.

GM1 145.A.200 Management System

GENERAL

Safety management seeks to proactively identify hazards and to mitigate the related safety risks before they result in aviation accidents and incidents. Safety management enables an organisation to manage its activities in a more systematic and focused manner. When an organisation has a clear understanding of its role and contribution to aviation safety, it can prioritise safety risks and more effectively manage their resources and obtain optimal results.

The principles of the requirements in EMAR 145.A.200, EMAR 145.A.202, EMAR 145.A.205 and the related AMC constitute the framework for military aviation safety management. This framework addresses the core elements of the ICAO safety management system (SMS) framework defined in Appendix I to Annexes B and C – Policy on Safety Management System (SMS) of BFD, includes the elements of the compliance monitoring system, and promotes an integrated approach to the management of an organisation. It facilitates the introduction of the additional safety management components, building upon the existing management system, rather than adding them as a separate framework.

This approach is intended to encourage organisations to embed safety management and risk-based decision-making into all their activities, instead of superimposing another system onto their existing management system and governance structure. In addition, if the organisation holds multiple EMAR organisation certificates, it may choose to implement a single management system to cover all of its activities. An integrated management system may not only be used to capture multiple certification requirements, but also to cover other management systems such as security, occupational health and environmental management systems. Integration will remove any duplication and exploit synergies by managing safety risks across multiple activities. Organisations may determine the best means to structure their management systems to suit their activities and organisational needs.

The core part of the management system framework (EMAR 145.A.200) focuses on what is essential to manage safety, by mandating the organisation to:

(a) clearly define accountabilities and responsibilities;

(b) establish a safety policy and the related safety objectives;

(c) implement safety reporting procedures in line with just culture principles;

(d) ensure the identification of aviation safety hazards entailed by its activities, ensure their evaluation, and the management of the associated risks, including:

  (1) taking actions to mitigate the risks;

  (2) verifying the effectiveness of the actions taken to mitigate the risks;

  (e) monitor compliance, while considering any additional requirements that are applicable to the organisation;

(f) keep their personnel trained, competent, and informed about significant safety issues; and

(g) document all the key management system processes.

Compared with the previous EMAR 145 quality system 'framework' (now covered by point (b) and (e)), the new elements that are introduced by the management system are, in particular, those addressed under points (c) and (d).

Points (a), (b) and (g) address component 1 'Safety policy and objectives' of the Appendix I to Annexes B and C – Policy on Safety Management System (SMS) of BFD.

Points (c) and (d)(1) address component 2 'Safety Risk Management' of the Appendix I to Annexes B and C – Policy on Safety Management System (SMS) of BFD.

Point (d)(2) addresses component 3 'Safety Assurance' of the Appendix I to Annexes B and C – Policy on Safety Management System (SMS) of BFD.

Finally, point (f) addresses component 4 'Safety Promotion' of the element thereof.

EMAR 145.A.200 introduces the following as key safety management processes; these are further specified in the related AMC and GM:

- Hazard identification;
- Safety risk management;
- Internal investigation;
- Safety performance monitoring and measurement;
- Management of change;
- Continuous improvement;
- Immediate safety action and coordination with the aircraft Operating Organisation.

It is important to recognise that safety management will be a continuous activity, as hazards, risks and the effectiveness of safety risk mitigations will change over time.

These key safety management processes are supported by a compliance monitoring function as an integral part of the management system. Most military aviation safety requirements constitute generic safety risk controls established by the NMAA. Therefore, ensuring effective compliance with the requirements during daily operations and independent monitoring of compliance are fundamental to any management system for safety. The compliance monitoring function may, in addition, support the follow-up of safety risk mitigation actions. Moreover, where non-compliances are identified through internal audits, the causes will be thoroughly assessed and analysed. Such an analysis in return supports the risk management process by providing insights into causal and contributing factors, including human factors, organisational factors and the environment in which the organisation operates. In this way, the outputs of compliance monitoring become some of the various inputs to the safety risk management functions. Conversely, the output of the safety risk management processes may be used to determine focus areas for compliance monitoring. In this way, internal audits will inform the organisation's management of the level of compliance within the organisation, whether safety risk mitigation actions have been implemented, and where corrective or preventive action is required. The combination of safety risk management and compliance monitoring should lead to an enhanced understanding of the end-to-end process and the process interfaces, exposing opportunities for increased efficiencies, which are not limited to safety aspects.

As military aviation is a complex system with many organisations and individuals interacting together, the primary focus of the key safety management processes is on the organisational processes and procedures, but it also relies on the humans in the system. The organisation and the way in which it operates can have a significant impact on human performance. Therefore, safety management necessarily addresses how humans can contribute both positively and negatively to an organisation's safety outcomes, recognising that human behaviour is influenced by the organisational environment.

The effectiveness of safety management largely depends on the degree of commitment of the senior management to create a working environment that optimises human performance and encourages personnel to actively engage in and contribute to the organisation's management processes. Similarly, a positive safety culture relies on a high degree of trust and respect between the personnel and the management, and it must therefore be created and supported at the senior management level. If the management does not treat individuals who identify hazards and report adverse events in a consistently fair and just way, those individuals are unlikely to be willing to communicate safety issues or to work with the management to effectively address the safety risks. As with trust, a positive safety culture takes time and effort to establish, and it can be easily lost.

It is further recognised that the introduction of processes for hazard identification and risk assessment, mitigation and verification of the effectiveness of such mitigation actions will create immediate and direct costs, while related benefits are sometimes intangible, and may take time to materialise. Over time, an effective management system will not only address the risks of major occurrences, but also identify and address production inefficiencies, improve communication, foster a better organisational culture, and lead to a more effective control of contractors and suppliers. In addition, through an improved relationship with the NMAA, an effective management system may result in a reduced oversight burden.

Thus, by viewing safety management and the related organisational policies and key processes as items that are implemented not only to prevent incidents and accidents, but also to meet the organisation's strategic objectives, any investment in safety should be seen as an investment in productivity and organisational success.

AMC1 145.A.200(a)(1) Management system

ORGANISATION AND ACCOUNTABILITIES

(a) The management system should encompass safety by including a safety manager and a safety review board in the organisational structure. The functions of the safety manager are those defined in AMC1 145.A.30(c);(ca).

(b) Safety review board

(1) The safety review board should be a high-level committee that considers matters of strategic safety in support of the accountable manager's safety accountability.

(2) The board should be chaired by the accountable manager and composed of the person or group of persons nominated under EMAR 145.A.30.

(3) The safety review board should monitor:

(i) the safety performance against the safety policy and objectives;

(ii) that any safety action is taken in a timely manner; and

(iii) the effectiveness of the organisation's management system processes.

(4) The safety review board may also be tasked with:

(i) reviewing the results of compliance monitoring;

(ii) monitoring the implementation of related corrective and preventive actions.

(c) The safety review board should ensure that appropriate resources are allocated to achieve the established safety objectives.

(d) Notwithstanding point (a), where justified by the size of the organisation and the nature and complexity of its activities and subject to a risk assessment and agreement by the NMAA, the organisation may not need to establish a formal safety review board. In this case, the tasks normally allocated to the safety review board should be allocated to the safety manager.

GM1 145.A.200(a)(1) Management system

SAFETY ACTION GROUP

(a) Depending on the size of the organisation and the nature and complexity of its activities, a safety action group may be established as a standing group or as an ad hoc group to assist, or act on behalf of the safety manager or the safety review board.

(b) More than one safety action group may be established, depending on the scope of the task and the specific expertise required.

(c) The safety action group usually reports to, and takes strategic direction from, the safety review board, and may be composed of managers, supervisors and personnel from concerned services.

(d) The safety action group may be tasked or assist with:

(1) monitoring safety performance;

(2) defining actions to control risks to an acceptable level;

(3) assessing the impact of organisational changes on safety;

(4) ensuring that safety actions are implemented within the agreed timescales;

(5) reviewing the effectiveness of previous safety actions and safety promotion.

GM2 145.A.200(a)(1) Management system

MEANING OF THE TERMS 'ACCOUNTABILITY' AND 'RESPONSIBILITY'

In the English language, the notion of accountability is different from the notion of responsibility. Whereas 'accountability' refers to an obligation which cannot be delegated, 'responsibility' refers to an obligation that can be delegated.

AMC1 145.A.200(a)(2) Management system

SAFETY POLICY AND OBJECTIVES

(a) The safety policy should:

(1) reflect organisational commitments regarding safety, and its proactive and systematic management, including the promotion of a positive safety culture;

(2) include internal reporting principles, and encourage personnel to report maintenance-related errors, incidents and hazards;

(3) recognise the need for all personnel to cooperate with the compliance monitoring and internal investigations referred to under point (c) of AMC1 145.A.200(a)(3);

(4) be endorsed by the accountable manager;

(5) be communicated, with visible endorsement, throughout the organisation; and

(6) be periodically reviewed to ensure it remains relevant and appropriate for the organisation.

(b) The safety policy should include a commitment to:

(1) comply with all the applicable legislation, to meet all the applicable requirements, and adopt practices to improve safety standards;

(2) provide the necessary resources for the implementation of the safety policy;

(3) apply human factors principles, including giving due consideration to the aspect of fatigue;

(4) enforce safety as a primary responsibility of all managers; and

(5) apply 'just culture' principles to internal safety reporting and the investigation of occurrences and, in particular, not to make available or use the information on occurrences:

(i) to attribute blame or liability to front-line personnel or other persons for actions, omissions or decisions taken by them that are commensurate with their experience and training; or

(ii) for any purpose other than maintaining or improving aviation safety.

(c) Senior management should continually promote the safety policy to all personnel, demonstrate its commitment to it, and provide necessary human and financial resources for its implementation.

(d) Taking due account of its safety policy, the organisation should define safety objectives. The safety objectives should:

(1) form the basis for safety performance monitoring and measurement;

(2) reflect the organisation's commitment to maintain or continuously improve the overall effectiveness of the management system;

(3) be communicated throughout the organisation; and

(4) be periodically reviewed to ensure they remain relevant and appropriate for the organisation.

GM1 145.A.200(a)(2) Management system

SAFETY POLICY

(a) The safety policy is the means whereby the organisation states its intention to maintain and, where practicable, improve safety levels in all its activities and to minimise its contribution to the risk of an aircraft accident or serious incident as far as is reasonably practicable. It reflects the management's commitment to safety, and should reflect the organisation's philosophy of safety management, as well as being the foundation on which the organisation's management system is built. It serves as a reminder of 'how we do activities here'. The creation of a positive safety culture begins with the issuance of a clear, unequivocal policy.

(b) The commitment to apply 'just culture' principles forms the basis for the organisation's internal rules describing how 'just culture' principles are guaranteed and implemented.

(c) NOT APPLICABLE.

AMC1 145.A.200(a)(3) Management system

SAFETY MANAGEMENT KEY PROCESSES

(a) Hazard identification processes

(1) A reporting scheme should be the formal means of collecting, recording, analysing, acting on, and generating feedback about hazards, events and the associated risks that may affect safety.

(2) The hazards identification should include in particular:

(i) hazards that may be linked to human factors issues that affect human performance; and

(ii) hazards that may stem from the organisational set-up or the existence of complex operational and maintenance arrangements (such as when multiple organisations are contracted, or when multiple levels of contracting/subcontracting are included).

(b) Risk management processes

(1) A formal safety risk management process should be developed and maintained that ensures reactive and proactive approach composed by:

(i) analysis (e.g. in terms of the probability and severity of the consequences of hazards and occurrences);

(ii) assessment (in terms of tolerability);

(iii) control (in terms of mitigation) of risks to an acceptable level.

Note: The severity of the consequence should be evaluated to the best knowledge and engineering judgement of the organisation, and this evaluation may require collecting information from the NMAA, incident/accident investigation reports, the design approval holder, etc.

(2) The levels of management who have the authority to make decisions regarding the tolerability of safety risks, in accordance with (b)(1)(ii), should be specified.

(c) Internal investigation

(1) In line with its just culture policy, the organisation should define how to investigate incidents such as errors or near misses, in order to understand not only what happened, but also how it happened, to prevent or reduce the probability and/or consequence of future recurrences (refer to AMC1 145.A.202). This approach should avoid concentrating the analysis on who was (were) directly or indirectly concerned by the events.

(2) The scope of internal investigations should extend beyond the scope of the occurrences required to be reported to the NMAA in accordance with point EMAR 145.A.60, to include the reports referred to in EMAR 145.A.202(b).

(d) Safety performance monitoring and measurement

(1) Safety performance monitoring and measurement should be the processes by which the safety performance of the organisation is verified in comparison with the safety policy and the safety objectives.

(2) These processes may include, as appropriate to the size, nature and complexity of the organisation:

(i) safety reporting, which may also address the status of compliance with the applicable requirements;

(ii) safety reviews, including trend reviews, which would be conducted during the introduction of new products and their components, new equipment/technologies, the implementation of new or changed procedures, or in situations of organisational changes that may have an impact on safety;

(iii) safety audits that focus on the integrity of the organisation's management system, and on periodically assessing the status of safety risk controls;

(iv) safety surveys, examining particular elements or procedures in a specific area, such as identified problem areas, or bottlenecks in daily maintenance activities, perceptions and opinions of maintenance management personnel, and areas of dissent or confusion; and

(v) other indicators relevant to safety performance, which may be generated by automated means.

(e) Management of change

Changes may introduce new hazards or threaten existing safety risk controls. The management of change should be a documented process established by the organisation to identify external and internal changes that may have an adverse effect on the safety of its maintenance activities. It should make use of the organisation's existing hazard identification, risk assessment and mitigation processes.

(f) Continuous improvement

The organisation should continuously seek to improve its safety performance and the effectiveness of its management system. Continuous improvement may be achieved through:

(1) audits carried out by external organisations;

(2) assessments, including assessments of the effectiveness of the safety culture and management system, in particular to assess the effectiveness of the safety risk management processes;

(3) staff surveys, including cultural surveys, that can provide useful feedback on how engaged personnel are with the management system;

(4) monitoring the recurrence of incidents and occurrences;

(5) evaluation of safety performance indicators and reviews of all the available safety performance information; and

(6) the identification of lessons learned.

(g) Immediate safety action and coordination with the Operating Organisation

(1) Procedure(s) should be implemented that enable the organisation to act promptly when it identifies safety concerns with the potential to have an immediate effect on flight safety, including clear instructions on who to contact at the Operating Organisation, and how to contact them, including outside of normal working hours. These provisions are without prejudice to the occurrence reporting required by EMAR 145.A.60.

(2) If applicable, procedure(s) should be implemented to enable the organisation to react promptly if triggered by the Operating Organisation and it requires the support of the EMAR 145 organisation.

GM1 145.A.200(a)(3) Management system

SAFETY RISK MANAGEMENT — INTERFACES BETWEEN ORGANISATIONS

(a) Safety risk management processes should specifically address the planned implementation of, or participation of the organisation in, complex operational and maintenance arrangements (such as when multiple organisations are contracted, or when multiple levels of contracting/subcontracting are included).

(b) Hazard identification and risk assessment start with the identification of all the parties involved in the arrangement, including independent experts and non-approved organisations. This identification process extends to cover the overall control structure, and assesses in particular the following elements across all subcontract levels and all parties within such arrangements:

(1) coordination and interfaces between the different parties;

(2) applicable procedures;

(3) communication between all the parties involved, including reporting and feedback channels;

(4) task allocation, responsibilities and authorities; and

(5) the qualifications and competency of key personnel with reference to EMAR 145.A.30.

(c) Safety risk management should focus on ensuring the following aspects:

(1) clear assignment of accountability and allocation of responsibilities;

(2) that only one party is responsible for a specific aspect of the arrangement, with no overlapping or conflicting responsibilities, in order to eliminate coordination errors;

(3) the existence of clear reporting lines, both for occurrence reporting and progress reporting;

(4) the possibility for staff to directly notify the organisation of any hazard that suggests an obviously unacceptable safety risk as a result of the potential consequences of this hazard.

(d) The safety risk management processes should ensure that there is regular communication between all the parties involved to discuss work progress, risk mitigation actions, and changes to the arrangements, as well as any other significant issues.

GM2 145.A.200(a)(3) Management system

MANAGEMENT OF CHANGE

(a) Unless they are properly managed, changes in organisational structure, facilities, the scope of work, personnel, documentation, policies and procedures, etc. can result in the inadvertent introduction of new hazards, and expose the organisation to new or increased risks. Effective organisations seek to improve their processes, with conscious recognition that changes can expose the organisation to potentially latent hazards and risks if they are not properly and effectively managed.

(b) Regardless of the magnitude of a change, large or small, its safety implications should always be proactively considered. This is primarily the responsibility of the team that proposes and/or implements the change. However, a change can only be successfully implemented if all the personnel affected by the change are engaged, are involved and participate in the process. The magnitude of a change, its safety criticality, and its potential impact on human performance should be assessed in any change management process.

(c) The process for the management of change typically provides principles and a structured framework for managing all aspects of the change. Disciplined application of the management of change can maximise the effectiveness of the change, engage the staff, and minimise the risks that are inherent in a change.

(d) The introduction of a change is the trigger for the organisation to perform their hazard identification and risk management processes. Some examples of change include, but are not limited to:

(1) changes to the organisational structure;

(2) the inclusion of a new aircraft type in the terms of approval;

(3) the addition of aircraft of the same or a similar type;

(4) significant changes in personnel (affecting key personnel and/or large numbers of personnel, high turnover);

(5) new or amended regulations;

(6) changes to the security arrangements;

(7) changes in the situation of an organisation (e.g. operational, commercial or financial pressure);

(8) new schedule(s), location(s), equipment, and/or operational procedures; and

(9) the addition of new subcontractors.

(e) A change may have the potential to introduce new, or to exacerbate pre-existing, human factors issues. For example, changes in computer systems, equipment, technology, personnel changes, including changes in management personnel, procedures, work organisation, or work processes are likely to affect performance.

(f) The purpose of integrating human factors (HF) into the management of change is to minimise potential risks by specifically considering the impact of the change on the people within a system.

(g) Special consideration, including any HF issues, should be given to the 'transition period'. In addition, the activities utilised to manage these issues should be integrated into the change management plan.

(h) Effective management of change should be supported by the following:

(1) implementation of a process for formal hazard identification/risk assessment for major operational changes, major organisational changes, changes in key personnel, and changes that may affect the way maintenance is carried out;

(2) identification of changes that are likely to occur in the activity which would have a noticeable impact on:

(i) resources — material and human;

(ii) management direction — policies, processes, procedures, training; and

(iii) management control;

(3) safety cases/risk assessments that are focused on military aviation safety;

(4) the involvement of key stakeholders in the change management process, as appropriate.

(i) During the management of change process, previous risk assessments and existing hazards are reviewed for possible effect.

AMC1 145.A.200(a)(4) Management system

COMMUNICATION ON SAFETY

(a) The organisation should establish communication regarding safety matters that:

(1) ensures that all personnel are aware of the safety management activities, as appropriate for their safety responsibilities;

(2) conveys safety-critical information, especially related to assessed risks and analysed hazards;

(3) explains why particular actions are taken; and

(4) explains why safety procedures are introduced or changed.

(b) Regular meetings with personnel, at which information, actions, and procedures are discussed, may be used to communicate safety matters.

GM1 145.A.200(a)(4) Management system

SAFETY PROMOTION

(a) Safety training, combined with safety communication and information sharing, forms part of safety promotion.

(b) Safety promotion activities should support:

(1) the organisation's policies, encouraging a positive safety culture, creating an environment that is favourable to the achievement of the organisation's safety objectives;

(2) organisational learning; and

(3) the implementation of an effective safety reporting scheme and the development of a just culture.

(c) Depending on the particular safety issue, safety promotion may also constitute or complement risk mitigation actions.

(d) Qualifications and training aspects are further specified in the AMC and the GM to EMAR 145.A.30.

GM1 145.A.200(a)(5) Management system

MANAGEMENT SYSTEM DOCUMENTATION

(a) The organisation may document its safety policy, safety objectives and all its key management system processes in a separate manual (e.g. a Safety Management Manual or Management System Manual), or in its MOE (see AMC1 145.A.70(a), Part 3 'Management system procedures'). Organisations that hold multiple organisation certificates within the scope of EMARs may prefer to use a separate manual in order to avoid duplication. That manual or the MOE, depending on the case, should be the key instrument for communicating the approach to the management system for the whole of the organisation.

(b) The organisation may also choose to document some of the information that is required to be documented in separate documents (e.g. policy documents, procedures). In that case, it should ensure that the manual or the MOE contains adequate references to any document

that is kept separately. Any such documents are to be considered to be integral parts of the organisation's management system documentation.

AMC1 145.A.200(a)(6) Management system

COMPLIANCE MONITORING — GENERAL

(a) The primary objectives of compliance monitoring are to provide an independent monitoring function on how the organisation ensures compliance with the applicable requirements, policies and procedures, and to request action where non-compliances are identified.

(b) The independence of the compliance monitoring should be established by always ensuring that audits and inspections are carried out by personnel who are not responsible for the functions, procedures or products that are audited or inspected.

AMC2 145.A.200(a)(6) Management system

COMPLIANCE MONITORING — INDEPENDENT AUDIT

(a) An essential element of the compliance monitoring function is the independent audit.

(b) The independent audit should be an objective process of routine sample checks of all aspects of the organisation's ability to carry out all maintenance to the standards required by continuing airworthiness EMARs. It should include checking compliance of the organisation procedures with the applicable requirements, adherence of the organisation to these procedures, and product or maintenance sampling (i.e. product audit), as this is the end result of the maintenance process.

(c) The independent audit should provide an objective overview of the complete set of maintenance-related activities. It should include a percentage of unannounced audits carried out on a sample basis while maintenance is being carried out. This means that some audits should be carried out during the night for those organisations that work at night.

(d) The organisation should establish an audit plan to show when and how often the activities as required by this EMAR M and EMAR 145 will be audited.

(e) Except as specified in points (h) and (j), the audit plan should ensure that all aspects of EMAR 145 compliance are verified every year, including all the subcontracted activities. The auditing may be carried out as a complete single exercise or subdivided over the annual period. The independent audit should not require each procedure to be verified 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 verified every year without resultant findings. Where findings have been identified, compliance with the particular procedure should be verified against other product lines until the findings have been closed, after which the independent audit procedure may revert back to a yearly interval for the particular procedure.

(f) Except as specified otherwise in point (h), the independent audit should sample check one product (such as one aircraft or engine or component) while undergoing maintenance on each product line every year as a demonstration of compliance with the maintenance procedures and requirements associated with that specific product. This should include in particular the verification of:

- the maintenance data and compliance with the organisation procedures, including consideration of human factors issues;

- the facility and maintenance environment;

- the standard of inspection and precautions;

- the completion of work cards/worksheet;

- the tools and material;

- the authorisation of the person carrying out maintenance.

For the purpose of this AMC, a product line includes any product under an Appendix II approval class rating as specified in the terms of approval issued to the particular organisation.

It therefore follows, for example, that an EMAR 145 MO approved to maintain aircraft, engines, brakes and autopilots would need to carry out at least four complete product audits each year, except as specified otherwise in points (f), (h) or (j).

(g) The product audit includes witnessing any relevant testing and visually inspecting the product and the associated documentation. The product audit should not involve repeated disassembly or testing unless the product audit identifies findings that require such an action.

(h) Except as specified otherwise in point (j), where the organisation contracts the independent audit element of the compliance monitoring function in accordance with point (l), the audit should be carried out twice every year.

(i) Except as specified otherwise in point (j), where the organisation has line stations listed as per EMAR 145.A.75(d), the compliance monitoring documentation should include a description of how these line stations are integrated into the monitoring 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 and the related safety hazards identified. Except as specified otherwise in point (j), the maximum period between audits of a particular line station should not exceed 2 years.

(j) Except as specified otherwise in point (f), provided that there are no safety-related findings, the audit planning cycle specified in this AMC may be increased by up to 100 %, subject to a risk assessment and/or mitigation actions, and agreement by the NMAA.

(k) A report should be issued each time an audit is carried out describing what was checked and the resulting non-compliance findings against applicable requirement and procedures.

(l) Organisations with a maximum of 10 maintenance staff actively engaged in carrying out maintenance may subcontract the whole independent audit element of the compliance monitoring function to another organisation or contract a qualified and competent person to become responsible for this element, with the agreement of the NMAA.

This does not prevent a larger organisation from occasionally using external support for conducting particular audits.

AMC3 145.A.200(a)(6) Management system

COMPLIANCE MONITORING — CONTRACTING OF THE INDEPENDENT AUDIT

(a) If external personnel are used to perform independent audits:

(1) any such audits should be performed under the responsibility of the compliance monitoring manager; and

(2) the organisation remains responsible for ensuring that the external personnel have the relevant knowledge, background, and experience that are appropriate to the activities being audited, including knowledge and experience in compliance monitoring.

(b) The organisation retains the ultimate responsibility for the effectiveness of the compliance monitoring function, in particular for the effective implementation and follow-up of all corrective actions.

AMC4 145.A.200(a)(6) Management system

COMPLIANCE MONITORING — FEEDBACK SYSTEM

(a) Another essential element of the compliance monitoring function is the feedback system.

(b) The feedback system should not be contracted to external persons or organisations.

(c) When a non-compliance is found, the compliance monitoring function should ensure that the root cause(s) and contributing factor(s) are identified (see GM1 145.A.95), and that corrective actions are defined. The feedback part of the compliance monitoring function should define who is required to address any non-compliance in each particular case, and the procedure to be followed if the corrective action is not completed within the defined time frame. The principal functions of the feedback system are to ensure that all findings resulting from the independent audits of the organisation are properly investigated and corrected in a timely manner, and to enable the accountable manager to be kept informed of safety issues and the extent of compliance with EMAR 145.

(d) The independent audit reports referred to in AMC2 145.A.200(a)(6) should be sent to the relevant department(s) for corrective action, giving target closure dates. These target dates should be discussed with the relevant department(s) before the compliance monitoring function confirms the dates in the report. The relevant department(s) is (are) required to implement the corrective action and inform the compliance monitoring function of the status of the implementation of the action.

(e) Unless the review of the results from compliance monitoring is given to the safety review board (ref. AMC1 145.A.200(a)(1) point (b)(4)), the accountable manager should hold regular meetings with staff to check the progress of corrective actions. These meetings may be delegated to the compliance monitoring manager on a day-to-day basis, provided that the accountable manager:

(1) meets the senior staff involved at least twice per year to review the overall performance of the compliance monitoring function; and

(2) receives at least a half-yearly summary report on non-compliance findings.

(f) All records pertaining to the independent audit and the feedback system should be retained for the period specified in EMAR 145.A.55(c) or for such periods as to support changes to the audit planning cycle in accordance with AMC2 145.A.200(a)(6), whichever is the longer.

GM1 145.A.200(a)(6) Management system

COMPLIANCE MONITORING FUNCTION

The compliance monitoring function is one of the elements that is required to be in compliance with the applicable requirements. This means that the compliance monitoring function itself should be subject to independent monitoring of compliance in accordance with EMAR 145.A.200(a)(6).

GM2 145.A.200(a)(6) Management system

COMPLIANCE MONITORING — AUDIT PLAN

(a) The purpose of this GM is to provide guidance on one acceptable working audit plan to meet part of the needs of EMAR 145.A.200(a)(6). There is any number of other acceptable working audit plans.

(b) The audits described in the audit plan are intended to monitor compliance with the applicable requirements, and at the same time to review all areas of the organisation to which those requirements are applicable.

(c) In order to achieve this objective, as a first element, the organisation needs to identify all the regulatory requirements that are applicable to the activity and the scope of work under consideration, to allow the audit plan to focus on the relevant topics. Each topic (e.g. facilities, personnel, etc.) should be cross-referred with the relevant requirement and the related procedure of the organisation in the exposition that describes the particular topic. If the organisation follows a specific means of compliance to demonstrate compliance with the requirement, that information may also be stated.

(d) As a second element, all the functional areas of the organisation in which EMAR 145 functions are intended to be carried out (i.e. the types of maintenance-related activities), including subcontracting, need to be listed in order to identify the applicability of any topic to each functional area.

(e) A matrix can be used, as shown in the example below, to capture the two elements mentioned above. This matrix is intended to be a living document to be customised by each particular organisation depending on its scope of work and its structure. This matrix should represent the overall compliance of the audit system, and needs to be amended, as necessary, based upon any change to the applicable regulations, the procedures of the organisation or the functional areas of the organisation (e.g. a change in the scope of work to include line maintenance, etc.).

Example (to be further completed) of an audit matrix for an organisation involved in aircraft base maintenance:

Topic	Requirement	Exposition	Functional areas				
			Base maintenance	Compliance monitoring	Subcontracting	Component workshop	…
Facilities	145.A.25(a)1	1.8	X	N/A	X	X	…
	AMC 145.A.25(a)	2.22	X	N/A	N/A		…
	…	…	…	…	…	…	…
Personnel	…	…	…	…	…	…	…
	145.A.30(c)	1.4	N/A	X	N/A	N/A	…
	145.A.30(d)	1.7, 2.22	X	X	X	X	…
	…	…	…	…	…	…	…
	145.A.37	N/A	N/A	N/A	N/A	N/A	…
…	…	…	…	…	…	…	…
Record-keeping	145.A.55	…	…	…	…	…	…
	…	…	…	…	…	…	…
…	…	…	…	…	…	…	…

(f) The audit plan can be presented as a simplified schedule (see below), showing the operational areas of the organisation (i.e. where the maintenance-related activities are effectively carried out) against a timetable to indicate when each particular area was scheduled for audit and when the audit was completed. The audit plan should include a number of product audits (depending on the number of product lines), some of which should be unannounced (see AMC2 145.A.200(a)(6)).

Example (to be further completed) of an audit plan for an organisation, mentioned in point (e), that has two base maintenance hangars, and hydraulic and electrical workshops:

Operational area	Functional area	Planned	Completed	Remarks
Base maintenance hangar 1	Base maintenance	mmm yyyy	dd mmm yyyy	
Base maintenance hangar 2	Base maintenance	mmm yyyy	dd mmm yyyy	
Hydraulic workshop	Component workshop	mmm yyyy	dd mmm yyyy	
Electrical workshop	Component workshop	mmm yyyy	dd mmm yyyy	
Subcontractor 1	Subcontracting	mmm yyyy	dd mmm yyyy	
Product audit 1	Base maintenance	mmm yyyy	dd mmm yyyy	During night
Product audit 2	Component workshop	unannounced		
…	…	…	…	…

(g) The audit of each operational area will review all the topics that are applicable to the relevant functional area. For each topic, the audit should check that the particular EMAR 145 requirement is documented in the corresponding procedure in the exposition, and that the procedure is effectively implemented in the operational area that is being audited. In addition, the audit should also identify any practice/process implemented in the operational area which has not been documented in any procedure in the exposition.

GM1 145.A.200(a)(6) and 145.B.300 Management system and Oversight principles

THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) FOR PERFORMING REMOTE AUDITS

This GM provides technical guidance on the use of remote information and communication technologies (ICT) to support:

- NMAAs when overseeing regulated organisations;
- regulated organisations when conducting internal audits/monitoring compliance of their organisation with the relevant requirements, and when evaluating suppliers and subcontractors.

In the context of this GM:

- ‘remote audit’ means an audit that is performed with the use of any real-time video and audio communication tools instead of the physical presence of the auditor on-site; the

specificities of each type of approval need to be considered in addition to the general overview (described below) when applying the 'remote audit' concept;

- 'auditing entity' means the NMAA or organisation that performs the remote audit;
- 'auditee' means the entity being audited/inspected (or the entity audited/inspected by the auditing entity via a remote audit);

It is the responsibility of the auditing entity to assess whether the use of remote ICT constitutes a suitable alternative to the physical presence of an auditor on-site in accordance with the applicable requirements.

THE CONDUCT OF A REMOTE AUDIT

The auditing entity that decides to conduct a remote audit should describe the remote audit process in its documented procedures and should consider at least the following elements:

- The methodology for the use of remote ICT is sufficiently flexible and non-prescriptive in nature to optimise the conventional audit process.
- Adequate controls are defined and are in place to avoid abuses that could compromise the integrity of the audit process.
- Measures to ensure that the security and confidentiality are maintained throughout the audit activities (data protection and intellectual property of the organisation also need to be safeguarded).

Examples of the use of remote ICT during audits may include but are not limited to:

- meetings by means of teleconference facilities, including audio, video and data sharing;
- assessment of documents and records by means of remote access, in real time;
- recording, in real time during the process, of evidence to document the results of the audit, including non-conformities, by means of exchange of emails or documents, instant pictures, video or/and audio recordings;
- visual (livestream video) and audio access to facilities, stores, equipment, tools, processes, operations, etc.

An agreement between the auditing entity and the auditee should be established when planning a remote audit, which should include the following:

- determining the platform for hosting the audit;
- granting security and/or profile access to the auditor(s);
- testing platform compatibility between the auditing entity and the auditee prior to the audit;
- considering the use of webcams, cameras, drones, etc. when the physical evaluation of an event (product, part, process, etc.) is desired or is necessary;
- establishing an audit plan which will identify how remote ICT will be used and the extent of their use for the audit purposes to optimise their effectiveness and efficiency while maintaining the integrity of the audit process;
- if necessary, time zone acknowledgement and management to coordinate reasonable and mutually agreeable convening times;
- a documented statement of the auditee that they shall ensure full cooperation and provision of the actual and valid data as requested, including ensuring any supplier or subcontractor cooperation, if needed; and

- data protection aspects.

The following equipment and set-up elements should be considered:

- the suitability of video resolution, fidelity, and field of view for the verification being conducted;
- the need for multiple cameras, imaging systems, or microphones, and whether the person that performs the verification can switch between them, or direct them to be switched and has the possibility to stop the process, ask a question, move the equipment, etc.;
- the controllability of viewing direction, zoom, and lighting;
- the appropriateness of audio fidelity for the evaluation being conducted; and
- real-time and uninterrupted communication between the person(s) participating to the remote audit from both locations (on-site and remotely).

When using remote ICT, the auditing entity and the other persons involved (e.g. drone pilots, technical experts) should have the competence and ability to understand and utilise the remote ICT tools employed to achieve the desired results of the audit(s)/assessment(s). The auditing entity should also be aware of the risks and opportunities of the remote ICT used and the impacts they may have on the validity and objectivity of the information gathered.

Audit reports and related records should indicate the extent to which remote ICT have been used in conducting remote audits and the effectiveness of remote ICT in achieving the audit objectives, including any item that has not been able to be completely reviewed.

AMC1 145.A.202 Internal safety reporting scheme

(a) Each internal safety reporting scheme should ensure confidentiality and enable and encourage free and frank reporting of any potentially safety-related occurrence, including incidents such as errors or near misses, safety issues and identified hazards. This will be facilitated by the establishment of a just culture.

(b) The internal safety reporting scheme should contain the following elements:

(1) clearly identified aims and objectives with demonstrable corporate commitment;

(2) a just culture policy as part of the safety policy, and related just culture implementation procedures;

(3) a process to:

(i) identify those reports which require investigation; and

(ii) when so identified, investigate all the causal and contributing factors, including technical, organisational, managerial, or human factors issues, and any other contributing factors related to the occurrence, incident, error or near miss that was identified;

(iii) if adapted to the size and complexity of the organisation, analyse the collective data showing the trends and frequencies of the contributing factors;

(4) appropriate corrective actions based on the findings of investigations;

(5) initial and recurrent training for staff involved in internal investigations;

(6) where relevant, the organisation should cooperate with the operating organisation/CAMO on occurrence investigations by exchanging relevant information to improve military aviation safety.

(c) The internal safety reporting scheme should:

(1) ensure the confidentiality of the reporter;

(2) be closed loop, to ensure that actions are taken internally to address safety issues and hazards; and

(3) feed into the recurrent training as defined in AMC3 145.A.30(e) whilst maintaining the appropriate confidentiality.

(d) Feedback should be given to staff both on an individual and a more general basis to ensure their continued support of the safety reporting scheme.

GM1 145.A.202 Internal safety reporting scheme

GENERAL

(a) The overall purpose of the internal safety reporting scheme is to collect information reported by the organisation personnel and use this reported information to improve the level of compliance and safety performance of the organisation. The purpose is not to attribute blame.

(b) The objectives of the scheme are to:

(1) enable an assessment to be made of the safety implications of each relevant incident (errors, near miss), safety issue and hazard reported, including previous similar issues, so that any necessary action can be initiated; and

(2) ensure that knowledge of relevant incidents, safety issues and hazards is shared so that other persons and organisations may learn from them.

(c) The scheme is an essential part of the overall monitoring function and should be complementary to the normal day-to-day procedures and 'control' systems; it is not intended to duplicate or supersede any of them. The scheme is a tool to identify those instances in which routine procedures have failed or may fail.

(d) All reports should be retained, as the significance of such reports may only become obvious at a later date.

(e) The collection and analysis of timely, appropriate and accurate data will allow the organisation to react to the information that it receives, and to take the necessary action.

GM1 145.A.205 Contracting and subcontracting

RESPONSIBILITY WHEN CONTRACTING OR SUBCONTRACTING MAINTENANCE

(a) Regardless of the approval status of the subcontracted organisations, an EMAR 145 organisation is responsible for ensuring that all subcontracted activities are subject to

hazard identification andrisk management, as required by EMAR 145.A.200(a)(3), and to compliance monitoring, as required by EMAR 145.A.200(a)(6).

(b) An EMAR 145 organisation is responsible for identifying hazards that may stem from the existence of complex maintenance arrangements (such as when multiple organisations are contracted, orwhen multiple levels of contracting/subcontracting are included) with due regard to the organisations' interfaces (see GM1 145.A.200(a)(3)). In addition, the compliance monitoring function should at least check that the approval of the contracted MO(s) effectively covers the contracted activities, and that it is still valid.

(c) An EMAR 145 organisation is responsible for ensuring that interfaces and communication channels are established with the contracted MO(s) for occurrence reporting. This does not replace the obligation of the contracted organisation(s) to report to the NMAA in accordance with continuing airworthiness EMARs.

For subcontracted activities, interfaces and communication channels are also needed for the purpose of the internal safety reporting scheme (EMAR 145.A.202).

GM2 145.A.205 Contracting and subcontracting

DIFFERENCE BETWEEN 'CONTRACTING MAINTENANCE' AND 'SUBCONTRACTING MAINTENANCE'

(a) 'Subcontracting maintenance' means subcontracting to a third party under the maintenance organisation management system.

This is the case when a third party carries out certain maintenance tasks on behalf of the EMAR 145 organisation and the responsibility remains with the EMAR 145 organisation (this EMAR145 organisation must have the tasks within its scope of approval). Whether the third party is approved or not is not relevant for the designation of subcontracting, since the third party will be working under the management system of the EMAR 145 organisation and the maintenance will be released under the approval of this organisation.

(b) 'Contracting maintenance' means contracting to another MO which will release the maintenance under its own approval.

This is the case when an EMAR 145 organisation, contracted to carry out maintenance by an Operating Organisation/CAMO, further contracts certain maintenance tasks to another approved EMAR 145 organisation and transfers the responsibility for the release of such tasks to the second EMAR 145 organisation.

Contracting should only be envisaged when it is allowed by the organisation that requests the maintenance.

(c) In case (a), the subcontracted organisation works under the approval of the contracting organisation, whereas in case (b), the contracted organisation works under its own approval.

SECTION B - PROCEDURES FOR NATIONAL MILITARY AIRWORTHINESS AUTHORITIES

GM1 145.B.120 Means of compliance

ALTERNATIVE MEANS OF COMPLIANCE — GENERAL

(a) A NMAA may establish means to comply with EMARs different from the AMC. In that case, the NMAA is responsible for ensuring that these alternative means of compliance (AltMoC) establish compliance with EMARs.

(b) NOT APPLICABLE.

(c) AltMoC issued by the NMAA may cover the following cases:

- AltMoC to be used by organisations under the oversight of the NMAA and made available to these organisations;
- AltMoC to be used by the NMAA itself to discharge its responsibilities.

AMC1 145.B.120(b);(c) Means of compliance

PROCESSING THE ALTERNATIVE MEANS OF COMPLIANCE

To meet the objective of EMAR 145.B.120(b):

(a) the NMAA should establish the means to consistently evaluate over time that all the AltMoC used by itself or by organisations under its oversight allow for the establishment of compliance with the EMARs.

(b) If the NMAA issues AltMoC for itself or for the organisations under its oversight, it should:

- make them available to all relevant organisations;
- NOT APPLICABLE.

(c) The NMAA should evaluate the AltMoC proposed by an organisation by analysing the documentation provided and, if considered necessary, inspecting the organisation.

When the NMAA finds that the AltMoC is in accordance with EMARs, it should:

- notify the applicant that the AltMoC is approved;
- indicate that this AltMoC may be implemented and agree when the MOE is to be amended; and
- NOT APPLICABLE
- All the elements describing the AltMoC form an integral part of the records to be kept in accordance with EMAR 145.B.220.

(d) NOT APPLICABLE

GM1 145.B.120(b);(c) Means of Compliance

CASE WHERE EMARs HAS NO CORRESPONDING AMC

NOT APPLICABLE.

AMC1 145.B.125(b) Information to other NMAAs

EXCHANGE OF SAFETY-SIGNIFICANT INFORMATION WITH OTHER NMAAs

Each NMAA should appoint a coordinator to act as the contact point for the exchange of safety-significant information between NMAAs.

GM1 145.B.125(b) Information to other NMAAs

MEANING OF SAFETY-SIGNIFICANT INFORMATION STEMMING FROM THE OCCURRENCE REPORTS

'Safety-significant information stemming from the occurrence reports' means:

(a) a conclusive safety analysis which summarises individual occurrence data and provides an in-depth analysis of a safety issue, and which may be relevant for other NMAAs' safety action planning; and

(b) NOT APPLICABLE.

GM2 145.B.125(b) Information to other NMAAs

RECOMMENDED CONTENT FOR CONCLUSIVE SAFETY ANALYSES

A conclusive safety analysis should contain the following:

(a) a detailed description of the safety issue, including the scenario in which the safety issue takes place; and

(b) an indication of the stakeholders affected by the safety issue, including types of operations and organisations;

and, as appropriate:

(c) a risk assessment establishing the severity and probability of all the possible consequences of the safety issue;

(d) information about the existing safety barriers that the military aviation system has in place to prevent the likely safety issue consequences from occurring;

(e) any mitigating actions already in place or developed to deal with the safety issue;

(f) recommendations for future actions to control the risk; and

(g) any other element the NMAA considers essential to properly assess the safety issue.

GM3 145.B.125(b) Information to other NMAAs

NOT APPLICABLE.

AMC1 145.B.200 Management system

ORGANISATIONAL STRUCTURE

(a) In deciding upon the required organisational structure, the NMAA should review:

(1) the number of certificates to be issued, and the number and size of the potential EMAR 145 approved MOs within that pMS;

(2) the possible use of qualified entities and of the resources of the NMAAs of other pMS to fulfil the continuing oversight obligations;

(3) the level of military aviation activity, the number and complexity of aircraft, and the size of the pMS' military aviation industry; and

(4) the potential growth of activities in the field of military aviation.

(b) The NMAA should retain effective control of the important surveillance functions and should not delegate them in such a way that EMAR 145 organisations, in effect, regulate themselves in airworthiness matters.

(c) The set-up of the organisational structure should ensure that the various tasks and obligations of the NMAA do not solely rely on individuals. The continuous and undisturbed fulfilment of these tasks and obligations of the NMAA should also be guaranteed in case of illness, accidents or leave of individual employees.

AMC2 145.B.200 Management system

GENERAL

(a) The NMAA designated by each pMS should be organised in such a way that:

(1) there is specific and effective management authority in the conduct of all the relevant activities;

(2) the functions and processes described in the applicable requirements of EMARs, AMC, Airworthiness codes and standards, and Guidance Material (GM) are properly implemented;

(3) the NMAA's policy, organisation and operating procedures for the implementation of the applicable requirements of EMARs are properly documented and applied;

(4) all the NMAA's personnel who are involved in the related activities are provided with training where necessary;

(5) specific and effective provision is made for communicating and interfacing as necessary with NMAAs of other pMS; and

(6) all the functions related to implementing the applicable requirements are adequately described.

(b) A general policy in respect of the activities related to the applicable requirements of EMARs should be developed, promoted, and implemented by the manager at the highest appropriate level; for example, the manager at the top of the functional area of the NMAA that is responsible for such activities.

(c) Appropriate steps should be taken to ensure that the policy is known and understood by all the personnel involved, and all the necessary steps should be taken to implement and maintain the policy.

(d) The general policy, whilst also satisfying the additional national regulatory responsibilities, should, in particular, take into account:

(1) NOT APPLICABLE;

(2) the provisions of the applicable EMARs and their AMC, Airworthiness codes and standards, and GM;

(3) the needs of Operating Organisations and industry; and

(4) the needs of the NMAA.

(e) The policy should define specific objectives for the key elements of the NMAA and processes for implementing the related activities, including the corresponding control procedures and the measurement of the achieved standard.

AMC1 145.B.200(a)(1) Management system

DOCUMENTED POLICIES AND PROCEDURES

(a) The various elements of the organisation involved with the activities related to EMARs should be documented in order to establish a reference source for the establishment and maintenance of this organisation.

(b) The documented procedures should be established in a way that facilitates their use. They should be clearly identified, kept up to date, and made readily available to all the personnel who are involved in the related activities.

(c) The documented procedures should cover, as a minimum, all of the following aspects:

(1) policies and objectives;

(2) the organisational structure;

(3) responsibilities and the associated authority;

(4) procedures and processes;

(5) internal and external interfaces;

(6) internal control procedures;

(7) the training of personnel;

(8) cross-references to associated documents;

(9) assistance from other NMAAs, if applicable.

(d) It is likely that the information may be held in more than one document or series of documents, and suitable cross-referencing should be provided. For example, the organisational structure and job descriptions are not usually in the same documentation as the detailed working procedures. In such cases, it is recommended that the documented procedures should include an index of cross references to all such other related information, and the related documentation should be readily available when required.

GM1 145.B.200(a)(2) Management system

SUFFICIENT PERSONNEL

(a) This GM on the determination of the required personnel is limited to the performance of certification and oversight tasks, excluding any personnel who are required to perform tasks that are subject to any national regulatory requirements.

(b) The elements to be considered when determining who are the required personnel and planning their availability may be divided into quantitative and qualitative elements:

(1) Quantitative elements

(i) the estimated number of initial certificates to be issued;

(ii) the number of organisations to be certified by the NMAA;

(iii) the estimated number of subcontracted organisations used by certified organisations.

(2) Qualitative elements

(i) the size, nature, and complexity of the activities of certified organisations, taking into account:

(A) the privileges of each organisation;

(B) the types of approval and the scopes of work;

(C) possible certification to industry standards;

(D) the number of personnel; and

(E) the organisational structure and the existence of subsidiaries;

(ii) the safety priorities identified;

(iii) the results of past oversight activities, including audits, inspections and reviews, in terms of risks and regulatory compliance, taking into account:

(A) the number and the levels of findings;

(B) the time frame for implementation of corrective actions; and

(C) the maturity of the management systems implemented by organisations, and their ability to effectively manage safety risks; and

(iv) the size and complexity of the pMS' military aviation, and the potential growth of activities in the field of military aviation, which may be an indication of the number of new applications and changes to existing certificates to be expected.

(c) Based on the existing data from previous oversight planning cycles, and taking into account the situation within the pMS' military aviation, the NMAA may estimate:

(1) the standard working time required for processing applications for new certificates;

(2) the number of new certificates to be issued for each planning period; and

(3) the number of changes to existing certificates to be processed for each planning period.

(d) In line with the NMAA's oversight policy, the following planning data should be determined:

(1) the standard number of audits to be performed per oversight planning cycle;

(2) the standard duration of each audit;

(3) the standard working time for audit preparation, on-site audit, reporting, and follow-up per inspector;

(4) the standard number of unannounced inspections to be performed;

(5) the standard duration of inspections, including preparation, reporting, and follow-up per inspector; and

(6) the minimum number and the required qualifications of the inspectors for each audit/inspection.

(e) The standard working time could be expressed either in working hours per inspector, or in working days per inspector. All planning calculations should then be based on the same unit (hours or working days).

(f) It is recommended to use a spreadsheet application to process the data defined under (c) and (d), to assist in determining the total number of working hours/days per oversight planning cycle required for certification, oversight and enforcement activities.

This application could also serve as a basis for implementing a system for planning the availability of personnel.

(g) The number of working hours/days per planning period for each qualified inspector that may be allocated for certification, oversight and enforcement activities should be determined, taking into account:

(1) purely administrative tasks that are not directly related to certification and oversight;

(2) training;

(3) participation in other projects;

(4) planned absence; and

(5) the need to include a reserve for unplanned tasks or unforeseeable events.

(h) The determination of the working time available for certification, oversight and enforcement activities should also consider, as applicable:

(1) the use of qualified entities;

(2) cooperation with other NMAAs for approvals that involve more than one pMS;

(3) NOT APPLICABLE.

(i) Based on the elements listed above, the NMAA should be able to:

(1) monitor the dates when audits and inspections are due, and when they were carried out;

(2) implement a system to plan the availability of personnel; and

(3) identify possible gaps between the number and the qualifications of personnel and the required volume of certification and oversight.

Care should be taken to keep planning data up to date in line with changes in the underlying planning assumptions, with particular focus on risk-based oversight principles.

AMC1 145.B.200(a)(3) Management system

QUALIFICATION AND TRAINING — GENERAL

(a) It is essential for the NMAA to have the full capability to adequately assess the compliance and performance of an organisation by ensuring that the whole range of activities is assessed by appropriately qualified personnel.

(b) For each inspector, the NMAA should:

(1) define the competencies required to perform the allocated certification and oversight tasks;

(2) define the associated minimum qualifications that are required;

(3) establish initial and recurrent training programmes in order to maintain and to enhance the competency of inspectors at the level that is necessary to perform the allocated tasks; and

(4) ensure that the training provided meets the established standards, and is regularly reviewed and updated whenever necessary.

(c) The NMAA should ensure that training is provided by qualified trainers with appropriate training skills.

AMC2 145.B.200(a)(3) Management system

QUALIFICATION AND TRAINING — INSPECTORS

(a) NMAA inspectors should have:

(1) practical experience and expertise in the application of aviation safety standards and safe operating practices;

(2) comprehensive knowledge of:

(i) the relevant parts of the EMARs, Airworthiness codes and standards, AMC and GM;

(ii) the NMAA’s procedures;

(iii) the rights and obligations of an inspector;

(iv) safety management systems based on the EMARs management system requirements and Appendix I to Annexes B and C of BFD, and compliance monitoring;

(v) continuing airworthiness management and maintenance;

(vi) operational procedures that affect the continuing airworthiness management of the aircraft or its maintenance;

(vii) maintenance-related human factors and human performance principles;

(3) training on auditing techniques and assessing and evaluating management systems and safety risk management processes;

(4) 5 years of relevant work experience for them to be allowed to work independently as inspectors. This may include experience gained during training to obtain the qualifications mentioned below in point (a)(5);

(5) a relevant engineering degree or an aircraft maintenance technician qualification with additional education. 'Relevant engineering degree' refers to an engineering degree from aeronautical, mechanical, electrical, electronic, avionics or other studies that are relevant to the maintenance and continuing airworthiness of aircraft/aircraft components;

(6) knowledge of a relevant sample of the type(s) of aircraft or components, gained through a formalised training course. Aircraft/engine type training courses should be at least at a level equivalent to an EMAR 66 Appendix III Level 1 General Familiarisation.

'Relevant sample' refers to courses that cover the typical aircraft or components that are within the scope of work;

(7) knowledge of maintenance standards, including fuel tank safety (FTS) training as described in Appendix IV to AMC5 145.A.30(e) and AMC2 145.B.200(a)(3).

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

(c) A programme for recurrent training should be developed that ensures that the inspectors remain competent to perform their allocated tasks. As a general policy, it is not desirable for the inspectors to obtain technical qualifications from those entities that are under their direct regulatory oversight.

AMC3 145.B.200(a)(3) Management system

INITIAL AND RECURRENT TRAINING — INSPECTORS

(a) Initial training programme

The initial training programme for inspectors should include, to an extent appropriate to their role, current knowledge, experience and skills, at least all of the following:

(1) national military aviation legislation, organisation, and structure;

(2) if required by the NMAA, the Chicago Convention, the relevant ICAO Annexes and Documents;

(3) NOT APPLICABLE;

(4) overview of BFD;

(5) continuing airworthiness EMARs as well as any other applicable requirements;

(6) management systems, including the assessment of the effectiveness of a management system, in particular hazard identification and risk assessment, and non-punitive reporting techniques in the context of the implementation of a 'just culture';

(7) auditing techniques;

(8) procedures of the NMAA that are relevant to the inspectors' tasks;

(9) human factors principles;

(10) the rights and obligations of inspecting personnel of the NMAA;

(11) on-the-job training that is relevant to the inspector's tasks;

(12) technical training, including training on aircraft-specific subjects, that is appropriate to the role and tasks of the inspector, in particular for those areas that require approvals.

NOTE: The duration of the on-the-job training should take into account the scope and complexity of the inspector's tasks. The NMAA should assess whether the required competency has been achieved before an inspector is authorised to perform a task without supervision.

(b) Recurrent training programme

Once qualified, the inspector should undergo training periodically, as well as whenever deemed necessary by the NMAA, in order to remain competent to perform the allocated tasks. The recurrent training programme for inspectors should include, as appropriate to their role, at least the following topics:

(1) changes in national military aviation legislation, the operational environment and technologies;

(2) procedures of the NMAA that are relevant to the inspector's tasks;

(3) technical training that is appropriate to the role and tasks of the inspector; and

(4) results from past oversight.

(c) Assessments of an inspector's competency should take place at regular intervals that do not exceed 3 years. The results of these assessments, as well as any actions taken following the assessments, should be recorded.

AMC1 145.B.200(a)(5) Management system

SAFETY RISK MANAGEMENT PROCESS

(a) The safety risk management process required by EMAR 145.B.200(a)(5) should be documented. The following should be defined in the related documentation:

(1) means for hazard identification, and the related data sources, taking into account data that comes from other NMAAs;

(2) risk management steps including:

(i) analysis (in terms of the probability and the severity of the consequences of hazards and occurrences);

(ii) assessment (in terms of tolerability); and

(iii) control (in terms of mitigation) of risks to an acceptable level;

(3) who holds the responsibilities for hazard identification and risk management;

(4) who holds the responsibility for the follow-up of risk mitigation actions;

(5) the levels of management who have the authority to make decisions regarding the tolerability of risks;

(6) means to assess the effectiveness of risk mitigation actions; and

(7) the link with the compliance monitoring function.

(b) To demonstrate that the safety risk management process is operational, NMAAs should be able to provide evidence that:

(1) the persons involved in internal safety risk management activities are properly trained;

(2) hazards that could impact the NMAA's capabilities to perform its tasks and discharge its responsibilities have been identified and the related risk assessment is documented;

(3) regular meetings take place at appropriate levels of management of the NMAA to discuss the risks identified, and to decide on the tolerability of risks and possible risk mitigations;

(4) in addition to the initial hazard identification exercise, the risk management process is triggered as a minimum whenever changes occur that may affect the NMAA's capability to perform any of the tasks required by EMAR 145;

(5) a record of the actions taken to mitigate risks is maintained, showing the status of each action and the owner of the action;

(6) there is a follow-up on the implementation of all risk mitigation actions;

(7) risk mitigation actions are assessed for their effectiveness;

(8) the results of risk assessments are periodically reviewed to check whether they remain relevant. (Are the assumptions still valid? Is there any new information?).

GM1 145.B.200(a)(5) Management system

SAFETY RISK MANAGEMENT PROCESS

The purpose of safety risk management as part of the management system framework for NMAA is to ensure the effectiveness of the management system. As for any organisation, hazard identification and risk management are expected to contribute to effective decision-making, to guide the allocation of resources and contribute to organisational success.

The safety risk management process required by EMAR 145.B.200 is intended to address the safety risks that are directly related to the NMAA's organisation and processes, and which may affect its capability to perform its tasks and discharge its responsibilities. This process is not intended to be a substitute for the national State/Military Safety Programme, if any. If applicable, the NMAA may use information and data that is obtained through the national State/Military Safety Programme, including oversight data and information, for the purposes of safety risk management as part of its management system.

The safety risk management process is also to be applied to the management of changes (EMAR 145.B.210), which is intended to ensure that the management system remains effective whenever changes occur.

AMC1 145.B.200(d) Management system

PROCEDURES AVAILABLE TO EASA

NOT APPLICABLE.

GM1 145.B.205 Allocation of tasks to qualified entities

CERTIFICATION TASKS

The tasks that may be performed by a qualified entity on behalf of the NMAA include those that are related to the initial certification and to the continuing oversight of organisations as defined in continuing airworthiness EMARs.

AMC1 145.B.220(a) Record-keeping

GENERAL

(a) The record-keeping system should ensure that all records are accessible within a reasonable time whenever they are needed. These records should be organised in a manner that ensures their traceability and retrievability throughout the required retention period.

(b) All records that contain sensitive data regarding applicants or organisations should be stored in a secure manner with controlled access to ensure their confidentiality.

(c) Records should be kept in paper form, or in an electronic format, or a combination of the two. Records that are stored on microfilm or optical discs are also acceptable. The records should remain legible and accessible throughout the required retention period. The retention period starts when the record is created.

(d) Paper systems should use robust material which can withstand normal handling and filing. Computer record systems should have at least one backup system which should be updated within 24 hours of any new entry. Computer record systems should include safeguards to prevent any unauthorised personnel from altering the data.

(e) All computer hardware that is used to ensure the backup of data should be stored in a different location from the one that contains the working data and in an environment that

ensures that the data remains in a good condition. When hardware or software changes take place, special care should be taken to ensure that all the necessary data continues to be accessible throughout at least the full period specified in EMAR 145.B.220(c).

AMC1 145.B.220(a)(1) Record-keeping

NMAA MANAGEMENT SYSTEM

Records that are related to the NMAA's management system should include, as a minimum, and as applicable:

(a) the documented policies and procedures;

(b) the personnel files of the NMAA's personnel with the supporting documents related to their training and qualifications;

(c) the results of the NMAA's internal audits and safety risk management processes including audit findings and corrective, preventive and risk mitigation actions; and

(d) the contract(s) established with any qualified entities that perform certification or oversight tasks on behalf of the NMAA.

AMC1 145.B.300(a);(b);(c) Oversight principles

MANAGEMENT SYSTEM ASSESSMENT

As part of the initial certification of an organisation, the NMAA should assess the organisation's management system and processes to make sure that all the required enablers of a functioning management system are present and suitable.

As part of its continuing oversight activities, the NMAA should verify that the required enablers remain present and operational and assess the effectiveness of the organisation's management system and processes.

When significant changes take place in the organisation, the NMAA should determine whether there is a need to review the existing assessment to ensure that it is still valid.

AMC1 145.B.300(f) Oversight principles

INFORMATION DEEMED NECESSARY FOR OVERSIGHT

This information should include, as a minimum:

(a) any occurrence reports received by the NMAA;

(b) the reports received following the issuing of any one-off certification authorisation as defined in EMAR 145.A.30(j)(5);

(c) the results of the following types of inspections and surveys if they indicate an issue that originates from an EMAR 145 organisation:

  (i) NOT APPLICABLE;

  (ii) product surveys of aircraft, pursuant to EMAR M.B.303;

  (iii) product audits conducted pursuant to EMAR CAMO.B.305(b)(1) and/or EMAR 145.B.305(b)(1); and

(iv) physical surveys or partial airworthiness reviews performed by the NMAA in line with AMC M.B.901.

AMC1 145.B.305(a);(b) Oversight programme

REGULAR REVIEW

(a) The oversight planning cycle and the related oversight programme for each organisation should be reviewed regularly to ensure that they remain adequate regarding any changes in the nature of the organisation, the complexity of its activities or the safety performance of the organisation.

(b) When reviewing the oversight planning cycle and the related oversight programme, the NMAA should also consider any relevant information collected in accordance with EMAR 145.A.60 and EMAR 145.B.300(f).

AMC1 145.B.305(b) Oversight programme

SPECIFIC NATURE OF THE ORGANISATION AND COMPLEXITY OF ITS ACTIVITIES — RESULTS OF PAST CERTIFICATION OR OVERSIGHT ACTIVITIES

When determining the oversight programme, including the product audits, the NMAA should consider in particular the following elements, as applicable:

(1) the effectiveness of the organisation's management system in identifying and addressing
non-compliances and safety hazards;

(2) the implementation by the organisation of any industry standards that are directly relevant to the organisation's activities subject to continuing airworthiness EMARs;

(3) the procedure applied for and the scope of changes not requiring prior approval;

(4) any specific procedures implemented by the organisation that are related to any alternative means of compliance used;

(5) the number of approved locations and the activities performed at each location;

(6) the number and type of any subcontractors that perform maintenance tasks; and

(7) the volume of activity for each A, B, C and D class rating, as applicable.

AMC2 145.B.305(b) Oversight programme

SUBCONTRACTED ACTIVITIES

If an EMAR 145 organisation subcontracts maintenance tasks, the NMAA should determine whether the subcontracted organisation needs to be audited and included in the oversight programme, taking into account the specific nature and complexity of the subcontracted activities, the results of previous oversight activities of the approved organisation, and the assessment of the associated risks.

For such audits, NMAA inspectors should ensure that they are accompanied throughout the audit by a senior technical member of the EMAR 145 organisation.

NOTE: If an EMAR 145 organisation subcontracts maintenance tasks, the NMAA should ensure that the EMAR 145 organisation manages the risks related to, and that it has sufficient control over, the subcontracted activities (see AMC1 145.A.75(b)).

AMC1 145.B.305(b)(1) Oversight programme

AUDIT

(a) The oversight programme should indicate which aspects of the approval will be covered by each audit.

(b) Part of each audit should concentrate on the audit reports produced by the organisation's compliance monitoring function, to determine whether the organisation has been identifying and correcting its problems.

(c) At the conclusion of the audit, the auditing inspector should complete an audit report that identifies the areas and processes that were audited, and includes all the findings and/or observations that were raised.

(d) At the completion of each oversight planning cycle a new EMAR Form 6 should be issued.

AMC1 145.B.305(c) Oversight programme

OVERSIGHT PLANNING CYCLE — AUDIT AND INSPECTION

(a) When determining the oversight planning cycle and defining the oversight programme, the NMAA should assess the risks related to the activity and set-up of each organisation and adapt the oversight to the level of risk identified and to the effectiveness of the organisation's management system, in particular its ability to effectively manage safety risks.

(b) The NMAA should establish a schedule of audits and inspections that is appropriate to each organisation. The planning of audits and inspections should take into account the results of the hazard identification and the risk assessment conducted and maintained by the organisation as part of the organisation's management system. Inspectors should work in accordance with the schedule provided to them.

(c) When the NMAA, having regard to the level of risk identified and the effectiveness of the organisation's management system, varies the frequency of an audit or inspection, it should ensure that all aspects of the organisation's activity are audited and inspected within the applicable oversight planning cycle.

AMC2 145.B.305(c) Oversight programme

OVERSIGHT PLANNING CYCLE — AUDIT

(a) For each organisation certified by the NMAA, all applicable requirements including relevant processes should be audited at periods that do not exceed the applicable oversight planning cycle. The beginning of the first oversight planning cycle is normally determined by the date of issue of the first certificate. If the NMAA wishes to align the oversight planning cycle with the calendar year, it should shorten the first oversight planning cycle accordingly.

(b) Audits should include at least one on-site audit within each oversight planning cycle. For organisations that carry out their regular activities at more than one site, the determination of the sites and the requirements at these sites to be audited should consider the results

of past oversight activities and the volume of activities at each site, as well as the main risk areas identified.

(c) For organisations that hold more than one certificate under EMARs, the NMAA may define an integrated oversight schedule that includes all the applicable audit items. In order to avoid any duplication of audits, credit may be granted for specific audit items that have already been completed during the current oversight planning cycle, provided that:

(1) the specific audit item is the same for all the certificates under consideration;

(2) there is satisfactory evidence on record that those specific audit items were carried out and that all the related corrective actions have been implemented to the satisfaction of the NMAA;

(3) the NMAA is satisfied that there is no evidence that standards have deteriorated regarding those specific audit items for which credit is granted.

GM1 145.B.305(c) Oversight programme

The expression 'shall not exceed 24 months' does not imply that 24 months is a minimum duration for the oversight cycle. Based on the elements specified in EMAR 145.B.300(c) and EMAR 145.B.305(b) (e.g. safety priorities, assessment of the risks, complexity of activities), the NMAA may decide to apply a cycle of less than 24 months (e.g. 12 months).

AMC1 145.B.305(d) Oversight programme

EXTENSION OF THE OVERSIGHT PLANNING CYCLE BEYOND 24 MONTHS

(a) If the NMAA applies an oversight planning cycle that exceeds 24 months, it should, at a minimum, perform one focused inspection of the organisation (inspection of a specific area, element or aspect of the organisation) within each 12-month segment of the applicable oversight planning cycle to support the extended oversight programme.

(b) If the results of this inspection indicate a decrease in the safety performance or regulatory compliance of the organisation, the NMAA should revert back to a 24-month (or less) oversight planning cycle and review the oversight programme accordingly.

(c) In order to be able to apply an oversight planning cycle beyond 36 months, the NMAA should agree on the format and contents of the continuous reporting to be made by the organisation on its safety performance and regulatory compliance.

GM1 145.B.305(d)(2) Oversight programme

ORGANISATION'S CONTROL OVER THE CHANGES

For the purpose of extending the oversight planning beyond 24 months, the continuous compliance of the organisation with EMAR 145.A.85 and the full control over all changes referred to in EMAR 145.B.305(d)(2) includes in particular the ability of the organisation to manage adequately the changes not requiring prior approval foreseen in EMAR 145.A.85(c).

AMC1 145.B.310 Initial certification procedure

VERIFICATION OF COMPLIANCE

(a) In order to verify the organisation's compliance with the applicable requirements, the NMAA should conduct an audit of the organisation, including interviews of the personnel,

and inspections carried out at the organisation's facilities.

(b) The NMAA should only conduct such an audit if it is satisfied that the application and the supporting documentation, including the results of the pre-audit performed by the organisation, are in compliance with the applicable requirements.

(c) The audit should focus on the following areas:

(1) the detailed management structure, including the names and qualifications of personnel as required by EMAR 145.A.30(a), (b), (c) and (ca) and the adequacy of the organisation and its management structure;

(2) the personnel:

(i) the adequacy of the number of staff and of their qualifications and experience with regard to the intended terms of approval and the associated privileges;

(ii) the validity of any licences and/or authorisations, as applicable;

(3) the processes used for safety risk management and compliance monitoring;

(4) the facilities and their adequacy regarding the organisation's scope of work;

(5) the documentation based on which the certificate should be granted (i.e. the documentation required by EMAR 145):

(i) verification that the procedures specified in the MOE comply with the applicable requirements; and

(ii) verification that the accountable manager has signed the exposition statement.

(d) If an application for an organisation certificate is refused, the NMAA should notify this decision in writing to the organisation together with the reasons thereto.

AMC1 145.B.310(a) Initial certification procedure

AUDIT

(a) The NMAA should determine how and by whom the audit shall be conducted. Forexample, it will be necessary to determine whether one large team audit, a short series of small team audits, or a long series of single inspector audits is most appropriate for the particular situation.

(b) The audit may be structured so as to verify the organisation's processes related to a product line. For example, in the case of an organisation with C27J and A400M ratings, the audit should concentrate on the maintenance processes of one aircraft type only for a full compliance check, and depending upon the result, the second aircraft type may only require a sample check against those aspects that were seen to be weak regarding compliance for the first type.

(c) In determining the scope of the audit and which activities of the organisation will be assessed during the audit, the privileges of the approved organisation should be taken into account, e.g. their approval to carry out maintenance on different ratings.

(d) NMAA auditing inspectors should always ensure that they are accompanied throughout the audit by a senior member of the organisation, who is normally the compliance monitoring manager. The reason for being accompanied is to ensure that the organisation is fully aware of any findings and/or observations raised during the audit.

(e) At the end of the audit, the auditing inspector should inform the senior member of the organisation of all the findings and/or observations that were raised during the audit.

AMC1 145.B.310(c) Initial certification procedure

There may be occasions when the NMAA inspector is unsure about the compliance of some aspects of the organisation applying for the initial issue of a certificate. If this occurs, the inspector should inform the organisation about the possible non-compliance at the time, and about the fact that the situation will be reviewed within the NMAA before a decision is made. If the review concludes that there is no finding, then a verbal confirmation to the organisation should suffice.

AMC2 145.B.310(c) Initial certification procedure

(a) The audit should be recorded using the audit report EMAR Form 6 (Appendix II to AMC2 145.B.310(c)).

(b) A review of the EMAR Form 6 audit report form should be carried out by a competent independent person nominated by the NMAA. A satisfactory review of the audit report should be indicated by a signature on the EMAR Form 6.

(c) The audit reports should include the date when each finding was closed, together with a reference to the closure actions.

AMC1 145.B.310(d) Initial certification procedure

All findings should be confirmed in writing to the applicant organisation within 2 weeks of the on-site audit.

AMC1 145.B.330 Changes — organisations

(a) The NMAA should have adequate control over any changes to the personnel specified in EMAR 145.A.30(a), (b), (c) and (ca). Such changes in personnel will require an amendment to the exposition.

(b) When an organisation submits the name of a new nominee for any of the personnel specified in EMAR 145.A.30(a), (b), (c) and (ca), the NMAA may require the organisation to produce a written résumé of the proposed person’s qualifications. The NMAA should reserve the right to interview the nominee or to call for additional evidence of their suitability before deciding upon them being acceptable.

(c) For changes requiring prior approval, in order to verify the organisation’s compliance with the applicable requirements, the NMAA should conduct an audit of the organisation, limited to the extent of the changes. The NMAA may also request the organisation to provide the risk assessment referred to in AMC2 145.A.85 for review.

(d) If required, the audit may include interviews and inspections carried out at the organisation’s facilities.

(e) The applicable part(s) of EMAR Form 6 should be used to document the assessment of any changes to the EMAR 145 approval.

GM1 145.B.330 Changes — organisations

CHANGE OF THE NAME OF THE ORGANISATION

(a) On receipt of the application and the amendment to the relevant parts of the MOE, the NMAA should reissue the certificate.

(b) A change of only the name does not require the NMAA to audit the organisation unless there is evidence that other aspects of the organisation have changed.

AMC1 145.B.330(e) Changes — organisations

REVIEW OF CHANGES NOT REQUIRING PRIOR APPROVAL

The NMAA should implement a process to review the changes not requiring prior approval. This should include at least, as part of the continuing oversight activities during the oversight cycle:

- auditing the organisation process for changes not requiring prior approval;
- selecting a sample of these changes and verifying their compliance with the applicable requirements.

GM1 145.B.350(f) Findings and corrective actions; observations

DIFFERENCE BETWEEN 'LEVEL 2 FINDING' AND 'OBSERVATION'

(a) 'Findings' are issued for non-compliance with EMARs, whereas 'observations' may be issued to an organisation remaining compliant with EMARs while additional inputs for the organisation could be considered for continuous improvement.

However, the NMAA may decide to issue a 'level 2' finding when the 'observations' process is not managed correctly or overlooked.

(b) Examples to help differentiate between a 'level 2 finding' and an 'observation' are provided below, based on the provisions for the control and calibration of tools in accordance with EMAR 145.A.40(b).

<u>Example of a 'level 2 finding'</u>

- The organisation could not demonstrate compliance with some elements of EMAR 145.A.40(b) regarding the control register of the tools, equipment and particularly test equipment process as evidenced by:
  - (1) the fact that some sampled tools physically available in the tools store were missing in the tools control register managed by the organisation;
  - (2) the fact that one tool has not been correctly identified (e.g. incorrect P/N, S/N) in the tools control register.

<u>Examples of 'observations'</u>

- Accumulation of tools in the store not sent yet for calibration. This situation could generate some consequences on the availability of tools and operational capabilities during a peak of activities (ineffectiveness of the process).
- The process to manage the tools control register through the dedicated software is not detailed enough (potential to cause a level 2 finding).

– The colour of the ‘unserviceable’ tag of the tools could generate some confusion. The organisation should consider changing the colour of this unserviceable tag to better alert the staff on the particular status of the unserviceable tools (potential improvement).

AMC to Appendix I to EMAR 145

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

AMC1 Appendix III - Maintenance Organisation Approval referred to in EMAR 145

The following fields on page 2 ‘Maintenance Organisation Terms of Approval’ of the maintenance organisation approval certificate should be completed as follows:

- Date of original issue: It refers to the date of the original issue of the maintenance organisation exposition
- Date of last revision approved: It refers to the date of the last revision of the maintenance organisation exposition affecting the content of the certificate. Changes to the maintenance organisation exposition which do not affect the content of the certificate do not require the reissuance of the certificate.
- Revision No: It refers to the revision of the last revision of the maintenance organisation exposition affecting the content of the certificate. Changes to the maintenance organisation exposition which do not affect the content of the certificate do not require the reissuance of the certificate.

GM1 Appendix III - Maintenance Organisation Certificate - EMAR Form 3-145

NOT APPLICABLE.

APPENDICES TO AMCs

Appendix II to AMC2 145.B.310(c) - EMAR Form 6

EMAR Form 6 is contained in the EMAR Forms document.

Appendix III to AMC1 145.A.15 - EMAR Form 2

EMAR Form 2 is contained in the EMAR Forms document.

Appendix IV to AMC5 145.A.30(e) and AMC2 145.B.200(a)(3) -

Fuel Tank Safety Training

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

A) Effectivity:

Aeroplanes as nationally defined by the NMAA.

B) Affected organisations:

- EMAR 145 approved MOs involved in the maintenance of aeroplanes specified in paragraph A) and fuel system components installed on such aeroplanes when the maintenance data are affected by CDCCL (if applicable).
- NMAA that is responsible for the oversight of the EMAR 145 approved organisations 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 organisation, the compliance monitoring manager, the safety manager and the staff who are directly involved in monitoring the compliance of the organisation.
- Personnel of the NMAA who is responsible for the oversight of EMAR 145 approved organisations specified in paragraph B).

Phase 1 + Phase 2 + Recurrent training:

- Personnel of the EMAR 145 approved organisations who are required to plan, perform, supervise, inspect and certify the maintenance of the 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 organisation.

Type: It should provide awareness of the principal elements of the subject.

It may take the form of a training bulletin, or other self-study or informative session. The signature of the trainer 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: It should be a more in-depth internal or external course. It should not take the form of a training bulletin, or any other self-study. At the end of the course, the trainees should be required to take an examination, which should be in the form of multiple-choice questions, 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 the specific regulations (e.g. FAA regulations known as SFAR (Special FAR) 88 of the FAA and of JAA Temporary Guidance Leaflet TGL 47),, 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.

Recurrent training

The organisation should ensure that the recurrent training is required in each 2-year period. The syllabus of the training programme referred to in chapter 3.9 of the MOE should include the additional syllabus for this recurrent training.

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

The recurrent 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) SFAR 88 of the FAA and JAA Interim Policy INT POL 25/12: 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 SFAR 88 of the FAA and JAA INT/POL 25/12: 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 applicable maintenance data as defined in EMAR 145.A.45(b).

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 EMAR 145 approved organisations, the approval of the initial and recurrent training programme and the content of the examination can be achieved by the change to the MOE. The necessary changes to the MOE to meet the content of this decision should be made and implemented at the time requested by the NMAA.

Appendix V to AMC 145.A.70: Maintenance Organisation Exposition (MOE)

To be developed later (if required)

Note: Those MOs/NMAAs that are looking for further details about the expected content of the MOE could refer to the "*Foreign Part-145 approvals - User Guide for Maintenance Organisation Exposition*" (latest edition) accessible on EASA website that also address the new Management System requirements applicable to the Maintenance Organisation (the reference of this user guide is "UG.CAO.00024-XXX").