European Aviation Safety Agency *21 Jan 2013*

NOTICE OF PROPOSED AMENDMENT (NPA) 2013-01

DRAFT DECISION OF THE EXECUTIVE DIRECTOR OF THE EUROPEAN AVIATION SAFETY AGENCY

amending Decision No 2003/19/RM of the Executive Director of the European Aviation Safety Agency of 28 November 2003 on Acceptable Means of Compliance (AMC) and Guidance Material (GM) to Commission Regulation (EC) No 2042/2003 of 20 November 2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks

and

DRAFT OPINION OF THE EUROPEAN AVIATION SAFETY AGENCY

for a Commission Regulation amending Commission Regulation (EC) No 2042/2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks

NPA 2013-01 (C) 'Part-145'

Embodiment of Safety Management System (SMS) requirements into Commission Regulation (EC) No 2042/2003

RMT.0251 (MDM.055)

Embodiment of Safety Management System (SMS) requirements into Commission Regulation (EC) No 2042/2003

Part-145

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Explanatory Note Part-145

Scope of changes

Changes have been made both to Section A and Section B to align with Subparts GEN of Parts ORA/ORO and ARA/ARO respectively. A significant number of rules, AMC, and GM are affected by the changes in terminology related to the new management system requirements. NPA A provides a more general description and information on the origin of changes.

SECTION A

Section A has been renamed 'TECHNICAL AND ORGANISATION REQUIREMENTS' for consistency.

Management system

The most significant change in Part-145 Section A is the alignment of provisions in 145.A.30; 145.A.47; 145.A.60; and 145.A.65 with the management system requirements and related AMC and GM developed in Part-ORX (organisation requirements for air crew, ORA or air operations, ORO). It mainly affects 145.A.65 'Safety and quality policy, maintenance procedures and quality system', which now reads 145.A.65 'Management System'. The titles of existing AMC and GM to 145.A.65 have been aligned with 145.A.65 to also read 'Management system'.

145.A.65 'Management System' reproduces all elements of the management system requirements including the organisation requirements and related AMC for air crew and air operations (see ORX.GEN.200). These changes are supported by a series of Guidance Material specific to the context of maintenance organisations, with particular focus on human factors and safety risk management/fatigue risk management. Some of this additional Guidance Material originates from the Australian CAA draft AC 145-1(0) 'Safety Management Systems for Approved Maintenance Organisations', dated May 2012[1]. This GM may be subject to further changes following the issue of the first edition of this Advisory Circular.

The new 145.A.65 clarifies that where the organisation is certified in accordance with another Part, the management system may be combined or integrated with that required by the other Part. Integration is most beneficial from a safety management perspective as it will increase the effectiveness of hazard identification and risk assessment by taking an overall view of the activities of an organisation, considering responsibilities, accountabilities, and communication channels for the whole organisation. By contrast, fragmented management systems may lead to a waste of effort and an inability to optimise the management and process controls applied to the different areas. Integration allows the same processes to be used to identify and assess hazards in different areas (continuing airworthiness management, maintenance, and operations), while taking a systemic view on the organisation as a whole. This requires proper understanding of its processes and their interactions.[2] A system description of the organisation considering organisational structures, partners and contractors, processes and their interfaces, reporting lines, communication channels, procedures, staff, equipment, facilities and the environment in which the organisation operates will support effective root cause (reactive) and hazard (proactive) analysis and can,

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1 http://www.casa.gov.au/wcmswr/_assets/main/newrules/parts/145/download/draftac145-1-0.pdf

2 Integrated management is expected to become 'best practice' in international standards dealing with management systems.

therefore, be considered as a prerequisite for the implementation of an effective management system for safety on the basis of the new provisions[3].

The new management system provisions are introduced to ensure maximum flexibility by defining core requirements of the management system at IR level, and including the detailed means to achieve these goals at AMC level. They also allow considering those elements that are already in place today in any Part-145 organisation, in terms of quality system related provisions that deliver the 'compliance monitoring function' of the new management system requirements. Most of the provisions related to 'quality system' in current Part-145 deal with the monitoring of compliance and related reporting and corrective action processes. As there are multiple types of quality systems defined in different international or national standards, with different meanings and scopes, it is more appropriate to refer to compliance monitoring function when it comes to Part-145. This does not mean that organisations will be required to change designations of their quality system personnel. It is left up to each organisation to decide how to refer to this function. Conversely, at the level of the requirements ,no reference to quality system will remain.

The distinction between complex and non-complex organisations as introduced with the AMC to Part-ORX, has been transposed to Part-145. However, specific AMC related to safety management key processes that in Part-ORX are included for complex organisations only, have been made generally applicable in Part-145. This considers that a Part-145 approval is designed for maintenance of large aircraft and aircraft used in CAT. Moreover, specific Safety Recommendations following accident & incident analysis support the need for effective safety management in Part-145 organisations.

The Part-ORX AMC providing criteria for the assessment of organisational complexity has been adapted to the specific context of maintenance organisations. The first item to be considered is the number of staff (in terms of Full Time Equivalents - FTEs) actively engaged in carrying out maintenance. Such organisations, except those addressed in point 3 of the new AMC1 145.A.65(b) are always considered complex. If engaging up to 20 FTEs, an organisation may be considered complex when it subcontracts to a large extent, or when it has a significant number and large variety of different ratings.

Two types of organisations are defined as non-complex by default:

— Organisations only holding a D rating

  This considers that these organisations need to demonstrate compliance with a specific industry standard in terms of training and qualification of NDT personnel (EN4179 or equivalent acceptable to the competent authority); and

— Organisations only holding three or less C ratings within a selection of C ratings.

  This selection represents those components that have a lesser impact on aircraft safety in case of a failure due to redundancy or backup systems.

The below list provides an overview of 'simplified' means of compliance designed for organisations that qualify as non-complex on the basis of the proposed AMC1 145.65(b):

— The organisation may use simple procedures and tools for its safety risk management process (e.g. checklists), and safety performance monitoring and measurement (no need to perform extensive safety studies, surveys, etc.)

— The accountable manager or a person with an operational role in the organisation may fulfil the role of safety manager.

[3] Guidance on system description may be found for example in the FAA AIR SMS Pilot Project Guide APPENDIX D: System Description & Hazard Identification Process (http://www.faa.gov/about/initiatives/sms/pilot_projects/guidance/media/DM_SMS_PilotProjectGuide.pdf).

— The organisation does not need to have a safety review board, which is a high level committee to consider matters of strategic safety in support of the accountable manager's safety accountability.

— The accountable manager may also be the compliance monitoring manager provided that he/she has demonstrated the required competence, and that the independence of the internal audits is maintained.

— Simple checklists may be used to document compliance monitoring audits and inspections.

Irrespective of which AMC apply (complex/non-complex), the organisation must be able to demonstrate that it has implemented processes for hazard identification and safety risk management, and that it ensures that mitigation actions are effective.

It is worth noting that both for complex and non-complex organisations the possibility to have the same person act as safety manager and as compliance monitoring manager, although not recommended for the larger, complex organisations, has not been excluded. Should this be the case, it must be ensured that sufficient resources are made available for both functions (safety management/compliance monitoring). It must also be ensured that the safety function has the necessary 'proactive' attitude to managing safety, as well as authority to request safety action. Finally, in line with the general auditing principles, the independence of inspections and audits must be ensured. Regardless of the organisational set-up chosen, it is ultimately the accountable manager who is directly accountable for safety. In this context, it is worth noting that top management concern about and commitment to safety is seen as a critical success factor for implementing effective safety management practices[4].

Regarding proportionality and flexibility, it is important to note that the general principle of AMC being non-binding also applies to the specific AMC included for non-complex organisations. Even for these 'lighter' provisions, an organisation may apply for an alternative means of compliance in accordance with the provisions defined in the new 145.A.82.

Changes to the Maintenance Organisation Exposition — Management system documentation

The Maintenance Organisation Exposition (MOE) contents have been amended to reflect the introduction of new provisions related to the approval of alternative means of compliance and new safety management related processes.

This mainly leads to amending the titles of Parts 1, 3, 4, and 5 and creating additional MOE chapters, as below:

PART 1 — now referred to as 'GENERAL'

— 1.12 Alternative means of compliance procedure

PART 3 — now referred to as 'MANAGEMENT SYSTEM PROCEDURES'

— 3.17 Hazard identification and safety risk management schemes;
— 3.18 Safety action planning;
— 3.19 Safety performance monitoring;
— 3.20 Incident investigation and safety reporting;
— 3.21 Emergency response planning;
— 3.22 Management of change (including organisational changes with regard to safety responsibilities);

[4] See 'The Senior Manager's role in implementing effective', produced by the SM-ICG: http://www.skybrary.aero/bookshelf/books/1781.pdf

— 3.23 Safety promotion; and
— 3.24 Management system record keeping.

PART 4 — now referred to as 'EXTERNAL PARTIES'

PART 5 — now referred to as 'SUPPORTING DOCUMENTS'

The generic term 'management system documentation' is used to refer to all documents the organisation needs to maintain in order to be able to demonstrate compliance with Part-145. This normally consists of an MOE and the related procedures. Considering the additional MOE items in Part 3, the organisation may also choose to document how it implements these new management system processes in a separate manual (e.g. Safety Management Manual — SMM, Management System Manual, etc.).

For organisations certified in accordance with any other EASA Part, this may prevent having to duplicate these elements. Moreover, it is generally possible to document specific elements in a separate procedure, to be referenced in the MOE or SMM or management system manual, etc. A new GM (GM1 145.A.65(a)(5)) is provided to explain different options.

Internal safety reporting scheme

To further strengthen the management system provisions for effective safety management introduced in 145.A.65, point (b) of current 145.A.60 on 'internal occurrence reporting system' has been extracted as a separate provision 145.A.62 'Internal Safety Reporting Scheme' and the existing provisions have been further enhanced and complemented with specific AMC and GM. The new provisions aim at the establishment of a confidential internal safety reporting scheme as part of the organisation's 'safety information system' to help the organisation foster its safety culture. This is important as a strong safety culture is an essential ingredient for effective safety management. Inclusion of this new provision also responds to a recommendation made to the Agency by the Continuing Airworthiness Focus Group within the European Human Factors Advisory Group (EHFAG). For complex organisations, this new requirement further specifies the need for trained and qualified investigators to assess and analyse occurrences for their safety relevance. This is important as experience has shown that existing systems quite often fail to properly establish the root cause or causes and contributing factors in significant occurrences which leads to ineffective corrective actions. It is expected that larger maintenance organisations have already implemented systems that meet the intent of the new provision, such as Maintenance Error Management Systems (MEMS). It is important to note that the intent of the internal safety reporting scheme is not only to capture reactive safety information following from errors, near-misses or other undesirable events (occurrences) but also to capture safety hazards, i.e. any condition that may lead to or contribute to an undesirable event, in order to support the proactive element of safety risk management as required by 145.A.65 'Management System´ point (a)(3). For this reason the new provision is termed 'internal safety reporting scheme' as opposed to 'internal occurrence reporting system' in current Part-145.

This new provision further requires:

(a) immediate action ('recall' procedure) for errors, near-misses or hazards affecting the safety of an aircraft or component that has already been released/delivered; and
(b) the Part-145 organisation to cooperate with the Part-M Subpart G organisation (operator) for occurrence investigations initiated by such an organisation.

AMC and GM are provided for this new provision, in line with the recommendations made by the EHFAG.

As with the term 'quality system' (now referred to as 'compliance monitoring function' throughout Commission Regulation (EC) No 2042/2003), the organisation may adopt any title it deems appropriate for this scheme as long as the intent of the new provision is met. Moreover, no specific occurrence reporting form is defined. It is left to the organisation to decide on the most appropriate format and methods of internal reporting.

Human factors

To complement and clarify the new provisions related to safety management introduced with 145.A.65, all AMC and GM dealing with Human Factors (HF) issues have been further enhanced. This has been done in cooperation with the EHFAG and leads, among other changes, to the definition of more specific criteria for the qualification of HF training, and to an amendment to the HF training syllabus in GM 145.A.30(e), as well as to the introduction of new definitions that are directly relevant to HF.

Fatigue risk management

In response to safety recommendations made to the Agency[5], the general provisions on safety risk management have been complemented and enhanced with specific material pertaining to the management of safety risks stemming from maintenance personnel fatigue. These provisions have been drafted in cooperation with the EHFAG and are closely linked to the existing requirements for approved maintenance organisations to take into account human performance limitations.

A reference to Directive 2003/88/EC, 'EU Working Time Directive' is now included in the AMC to 145.A.47 'Production Planning'. Compliance with the EU Working Time Directive does not relieve the organisation from identifying fatigue related hazards and managing the related safety risks. It has to be considered that the EU Working Time Directive allows a series of derogations (e.g. derogations from rest periods 'in the case of activities involving the need for continuity of service or production, in particular for industries in which work cannot be interrupted on technical grounds), or derogations by means of collective workforce agreements). Thus, it is important for all Part-145 organisations to specifically address fatigue as part of their hazard identification and risk management processes. Whenever the organisation chooses not to follow the Directive, it needs to additionally provide a specific and detailed fatigue risk management scheme (FRMS) that must be acceptable to the competent authority.

Guidance on the EU Working Time Directive has been included. The elements of the FRMS are defined in AMC2 145.A.65(a)(3) and related GM to link them with the general provisions on hazard identification and risk management as part of the organisation's management system defined in 145.A.65 and related AMC and GM.

Part-M requirements applicable under Part-145

In response to recurrent standardisation findings, the Agency proposes to duplicate relevant Part-M requirements in Part-145, which will also improve legal certainty, as it will ensure Part-145 exhaustively covers all technical requirements for maintenance as defined in Commission Regulation (EC) No 2042/2003. This change would be reconsidered should the NPA consultation process indicate strong support for restructuring Commission Regulation (EC) No 2042/2003 in a way as to separate

[5] E.g. following a serious incident occurred on 24 April 2010 with an aircraft type DHC-8-102 SX-BIO at Bristol International Airport.

'technical' requirements from organisational requirements and clarify their applicability (cf. NPA A paragraph 'rule structure').

The table below provides guidance on the Part-M requirements and AMC/GM that have been added to Part-145:

M.A.402 (a) M.A.402 (f)	New 145.A.48 'Performance of maintenance' (cf. subparagraphs (a) and (d))
AMC M.A.402(a)	New AMC 145.A.48(b) 'Performance of maintenance'
M.A.403 (b)	New 145.A.48 'Performance of maintenance' (cf. subparagraph (c))
M.A.501 (a)	Incorporated into 145.A.42 'Acceptance of components' as new subparagraph (a)
M.A.501 (c)	Incorporated into 145.A.42 'Acceptance of components' as new subparagraph (g)
M.A.501 (d)	Incorporated into 145.A.42 'Acceptance of components' as new subparagraph (h)
AMC M.A.501(a)	points 1 to 3: New AMC 145.A.42(a) 'Acceptance of components' point 4: New GM 145.A.42(a) 'Acceptance of components' point 6: added to existing AMC 145.A.42(a) (now AMC 145.A.42 (b))
AMC M.A.501(c)	New AMC 145.A.42(g) Acceptance of components
AMC M.A.501(d)	New AMC 145.A.42(h) Acceptance of components
M.A.504 (a),(b),(d), and(e)	New 145.A.43 Control of unserviceable components
AMC M.A.504 (a)	Not required in Part-145.
AMC M.A.504 (b)	New AMC 145.A.43(b) Control of unserviceable components
AMC M.A.504 (d)(2)	New AMC 145.A.43 (c)(2) Control of unserviceable components
AMC M.A.504 (e)	New AMC 145.A.43(d) Control of unserviceable components
Consequential amendments	AMC to 145.A.42 now included as AMC 145.A.43(c)

Indirect approval vs changes not requiring prior approval

The provisions on change to an existing certificate and changes to the MOE have been reviewed to align with Part-ORX. As a result, all references to 'indirect approval' have been reworded. These changes are now designated as 'changes not requiring prior approval'. Linked to this, specific provisions are included for organisations wishing to implement changes without prior competent authority approval. The organisation shall have a procedure specifying the scope of such changes, describe how these will be managed, and submit this procedure to the competent authority for approval. The amended provisions fully meet the intent of 'indirect approval' or changes 'acceptable to the authority' as in current Part-145. These changes mainly affect current provisions in 145.A.85 'Changes to the organisation', as well as the corresponding Section B provisions in 145.B.35 'Changes', and 145.B.40 'Changes to the MOE'.

Other changes to Section A

As this rulemaking task leads to a significant number of changes throughout Commission Regulation (EC) No 2042/2003, it is also proposed to address through this task some other issues not directly linked to SMS/SSP implementation. The most relevant of these additional changes proposed to Part-145 are presented below. Details of all changes are included in the section 'Detailed list of changes'.

1. Limited certifying staff authorisation (cf. 145.A.30(j)(4)):

   — Update of relevant JAR-FCL references to align with EASA Part-FCL;

   — Deletion of references to flight engineer licence, which ceases to exist under EASA Part-FCL. Existing authorisations will be 'grandfathered'; and

   — Consideration of an additional category of staff for the issuance of a limited certifying staff authorisation, following a request for rulemaking received from Helicopter Emergency Medical Services (HEMS) operators. This will concern technical staff in HEMS and Helicopter Hoist Operations (HHO) as identified through Part-ORO Subpart TC (EASA Regulation on Air Operations[6]).

2. Components removed serviceable from non-EU registered aircraft (cf. AMC 2 to 145.A.50(d) point 2.6.2): The provisions related to the control of the airworthiness status have been clarified.

SECTION B

(see also NPA A) Section B material has been reviewed to align with and introduce all additional elements from Subpart GEN of Part-ARX (Authority Requirements developed for air crew and air operations).This leads to the introduction of a series of new provisions. The most significant change is the introduction of specific provisions for the competent authority's management system which are fully aligned with those in Part-ARX Section II. The provisions on initial approval and on change to an existing approval have been reviewed to align with Part-ARX. As a result, all references to 'indirect approval' have been reworded. The amended provisions fully meet the intent of 'indirect approval' or changes 'acceptable to the authority' as in current Part-145 and allow the competent authority to control the scope of changes not requiring prior approval taking a performance based approach, by considering the results of past oversight and the maturity of the organisation's management system.

In response to recurrent standardisation findings, in Section B, new AMC material has been added to clarify competence assessment of inspectors. This aligns with the objectives of the Common Training Initiative Group[7].

A new provision has been added to 145.B.45 to address the specific case of third-country approvals (foreign EASA Part-145 organisations and maintenance locations of EASA Part-145 organisations having their principal place of business in a Member State) with regard to security alerts that may exist for some States. This will allow the competent authority to suspend an approval if the security situation in that State where the maintenance facility is located is not compatible with the conduct of an on-site audit. A new AMC is provided to specify criteria for the assessment of the security situation. These criteria have been defined with the assistance of the European Commission's Directorate-General Human Resources and Security. The new provisions

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[6] Commission Regulation (EC) No 965/2012 (http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:296:0001:0148:EN:PDF).

[7] http://www.easa.europa.eu/approvals-and-standardisation/technical-training-common-training-initiative-group-CTIG.php

are closely linked to ICAO Critical elements CE-7 'Surveillance Obligations' and CE-8 'Resolution of Safety Concerns', hence, they complement the State's/Agency's safety oversight system to support SSP/EASP implementation.

Editorial and consistency changes

The term 'approval' has been replaced by 'certificate' when reference is made to the organisation's approval certificate as opposed to the process of approving it.

The term 'quality system' has been replaced by 'compliance monitoring function' throughout the text.

'Quality manager' has been replaced by 'compliance monitoring manager'.

'Surveyor' (competent authority) has been replaced by 'inspector'.

'Sub-contract' and its derivatives (sub-contractor, sub-contracted, etc.) have been replaced by 'subcontract', 'subcontractor', etc. throughout the text.

References to Commission Regulation (EC) No 1702/2003 have been updated to Commission Regulation (EU) No 748/2012.

References to 'this Annex' or 'this Part' have been reviewed for consistency and replaced by 'this Regulation' where necessary (by referring to 'this Part' all cover regulation provisions are excluded).

The numbering and format of those AMC and GM that have been amended in the course of this rulemaking task has been aligned with the current EASA Rulemaking style guide, which results in:

— adding an AMC/GM number to those amended AMC/GM (e.g. : AMC**1** M.A.616 instead of AMC M.A.616), including when there is only one AMC/GM;

— adding a subtitle to all new AMC and GM; and

— aligning numbered lists in the AMC/GM with the number format of the Implementing Rile ((a),(b)(c) instead of 1., 2., 3.).

This results in the coexistence of two different standards for the numbering of AMC/GM paragraphs and subparagraphs. For the final Agency Decisions to be issued following adoption of the relevant amendments at Implementing Rule level, a consolidated version of all AMC and GM to which uniform numbering styles will have been applied will be published.

Detailed list of changes

NOTES

— Items identified with a (*) are fully aligned with the equivalent Part-M items.
— The use of the verb 'transpose' means that the ARX/ORX provisions have been included without alteration.

Reference	Type of change	Description
AMC 145.A.1 General	deleted	This AMC is deleted, as the issue is now addressed through the new Article in the Cover Regulation related to 'Oversight capabilities'.
145.A.10 Scope	amended	The text has been amended for consistency ('certificate' instead of 'approval').
AMC1 145.A.10 Scope	amended	In 1.b, a reference to an appropriate risk assessment has been added for consistency with the new management system processes introduced in 145.A.65.
GM 145.A.10 Scope	deleted	The GM is now included with 145.A.65 (cf. GM2 to 145.A.65(b))..
145.A.15 Application for an organisation certificate*	title changed, text amended	The title and text have been amended to transpose ORX.GEN.115.
AMC1 145.A.20 Terms of approval	amended	In Rating C5, ATA chapter 85 has been added.
145.A.30 Personnel requirements	amended	Text in (b) and (c) has been amended in order to clarify that the safety manager and compliance monitoring manager are also considered managers but not part of the maintenance management function. Point (e) has been amended to address safety management principles as part of competence control. Points (j)(3) and (j)(4) have been amended by deleting all references to Flight Engineer (FE) licences as these are no longer foreseen in EASA Part-FCL (Commission Regulation (EC) No 1178/2011 as amended by Commission Regulation (EU) No 290/2012). In order not to affect holders of a FE licence in accordance with JAR-FCL 4, a specific provision is added in the Cover Regulation to ensure any CS authorisation issued on the basis of a FE licence continues to remain valid. In addition, the case of technical crew in HEMS and HHO as identified in Part-ORO Subpart TC is now covered, as requested by stakeholders. This will allow such crew members to obtain a limited certifying staff authorisation. This is justified from a safety point of view as it can be expected that the technical crew member (e.g. hoist operator, who usually is also the HEMS technical crew member) is more

Reference	Type of change	Description
		familiar and knowledgeable about the hoist and its operation than flight crew. Likewise, HEMS technical crew members are assumed to be more familiar with HEMS equipment than the flight crew as the technical crew are the ones to operate and use that equipment and also to receive recurrent training on such equipment. Therefore, HEMS/HHO technical crew should be entitled to obtain a limited certifying staff authorisation for simple tasks to be performed in the spirit of AMC 145.A.30(j)(4) as in most cases they are expected to be more knowledgeable about the functioning of the equipment and in a better position to determine airworthiness aspects of that equipment than any flight crew or Part-66 certifying staff.
AMC1 145.A.30(a) Personnel requirements	editorial change	A missing article has been added.
AMC1 145.A.30(b)	amended	A reference to safety manager has been added and references to 145.A.65 have been updated. Point 6 has been deleted as paragraph (b) of the IR currently does not address the quality manager but the nominated post holders (maintenance management).
AMC1 145.A.30(c) Personnel requirements	amended	Point 1 has been amended. 'Remedial action' has been replaced by 'correction and corrective action' to align with common terminology. The terms are further explained in a new GM to 145.A.65 (a)(6). The new points 2 to 5 are transposed from Part-ORX, cf. AMC1 ORX.GEN.200(a)(6). The responsibility of the safety manager has been clarified: 'The safety manager is responsible for the development, administration, and maintenance of effective safety management processes as part of the management system in accordance with 145.A.65'
AMC1 145.A.30(d) Personnel requirements	amended	Editorial changes have been made in point 6, and a reference to the safety manager has been added under point 8.
AMC1 145.A.30(e) Personnel	amended	Point 5 has been amended to add a reference to safety policy and to consider staff responsibilities with regard to the new safety management related elements introduced in 145.A.65.

Reference	Type of change	Description
requirements		
AMC2 145.A.30(e) Personnel requirements	amended	References to 'safety manager' and 'staff having designated safety management responsibilities' have been added. In point 3., the conduct of HF training has been further specified to emphasise the need for competent trainers.
AMC5 145.A.30(e) Personnel requirements*	new	This new AMC has been added to specify training for personnel involved in compliance monitoring, to transpose Part-ORX (cf. AMC1 ORX.GEN.200(a)(6)).
AMC6 145.A.30(e) Personnel requirements*	new	This new AMC has been added to specify safety management related training, to transpose Part-ORX (cf. point (a) of AMC1 ORX.GEN.200(a)(4)).
AMC1 145.A.30(g) Personnel requirements	amended	Point (4) of the AMC has been reworded to enhance clarity.
AMC1 145.A.30(j)(4) Personnel requirements	amended	This AMC has been aligned with changes made at IR level (the case of flight engineers and technical crew in HEMS and HHO). Further editorial changes have been made.
AMC1 145.A.30(j)(5) Personnel requirements	amended	This AMC has been amended to introduce safety risk management related to the issuance of one-off authorisations.
AMC1 145.A.30(j)(5)(i) Personnel requirements	amended	The reference to quality manager has been updated, and consultation with the safety manager or person having designated safety management responsibilities has been added to align with changes made in 145.A.30.
AMC1 145.A.30(j)(5)(ii) Personnel	amended	This AMC has been amended to align with changes made in 145.A.65 (editorial and consistency changes only).

Reference	Type of change	Description
GM1 145.A.30(c) Personnel requirements	new	This new GM has been added to clarify that the person or group of persons referred to in M.A.706(c) also includes the compliance monitoring manager. The GM further clarifies that the compliance monitoring function itself needs to be monitored for compliance.
GM1 145.A.30(e) Personnel requirements	amended	The training syllabus has been further amended based on recommendations made by the EHFAG. Item 3, 'Safety culture and organisational factors' has been added. A reference to fatigue management has been added. in point 4, and additional elements are included to address safety risk assessment, safety policy, just culture, and occurrence investigation in point 10.
GM2 145.A.30(e) Personnel requirements*	new	This GM has been added to provide further guidance on HF trainer competences, based on recommendations made by the EHFAG.
GM3 145.A.30(e) Personnel requirements*	new	The text is extracted from the Implementing Rule 145.A.30(e) in line with the legal drafting principles. The definition of 'Human Factors' has been amended as suggested by the EHFAG.
GM4 145.A.30(e) Personnel requirements*	new	This new GM has been added to clarify the scope of safety training depending on the complexity of the organisation.
GM5 145.A.30(e) Personnel requirements	renumbered, title changed, and text amended	This was included as GM2 145.A.30 'Competence assessment procedure'. A new column has been added to include the safety manager and safety management key personnel.
GM6 145.A.30(e) Personnel requirements	renumbered,title changed, and template amended	This was included as GM3 145.A.30(e) 'Template for recording experience/training'. Editorial changes have been made to the template to align with the new terminology used.
GM1 145.A.30(j)(4) Personnel requirements	amended	This GM has been aligned with the changes made at IR level (in the case of flight engineers and technical crew in Helicopter Medical Emergency Services (HEMS) and Helicopter Hoist Operations (HHO)). Further editorial changes have been made.

Reference	Type of change	Description
AMC1 145.A.35(d) Certifying staff and support staff	amended	In point 3, a reference to hazards and related safety risks identified to be considered for the continuation training has been added.
145.A.42 Acceptance of components	amended	This provision has been amended to incorporate the applicable elements of Part-M Subpart E. The additional elements cover M.A.501(a),(c), and (d) and are addressed in points (a), (g) and (h).
AMC1 145.A.42(a) Acceptance of components	new	This AMC has been amended to incorporate the applicable elements of Part-M, i.e. AMC M.A.501 Points 1-3.
GM1 145.A.42(a) Acceptance of components	new	This GM has been amended to incorporate the applicable elements of Part-M, i.e. AMC M.A.501 point 4.
AMC1 145.A.42 (b) Acceptance of components	renumbered, text amended	The former AMC 145.A.42(a) has been re-identified as 145.A.42(b) to reflect changes made at IR level. Point 3 has been added to transpose item 6 of AMC M.A.501(a).
AMC1 145.A.42(c) Acceptance of components	renumbered	The former AMC 145.A.42(b) has been re-identified as 145.A.42(c) to reflect changes made at IR level.
AMC1 145.A.42(d) Acceptance of components	renumbered	The former AMC 145.A.42(c) has been re-identified as 145.A.42(d) to reflect changes made at IR level.
AMC 145.A.42(d) Acceptance of components	deleted	This AMC has been removed because the issues addressed are now included in 145.A.43 as part of the incorporation of applicable elements of Part-M. As these criteria are directly safety relevant, they have been upgraded to IR.
AMC1 145.A.42(g) Acceptance of	new	This new AMC on standard parts has been added to incorporate AMC M.A.501(c).

Reference	Type of change	Description
components		
GM1 145.A.42(g) Acceptance of components	new	This new GM on standard parts has been added to incorporate those elements of AMC M.A.501(c) that qualify as GM.
AMC1 145.A.42(h) Acceptance of components	new	This new AMC on consumables and raw material has been added to incorporate the applicable elements of AMC M.A.501(d).
GM1 145.A.42(h) Acceptance of components	new	This new GM defines consumables and raw material and is based on AMC M.A.501(d).
145.A.43 Control of unserviceable components	new	This new provision has been added to incorporate into Part-145 the applicable Part-M requirements as per M.A.504(a), (b), (d), and (e).
AMC1 145.A.43(b) Control of unserviceable components	new	This new AMC has been added in order to incorporate AMC M.A.504(b).
AMC1 145.A.43(c) Control of unserviceable components	renumbered, title changed	Former AMC 145.A.42 Acceptance of components has been renumbered and renamed to AMC 145.A.**43(c)** 'Control of unserviceable components' as the issues addressed are more relevant to the new 145.A.43.
AMC1 145.A.43(c)(2) Control of unserviceable components	new	This new AMC on mutilation has been added in order to incorporate AMC M.A.504(d)(2). .

Reference	Type of change	Description
AMC 145.A.43(d) Control of unserviceable components	new	This new AMC on mutilation has been added in order to incorporate AMC M.A.504(e).
AMC1 145.A.45(d) Maintenance data	amended	Editorial changes have been made in order to align with the terminology used in 145.A.65 and introduce the possibility to perform a safety risk assessment as related to modified maintenance instructions.
AMC1 145.A.47(b) Production planning	new	This new AMC on fatigue risk management has been added as recommended by the EHFAG.
AMC2 145.A.47(b) Production planning	new	This new AMC on duty time schedules has been added as recommended by the EHFAG.
GM1 145.A.47(b) Production planning	renumbered	Former AMC 1 145.A.47(b) is now included as GM in line with the legal drafting principles.
GM2 145.A.47(b) Production planning	new	This new GM provides guidance on the EU Working Time Directive.
145.A.48 Performance of maintenance	new	This new provision has been added to incorporate applicable Part-M requirements from M.A.402. Further changes may be required before issuing the Opinion for this NPA to reflect the text of the Opinion to be issued for MDM.020 'Critical tasks'.
AMC1 145.A.48(b) Performance of maintenance	new	This new AMC on independent inspections has been adapted from AMC M.A.402(a).
AMC 2 145.A.50(d) Certification of maintenance	amended	The AMC numbering has been aligned. In point 2.6.2, which is related to serviceable components removed from a non-Member State registered aircraft, the provisions on how to establish the airworthiness status of the components have been clarified.

Reference	Type of change	Description
AMC1 145.A.55 Maintenance records	new	This AMC has been added to align with additional provisions added for record keeping related to management system documentation. The items included in this new AMC cover those deleted in GM 145.A.55(a).
GM1 145.A.55(a) Maintenance records	amended	Points 4, 5, and 6 have been deleted. They are now included in the new AMC1 145.A.55 'Maintenance records' as these points constitute AMC and not GM.
145.A.60 External occurrence reporting	title changed and text amended	In the title a reference to 'external' has been added to differentiate this provision from the new provision on internal safety reporting. Elements relevant to internal reporting have been deleted as these are now addressed in the new IR 145.A.62. In point (c), now (b), the term 'agency' has been replaced by 'competent authority'. Point (e) of 145.A.60 External occurrence reporting has been added to align with Part-ORX (cf. ORX.GEN.160).
AMC1 145.A.60 External occurrence reporting	title changed, renumbered	This AMC has been renumbered and the title has been aligned with 145.A.60.
AMC2 145.A.60 External occurrence reporting	re-identified, amended	Former GM 145.A.60 is now included as AMC in line with the legal drafting principles. Point 2 has been added to introduce a reference to the Agency's occurrence reporting form.
GM1 145.A.60 External occurrence reporting	title changed	The title has been aligned with 145.A.60.
145.A.62 Internal safety reporting scheme*	new	This new provision has been added to align with Part-ORX. Unlike in ORX, this has been included at IR level to reflect existing requirements in 145.A.60 point (b) as well as to strengthen the reporting provisions that are essential for effective risk management. The text considers additional input from the EHFAG.

Reference	Type of change	Description
AMC1 145.A.62 Internal safety reporting scheme*	amended	This AMC expands on former AMC 145.A.60 'Occurrence reporting', and specifies the elements of the internal safety reporting scheme, including a just culture policy. It considers recommendations made by the EHFAG (confidentiality of the scheme).
GM1 145.A.62 Internal safety reporting scheme*	new	This new GM is added to transpose Part-ORX (cf. GM1 ORX.GEN.200(a)(3)). The text has been further amended and creates a link with ERP and address events that require a recall of components or aircraft after release.
GM2 145.A.62 Internal safety reporting scheme*	new	This new GM provides definitions of terms relevant to internal safety reporting. It also provides examples for these terms. The definition of 'hazard' is the one provided by SM-ICG[8] as draft Annex 19 does not include any definition for this term. The definition of 'error' is the one provided by the SM-ICG. The definition of 'near-miss' has been suggested by the EHFAG.
145.A.65 Management System*	significantly amended	This provision has been significantly amended: 1. The text has been aligned with the elements of ORX.GEN.200 'management system'. New items (a) and (b) are aligned with the ORX.GEN.200. This is important to ensure consistency of organisation approvals for those organisations approved in accordance with more than one Part. 2. The text in existing point (b) related to maintenance procedures has been removed from 145.A.65 to include it as a stand-alone rule 145.A.71 'Maintenance procedures'. This better aligns with the new MOE structure as defined in the AMC to 145.A.70. Related AMC 145.A.65(b) and 145.A.65(b)(2) have been re-identified and relocated accordingly.
AMC1 145.A.65(a)(1) Management system	new	This new AMC incorporates AMC 1 ORX.GEN.200(a)(1). Some small changes have been made to the ORX version, i.e. to include a reference to the safety action group, which is addressed at GM level. Point 6 of the AMC is based on AMC1 ORX.GEN.200 (a)(1);(2);(3); and (5) and includes specific, alleviated provisions applicable to non-complex organisations. It was felt necessary to start with the generally applicable provisions and then introduce those specific provisions as one option. Even if the

[8] http://www.skybrary.aero/index.php/Safety_Management_International_Collaboration_Group_(SM_ICG)

Reference	Type of change	Description
		organisation considers itself non-complex, it may opt for the set of AMC that is foreseen for complex organisations.
GM1 145.A.65(a)(1) Management system *	new	This new GM incorporates GM1 ORX.GEN.200(a)(1) on 'safety manager'.
GM2 145.A.65(a)(1) Management system*	new	This new GM incorporates GM2 ORX.GEN.200(a)(1) on the possibility to establish one or more safety action groups.
AMC1 145.A.65(a)(2) Management system*	amended	The text of the existing AMC 145.A.65(a) has been replaced by that of AMC1 ORX.GEN.200(a)(2). Whereas in Part-ORX it is included for complex organisations, here it is included with general applicability to reflect the original intent of the existing AMC.
GM1 145.A.65(a)(2) Management system	amended	This new GM on 'safety policy' incorporates GM1 ORX.GEN.200(a)(2). The text has been further amended based on CASA draft Advisory Circular 145-1(0) dated May 2012.
AMC1 145.A.65(a)(3) Management system*	new	This new AMC incorporates AMC 1 ORX.GEN.200(a)(3). In Part-ORX, safety risk management related Acceptable Means of Compliance are included for complex organisations only. Considering that a Part-145 approval is designed for maintenance of large aircraft and aircraft used in CAT, and taking into account safety recommendations supporting the need for effective SMS in Part-145, all of these means of compliance related to safety management key processes should apply. If an organisation wishes to adopt different means of compliance it may apply for an alternative means of compliance. In point (a), item (3)(ii) has been added to address safety recommendation SR UNKG-2010-072.
AMC2 145.A.65(a)(3) Management system	new	This new AMC is for those organisations implementing a fatigue risk management scheme as part of their general risk management processes. It is based on input provided by the EHFAG and it is related to the new AMC2 145.A.47(b)
GM1 145.A.65(a)(3) Management system	new	This new GM has been adapted from CASA draft Advisory Circular 145-1(0) — 'Safety Management Systems for Approved Maintenance Organisations'.
GM2 145.A.65(a)(3)	new	This new GM (not included in Part-ORX), has been added to link with the new 145.A.62 ' Internal safety

Reference	Type of change	Description
Management system		reporting'.
GM3 145.A.65(a)(3) Management system	new	This new GM is an amended version of material initially proposed with Part-OR (see CRD 2008-22c, and 2009-02c ref. GM2 OR.OPS.GEN.200(a)(5). It provides detailed guidelines on the performance of safety risk management. These may be adapted to the particular context of the organisation and to the type of risk being assessed.
GM4 145.A.65(a)(3) Management system	new	This new GM on Management of Change has been adapted from CASA draft Advisory Circular 145-1(0) — Safety Management Systems for Approved Maintenance Organisations
GM5 145.A.65(a)(3) Management system	new	This new GM on the Emergency Response Plan (ERP) has been adapted from CASA draft Advisory Circular 145-1(0) dated May 2012.
GM6 145.A.65(a)(3) Management system	new	This new GM on emergency response planning has been adapted from CASA draft Advisory Circular 145-1(0) dated May 2012.
GM7 145.A.65(a)(3) Management system	new	This new GM clarifies the provisions on fatigue risk management scheme. It is based on input provided by the EHFAG and addresses the key components of the fatigue risk management scheme in terms of hazard identification, risk assessment and mitigation, and communication and promotion.
AMC1 145.A.65(a)(4) Management system*	new	This new AMC transposes elements of AMC1 ORO.GEN.200(a)(4) as related to communication on safety. The elements of this Part-ORX AMC related to training are included with 145.A.30 related AMC.
GM 145.A.65(a)(5) Management system*	new	This new GM is based on GM1 ORX.GEN.200(a)(5) and provides further guidance on management system documentation regarding MOE and safety management manual.
AMC 145.A.65(b)(3) Safety and quality policy, maintenance procedures and quality system	deleted	This AMC has been superseded by the new AMC1 145.A.48 (b) Performance of maintenance. The procedure should identify the method for capturing errors, the maintenance tasks concerned, the training and qualification of personnel, and how the organisation ensures that its staff is familiar with flight safety sensitive maintenance tasks and error capturing methods.
AMC1 145.A.65(a)(6) Management system*	new	This new AMC is based on AMC1 ORX.GEN.200(a)(6), with further adaptations to fit the context of Part-145.

Reference	Type of change	Description
AMC2 145.A.65(a)(6) Management system	renumbered, title changed and text amended	This AMC was included as AMC 145.A.65(c)(1). This has been further amended to better align with the safety management principles, by providing for a more dynamic, flexible planning of internal compliance monitoring. Point 7 of the former AMC has been deleted as it is now addressed in the new AMC3 145.A.65(a)(6). Point 11 of the former AMC has been deleted as the issue is now addressed in AMC4 and AMC5 to 145.A.65(a)(6).
AMC3 145.A.65(a)(6) Management system	new	This new AMC includes the provisions on defining the audit planning cycle previously included in AMC 145.A.65(c)(1).
AMC4 145.A.65(a)(6) Management system*	new	This new AMC is based on GM1 ORO.GEN.200(a)(6) and includes the provisions on independence of the audit previously included with AMC 145.A.65(c)(1). The definition of 'large organisation' has been reviewed: This is an organisation with more than 200 maintenance staff (FTEs) instead of 500, which is more proportionate.
AMC5 145.A.65(a)(6) Management system	renumbered, title changed and text amended	The former AMC 145.A.65(a)(6) has been renumbered, its title changed and its text aligned with terminology used in 145.A.65. It includes point 11 of the former AMC 145.A.65(c)(1) as related to large maintenance organisations. The definition of 'large organisation' has been reviewed (see AMC4).
AMC6 145.A.65 (a)(6) Management system	new	This AMC has been added to define means of compliance for concession control of deviations as part of compliance monitoring as defined in MOE chapter 3.10.
GM1 145.A.65(a)(6) Management system	renumbered, title changed and text amended	The former GM 145.A.65(c)(1) has been renumbered and its title changed. The table now reflects all changes to the Part-145 requirements and to the contents of the MOE. Additionally, the reference in Note 2 has been updated.
GM2 145.A.65(a)(6) Management system *	new	This new GM on terminology incorporates GM4 ORX.GEN.200(a)(6).
AMC1 145.A.65(b) Management system*	new	This new AMC transposes AMC1 ORX.GEN.200(b). The criteria for determining organisational complexity have been adapted to the Part-145 context.

Reference	Type of change	Description
GM1 145.A.65(b) Management system	new	This GM contains the material previously included with GM 145.A.10 'Scope', as this is more relevant to size, nature, and complexity of the management system. The GM has been reviewed for consistency with 145.A.65 and related AMC. The meaning of 'full time equivalent' for the purpose of Part-145 has been included as GM2 to 145.A.65(b).
GM2 145.A.65(b) Management system	new	This new GM is extracted from GM 145.A.10 (meaning of 'full time equivalent').
AMC 145.A.65(b) Management system *	deleted	This AMC is now included with the new 145.A.71 'Maintenance procedures'.
AMC 145.A.65(b)(2)	deleted	This AMC is now included with the new 145.A.71 'Maintenance procedures'.
145.A.68 Management system record keeping*	new	This new provision transposes ORX.GEN.220.
AMC1 145.A.68 Management system record keeping*	new	This new AMC transposes AMC1 ORX.GEN.220(b).
GM1 145.A.68 Management system record keeping*	new	This new GM transposes GM1 ORX.GEN.220(b).
145.A.70 Maintenance organisation exposition	amended	Point (a) has been amended to incorporate a reference to the organisation's related manuals, such as the safety management manual if this is kept as a separate document, which is one possible option. Throughout the text, changes have been made to align with 145.A.65 as amended. In particular, the reference to 'indirect approval' in point (c) has been changed to 'changes not requiring prior approval' in line with the new provisions on how to manage changes.
AMC1 145.A.70(a) Maintenance	amended	The reference to Part-0 has been deleted, as it duplicates Part 6. MOE Part 1 has been renamed 'General.

Reference	Type of change	Description
organisation exposition		Point 1.2 'Safety policy and objectives' and Point 1.4 'Duties and responsibilities of the management personnel, including safety responsibilities' have been amended in line with changes made throughout Part-145 in relation to the management system and safety management responsibilities. MOE Part 3 has been renamed 'Management system procedures'. New points from 3.17 'Hazard Identification and risk management schemes' to Point 3.24 'Management system record keeping' have been added to address the new safety management related elements. MOE Part 4 has been renamed 'External parties'. MOE Part 5, which currently does not have any title, is now included as 'Supporting Documents'. In MOE Part 7 the reference to the FAA AC 145-7A has been deleted, as this AC has been cancelled. Reference is now made to the EASA-FAA Maintenance Annex Guidance (MAG). In MOE Part 8 the reference to TCCA MSI 10 has been deleted, as this document is cancelled. Reference is now made to the EASA-TCCA Maintenance Annex Guidance (MAG). Cf. http://easa.europa.eu/rulemaking/international-cooperation-bilateral-agreements.php
GM1 145.A.70(a) Maintenance Organisation Exposition	amended	The text of the existing GM has been reviewed to align with changes made in 145.A.65: - point 7 has been reviewed to allow more flexibility regarding responsibilities for monitoring the amendments to the MOE. - point 10 has been reworded for better clarity.
145.A.71 Maintenance procedures	new	This new provision incorporates point (b) of existing 145.A.65. The text has been reviewed to consider the outcome of Rulemaking Task MDM.020 'Critical tasks': - 'critical systems is now replaced by a reference to 'flight safety sensitive tasks'. - the limitation to aircraft line and base maintenance has been removed (virtually all areas of maintenance, including component maintenance and NDT, may be affected by multiple errors). Further changes may be required before issuing the Opinion for this NPA to reflect the text of the Opinion to be issued for MDM.020.
AMC1 145.A.71	renumbered, title	The number and title of former AMC 145.A.65(b) have been amended and an editorial change has been

Reference	Type of change	Description
Maintenance procedures	changed and text amended	made in the text for consistency.
AMC1 145.A.71(b) Maintenance procedures	renumbered, title changed and text amended	The number and title of former AMC 145.A.65(b)(2) have been amended. The text has been reworded in line with the legal drafting principles without altering the intent.
GM1 145.A.71* Maintenance procedures	new	This new GM is added to provide a reference to CAA UK CAP 716[9] chapter 6 that provides guidance on the design and presentation of technical procedures in line with human factors principles.
145.A.75 Privileges of the organisation	amended	The text has been reviewed for consistency and to update the link to 145.A.65(c) (now 145.A.71).
AMC1 145.A.75(b) Privileges of the organisation	amended	A reference to risk assessment has been added in point (d) of the AMC. This reference is related to the initial assessment of new subcontractors, and the control procedures that now include safety management related elements. Point (d)(7) has been reworded in line with legal drafting principles.
145.A.82 Means of compliance*	new	A new provision has been added to align with Part-ORX.
AMC1 145.A.82 Means of compliance*	new	This new AMC introduces the elements of AMC1 to with ORX.GEN.120(a).
145.A.85 Changes to the organisation*	amended	The text has been reviewed to align with ORX.GEN.130. It now introduces the concept of changes not requiring prior approval in replacement of the indirect approval procedures.
AMC1 145.A.85 Changes to the organisation*	new	This new AMC on application timeframes is based on AMC1 ORX.GEN.130.

[9] http://www.caa.co.uk/docs/109/CAP716%20(Issue%202).pdf

Reference	Type of change	Description
AMC2 145.A.85 Changes to the organisation*	new	This new AMC is included to make a link with safety risk management as defined in AMC1 145.A.65(a)(3), as related to the management of changes.
GM1 145.A.85(a) Changes to the organisation*	new	This new GM has been added to align with GM to ORX.GEN.130. It introduces a list of changes that potentially require prior approval. Point (a)(2) has been added to address cases such as a change in ownership. A change in legal entity will require prior approval if this change affects basic elements of the organisation. Conversely, a change of ownership not affecting the aforementioned basic elements should not require prior approval. In general, it can be stated that any change, in ownership or not, would require prior approval if it would affect/alter the basic elements (previously identified in the rule) of the organisation and its approval.
GM2 145.A.85 (a) Changes to the organisation*	new	This new GM 'change of name of the organisation' has been added to align with Part-ORX (cf. GM2 ORX.GEN.130(a)).
145.A.90 Continued validity	amended	Minor changes have been made in order to align with Part-ORX.
145.A.92 Access	new	A new provision has been added to align with ORX. Point (a) has been adapted to align with the AMC to 145.A.75
145.A.95 Findings*	amended	The text has been aligned with ORX.GEN.150. The definition of findings has been transferred to Section B (cf. 145.B.50) as the assessment of findings is made by the authority.
AMC1 145.A.95(b) Findings*	new	A new AMC has been added to align with Part-ORX (cf. AMC1 ORX.GEN.150(b)).
GM1 145.A.95 Findings*	new	A new GM has been added to align with Part-ORX (cf. GM1 ORX.GEN.150).
GM2 145.A.95 Findings*	new	This new GM on root-cause analysis has been added as requested by the drafting group RMT M.027 'ACAM'. It was agreed this should be done as part of task MDM.055, as it is also directly relevant to the

Reference	Type of change	Description
		context of SMS.
145.A.97 Immediate reaction to a safety problem*	new	A new provision has been added to align with Part-ORX (cf. ORX.GEN.155).
145.B.01 Scope	amended	Editorial changes have been made for consistency.
145.B.10 Competent authority	deleted	This provision has been deleted as it is superseded by the new Article of the Cover Regulation on oversight capabilities and the new provisions related to the competent authority's management system (cf. 145.B.20).
AMC.145.B.10(1) Competent authority	deleted	This case is now addressed in AMC 145.B.20 Management system.
AMC.145.B.10(3) Competent authority	deleted	This case is now addressed in new AMC2 145.B.20(a)(3).
AMC.145.B.10(4) Competent authority	deleted	This case is now addressed in new AMC1 145.B.20(a)(1).
145.B.11 Oversight documentation*	new	A new provision has been added to align with ARX (cf. ARX.GEN.115). It complements the new Article of the Cover Regulation on 'Oversight capabilities'.
145.B.12 Means of compliance*	new	A new provision has been added to align with ARX.GEN.120. This forms the counterpart to the new provisions in 145.A.82.
AMC1 145.B.12 (d)(3) Means of compliance*	new	A new AMC has been added to align with ARX.GEN.120 related AMC (cf. AMC1 ARX.GEN.120(d)(3)).
GM1 145.B.12 Means of compliance*	new	A new GM has been added to align with ARX.GEN.120 related GM (cf. GM1 ARX.GEN.120).
145.B.13 Information	new	A new provision has been added to align with ARX.GEN.125.

Reference	Type of change	Description
to the Agency*		
145.B.14 Immediate reaction to a safety problem*	new	A new provision has been added to align with ARX.GEN.135.
145.B.15 Organisations located in several Member States	deleted	This case is now addressed in the new provision 145.B.30.
145.B.20 Initial approval	deleted	This case is now addressed in the new provision 145.B.32 Initial certification procedure.
AMC 145.B.20(1) Initial approval	deleted	This case is now addressed in the new AMC 145.B.32(e)(2) Initial certification procedure.
AMC 145.B.20(3) Initial approval	deleted	This case is now included as AMC2 145.B.32(a) Initial certification procedure.
AMC 145.B.20(2) Initial approval	deleted	This case is now addressed in the new provisions on initial certification (cf. AMC1 145B.32(1)).
AMC 145.B.20(5) Initial approval	deleted	This case is now included as AMC1 145.B.32(c) 'Initial certification procedure'.
AMC 145.B.20(6) Initial approval	deleted	This case is now included as AMC1 145.B.32(d) 'Initial certification procedure'.
145.B.20 Management system*	new	A new provision has been added to align with ARX.GEN.200. Point (a)(2) of ARX.GEN.200 has been included as two distinct points (a)(2) and (a)(3) to differentiate between provisions related to number of staff and those related to training and qualification. This allows to better focus the related AMC on those two aspects.

Reference	Type of change	Description
AMC1 145.B.20 Management system*	new	It incorporates former AMC.145.B.10(1) with some text changes for consistency with other changes made in Section B.
GM1 145.B.20 Management system*	new	A new GM has been added to transpose GM1 ARX.GEN.200(a).
AMC1 145.B.20(a)(1) Management system*	new	This new AMC on documented policies and procedures has been added to transpose AMC1 ARX.GEN.200(a)(1).
GM1 145.B.20(a)(2) Management system*	new	This new GM has been added to transpose GM1 ARA.GEN.200(a)(2) on sufficient personnel.
AMC1 145.B.20(a)(3) Management system*	new	This new AMC on qualification and training general has been added to transpose AMC1 ARX.GEN.200(a)(2).
AMC2 145.B.20(a)(3) Management system*	new	This new AMC includes points (1) and (3) of former AMC 145.B.10(3). Point (2) of that AMC has not been included, as this issue is now addressed in the new Article of the Cover Regulation on 'Oversight capabilities' and 145.B.21 'Allocation of tasks to qualified entities' (surveillance obligations can not be delegated). Editorial changes have been made for consistency reasons.
AMC3 145.B.20(a)(3) Management system*	new	A new AMC has been added to transpose ARX (cf. AMC2 ARX.GEN.200(a)(2)).
AMC4 145.B.20(a)(3) Management system	new	This new AMC on competence assessment has been added in response to recurrent standardisation findings.
AMC1 145.B.20(d) Management system*	new	This new AMC specifying the procedures to be made available to the Agency for the purpose of standardisation has been added to transpose ARX (cf. AMC1 ARX.GEN.200(d)).
GM1 145.B.20(a)(2) Management system*	new	A new GM has been added to transpose ARX (cf. GM1 ARX.GEN.200(a)(2)) and further adapted to keep items relevant to organisations only.
145.B.21 Allocation of tasks to qualified	new	This new provision has been added to transpose ARX.GEN.205. This also addresses the possible use of

Reference	Type of change	Description
entities*		resources of other Member States' competent authorities.
GM1 145.B.21 Allocation of tasks to qualified entities*	new	A new GM has been added to align with Part-ARX. It clarifies which tasks can be allocated to a qualified entity.
145.B.22 Changes in the management system*	new	A new provision has been added to align with ARX.GEN.210. This mirrors the change management provisions introduced in Section A.
145.B.25Issue of approval	deleted	These items are now included in 145.B.32 initial certification procedure, in order to align with ARX.
AMC 145.B.25(1) Issue of approval	deleted	This case is now addressed in AMC 145.B.32(e) Initial certification procedure.
AMC 145.B.25(2) Issue of approval	deleted	This case is now addressed in 145.B.32 Initial certification procedure, point 7.
AMC 145.B.25(3) Issue of approval	deleted	This AMC is obsolete (cf. ED Decision on the numbering of organisation certificates).
145.B.30 Continuation of an approval	deleted	This case is now addressed in 145.B.33 'Oversight programme'.
AMC 145.B.30(1) Continuation of an approval	deleted	The issue is now addressed in AMC2 145.B.33(c) 'Oversight programme'.
145.B.30 Oversight principles*	new	A new provision has been added to align with ARX.GEN.300. The title has been changed by adding 'principles' in order to differentiate these general provisions from the more specific ones in the subsequent IRs.

Reference	Type of change	Description
AMC1 145.B.30(f) Oversight principles	new	This AMC has been added to provide a non-exhaustive list of issues to be considered in terms of safety information deemed useful for oversight.
145.B.32 Initial certification procedure*	new	A new provision has been added to align with ARX.GEN.310. It supersedes former 145.B.20 Initial approval.
AMC1 145.B.32 (a) Initial certification procedure*	new	This new AMC on verification of compliance has been added to align with Part-ARX (cf. AMC1 ARX.GEN.310(a)).
AMC2 145.B.32 (a) Initial certification procedure.	new	This AMC incorporates former AMC 145.B.20(3) Initial approval. The text has been amended to align with changes made throughout Section B and to improve consistency.
AMC1 145.B.32 (c) Initial certification procedure *	new	This AMC incorporates former AMC 145.B.20(5) Initial approval. The processing of the EASA Form 6 has been further specified to address recurrent standardisation findings.
AMC1 145.B.32 (d) Initial certification procedure*	new	This AMC incorporates former AMC 145.B.20(6) Initial approval. The text has been amended to align with changes made throughout Section B. Point 2 has been taken from Point 3 of AMC 145.B.20(6). Point 4 has been taken from Point 1 of AMC 145.B.20(6).
AMC1 145.B.32 (e) Initial certification procedure*	new	This new AMC is based on former AMC 145.B.25(1) Issue of approval. It addresses the case of certification procedures involving more than one Member State. Point 2 has been deleted as: 1. it is not in line with the general principle that a Part-145 approval is not to be used for a non-EASA aircraft; and 2. it is not relevant to the main subject being dealt with in this AMC.

Reference	Type of change	Description
		Point 3 has been deleted because it is redundant.
AMC1 145.B.32 (e)(2) Initial certification procedure	new	This AMC incorporates former AMC 145.B.20(1) 'Initial approval'. The text has been amended to align with changes made throughout Section B. The group of persons for which an EASA Form 4 is to be provided now also includes the compliance monitoring manager (compliance monitoring is one of the functions required to ensure the organisation remains in compliance with Part-145).
145.B.33 Oversight programme*	new	A new provision has been added to align with Part-ARX (ARX.GEN.300). It supersedes previous 145.B.30 Continuation of an approval.
AMC1 145.B.33(a);(b) Oversight programme*	new	This new AMC has been added to define an annual review of the audit programme and audit planning cycle.
AMC1 145.B.33(b) Oversight programme*	new	A new AMC has been added to align with AMC1 ARX.GEN.305(b) on the aspects to be considered when determining the oversight programme for an organisation.
AMC2 145.B.33(b) Oversight programme*	new	A new AMC has been added to align with AMC1 ARX.GEN.305(b) and (c) on industry standards.
AMC1 145.B.33(b)(1) Oversight programme*	new	A new AMC has been added to align with AMC1 ARX.GEN.305(b)(1).
AMC1 145.B.33 (c) Oversight programme*	new	A new AMC has been added to align with AMC1 ARX.GEN.305(c) related to determining the oversight planning cycle based on a risk assessment for the organisation under consideration.
AMC2 145.B.33(c) Oversight	new	A new AMC has been added to align with AMC2 ARX.GEN.305(c) related to the meaning of oversight planning cycle. This also specifies the conditions for granting credits for specific audit items. The starting point for this new AMC was the text existing in AMC 145.B.30(1) The text has been reviewed as

Reference	Type of change	Description
programme*		stakeholder comments received indicated it was not clear.
AMC3 145.B.33(c) Oversight programme	new	This addresses the elements of the former AMC 145.B.30(2) 'Continuation of an approval', with the exception of the reference to 'concessions granted by the quality manager': As Part-145 does not define this possibility, this item has been deleted. Point 4 has been deleted as this point is now addressed at IR level. Point 5 has been deleted as it is now addressed in AMC1 145.B.33(b).
AMC1 145.B.33(d) versight programme	new	This new AMC has been added to define an annual validation inspection to confirm the audit programme and audit planning cycle when extended beyond 24 months.
AMC2 145.B.33(d) Oversight programme	new	This new AMC has been added for the competent authority to define the format and methods of safety reporting when the audit planning cycle is extended beyond 24 months.
GM1 145.B.33 Oversight programme	new	This new GM explains the terms 'audit', 'inspection', oversight planning cycle' and oversight programme'.
GM1 145.B.33(d) Oversight programme	new	This new GM has been added for the competent authority to develop procedures for assessing the safety performance and management system maturity of an organisation.
145.B.35 Changes*	amended	The text has been aligned with ARX.GEN.330.
AMC1 145.B.3 Changes*	amended	The text of AMC 145.B.35 has been amended to incorporate the text of AMC1 ARX.GEN.330 and align with changes made in 145.B.35.
AMC 145.B.35(1 Changes	deleted	This has been incorporated into AMC1 145.B.35 'Changes'
GM1 145.B.35 Changes	new	This new GM on the change of the name of the organisation has been added to align with GM1 ARX.GEN.330.
GM1 145.B.35(b) Changes	renumbered and title changed	Former AMC 145.B.35(2) 'Changes to the organisation' has been included as GM in line with legal drafting principles, as it does not provide any means of compliance.

Reference	Type of change	Description
145.B.40 Changes to the Maintenance Organisation Exposition	deleted	This provision has been deleted as changes to the MOE are to be managed in accordance with the general provision on changes as defined in 145.B.35.
AMC 145.B.40 MOE amendments	deleted	This AMC has been deleted as the issue addressed is now covered by AMC1 145.B.35 'Changes'.
145.B.45 Suspension, limitation and revocation*	title changed, amended	The title has been amended to align with the changes made throughout the Commission Regulation (EC) No 2042/2003. A new point (c) has been added to address the case of maintenance organisations/facilities located in States where the security situation is not compatible with the conduct of any on-site audit.
AMC1 145.B.45(c) Suspension, limitation, and revocation*	new	This new AMC complements the new 145.B.45(c)..
145.B.50 Findings and corrective actions*	title changed, amended	The title has been changed to 'Findings and corrective actions' to align with Part-ARX, and the text has been reviewed to align with ARX.GEN.350. This ensures the same definitions for level 1 and level 2 findings are used for ATOs, AeMCs, Operators, Part-M Subpart F, Part-M Subpart G and Part-145 organisations.
AMC 145.B.50(a) Findings	deleted	Superseded by GM 145.B.50(a) 'Findings and corrective actions'
GM1 145.B.50(a) Findings and corrective actions	amended	It addresses former AMC 145.B.50 (a) 'Findings' . It has been changed to GM because it does not specify a means of compliance. The text has further been amended to avoid duplication and aligns with other changes made in Section B. 1. The statement beginning with 'In practical terms a level 1 finding…' within GM 145.B.50 (b)(c) Findings, has been deleted as it is already specified in the Implementing Rule. 2. The first bullet point in GM.145.B.50 (b)(c) Findings has been deleted because it is already included

Reference	Type of change	Description
		in the definition of level 1. 3. The statement beginning with 'Furthermore, for a level 1 finding it may be necessary…' within GM.145.B.50 (b)(c) Findings, has been added to transpose GM1 ARA.GEN.350.
AMC1 145.B.50(b) Findings and corrective actions	deleted	The issue is now addressed at Implementing Rule level.
145.B.55 Record keeping*	amended	This provision has been reviewed to align with ARX.GEN.220. New items related to the processing of alternative means of compliance have been added. Point 4 has been deleted because it is now addressed in the AMC.
AMC1 145.B.55 Record keeping*	amended	This AMC has been amended to align with AMC1 ARX.GEN.220(a).
AMC1 145.B.55(1)(a) Record keeping*	new	This new AMC has been added to align with AMC1 ARX.GEN.220(a)(1);(2); and (3).
GM1 145.B.55(1)(a) Record keeping*	new	This new GM has been added to align with GM1 ARA.GEN.220 .
145.B.60 Exemptions	deleted	The provision has been deleted as the issue is now addressed in 145.B.55 point (g)
Appendices to the Implementing Rules	no changes	---
Appendix I to AMC1 145.B.32 (e)(2) : EASA Form 4	renumbered	Appendix I to AMC1 145.B.20(1) has been renumbered to reflect the renumbering of that AMC.
Appendix II to AMC 145.B.20(5) EASA Form 6	amended	Editorial changes have been made (terminology), the references to Part-145 have been updated in line with the changes made. The references to the MOE chapters have been amended to reflect the changes made in 145.A.70 and the related AMC.

Reference	Type of change	Description
Appendix IV to AMC 145.A.30(e) and AMC2 145.B.20(a)(3)	renumbered, amended	The reference to 145.B.10(3) has been replaced by a reference to AMC2 145.B.20(a)(3). Editorial changes have been made throughout the text (terminology).

Draft Opinion/Decision ANNEX II (Part-145)

The text of the amendment is arranged to show deleted text, new text, or new paragraphs as shown below:

1. Deleted text is shown with a strike through: ~~deleted~~.
2. New text is highlighted with grey shading: new.
3. […] indicates that remaining text is unchanged in front of, or following the reflected amendment.
4. When only certain elements of the rule, AMC or GM are amended, this is specified (e.g. *'Point 3 of the AMC is amended as below:'*). If no indication is provided, the integral text of the rule, AMC, or GM is included.
5. In order to facilitate processing and consultation, all new and amended AMC and GM have been included directly after the corresponding rule, and appendices to AMC have been inserted directly after the corresponding AMC.

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Section A
Technical and Organisation Requirements

~~**AMC 145.1**~~

~~A competent authority may be a ministry, a national aviation authority, or any aviation body designated by the Member State and located within that Member State. A Member State may designate more than one competent authority to cover different areas of responsibility, as long as the designation decision contains a list of the competencies of each authority and there is only one competent authority responsible for each given area of responsibility~~

145.A.10 Scope

This Section establishes the requirements to be met by an organisation to qualify for the issue or continuation of a certificate ~~an approval~~ for the maintenance of aircraft and components.

AMC1 145.A.10 Scope

1. Line Maintenance should be understood as any maintenance that is carried out before flight to ensure that the aircraft is fit for the intended flight.

   (a) 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.
   - Scheduled maintenance and/or checks including visual inspections that will detect obvious unsatisfactory conditions/discrepancies but do not require extensive in depth inspection. It may also include internal structure, systems and power plant items which are visible through quick opening access panels/doors.
   - Minor repairs and modifications which do not require extensive disassembly and can be accomplished by simple means.

   (b) For temporary or occasional cases (ADs, SBs) the ~~Quality~~ compliance monitoring manager may accept base maintenance tasks to be performed by a line maintenance organisation after an appropriate risk assessment is carried out provided all requirements are fulfilled as defined by the competent authority.

   (c) Maintenance tasks falling outside these criteria are considered to be *Base Maintenance.*

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

2. Where the organisation uses facilities both inside and outside the Member State such as satellite facilities, subcontractors, line stations, etc., such facilities may be

included in the approval without being identified on the approval certificate subject to the maintenance organisation exposition identifying the facilities and containing procedures to control such facilities and the competent authority being satisfied that they form an integral part of the approved maintenance organisation.

~~GM 145.A.10 Scope~~

~~This Guidance Material (GM) provides guidance on how the smallest organisations satisfy the intent of Part-145:~~

~~1. By inference, the smallest maintenance organisation would only be involved in a limited number of light aircraft, or aircraft components, used for commercial air transport. It is therefore a matter of scale; light aircraft do not demand the same level of resources, facilities or complex maintenance procedures as the large organisation.~~

~~2. It is recognised that a Part-145 approval may be required by two quite different types of small organisations, the first being the light aircraft maintenance hangar, the second being the component maintenance workshop, e.g. small piston engines, radio equipment, etc.~~

~~3. Where only one person is employed (in fact having the certifying function and others), these organisations approved under Part-145 may use the alternatives provided in point 3.1 limited to the following:~~

~~**Class A2** Base and Line maintenance of aeroplanes of 5700 kg and below (piston engines only).~~

~~**Class A3** Base and Line maintenance of single-engined helicopters of less than 3175 kg.~~

~~**Class A4** Aircraft other than A1, A2 and A3~~

~~**Class B2** Piston engines with maximum output of less than 450 HP.~~

~~**Class C** Components.~~

~~**Class D1** Non destructive Testing.~~

~~3.1 145.A.30 (b): The minimum requirement is for one full-time person who meets the Part-66 requirements for certifying staff and holds the position of 'accountable manager, maintenance engineer and is also certifying staff'. No other person may issue a certificate of release to service and therefore if absent, no maintenance may be released during such absence.~~

~~3.1.1 The quality monitoring function of 145.A.65(c) may be contracted to an appropriate organisation approved under Part-145 or to a person with appropriate technical knowledge and extensive experience of quality audits employed on a part-time basis, with the agreement of the competent authority.~~

~~Note: Full-time for the purpose of Part-145 means not less than 35 hrs per week except during vacation periods.~~

~~3.1.2 145.A.35. In the case of an approval based on one person using a subcontracted quality monitoring arrangement, the requirement for a record of certifying staff is satisfied by the submission to and acceptance by the competent authority of the EASA Form 4. With only one person the requirement for a separate record of authorisation is unnecessary because the EASA Form 3 approval schedule defines the authorisation. An appropriate statement, to reflect this situation, should be included in the exposition.~~

~~3.1.3 145.A.65(c). It is the responsibility of the contracted quality monitoring organisation or person to make a minimum of 2 visits per 12 months and it is the responsibility of this organisation or person to carry out such~~

~~monitoring on the basis of 1 pre-announced visit and 1 not announced visit to the organisation.~~

~~It is the responsibility of the organisation to comply with the findings of the contracted quality monitoring organisation or the person.~~

~~CAUTION: it should be understood that if the contracted organisation or the above mentioned person loses or gives up its approval, then the organisation's approval will be suspended.~~

~~4. Recommended operating procedure for a Part-145 approved maintenance organisation based upon up to 10 persons involved in maintenance.~~

~~4.1 145.A.30 (b): The normal minimum requirement is for the employment on a full-time basis of two persons who meet the competent authorities' requirements for certifying staff, whereby one holds the position of 'maintenance engineer' and the other holds the position of 'quality audit engineer'.~~

~~Either person can assume the responsibilities of the accountable manager providing that they can comply in full with the applicable elements of 145.A.30(a), but the 'maintenance engineer' should be the certifying person to retain the independence of the 'quality audit engineer' to carry out audits. Nothing prevents either engineer from undertaking maintenance tasks providing that the 'maintenance engineer' issues the certificate of release to service.~~

~~The 'quality audit engineer' should have similar qualifications and status to the 'maintenance engineer' for reasons of credibility, unless he/she has a proven track-record in aircraft quality assurance, in which case some reduction in the extent of maintenance qualifications may be permitted.~~

~~In cases where the competent authority agrees that it is not practical for the organisation to nominate a postholder for the quality monitoring function, this function may be contracted in accordance to paragraph 3.1.1.~~

145.A.15 Application for an organisation certificate

~~An application for issue or change of a continuing airworthiness management organisation approval shall be made on a form and in a manner established by the competent authority.~~

(a) The application for an organisation certificate or an amendment to an existing certificate shall be made in a form and manner established by the competent authority, taking into account the applicable requirements of this Regulation.

(b) Applicants for an initial certificate shall provide the competent authority with documentation demonstrating how they will comply with the requirements established in this Regulation. Such documentation shall include a procedure describing how changes not requiring prior approval will be managed and notified to the competent authority.

AMC1 145.A.20 Terms of approval

The following table identifies the ATA Specification 2200 chapter for the category C component rating. If the maintenance manual (or equivalent document) does not follow the ATA Chapters, the corresponding subjects still apply to the applicable C rating.

CLASS	RATING	ATA CHAPTERS

COMPONENTS OTHER THAN COMPLETE ENGINES OR APUs	C1 Air Cond & Press	21
	C2 Auto Flight	22
	C3 Comms and Nav	23 - 34
	C4 Doors - Hatches	52
	C5 Electrical Power & Lights	24 – 33 - 85
	C6 Equipment	25 - 38 - 44 – 45 - 50
	C7 Engine – APU	49 - 71 - 72 - 73 - 74 - 75 - 76 - 77 - 78 - 79 - 80 - 81 - 82 - 83
	C8 Flight Controls	27 - 55 - 57.40 - 57.50 - 57.60 - 57.70
	C9 Fuel	28 - 47
	C10 Helicopters - Rotors	62 - 64 - 66 - 67
	C11 Helicopter - Trans	63 - 65
	C12 Hydraulic Power	29
	C13 Indicating/Recording Systems	31 – 42 - 46
	C14 Landing Gear	32
	C15 Oxygen	35
	C16 Propellers	61
	C17 Pneumatic & Vacuum	36 - 37
	C18 Protection ice/rain/fire	26 - 30
	C19 Windows	56
	C20 Structural	53 - 54 - 57.10 - 57.20 - 57.30
	C21 Water Ballast	41
	C22 Propulsion Augmentation	84

145.A.30 Personnel requirements

(a) The organisation shall appoint an accountable manager who has corporate authority for ensuring that all maintenance required by the customer can be financed and carried out to the standard required by this Regulation ~~Part~~. The accountable manager shall:

(1) ensure that all necessary resources are available to accomplish maintenance

in accordance with 145.A.65~~(b)~~ (c) to support the organisation approval;

(2) establish and promote the safety ~~and quality~~ policy specified in 145.A.65(a); and

(3) demonstrate a basic understanding of this Part.

(b) The organisation shall nominate a person or group of persons, whose responsibilities include ensuring that the organisation complies with this Part. Such person(s) shall ultimately be responsible to the accountable manager.

(1) The person or persons nominated shall represent the maintenance management structure of the organisation and be responsible for all maintenance functions specified in this Part.

(2) The person or persons nominated shall be identified and their credentials submitted in a form and manner established by the competent authority.

~~(3)~~ The person or persons nominated shall be able to demonstrate relevant knowledge, background and satisfactory experience related to aircraft or ~~component maintenance and demonstrate a working knowledge of this Part.~~

~~(4) Procedures shall make clear who deputises for any particular person in the case of lengthy absence of the said person.~~

(c) The accountable manager under paragraph (a) shall appoint a person with responsibility for compliance monitoring ~~the quality system~~, including the associated feedback system as required by 145.A.65(~~a~~e)(6). The appointed person shall have direct access to the accountable manager to ensure that the accountable manager is kept properly informed on ~~quality and~~ compliance matters.

(d) The organisation shall have a maintenance man-hour plan showing that the organisation has sufficient staff to plan, perform, supervise, inspect and ~~quality~~ monitor the organisation in accordance with approval. In addition the organisation shall have a procedure to reassess work intended to be carried out when actual staff availability is less than the planned staffing level for any particular work shift or period.

(e) The organisation shall establish and control the competence of personnel involved in any maintenance, management and/or ~~quality~~ audits in accordance with a procedure and to a standard agreed by the competent authority. In addition to the necessary expertise related to the job function, competence must include an understanding of the application of safety management principles and human factors and human performance issues appropriate to that person's function in the organisation.

(f) The organisation shall ensure that personnel who carry out and/or control a ~~continued airworthiness~~ non-destructive test of aircraft structures and/or components are appropriately qualified for the particular non-destructive test in accordance with the European or equivalent Standard recognised by the Agency. Personnel who carry out any other specialised task shall be appropriately qualified in accordance with officially recognised Standards. By derogation to this paragraph those personnel specified in paragraphs (g) and (h)(1) and (h)(2), qualified in category B1 or B3 in accordance with Annex III (Part-66) may carry out and/or control colour contrast dye penetrant tests.

(g) Any organisation maintaining aircraft, except where stated otherwise in point (j), shall in the case of aircraft line maintenance, have appropriate aircraft rated certifying staff qualified as category B1, B2, B3, as appropriate, in accordance with Annex III (Part-66) and point 145.A.35.

In addition such organisations may also use appropriately task trained certifying staff holding the privileges described in points 66.A.20(a)(1) and 66.A.20(a)(3)(ii) and qualified in accordance with Annex III (Part-66) and point 145.A.35 to carry out minor scheduled line maintenance and simple defect rectification. The availability of such certifying staff shall not replace the need for category B1, B2,

B3 certifying staff, as appropriate.

(h) Any organisation maintaining aircraft, except where stated otherwise in paragraph (j) shall:

(1) in the case of base maintenance of large aircraft, have appropriate aircraft type rated certifying staff qualified as category C in accordance with Part-66 and 145.A.35. In addition the organisation shall have sufficient aircraft type rated staff qualified as category B1, B2 as appropriate in accordance with Part-66 and 145.A.35 to support the category C certifying staff.

(i) B1 and B2 support staff shall ensure that all relevant tasks or inspections have been carried out to the required standard before the category C certifying staff issues the certificate of release to service.

(ii) The organisation shall maintain a register of any such B1 and B2 support staff.

(iii) The category C certifying staff shall ensure that compliance with paragraph (i) has been met and that all work required by the customer has been accomplished during the particular base maintenance check or work package, and shall also assess the impact of any work not carried out with a view to either requiring its accomplishment or agreeing with the operator to defer such work to another specified check or time limit.

(2) in the case of base maintenance of aircraft other than large aircraft have either:

(i) appropriate aircraft rated certifying staff qualified as category B1, B2, B3, as appropriate, in accordance with Annex III (Part-66) and point 145.A.35 or,

(ii) appropriate aircraft rated certifying staff qualified in category C assisted by support staff as specified in point 145.A.35(a)(i).

(i) Component certifying staff shall comply with Part-66.

(j) By derogation to paragraphs (g) and (h), in relation to the obligation to comply with Annex III (Part-66), the organisation may use certifying staff qualified in accordance with the following provisions:

(1) For organisation facilities located outside the Community territory certifying staff may be qualified in accordance with the national aviation regulations of the State in which the organisation facility is registered subject to the conditions specified in Appendix IV to this Part.

(2) For line maintenance carried out at a line station of an organisation which is located outside the Community territory, the certifying staff may be qualified in accordance with the national aviation regulations of the State in which the line station is based, subject to the conditions specified in Appendix IV to this Part.

(3) For a repetitive pre-flight airworthiness directive which specifically states that the flight crew may carry out such airworthiness directive, the organisation may issue a limited certification authorisation to the aircraft commander and/or the technical crew member in helicopter emergency medical services (HEMS) or helicopter hoist operations(HHO) ~~flight engineer~~ on the basis of the flight crew licence or qualification as technical crew in accordance with ORO.TC held. However, the organisation shall ensure that sufficient practical training has been carried out to ensure that such aircraft commander or technical crew member ~~flight engineer~~ can accomplish the airworthiness directive to the required standard.

(4) In the case of aircraft operating away from a supported location the organisation may issue a limited certification authorisation to the

commander and/or the technical crew member in HEMS or HHO ~~flight engineer~~ on the basis of the flight crew licence or qualification as technical crew in accordance with ORO.TC held subject to being satisfied that sufficient practical training has been carried out to ensure that the commander or technical crew member ~~flight engineer~~ can accomplish the specified task to the required standard. The provisions of this paragraph shall be detailed in an exposition procedure.

(5) In the following unforeseen cases, where an aircraft is grounded at a location other than the main base where no appropriate certifying staff are available, the organisation contracted to provide maintenance support may issue a one-off certification authorisation:

(i) to one of its employees holding equivalent type authorisations on aircraft of similar technology, construction and systems; or

(ii) to any person with not less than five years maintenance experience and holding a valid ICAO aircraft maintenance licence rated for the aircraft type requiring certification provided there is no organisation appropriately approved under this Part at that location and the contracted organisation obtains and holds on file evidence of the experience and the licence of that person.

All such cases as specified in this subparagraph shall be reported to the competent authority within seven days of the issuance of such certification authorisation. The organisation issuing the one-off authorisation shall ensure that any such maintenance that could affect flight safety is re-checked by an appropriately approved organisation.

AMC1 145.A.30(a) Personnel requirements

With regard to the accountable manager, it is normally intended to mean the chief executive officer of the approved maintenance organisation, who by virtue of position has overall (including in particular financial) responsibility for running the organisation. The accountable manager may be the accountable manager for more than one organisation and is not required to be necessarily knowledgeable on technical matters as the maintenance organisation exposition defines the maintenance standards. When the accountable manager is not the chief executive officer the competent authority will need to be assured that such an accountable manager has direct access to the chief executive officer and has a sufficiency of 'maintenance funding' allocation.

AMC1 145.A.30(b) Personnel requirements

1. Dependent upon the size of the organisation, the Part-145 functions may be subdivided under individual managers or combined in any number of ways.
2. The organisation should have, dependent upon the extent of approval, a base maintenance manager, a line maintenance manager, a workshop manager ~~and~~ a compliance monitoring ~~quality~~ manager, and a safety manager, all of whom should report to the accountable manager except in small Part-145 organisation where any one manager may also be the accountable manager, as determined by the competent authority, he/she may also be the line maintenance manager or the workshop manager.
3. The base maintenance manager is responsible for ensuring that all maintenance required to be carried out in the hangar, plus any defect rectification carried out during base maintenance, is carried out to the design and ~~quality~~ safety standards specified in 145.A.65 (~~b~~ c). The base maintenance manager is also responsible for any corrective action resulting from ~~the quality~~ compliance monitoring of 145.A.65~~(c)~~ (a)(6).
4. The line maintenance manager is responsible for ensuring that all maintenance required to be carried out on the line including line defect rectification is carried

out to the standards specified in ~~145.A.65(b)~~ 145.A.71 and also responsible for any corrective action resulting from ~~the quality~~ compliance monitoring of 145.A.65 ~~(c) (~~a)(6).

5. The workshop manager is responsible for ensuring that all work on aircraft components is carried out to the standards specified in ~~145.A.65(b)~~ 145.A.71 and also responsible for any corrective action resulting from the quality compliance monitoring of 145.A.65 ~~(c) (~~a)(6).

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

~~7~~ 6. Notwithstanding the example sub-paragraphs 2 - ~~6~~ 5 titles, the organisation may adopt any title for the foregoing managerial positions but should identify to the competent authority the titles and persons chosen to carry out these functions.

~~8~~ 7. Where an organisation chooses to appoint managers for all or any combination of the identified Part-145 functions because of the size of the undertaking, it is necessary that these managers report ultimately through either the base maintenance manager or line maintenance manager or workshop manager or ~~quality~~ compliance monitoring manager, as appropriate, to the accountable manager.

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

AMC1 145.A.30(c) Personnel requirements

1. ~~Monitoring the quality system~~ Compliance monitoring includes requesting correction and corrective ~~remedial~~ action as necessary by the accountable manager and the nominated persons referred to in 145.A.30 (b).

2. The role of the compliance monitoring manager is to ensure that the activities of the organisation are monitored for compliance with the applicable regulatory requirements, and any additional requirements as established by the organisation, and that these activities are being carried out properly under the supervision of the nominated persons referred to in 145.A.30 (b).

3. The compliance monitoring manager should be responsible for ensuring that the compliance monitoring programme is properly implemented, maintained, and continually reviewed and improved.

The compliance monitoring manager should:

(a) have direct access to the accountable manager;

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

(c) 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

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

4. In the case of a non-complex organisation, this task may be exercised by the accountable manager provided he/she has demonstrated having the related competence as defined in point 3(c).

5. The safety manager is responsible for the development, administration, and maintenance of effective safety management processes as part of the management system in accordance with 145.A.65.

6. In the case the same person acts as compliance monitoring manager and as safety manager, the accountable manager, with regard to his/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.

AMC1 145.A.30(d) Personnel requirements

Points (6) and (8) are amended as below:

6. The ~~quality monitoring~~ compliance monitoring function man-hours should be sufficient to meet the requirement of 145.A.65~~(c)~~ (a)(6) which means taking into account AMC 2 and AMC3 to 145.A.65 ~~(c)~~ (a)(6). Where ~~quality~~ compliance monitoring staff perform other functions, the time allocated to such functions needs to be taken into account in determining ~~quality~~ compliance monitoring staff numbers.

…

8. Significant deviation from the maintenance man-hour plan should be reported ~~through the departmental manager~~ to the compliance monitoring ~~quality~~ manager, the safety manager and the accountable manager for review. Significant deviation means more than a 25 % shortfall in available man-hours during a calendar month for any one of the functions specified in 145.A.30 (d).

AMC1 145.A.30(e) Personnel requirements

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

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

Competence should be assessed by evaluation of:

- on-the-job performance and/or testing of knowledge by appropriately qualified personnel, and
- records for basic, organisational, and/or product type and differences training, and
- experience records.

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

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

— which level of on-going supervision would be required or whether unsupervised work could be permitted.

— whether there is a need for additional training.

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

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

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

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

2. All staff should be able to demonstrate knowledge of and compliance with the maintenance organisation procedures, as applicable to their duties.
3. All staff should be able to demonstrate an understanding of safety management principles, human factors and human performance issues in relation with their job function and be trained as per AMC 2 145.A.30 (e).
4. To assist in the assessment of competence and to establish the training needs analysis, job descriptions are recommended for each job function in the organisation. Job descriptions should contain sufficient criteria to enable the required competence assessment.
5. Criteria should allow the assessment to establish that, among others (titles might be different in each organisation):
   (a) Managers are able to properly manage ~~the work output,~~ processes, resources and priorities described in their assigned duties and responsibilities in accordance with the safety policy and objectives and in compliance with ~~safe compliant manner in accordance with~~ the applicable requirements ~~regulations~~ and organisation procedures.
   (b) 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.
   (c) Supervisors are able to ensure that all required maintenance tasks are carried out and, where not completed or where it is evident that a particular maintenance task cannot be carried out to the maintenance data, then such problems will be reported to the compliance monitoring manager ~~145.A.30(c) person~~ for appropriate action. In addition, for those supervisors who also carry out maintenance tasks, that they understand such tasks should not be undertaken when incompatible with their management responsibilities.
   (d) Mechanics are able to carry out maintenance tasks to any standard specified in the maintenance data and will notify supervisors of defects or mistakes requiring rectification to re-establish required maintenance standards.
   (e) Specialised services staff are able to carry out specialised maintenance tasks to the standard specified in the maintenance data. They should be able to communicate with supervisors and report accurately when necessary.
   (f) Support staff are able to determine that relevant tasks or inspections have been carried out to the required standard.
   (g) Certifying staff are able to determine when the aircraft or aircraft component is ready for ~~to~~ release to service and when it should not be released to service.
   (h) ~~Quality audit staff~~ Compliance monitoring staff are able to monitor compliance with Part-145 identifying non-compliance in an effective and timely manner so that the organisation may remain in compliance with Part-145.
   (i) Staff having designated safety management responsibilities are familiar with the relevant processes in terms of hazard identification, risk management, and monitoring of safety performance.
   (j) All staff are familiar with the safety policy and the procedures and tools that can be used for internal safety reporting.

Competence assessment should be based upon the procedure specified in GM ~~2~~ 5 to 145.A.30(e).

AMC2 145.A.30(e) Personnel requirements

HUMAN FACTORS

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

(1) Nominated persons (145.A.30(b)), ~~Post-holders~~, managers, supervisors;

(2) Certifying staff, support staff and mechanics;

(3) Technical support personnel such as planners, engineers, technical record staff;

(4) ~~Quality control/assurance~~ Staff involved in compliance monitoring and having designated safety management responsibilities ~~staff~~;

(5) Specialised services staff;

(6) Human factors specialist staff including ~~human factors~~ investigators and trainers;

(7) Logistics and ~~Store department staff,~~ purchasing department staff;

(8) Ground equipment operators.

(b) Initial human factors training should cover all the topics of the training syllabus specified in GM 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 meet the particular nature of work for each function within the organisation. For example:

(1) small organisations not working in shifts may cover in less depth subjects related to teamwork and communication;

(2) planners may cover in more depth the scheduling and planning objective of the syllabus and in less depth the objective of developing skills for shift working.

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

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

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

(d) Human factors training should be delivered by a competent trainer and may be conducted by the maintenance organisation itself, or independent trainers, or any training organisations acceptable to the competent authority.

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

(e) The human factors training procedures should be specified in the maintenance organisation exposition.

AMC5 145.A.30(e) Personnel requirements

TRAINING — PERSONNEL INVOLVED IN COMPLIANCE MONITORING

1. Correct and thorough training is essential to optimise compliance in every organisation. In order to achieve significant outcomes of such training, the organisation should ensure that all personnel understand the objectives as laid down in the organisation's management system documentation.

2. 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.

3. Time should be provided to train all personnel involved in compliance management and for briefing the remainder of the personnel. The allocation of time and resources should be governed by the volume and complexity of the activities concerned.

AMC6 145.A.30(e) Personnel requirements

SAFETY TRAINING

(a) All personnel should receive safety training as appropriate for their safety management related responsibilities. Such training could be classroom-based or computer-based training. Adequate records of all safety training provided should be kept.

(b) Safety training should be delivered by the safety manager or a competent trainer and may be conducted by the maintenance organisation itself, or independent trainers, or any training organisations acceptable to the competent authority.

AMC1 145.A.30(g) Personnel requirements

Point (4) is amended as below:

~~4. The competent authority may accept that in the case of aircraft line maintenance an organisation has only B1, B2 or B3 certifying staff, as appropriate, provided that the competent authority is satisfied that the scope of work, as defined in the Maintenance Organisation Exposition, does not need the availability of all B1, B2 and B3 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~~.

4. In the case of aircraft line maintenance, an organisation may have only B1, B2, or B3 certifying staff, as appropriate, provided that the scope of work, as defined in the Maintenance Organisation Exposition, does not need the availability of all those types of 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(j)(4) Personnel requirements

1. For the issue of a limited certification authorisation the commander or flight engineer should hold either a valid air transport pilots license (ATPL), commercial pilots license (CPL) in accordance with Part-FCL, or authorisation as Technical Crew in accordance with Part-ORO Subpart TC ~~flight engineer (F/EL) licence in accordance with JAR-FCL, or a national equivalent acceptable to the competent authority on the aircraft type.~~ In addition the limited certification authorisation is subject to the maintenance organisation exposition containing procedures to address the personnel requirements of 145.A.30 (e) and associated AMC and guidance material.

   Such procedures should include as a minimum:

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

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

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

   The above procedures should be specified in the maintenance organisation exposition ~~and be accepted by the competent authority~~.

2. Typical tasks that may be certified and/or carried out by the commander holding an ATPL or CPL are minor maintenance or simple checks included in the following list:

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

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

   (c) Role changes e.g. stretcher fit, dual controls, FLIR, doors, photographic equipment, etc.

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

   (e) Any check / replacement involving simple techniques consistent with this AMC and as agreed by the competent authority.

~~2.(ii) Holders of a valid JAR FCL Flight engineers licence, or a national equivalent acceptable to the competent authority, on the aircraft type may only exercise this limited certification authorisation privilege when performing the duties of a flight engineer.~~

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

(a) Replacement of wheel assemblies.

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

(c) Replacement of ovens, boilers and beverage makers.

(d) Replacement of external lights.

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

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

(g) Replacement of static wicks.

(h) Replacement of aircraft main and APU aircraft batteries.

(i) Replacement of in-flight entertainment system components ~~but excluding~~ other than public address.

(j) The de-activation only of sub-systems and aircraft components as permitted by the operator's minimum equipment list where such de-activation is agreed by the competent authority as a simple task.

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

(l) Any other task agreed by the competent authority as a simple task for a particular aircraft type.

~~Any other simple task as agreed by the competent authority for a particular aircraft type only where it is agreed that the task is simple.~~

3. The validity of the authorisation should be limited to ~~have a finite life of~~ twelve months and may be renewed subject to satisfactory recurrent training on the applicable aircraft type.

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

1. For the purposes of this sub-paragraph 'unforeseen' means that the aircraft grounding could not reasonably have been predicted by the operator because the defect was unexpected due to being part of a hitherto reliable system.
2. A one-off authorisation should only be considered for issue under the responsibility of the compliance monitoring manager ~~by the quality department~~ of the contracted organisation after it has made a reasoned judgement that such a requirement is appropriate under the circumstances and at the same time maintaining the required airworthiness standards. The organisation's compliance monitoring manager ~~quality department~~ will need to assess each situation individually prior to the issuance of a one-off authorisation and may request the safety manager to perform a safety risk assessment.
3. A one-off authorisation should not be issued where the level of certification required could exceed the knowledge and experience level of the person it is issued to. In all cases, due consideration should be given to the complexity of the work involved and the availability of required tooling and/or test equipment needed to complete the work.

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

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

1. Flight crew should communicate full details of the defect to the ~~operator's supporting~~ maintenance organisation. If necessary, the ~~supporting~~ maintenance organisation will then request the use of a one-off authorisation from the ~~quality department~~ compliance monitoring manager.
2. When issuing a one-off authorisation, the compliance monitoring manager, in consultation with the safety manager or person having designated safety management responsibilities, ~~quality department of the organisation~~ should verify that:

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

   (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, communicated to the one-off authorisation holder.

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

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

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

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

GM1 145.A.30(c) . Personnel requirements

RESPONSIBILITY FOR ENSURING COMPLIANCE

The compliance monitoring function itself is one of the elements to 'ensure' compliance with the applicable requirements.

This means that an EASA Form 4 should be provided for the person referred to in 145.A.30 (c). It also means that the compliance monitoring function itself should be subject to monitoring of compliance in accordance with 145.A.65 (a)(6).

GM1 145.A.30(e) Personnel requirements

TRAINING SYLLABUS FOR INITIAL HUMAN FACTORS TRAINING

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

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

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

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

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

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

1 General/Introduction to human factors

1.1 Need to address human factors

1.2 Statistics

1.3 Incidents

2 Safety Culture/Organisational factors

2.1 Just Culture

- 2.2 Reporting culture
- 2.3 Informed culture
- 2.4 Flexible culture/learning culture
- 2.5 Safety Risk Management

3 Human ~~Error~~ error

- 3.1 Error models and theories
- 3.2 Types of errors in maintenance tasks
- 3.3 Violations
- 3.4 Implications of errors
- 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 and fatigue management
- 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 Hazards in the workplace
- 5.12 Lack of manpower

5.13 Distractions and interruptions

6 Procedures, information, tools and practices

6.1 Visual Inspection

6.2 Work logging and recording

6.3 Procedure - practice/mismatch/norms

6.4 Technical documentation - access and quality

7 Communication

7.1 Shift/Task handover

7.2 Dissemination of information

7.3 Cultural differences

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 Error provoking behaviour

9.3 Assertiveness

10 Organisation's HF program

10.1 Safety risk assessment

10.2 Confidential internal reporting scheme

10.3 Reporting errors and hazards

10.4 Safety policy as related to non-punitive reporting and just culture ~~Disciplinary policy~~

10.5 Occurrence ~~Error~~ investigation process

10.6 Action to address problems

10.7 Feedback

GM2 145.A.30(e) Personnel requirements

HUMAN FACTORS TRAINER

A competent Human Factors trainer should meet the following criteria:

1. attended training that is at least equivalent to the EASA Part 145 Maintenance Human Factors Initial training syllabus defined in GM 1 145.A.30(e);
2. received instruction in training techniques, and training development compatible with the skills to influence attitudes and behaviours;
3. has worked for a minimum of three years within the aviation industry, or possesses a suitable academic background;
4. has an appropriate level of understanding of Human Factors in the maintenance environment in relation to the organisation's HF programme (module 10 of GM 1 145.A.30(e)).

GM3 145.A.30(e) Personnel requirements

DEFINTIONS

1. 'Human factors' is anything that affects human performance which means principles which apply to aeronautical design, certification, training, operations, and maintenance and which seek safe interface between the human and other system components by proper consideration of human performance.
2. 'Human performance' means human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.

GM4 145.A.30(e) Personnel requirements

SAFETY TRAINING

1. The scope of safety training and related training programme will differ 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.
2. In recognition of this, training should be provided to management and staff at least:
   (a) during the initial implementation of safety management processes;
   (b) for all new staff or personnel recently appointed for any safety management related task;
   (c) on a regular basis to refresh their knowledge and to understand changes to the management system;
   (d) when changing roles which affects their safety management roles and responsibilities; and
   (e) when performing specialist safety roles, such as: safety manager, safety investigator, focal point for Emergency Response Planning, and Safety Auditor.

GM~~2~~ 5 145.A.30 (e) Personnel requirements ~~Competence assessment procedure~~

COMPETENCE ASSESSMENT PROCEDURE

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

(a) persons responsible for this process;

(b) when the assessment should take place;

(c) credits from previous assessments;

(d) validation of qualification records;

(e) means and methods for the initial assessment;

(f) means and methods for the continuous control of competence including feedback on personnel performance;

(g) competences to be observed during the assessment in relation with each job function;

(h) actions to be taken when assessment is not satisfactory; and

(i) recording of assessment results.

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

	Managers	Planners	Supervisor	Certifying staff and support staff	Mechanics	Specialised Service staff	Compliance monitoring staff	Safety manager and SM key
Knowledge of applicable officially recognised standards						X	X	X
Knowledge of auditing techniques: planning, conducting and reporting							X	X
Knowledge of human factors, human performance and limitations	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 Part-M, Part-145 and any other relevant regulations	X	X	X	X			X	X
Knowledge of relevant parts of the maintenance organisation exposition and procedures	X	X	X	X	X	X	X	X
Knowledge of occurrence reporting systems (mandatory and internal) and understanding of the importance of reporting occurrences, incorrect maintenance data and existing or potential defects		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 Safety Management Systems and Just Culture	X	X	X	X	X	X	X	X
Knowledge on CDCCL when relevant	X	X	X	X	X	X	X	
Knowledge on EWIS when relevant	X	X	X	X	X	X	X	
Understanding of professional integrity, behaviour and attitude towards safety	X	X	X	X	X	X	X	X
Understanding of conditions for ensuring continuing airworthiness of aircraft and components				X			X	
Understanding of his/her own human performance and limitations	X	X	X	X	X	X	X	
Understanding of personnel authorisations and limitations	X	X	X	X	X	X	X	
Understanding critical task		X	X	X	X		X	X
Ability to compile and control completed work		X	X	X				

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

	Managers	Planners	Supervisor	Certifying staff and support staff	Mechanics	Specialised Service staff	Compliance monitoring staff	Safety manager and SM key
planning skills								
Teamwork, decision-making and leadership skills	X		X				X	X
Ability to encourage a positive safety culture and apply a just culture	X		X				X	X

GM ~~36~~ 145.A.30 (e) Personnel requirements ~~Competence assessment procedure~~

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 be considered during the competence assessment of the individual in another organisation.

Aviation Maintenance personnel experience credential

Name Given name
Address

Telephone E-mail

Independent worker ☐
Trade Group: airframe ☐ engine ☐ electric ☐ avionics ☐ other (specify) ☐……

Employer's details (when applicable)
Name
Address

Telephone

Maintenance organisation details
Name
Address

Telephone
Approval Number
Period of employment From: To:

Domain of employment

☐ Planning	☐ Engineering	☐ Technical records
☐ ~~Store~~ Logistics department	☐ Purchasing	

Mechanics/Technician

☐ Line Maintenance	☐ Base Maintenance	☐ Component Maintenance
☐ Servicing	☐ Removal/installation	☐ Testing/inspection
☐ Scheduled Maintenance	☐ Inspection	☐ Repair
☐ Trouble-shooting	☐ Trouble-shooting	☐ Overhaul
	☐ Repair	☐ Re-treatment
		☐ Reassembly
A/C type	A/C type	Component type

Certifying Staff and support staff

☐ Cat. A	☐ Cat. B1	☐ Cat. B2	☐ Cat. C	☐ Component ☐ Other (e.g NDT)
A/C Type	A/C Type	A/C Type	A/C Type	Component Type Specify

Certification privileges: Yes ☐ / No ☐

☐ Specialised services Speciality (*NDT, composites, welding, etc.*):

☐ Skilled personnel Speciality *(sheet metal, structures, wireman, upholstery, etc.)*:

☐ Ground equipment operation
☐ ~~Quality control~~ ☐ ~~Quality assurance~~ ☐ Training
Supervision Compliance monitoring

Total number of check boxes ticked: ☐

Details of employment

Training received from the contracting organisation	
Date	Nature of training

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

GM1 145.A.30(j)(4) Personnel requirements

FLIGHT CREW

1. For the holder of an Airline Transport Pilot Licence (ATPL) or Commercial Pilot Licence (CPL) issued or deemed to have been issued in accordance with Part ~~JAR-~~ FCL ~~1 or JAR-FCL 2~~ the theoretical knowledge and examination subjects are

detailed in FCL.310, FCL.515(b) and FCL.615(b) ~~appendix 1 to JAR FCL 1.470 and appendix 1 to JAR FCL 2.470~~ and include the following subjects:

- Air law
- Airframe/systems/powerplant
- Instruments/electronics
- Mass and balance
- Performance
- Flight planning and monitoring
- Human performance and limitations
- Meteorology
- General ~~N~~navigation
- Radio navigation ~~Navigation~~
- Operational procedures ~~Procedures~~
- Principles of flight ~~Flight~~
- Visual Flight Rules (VFR) Communications
- Instrument Flight Rules (IFR) Communications

~~2.2. For the holder of an JAR FCL F/EL, JAR FCL 4 subpart D gives details on the theoretical and practical knowledge and skill requirements from which appendix 1 to JAR FCL 4.160 Technical Training Course (TTC) details the following subjects:(See JAR FCL 4.160(b)(1))~~ . For technical crew in Helicopter Emergency Medical Services (HEMS) or Helicopter Hoist Operations (HHO) in accordance with Part-ORO Subpart TC, the theoretical and practical knowledge and skills requirements are defined in ORO.TC.110 and the related AMC.

3. The following provide guidance on the training to be provided for holders of an ATPL or CPL and technical crew in accordance with ORO.TC, in view of issuing a limited certification authorisation:

(a) Familiarisation with basic maintenance procedures, to give additional technical background knowledge, especially with respect to the implication of systems malfunctions, and to train the applicant in maintenance related to the Minimum equipment list (MEL).

(b) The theoretical knowledge instruction consisting of ~~s of~~ 100 hours and including ~~es~~ the following elements:

1. Airframe and systems
2. Electrics
3. Power plant and emergency equipment ~~equipement~~
4. Flight instruments and automatic flight control systems

(c) Practical skills training provided by an organisation approved under Part-145 is given which includes 35 hours practical experience in the following subjects:

1. Fuselage and flight controls,
2. Engines,
3. Instruments,
4. Landing gear and brakes,
5. Cabin/cockpit/emergency equipment,
6. De-icing/anti-icing related maintenance activities;

7. Ground handling and servicing,

8. Certificate of completion.

(d) Following successful completion of the technical training, the training organisation carrying out the theoretical knowledge instruction and/or the practical skill training should provide the applicant with a certificate of satisfactory completion of the course, or part thereof.

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

1. Continuation training is a two way process to ensure that certifying staff remain current in terms of procedures, human factors and technical knowledge and that the organisation receives feedback on the adequacy of its procedures and maintenance instructions. Due to the interactive nature of this training, consideration should be given to the possibility that such training has the involvement of the compliance monitoring function and safety management key personnel ~~quality department~~ to ensure that feedback is actioned. Alternatively, there should be a procedure to ensure that feedback is formally passed from the training department to the compliance monitoring function and safety management key personnel ~~quality department~~ to initiate action.
2. Continuation training should cover changes in relevant requirements such as Part-145, changes in organisation procedures and the modification standard of the products being maintained plus human factor issues identified from any internal or external analysis of incidents. It should also address instances where staff failed to follow procedures and the reasons why particular procedures are not always followed. In many cases the continuation training will reinforce the need to follow procedures and ensure that incomplete or incorrect procedures are identified to the company in order that they can be corrected. This does not preclude the possible need to carry out an ~~quality~~ audit of such procedures.
3. Continuation training should be of sufficient duration in each 2 year period to meet the intent of 145.A.35(d) and may be split into a number of separate elements. 145.A.35(d) requires such training to keep certifying staff updated in terms of relevant technology, procedures and human factors issues which means it is one part of ensuring compliance ~~quality~~. Therefore sufficient duration should be related to relevant ~~quality~~ audit findings and other internal / external sources of information available to the organisation on human errors in maintenance. This means that in the case of an organisation that maintains aircraft with few relevant ~~quality~~ audit findings, continuation training could be limited to days rather than weeks, whereas a similar organisation with a number of relevant ~~quality~~ audit findings, such training may take several weeks. For an organisation that maintains aircraft components, the duration of continuation training would follow the same philosophy but should be scaled down to reflect the more limited nature of the activity. For example certifying staff who release hydraulic pumps may only require a few hours of continuation training whereas those who release turbine engine may only require a few days of such training. The content of continuation training should be related to relevant ~~quality~~ audit findings, hazards and related safety risks identified. It ~~and it~~ is recommended that such training is reviewed at least once in every 24 month period.
4. The method of training is intended to be a flexible process and could, for example, include a Part-147 continuation training course, aeronautical college courses, internal short duration courses, seminars, etc. The elements, general content and length of such training should be specified in the maintenance organisation exposition unless such training is undertaken by an organisation approved under Part-147 when such details may be specified under the approval and cross referenced in the maintenance organisation exposition.

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

1. The following minimum information as applicable should be kept on record in respect of each certifying staff and support staff:
   (a) Name
   (b) Date of Birth
   (c) Basic Training
   (d) Type Training
   (e) Continuation Training
   (f) Experience
   (g) Qualifications relevant to the authorisation.
   (h) Scope of the authorisation
   (i) Date of first issue of the authorisation
   (j) If appropriate — expiry date of the authorisation
   (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 ~~quality department~~. This does not mean that the compliance monitoring manager ~~quality department~~ should run the record system.
3. Persons authorised to access the system should be maintained at a minimum to ensure that records cannot be altered in an unauthorised manner or that such confidential records become accessible to unauthorised persons.
4. The competent authority is an authorised person when investigating the records system for initial and continued approval or when the competent authority has cause to doubt the competence of a particular person.

145.A.42 Acceptance of components

(a) No component may be fitted unless it is in a satisfactory condition, has been appropriately released to service on an EASA Form 1 or equivalent, and is marked in accordance with Subpart Q of the Annex (Part-21) to Commission Regulation (EC) No 748/2012, unless otherwise specified there, or in this Regulation.

(b) All components shall be classified and appropriately segregated into the following categories:
   1. Components which are in a satisfactory condition, released on an EASA Form 1 or equivalent and marked in accordance with Subpart Q of the Annex (Part-21) to Commission Regulation (EC) No 748/2012 ~~1702/2003.~~
   2. Unserviceable components which shall be maintained in accordance with this section.
   3. Unsalvageable components which are classified in accordance with point 145.A.42~~(d)~~ (e).
   4. Standard parts used on an aircraft, engine, propeller or other aircraft component when specified in the manufacturer's illustrated parts catalogue and/or the maintenance data.
   5. Material both raw and consumable used in the course of maintenance when the organisation is satisfied that the material meets the required specification and has appropriate traceability. All material must be accompanied by documentation clearly relating to the particular material and

containing a conformity to specification statement plus both the manufacturing and supplier source.

6. Components referred to in point 21A.307(c) of the Annex (Part-21) to Commission Regulation (EC) No 748/2012~~1702/2003.~~.

(i) Prior to installation of a component, the organisation shall ensure that the particular component is eligible to be fitted when different modification and/or airworthiness directive standards may be applicable.

(ii) The organisation may fabricate a restricted range of parts to be used in the course of undergoing work within its own facilities provided procedures are identified in the exposition.

(iii) Components which have reached their certified life limit or contain a non-repairable defect shall be classified as unsalvageable and shall not be permitted to re-enter the component supply system unless certified life limits have been extended or a repair solution has been approved according to Annex (Part-21) to Commission Regulation (EC) No 748/2012 Part-21.

(iv) Components referred to in point 21A.307(c) of the Annex (Part-21) to Commission Regulation (EC) No 748/2012 ~~1702/2003~~shall only be installed if considered eligible for installation by the aircraft owner in its own aircraft.

(v) Standard parts shall only be fitted to an aircraft or a component when the maintenance data specifies the particular standard part. Standard parts shall only be fitted when accompanied by evidence of conformity traceable to the applicable standard.

(vi) Material being either raw material or consumable material shall only be used on an aircraft or a component when the aircraft or component manufacturer states so in relevant maintenance data or as specified in this Part. Such material shall only be used when the material meets the required specification and has appropriate traceability. All material must be accompanied by documentation clearly relating to the particular material and containing a conformity to specification statement plus both the manufacturing and supplier source.

AMC1 145.A.42(a) Acceptance of components

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

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

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

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

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

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

(4) verification that the component has all plugs and caps appropriately installed to prevent damage or internal contamination. Tape should not be used to cover electrical connections or fluid fittings/openings because adhesive residues can insulate electrical connections and contaminate hydraulic or

fuel units.

GM1 145.A.42(a) Acceptance of components

The purpose of the EASA Form 1 is to release components after manufacture, to release maintenance work carried out on such components under the approval of a competent authority, and to allow components removed from one aircraft/component to be fitted to another aircraft/ component.

AMC1 145.A.42~~(a)~~(b) Acceptance of components

1. A document equivalent to an EASA Form 1 may be:
   (a) a release document issued by an organisation under the terms of a bilateral agreement signed by the European Community;
   (b) a release document issued by an organisation approved under the terms of a JAA bilateral agreement until superseded by the corresponding agreement signed by the European Community;
   (c) a JAA Form One issued prior to 28 November 2004 by a JAR 145 organisation approved by a JAA Full Member State;
   (d) in the case of new aircraft components that were released from manufacturing prior to the Part-21 compliance date the component should be accompanied by a JAA Form One issued by a JAR 21 organisation approved by a JAA Full Member Authority and within the JAA mutual recognition system;
   (e) a JAA Form One issued prior to 28 September 2005 by a production organisation approved by a competent authority in accordance with its national regulations.

~~2. For acceptance of standard parts, raw material and consumable material, refer to AMC M.A.501(c) and AMC M.A.501 (d).~~

2. Any item in storage without an EASA Form 1 or equivalent cannot be installed on aircraft registered in a Member State unless an EASA Form 1 is issued for such item by an appropriately approved maintenance organisation in accordance with AMC2 145.A.50(d)

AMC1 145.A.42~~(b)~~(c) Acceptance of components

No changes have been made in the text of the AMC.

AMC1 145.A.42~~(c)~~(d) Acceptance of components

No changes have been made in the text of the AMC.

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

~~1. The following types of components should typically be classified as unsalvageable:~~
~~(a) Components with non-repairable defects, whether visible or not to the naked eye;~~

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

~~(c) Components subjected to unacceptable modification or rework that is irreversible;~~

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

~~(e) Components that cannot be returned to airworthy condition due to exposure to extreme forces, heat or adverse environment;~~

~~(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 can not be retrieved.~~

~~2. It is common practice for possessors of aircraft components to dispose of unsalvageable components by selling, discarding, or transferring such items. In some instances, these items have reappeared for sale and in the active parts inventories of the aviation community. Misrepresentation of the status of components and the practice of making such items appear serviceable have resulted in the use of unsalvageable nonconforming components. Therefore organisations disposing of unsalvageable aircraft components should consider the possibility of such components later being misrepresented and sold as serviceable components. Caution should be exercised to ensure that unsalvageable components are disposed of in a manner that does not allow them to be returned to service.~~

AMC1 145.A.42(g) Acceptance of components

STANDARD PARTS

(a) To designate a part as a standard part, the TC holder may issue a standard parts manual accepted by the competent authority of the original TC holder, or may make reference in the parts catalogue to a national/international specification (such as a standard diode/capacitor, etc.) not being an aviation only specification for the particular part.

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

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

GM1 145.A.42(g) Acceptance of components

(a) Standard parts are:

(1) parts manufactured in complete compliance with an established industry, Agency, competent authority, or other Government specification which includes design, manufacturing, test and acceptance criteria, and uniform identification requirements. The specification should include all information 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.

(2) for sailplanes and powered sailplanes, non-required instruments and/or equipment certified under the provision of CS 22.1301(b), if those instruments or equipment, when installed, functioning, functioning improperly, or not functioning at all, do not in themselves, or by their effect upon the sailplane and its operation, constitute a safety hazard.

(b) 'Required' in the term 'non-required' as used above means required by the applicable airworthiness code (CS 22.1303, 22.1305, and 22.1307) or required by the relevant operating regulations and the applicable Rules of the Air or as required by Air Traffic Management (e.g. a transponder in certain controlled airspace). Examples of equipment which can be considered standard parts are electrical variometers, bank/slip indicators ball type, total energy probes, capacity bottles (for variometers), final glide calculators, navigation computers, data logger/barograph/turnpoint camera, bug-wipers, and anti-collision systems.

(c) Equipment, which must be approved in accordance with the airworthiness code, must comply with the applicable ETSO or equivalent, and is not considered a standard part (e.g. oxygen equipment).

AMC1 145.A.42(h) Acceptance of components

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

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

(c) EASA Form 1 or equivalent should not be issued for such material, 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 Agency or the competent authority has agreed otherwise.

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

GM1 145.A.42(h) Acceptance of components

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

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

145.A.43 Control of unserviceable components

(a) A component shall be considered unserviceable in any one of the following circumstances:

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

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

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

(4) evidence of defects or malfunctions; and

(5) involvement in an incident or accident likely to affect its serviceability.

(b) Unserviceable components shall be identified and stored in a secure location under the control of the maintenance organisation until a decision is made on the future status of such component. Nevertheless, for aircraft not used in commercial air transport other than large aircraft, the organisation that declared the component unserviceable may transfer its custody after identifying it as unserviceable, to the aircraft owner provided that such transfer is reflected in the aircraft logbook, or engine logbook, or component logbook.

(c) In the case of unsalvageable components the organisation shall :

(1) retain such component in the paragraph (b) location, or;

(2) arrange for the component to be mutilated in a manner that ensures that it is beyond economic salvage or repair before relinquishing responsibility for such component.

(d) Notwithstanding paragraph (c), the organisation may transfer responsibility of components classified as unsalvageable to an organisation for training or research without mutilation.

AMC1 145.A.43(b) Control of unserviceable components

(a) The organisation should ensure proper identification of any unserviceable components.

(b) The unserviceable status of the component should be clearly declared on a tag together with the component identification data and any information useful to define actions necessary to be taken. Such information should state, as applicable, in-service times, maintenance status, preservation status, failures, defects or malfunctions reported, or detected exposure to adverse environmental conditions if the component has been involved in or affected by an accident/incident. Means should be provided to prevent unwanted separation of this tag from the component.

(c) 'A secure location under the control of an approved maintenance organisation' means a secure location for which security is the responsibility of the approved maintenance organisation. This may include facilities established by the organisation at locations different from the main maintenance facilities. These locations should be identified in the relevant procedures of the organisation.

AMC1 145.A.~~42~~ 43(c) Control of unserviceable ~~Acceptance of~~ components

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

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

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

(c) Components subjected to unacceptable modification or rework that is irreversible;

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

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

(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.

2. It is common practice for owners ~~possessors~~ of aircraft components to dispose of unsalvageable components by selling, discarding, or transferring such items. In some instances, these items have reappeared for sale and in the active parts inventories of the aviation community. Misrepresentation of the status of components and the practice of making such items appear serviceable have resulted in the use of unsalvageable nonconforming components. Therefore organisations disposing of unsalvageable aircraft components should consider the possibility of such components later being misrepresented and sold as serviceable components. Caution should be exercised to ensure that unsalvageable components are disposed of in a manner that does not allow them to be returned to service.

AMC1 145.A.43(c)(2) Control of unserviceable components

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

(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 competent authority or the Agency on a case by case basis.

(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 tag or markings;

(5) drilling small holes; and

(6) sawing in two pieces only.

(d) Since manufacturers producing approved aircraft components should maintain records of serial numbers for 'retired', certified, life-limited, or other critical components, the organisation that mutilates a component should provide the original manufacturer with the data plate and/or serial number and final disposition of the component.

AMC1 145.A.43(d) Control of unserviceable components

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

(a) Permanently marking or stamping the component, as 'NOT SERVICEABLE.' (Ink stamping is not an acceptable method);

(b) Removing original part number identification;

(c) Removing data plate identification;

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

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

NOTE: Unsalvageable components should not be released to any person or organisation that is known to return unsalvageable components back into the aviation supply system, due to the potential safety threat.

AMC1 145.A.45(d) Maintenance data

The referenced procedure should address the need for a practical demonstration by the mechanic to the compliance monitoring manager ~~quality personnel~~ of the proposed modified maintenance instruction. Depending on the nature of the modification the safety manager should perform a safety risk assessment. When satisfied, the compliance monitoring manager ~~quality personnel~~ should approve the modified maintenance instruction and ensure that the type certificate or supplementary type certificate holder 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 type certificate / supplementary type certificate holders original intent can be carried out in a more practical or more efficient manner.

(b) Where the type certificate / supplementary type certificate holders original intent cannot be achieved by following the maintenance instructions. For example, where a component cannot be replaced following the original maintenance instructions.

(c) For the use of alternative tools / equipment.

Important Note: Critical Design Configuration Control Limitations (CDCCL) are airworthiness limitations. Any modification of the maintenance instructions linked to CDCCL constitutes an aircraft modification that should be approved in accordance with Part-21.

AMC1 145.A.47(b) Production planning

FATIGUE RISK MANAGEMENT

(a) In order to manage the fatigue related risk of personnel, as an aviation hazard, the organisation should:

(1) as part of its safety policy develop and maintain a policy for the management of fatigue related risk and define the related procedures;

(2) define and use a work schedule scheme with maximum work and minimum rest hours not exceeding the limitations laid down in the Directive

2003/88/EC[10].

Where temporary derogations and opt-outs to Directive 2003/88/EC are agreed between the organisation and its personnel, the organisation should conduct and document a risk assessment, and take the necessary actions to mitigate the applicable risks;

(3) ensure existing reporting systems enable the identification of fatigue related hazards;

(4) assess and manage the risks of such fatigue related hazard reports in accordance with the organisation's safety risk management procedures in accordance with AMC1 145.A.65(a)(3), and monitor the effectiveness of related risk mitigation actions implemented; and

(5) provide training on the management of fatigue.

(b) By derogation from point (a)(2) above, when the organisation does not apply the maximum work and minimum rest hours laid down in the Directive 2003/88/EC[11], it should establish as part of its management system a fatigue risk management scheme in accordance with AMC2 145.A.65(a)(3) acceptable to the competent authority.

AMC2 145.A.47(b) Production planning

DUTY TIME SCHEDULE

(a) The duty time schedule should address, at a minimum, the following topics:

(1) Maximum scheduled hours/day;

(2) Maximum hours with overtime;

(3) Maximum hours/month;

(4) Minimum rest between shifts (based on shift length); and

(5) Minimum uninterrupted rest hours per week.

All of the above must consider time of day work shift.

(b) Reasonable work hour limits should not be exceeded merely for management convenience even when staff is willing to work extended hours. When maximum work hours are exceeded, the organisation and the individual staff member should have a written plan on how the fatigue risk will be mitigated. This may include:

(1) additional supervision and independent inspection;

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

(3) use of additional rest breaks; and

(4) permission to nap in accordance with guidelines approved by the organisation.

~~AMC~~ GM1 145.A.47(b) Production planning

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

[10] *OJ L 299, 18.11.2003, p. 9–19*
[11] *OJ L 299, 18.11.2003, p. 9–19*

of when planning work and shifts.

GM2 145.A.47(b) Production planning

FATIGUE RISK MANAGEMENT

Guidance on the Directive 2003/88/EC of the European Parliament and of the Council of 4 November 2003 concerning certain aspects of the organisation of working time (hereafter referred to as 'European Working Time Directive).

Topic	Reference article	Directive text	Guidance material
Free health assessment for night workers prior to their assignment and at regular intervals thereafter	General	It is important that night workers should be entitled to a free health assessment prior to their assignment and thereafter at regular intervals, and that, whenever possible, they should be transferred to day work for which they are suited if they suffer from health problems. (10) The situation of night and shift workers requires that the level of safety and health protection should be adapted to the nature of their work, and that the organisation and functioning of protection and prevention services and resources should be efficient. (11) Specific working conditions may have detrimental effects on the safety and health of workers. The organisation of work according to a certain pattern must take account of the general principle of adapting work to the worker.	Nightshift workers are entitled to a free health assessment prior to commencing on nightshift, and the employer must offer regular health assessments to nightshift workers thereafter. Employees do not have to take the opportunity to have a health assessment, but it must be offered by the employer. These health assessments may be in the form of a questionnaire or, where necessary, a medical assessment. Employers should get help from a suitably qualified health professional when devising and assessing the questionnaire. This could be from a doctor or nurse who understands how night working might affect health.

Topic	Reference article	Directive text	Guidance material
			As with all health assessments, employers must keep a record of: (a) the name of the night worker; (b) when the assessment was offered; (c) when the assessment was carried out; and (d) the results of the assessment. The health assessment should take into account the type of work that will be done, and the restrictions on the worker's working time under the regulations.
Definitions	Article 2	For the purposes of this Directive, the following definitions shall apply: 1. 'working time' means any period during which the worker is working, at the employer's disposal and carrying out his activity or duties, in accordance with national laws and/or practice; 2. 'rest period' means any period which is not working time; 3. 'night time' means any period of not less than seven hours, as defined by national law, and which must include, in any case, the period	

Topic	Reference article	Directive text	Guidance material
		between midnight and 5.00; 4. 'night worker' means: a. on the one hand, any worker, who, during night time, works at least three hours of his daily working time as a normal course; and b. on the other hand, any worker who is likely during night time to work a certain proportion of his annual working time, as defined at the choice of the Member State concerned: (i) by national legislation, following consultation with the two sides of industry; or (ii) by collective agreements or agreements concluded between the two sides of industry at national or regional level; 5. 'shift work' means any method of organising work in shifts whereby workers succeed each other at the same work stations according to a certain pattern, including	

Topic	Reference article	Directive text	Guidance material
		a rotating pattern, and which may be continuous or discontinuous, entailing the need for workers to work at different times over a given period of days or weeks; 6. 'shift worker' means any worker whose work schedule is part of shift work; 7. 'mobile worker' means any worker employed as a member of travelling or flying personnel by an undertaking which operates transport services for passengers or goods by road, air or inland waterway.	
Daily rest	Article 3	minimum period of 11 consecutive hours per 24-hour period	Uninterrupted rest means a minimum rest period of 11 hours should be allowed between the end of shift and the beginning of the next, and this should not be compromised by overtime. The nature of tasks undertaken during the latter portions of work schedules should be considered. Note: The level of risk associated with errors and accidents increases after 8 hours and increases dramatically after working more than 12 hours.
Weekly rest per each seven-day period:	Article 5	minimum uninterrupted rest period of 24 hours + 11 hours in accordance	A worker is entitled to one whole day off a week. Days off can be

Topic	Reference article	Directive text	Guidance material
		with article 3 For a reference period not exceeding 14 days	averaged over a two-week period, meaning workers can take two days off a fortnight. Days off are taken in addition to paid annual leave. Employers must make sure that workers can take their rest, but are not required to make sure they do take their rest.
Average working time for each seven-day period (including overtime)	Article 6	Must not exceed 48 hours Unless the employer has first obtained the workers agreement to overwork Averaged for a reference period not exceeding 17 weeks	Workers cannot be forced to work for more than 48 hours a week on average. Working time includes travelling where it is part of the job, working lunches, and job-related training. Working time does not include travelling between home and work, lunch breaks, evening classes, or day release courses. The average weekly working time is normally calculated over 17 weeks. This can be longer in certain situations (26 weeks) and it can be extended by agreement (up to 52 weeks) Workers can agree to work longer than the 48-hour limit. An agreement must be in writing and signed by the worker. This is generally referred to as an opt-out. It can be for a specified period or an

Topic	Reference article	Directive text	Guidance material
			indefinite period.
Annual leave	Article 7	At least minimum 4 weeks Cannot be replaced by an allowance in lieu	
Night shift (between 24.00 and 05.00)	Article 8	A maximum average of 8 hours of work per 24-hour period Reference period subject to agreement with the trade unions	This is averaged over 17 weeks. (See UK Civil Aviation Publication CAP716 Appendix P[12] for examples of how this can be calculated)
Derogations in the case of activities involving the need for continuity of service or production		possible for airport workers for articles 3; 5; 6; and 8	**Art 3** — 11 hours of consecutive rest in a 24-hour period **Art 5** — 24 hours [+11] of uninterrupted rest for each 7-day period **Art 6** — Average working time in each 7-day period does not exceed 48 hours (in a month period) **Art 8** — Night work not to exceed the average of 8 hours in any 24-hour period
Derogation by collective agreements on condition that equivalent compensation rest periods are granted		possible for articles 3; 5; 6; and 8 and for reference period without exceeding 6 months	

For additional guidance and best practice considering scientific studies, refer to UK Civil Aviation Publication CAP716 Appendix P.

145.A.48 Performance of maintenance

(a) All maintenance shall be performed by qualified personnel, following the methods, techniques, standards, and instructions specified in the 145.A.45 maintenance data.

(b) An independent inspection shall be carried out after any flight safety sensitive maintenance task unless otherwise specified in this Part-145 or agreed by the competent authority.

(c) Only the authorised certifying staff, according to 145.A.35 can decide, using 145.A.45 maintenance data, whether an aircraft defect hazards seriously the flight safety and, therefore, decide when and which rectification action shall be taken before further flight, and which defect rectification can be deferred. However, this does not apply when:

(1) the approved minimum equipment list as mandated by the competent

[12] http://www.caa.co.uk/docs/109/CAP716%20Issue%202%20_Appendices_.pdf

authority is used by the pilot; or

(2) aircraft defects are defined as being acceptable by the competent authority.

(d) After completion of all maintenance, a general verification must be carried out to ensure the aircraft or component is clear of all tools, equipment, and any other extraneous parts and material, and that all access panels removed have been refitted.

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

INDEPENDENT INSPECTIONS

(a) The manufacturer's instructions for continued airworthiness should be followed when determining the need for an independent inspection.

(b) In the absence of maintenance and inspection standards published by organisation responsible for the type design, maintenance tasks that involve the assembly or any disturbance of a control system that, if errors occurred, could result in a failure, malfunction, or defect endangering the safe operation of the aircraft should be considered as flight safety sensitive maintenance tasks needing an independent inspection. A control system is an aircraft system by which the flight path, attitude, or propulsive force of the aircraft is changed, including the flight, engine and propeller controls, the related system controls and the associated operating mechanisms.

(c) Independent inspections should be carried out by at least two persons, to ensure correct assembly, locking and sense of operation. A technical record of the inspections should contain the signatures of both persons before the relevant certificate of release to service is issued.

(1) An independent inspection is an inspection first made by an authorised person signing the maintenance release who assumes full responsibility for the satisfactory completion of the work before being subsequently inspected by a second independent competent person who attests to the satisfactory completion of the work recorded and that no deficiencies have been found.

(2) The second independent competent person is not issuing a maintenance release, therefore, is not required to hold certification privileges. However, they should be suitably qualified to carry out the inspection.

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

(e) In summary, the following maintenance tasks should primarily be considered when inspecting aircraft control systems that have been disturbed:

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

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

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

Consideration should also be given to:

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

(2) information arising from an 'occurrence reporting system'

(f) When checking control systems that have undergone maintenance, the person signing the maintenance release and the person performing the independent check 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 the control system is duplicated to provide redundancy, each system should be checked separately; and

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

AMC ~~No~~ 2 ~~to~~ 145.A.50(d) Certification of maintenance

Point 2.6 is amended as below:

2.6. Used aircraft components removed from a serviceable aircraft

2.6.1. Serviceable aircraft components removed from a Member State registered aircraft may be issued with an EASA 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 by an appropriately qualified person.

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

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

(d) The aircraft record should be researched for any unusual events that could affect the serviceability of the aircraft component such as involvement in accidents, incidents, heavy landings or lightning strikes. Under no circumstances may an EASA 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 ~~effect~~ affect its operation.

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

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

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

(h) Compliance with known applicable airworthiness directives should be established.

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

2.6.2. Serviceable aircraft components removed from a non-Member State registered aircraft may only be issued with an EASA Form 1 under the following conditions:

(a) ~~if~~ the components have been ~~are~~ leased or loaned from an organisation ~~the maintenance organisation~~ approved under Annex I or Annex II of Commission Regulation (EC) No 2042/2003;

(b) the organisation leasing/loaning the components ~~Part-145 who~~ retains full control of the airworthiness status of the components;

(c) the Part-145 organisation issuing the EASA Form 1 has access to the complete airworthiness status of the components, including during the lease/loan.

An EASA Form 1 may be issued and should contain the information as specified in paragraph 2.4 including the aircraft from which the aircraft component was removed.

AMC1 145.A.55 Maintenance records

GENERAL

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

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

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

(d) All computer hardware used to ensure data backup should be stored in a different location from that containing the working data, and in an environment that ensures they remain in good condition. When hardware or software changes take place, special care should be taken that all necessary data continues to be accessible at least through the applicable retention period as defined in this Part.

GM1 145.A.55(a) Maintenance records

~~1.~~ (a) Properly executed and retained records provide owners, operators and maintenance personnel with information essential in controlling unscheduled and scheduled maintenance, and troubleshooting to eliminate the need for re-inspection and rework to establish airworthiness.

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

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

~~3.~~ (c) Reconstruction of lost or destroyed records can be done by reference to other

records which reflect the time in service, research of records maintained by repair facilities and reference to records maintained by individual mechanics, etc. When these things have been done and the record is still incomplete, the owner/operator may make a statement in the new record describing the loss and establishing the time in service based on the research and the best estimate of time in service. The reconstructed records should be submitted to the competent authority for acceptance.

Note: Additional maintenance may be required.

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

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

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

145.A.60 External occurrence reporting

(a) The organisation shall report to the competent authority, the state of registry and the organisation responsible for the design of the aircraft or component any condition of the aircraft or component identified by the organisation that has resulted or may result in an unsafe condition that hazards seriously the flight safety.

~~(b) The organisation shall establish an internal occurrence reporting system as detailed in the exposition to enable the collection and evaluation of such reports, including the assessment and extraction of those occurrences to be reported under paragraph (a). This procedure shall identify adverse trends, corrective actions taken or to be taken by the organisation to address deficiencies and include evaluation of all known relevant information relating to such occurrences and a method to circulate the information as necessary.~~

~~(c)~~ (b) The organisation shall make such reports in a form and manner established by the competent authority ~~Agency~~ and ensure that they contain all pertinent information about the condition and evaluation results known to the organisation.

~~(d)~~ (c) Where the organisation is contracted by a commercial operator to carry out maintenance, the organisation shall also report to the operator any such condition affecting the operator's aircraft or component.

~~(e)~~ (d) The organisation shall produce and submit such reports as soon as practicable but in any case within 72 hours of the organisation identifying the condition to which the report relates unless exceptional circumstances prevent this.

(e) Where relevant, the organisation shall produce a follow-up report to provide details of actions it intends to take to prevent similar occurrences in the future, as soon as these actions have been identified. This report shall be produced in a form and manner established by the competent authority.

AMC1 145.A.60~~(a)~~ External occurrence reporting

AMC 20-8 General Acceptable Means of Compliance for Airworthiness of Products, Parts and Appliances provides further guidance on occurrence reporting.

~~GM~~AMC2 145.A.60~~(a)~~ External occurrence reporting

~~1.~~ (a) Each report should contain at least the following information:

~~(a)~~ (1) Organisation name and approval reference.

~~(b)~~ (2) Information necessary to identify the subject aircraft and / or component.

~~(c)~~ (3) Date and time relative to any life or overhaul limitation in terms of flying hours/cycles/landings, etc., as appropriate.

~~(d)~~ (4) Details of the condition as required by 145.A.60(b).

~~(e)~~ (5) Any other relevant information found during the evaluation or rectification of the condition.

(b) For organisations under the oversight of the Agency, the EASA technical occurrence report form available on the EASA website should be used.

GM1 145.A.60(a) External o ~~O~~ccurrence reporting

The organisation responsible for the design is normally the TC holder of the aircraft, engine or propeller and/or if known the STC holder.

145.A.62 Internal safety reporting scheme

(a) As part of its management system, the organisation shall establish an internal safety reporting scheme as detailed in the exposition, to enable the collection and evaluation of such occurrences to be reported under 145.A.60.

(b) The scheme shall also enable the collection and evaluation of those errors, near-misses, and hazards reported internally that do not fall under point (a).

(c) Through this scheme the organisation shall:

(1) identify and address the factors contributing to incidents in order to reduce the likelihood of such incidents reoccurring;

(2) identify adverse trends, corrective actions taken or to be taken by the organisation to address deficiencies;

(3) ensure evaluation of all known relevant information relating to errors, near-misses and hazards, and a method to circulate the information as necessary; and

(4) ensure immediate action may be taken in case of occurrences that have an impact on the safety of aircraft, or components on which maintenance is performed, or which have already been released.

(d) When a Part-M Subpart G organisation is responsible for the continuing airworthiness management of an aircraft, the organisation shall cooperate with that Part-M Subpart G organisation on occurrence investigations.

AMC1 145.A.~~60(b)~~62 Internal safety reporting scheme ~~Occurrence reporting~~

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

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

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

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

(a) The internal safety reporting scheme should be confidential and enable free and frank reporting of any potentially safety related occurrence, including incidents such as errors or near-misses, safety issues, and hazards identified. This will be facilitated by the establishment of a just culture. An organisation should ensure that personnel are not inappropriately punished for reporting or cooperating with occurrence investigations.

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 and process identified and published;

(3) an investigation process to:

(i) identify those reports which require further investigation; and

(ii) establish all root causes, including any technical, organisational, managerial, or human factors issues, and any other contributing factors relating to the event;

(4) appropriate corrective actions based on investigation findings;

(5) for complex organisations:

(i) investigators selected and trained on a recurrent basis; and

(ii) analysis of the collective data showing contributing factor trends and frequencies; and

(6) where relevant, the operator and the organisation should cooperate on occurrence investigations by exchanging relevant information for improved aviation safety.

(b) The internal safety reporting scheme should:

(1) assure confidentiality to the reporter;

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

(3) feed into the continuation training as defined in the 145.A.30, whilst maintaining appropriate confidentiality;

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

GM1 145.A.62 Internal safety reporting scheme

GENERAL

(a) The overall purpose of the scheme is to use reported information to improve the level of safety performance of the organisation and 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 occurrences, so that any necessary action can be initiated; and

(2) ensure that knowledge of relevant incidents and hazards is disseminated 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 where routine procedures have failed or may fail.

(d) All safety reports judged reportable by the person submitting the report should be retained as the significance of such reports may only become obvious at a later

date.

(e) Typical occurrences to be reported are those where aviation safety was, or could have been endangered, or which could have led to an unsafe condition. If, in the view of the reporter, an occurrence did not endanger aviation safety but, if repeated in different but likely circumstances, would create an unsafe situation that could lead to an accident or serious incident, then a report should be made. What is judged to be reportable on one class of product, part, or appliance may not be the same for another, and the absence or presence of a single factor, organisational, human, or technical, can transform an occurrence into an accident or serious incident.

(f) The collection and analysis of timely, appropriate and accurate data will allow the organisation to react to information received, and apply the necessary action. Depending on the case, such action may entail a recall of components or aircraft which have already been released, in accordance with the organisation's Emergency Response Plan (ERP), for example in the case of tools and equipment found non-conforming to the required standards.

GM2 145.A.62 Internal safety reporting scheme

DEFINITIONS

(c) Near-miss: An occurrence which under slightly different circumstances could have led to an aircraft incident or accident.

An example is when a mechanic on rechecking his/her work at the end of a task realises that a pipe was only connected hand tight.

(d) Error: Non-intentional action or inaction by a person that may lead to deviations from accepted procedures or regulations.

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 to the intervention of some chance agency. The mechanic forgetting to tighten the pipe was an error.

(e) Hazard: A condition that could cause or contribute to an aircraft incident or accident.

Hazards can be related to human performance, the environment, organisational factors (commercial pressure, resource constraints, and culture) or technical factors (design of aircraft, systems, tooling, and equipment).

An example related to human performance is that of complex maintenance performed at time of night with circadian low.

Examples related to the environment are: line maintenance at night, excessive noise, and maintenance outside of hangar with very low temperatures.

Examples of organisational factors are: maintenance work involving multiple contractors/subcontractors, and significant turnover rate regarding maintenance and supervisory staff

Examples related to technical factors are: ambiguous maintenance data, use of alternative tooling different from that recommended in maintenance data, and use of modified maintenance instructions.

(f) Safety Culture: An enduring set of values, norms, attitudes, and practices within an organisation concerned with minimising 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.

(g) Just Culture: A culture in which front line operators or others are not punished for actions, omissions or decisions taken by them that are commensurate with their experience and training, but where gross negligence, wilful violations and destructive acts are not tolerated.

145.A.65 ~~Safety and quality policy, maintenance procedures and quality system~~ Management system

(a) The organisation shall establish, implement, and maintain a management system that includes:

(1) clearly defined lines of responsibility and accountability throughout the organisation, including a direct safety accountability of the accountable manager;

(2) a description of the overall philosophies and principles of the organisation with regard to safety, referred to as the safety policy;

(3) the identification of aviation safety hazards entailed by the activities of the organisation, their evaluation and the management of associated risks, including taking actions to mitigate the risk and verify their effectiveness;

(4) maintaining personnel trained and competent to perform their safety management related duties and tasks;

(5) documentation of all management system key processes and procedures, including a process for making personnel aware of their responsibilities, and the procedure for amending this documentation;

(6) a function to monitor compliance of the organisation with the relevant requirements. Compliance monitoring shall include a feedback system of findings to the person or group of persons specified in 145.A.30(b), and ultimately to the accountable manager to ensure effective implementation of corrective actions as necessary; and

(7) any additional requirements that are prescribed in this Regulation.

~~The organisation shall establish a safety and quality policy for the organisation to be included in the exposition under 145.A.70.~~

(b) The management system shall correspond to the size of the organisation and the nature and complexity of its activities, taking into account the hazards and associated risks inherent in these activities.

(c) Where the organisation holds one or more additional organisation certificates within the scope of Regulation (EC) No 216/2008, the management system may be combined or integrated with that required under the additional certificate(s) held.

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~~The organisation shall establish procedures agreed by the competent authority taking into account human factors and human performance to ensure good maintenance practices and compliance with this Part which shall include a clear work order or contract such that aircraft and components may be released to service in accordance with 145.A.50.~~

~~1. The maintenance procedures under this paragraph apply to 145.A.25 to 145.A.95.~~

~~2. The maintenance procedures established or to be established by the organisation under this paragraph shall cover all aspects of carrying out the maintenance activity, including the provision and control of specialised services and lay down the standards to which the organisation intends to work.~~

~~3. With regard to aircraft line and base maintenance, the organisation shall establish procedures to minimise the risk of multiple errors and capture errors on critical systems, and to ensure that no person is required to carry out and inspect in relation to a maintenance task involving some element of disassembly/reassembly of several components of the same type fitted to more than one system on the same aircraft during a particular maintenance check. However, when only one person is available to carry out these tasks then the organisation's work card or worksheet shall include an additional stage for re-inspection of the work by this person after completion of all the same tasks.~~

~~4. Maintenance procedures shall be established to ensure that damage is assessed and modifications and repairs are carried out using data approved by the Agency or by an approved Part-21 design organisation, as appropriate.~~

~~(c) The organisation shall establish a quality system that includes the following:~~

~~1. Independent audits in order to monitor compliance with required aircraft/aircraft component standards and adequacy of the procedures to ensure that such procedures invoke good maintenance practices and airworthy aircraft/aircraft components. In the smallest organisations the independent audit part of the quality system may be contracted to another organisation approved under this Part or a person with appropriate technical knowledge and proven satisfactory audit experience; and~~

~~2. A quality feedback reporting system to the person or group of persons specified in 145.A.30(b) and ultimately to the accountable manager that ensures proper and timely corrective action is taken in response to reports resulting from the independent audits established to meet paragraph (1).~~

AMC1 145.A.65(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.

(b) The functions of the safety manager should be to:

(1) facilitate hazard identification, risk analysis, and management;

(2) monitor the implementation of actions taken to mitigate risks as listed in the safety action plan;

(3) provide periodic reports on safety performance;

(4) ensure maintenance of safety management documentation;

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

(6) provide advice on safety matters; and

(7) ensure initiation and follow-up of internal occurrence/accident investigations.

(c) 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 be composed of the persons nominated in accordance with 145.A.30(b).

(3) The safety review board should monitor:

(i) 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 safety management processes.

(d) The safety review board should ensure that appropriate resources are allocated to achieve the established safety performance, eventually by recommending the establishment of one or more safety action groups.

(e) The safety manager or any other relevant person may attend, as appropriate, safety review board meetings. He/she may communicate to the accountable manager all information, as necessary, to allow decision making based on safety data.

(f) Notwithstanding points (a) to (e) above, non-complex organisations may opt for the following organisational set-up:

(1) The accountable manager, the compliance monitoring manager, or one of the persons nominated in accordance with 145.A.30(b) may fulfil the role of safety manager;

(2) The accountable manager should establish safety management responsibilities as related to hazard identification, risk assessment and mitigation.

(3) The accountable manager should:

(i) ensure that safety performance is reviewed against the safety policy and objectives;

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

(iii) ensure the effectiveness of the organisation's safety management processes; and

(iv) ensure a unique focal point exists as regards the development, administration and maintenance of the organisation's management system as related to safety.

GM1 145.A.65(a)(1) Management system

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 for the performance of all allocated safety management tasks as defined in AMC1 145.A.65(a)(1) point (b).

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

GM2 145.A.65(a)(1) Management system

SAFETY ACTION GROUP

(a) 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 safety review board.

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

(c) The safety action group should report to, and take strategic direction from the safety review board, and should be comprised of managers, supervisors, and maintenance personnel.

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

(1) monitoring safety performance;

(2) resolving identified risks;

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

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

(e) The safety action group may also be tasked with the review the effectiveness of previous safety actions and safety promotion.

AMC1 145.A.65(a)(2) ~~Safety and quality policy, maintenance procedures and quality system~~ Management system

SAFETY POLICY

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

- ~~Recognise safety as a prime consideration at all times.~~
- ~~Apply Human factors principles.~~
- ~~Encourage personnel to report maintenance related errors/incidents.~~
- ~~Recognise that compliance with procedures, quality standards, safety standards and regulations is the duty of all personnel.~~

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

(a) The safety policy should:

(1) be endorsed by the accountable manager;

(2) reflect organisational commitments regarding safety, and its proactive and systematic management;

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

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

(5) recognise the need for all personnel to cooperate for compliance monitoring and safety investigations.

(b) The safety policy should include a commitment:

(1) to improve towards the highest safety standards;

(2) to comply with all applicable legislation, meet all applicable standards, and consider best practices;

(3) to provide appropriate resources;

(4) to apply human factors principles;

(5) to enforce safety as one primary responsibility of all managers; and

(6) to ensure that personnel are not inappropriately punished for reporting or cooperating with occurrence investigations.

(c) Management should:

(1) continually promote the safety policy to all personnel and demonstrate their commitment to it;

(2) provide necessary human and financial resources for its implementation; and

(3) establish safety objectives and performance standards.

GM1 145.A.65(a)(2) Management system

SAFETY POLICY

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, and become the foundation on which the organisation's management system is built. It serves as a reminder as to 'how we do business here'. The creation of a positive safety culture begins with the issuance of a clear, unequivocal direction.

The safety policy should state that the purpose of internal safety reporting and internal safety investigations is to improve safety, not to apportion blame to individuals.

AMC1 145.A.65(a)(3) Management system

SAFETY MANAGEMENT KEY PROCESSES

(a) Hazard identification processes

(1) Reactive and proactive schemes for hazard identification should be used as the formal means of collecting, recording, analysing, acting on, and generating feedback about hazards and the associated risks that may affect safety.

(2) All reporting systems, including confidential reporting schemes, should include an effective feedback process.

(3) The organisation should, in particular, focus on:

(i) hazards that may be generated from the limitations in human performance; and

(ii) hazards that may stem from the existence of complex, multi-tier, subcontract maintenance and operational arrangements.

(b) Risk management processes

(1) A formal safety risk management process should be developed and maintained that ensures analysis (in terms of likelihood and severity of hazards, and occurrence), assessment (in terms of tolerability), and control (in terms of mitigation) of risks to an acceptable level.

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

(c) Internal occurrence investigation

The scope of internal occurrence investigations should extend beyond the scope of the external occurrence reporting in accordance with 145.A.60.

(d) Safety performance monitoring and measurement

(1) Safety performance monitoring and measurement should be the process by which the organisation's safety performance is verified in comparison to its safety policy and objectives.

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

(i) safety reporting, addressing also the status of compliance with the applicable requirements;

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

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

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

(e) The management of change

The organisation should manage safety risks related to a change. The management of change should be a documented process to identify external and internal change that may have an adverse effect on safety. It should make use of the organisation's existing hazard identification, risk assessment, and mitigation processes.

(f) Continual improvement

The organisation should continually seek to improve its safety performance. Continual improvement should be achieved through:

(1) proactive and reactive evaluations of facilities, equipment, documentation and procedures through safety audits and surveys;

(2) proactive evaluation of individuals' performance to verify the fulfilment of their safety responsibilities;

(3) reactive evaluations in order to verify the effectiveness of the system for control and mitigation of risk; and

(4) an annual review of the safety performance and the effectiveness of the management system.

(g) Emergency response planning

(1) An Emergency Response Plan (ERP) should be established that provides the actions to be taken by the organisation or specified individuals in an emergency. The ERP should reflect the size, nature, and complexity of the organisation's scope of work.

(2) The ERP should ensure:

(i) planned and coordinated action to ensure the risks attributable to a major safety event can be managed and minimised;

(ii) an orderly and safe transition from normal to emergency operations;

(iii) safe continuation of operations or return to normal operations as soon as practicable; and

(iv) coordination with the emergency response plans of other organisations, where appropriate.

AMC2 145.A.65(a)(3) Management system

FATIGUE RISK MANAGEMENT SCHEME

(a) When a Fatigue Risk Management (FRM) scheme is implemented, the organisation should establish, implement, document, and maintain the FRM scheme as an integral part of its management system.

(b) The FRM scheme should:

(1) incorporate scientific principles and knowledge;

(2) manage the operational risk(s) of the organisation arising from fatigue of personnel on an ongoing basis;

(3) ensure that actions necessary to effectively mitigate the organisation's risk(s) arising from fatigue, are implemented promptly;

(4) provide for continuous monitoring and regular assessment of the mitigation of fatigue risks achieved by such actions;

(5) provide for continuous improvement to the overall performance of the FRM scheme; and

(6) be supported by the organisation's just culture policy to ensure confidence in reporting fatigue related hazards.

(c) The FRM scheme should make use of the organisation's general management system processes in terms of hazard identification and safety risk management. It should reflect the size, nature, and complexity of the organisation and its operational working hours.

(d) All personnel involved in maintenance activities under a FRM scheme should receive FRM training to ensure competence commensurate with the roles and responsibilities of management, certifying engineers, and support staff.

(e) Records of all FRM output, including findings from collected data, recommendations, and actions taken, should be maintained in accordance with the organisation's general record keeping procedures.

GM1 145.A.65(a)(3) Management system

SAFETY RISK MANAGEMENT

(a) In very broad terms, the objective of safety risk management is to eliminate risk where practical, or reduce the risk (likelihood/severity) to acceptable levels, and

to manage the remaining risk so as to avoid, or mitigate any possible undesirable outcome. It is, therefore, integral to the development and application of effective safety management.

(b) Safety risk management can be applied at many levels in an organisation. It can be applied at the strategic level and operational levels. The potential for human error, its influences, and sources should be identified and managed through the safety risk management process. Human factors risk management should allow the organisation to determine where it is vulnerable, to human performance limitations.

GM2 145.A.65(a)(3) Management system

SAFETY RISK MANAGEMENT

(a) Whereas the external occurrence reporting scheme to be implemented in accordance with 145.A.60 may provide for reactive hazard identification, the internal safety reporting scheme to be established in accordance with 145.A.62 may provide both for reactive and proactive hazard identification**.**

(b) Other elements of proactive hazard identification may be:

(1) regular assessment of the organisation's existing management system and processes, including thorough internal and external audits; and

(2) an assessment of any changes that may affect the organisation's management system and processes before these become effective.

GM3 145.A.65(a)(3) Management system

SAFETY RISK MANAGEMENT

(a) Purpose

(1) This GM provides one method to help organisations with little or no previous experience in safety risk assessment to get familiar with the concept, and to serve as a reference document for the definition of the related safety management procedures. It should be adapted to the nature and complexity of the organisation. As an organisation gathers experience, the method may be further developed or adapted to suit individual needs.

(2) This GM can be used for different purposes, such as, but not limited to:

(i) the assessment of an organisation's existing management system and processes, and of changes thereto;

(ii) the modification of maintenance instructions in accordance with 145.A.45(d) to ensure that they guarantee an equivalent level of safety;

(iii) the development of alternative means of compliance where risk assessment will support the demonstration that an equivalent safety level can be met;

(iv) the issue of one-off certification authorisations in accordance with 145.A.30(j)(5); and

(v) the selection of suppliers and contracting to organisations not themselves approved to perform the tasks in accordance with 145.A.75(b);

(vi) the establishment of fatigue risk management schemes;

(vii) the identification of safety critical tasks;

(viii) the use of maintenance data provided by an operator or customer; and

(ix) cases where the organisation is allowed to deviate from the requirements due to operational circumstances as detailed in AMC1 145.A.10(1)(b), AMC1 145.A.30(j)(5), and AMC1 145.A.45(d).

(b) Scope

This GM only addresses the assessment of aviation safety risks. This does not mean that financial, legal, or economic aspects do not need to be considered in the risk assessment process. The organisation should be able to identify all significant influences that may impact aviation safety, in particular when determining contributing factors for the analysis of consequences of a hazard, and deciding on risk mitigation measures.

(c) Elements that will influence the safety risk assessment

(1) Communication and consultation

Good communication within the organisation and, where relevant, with external parties (such as customers, partners, or contractors) should help ensure access to all relevant information, and assist in ensuring buy-in from all those that may be affected by the risk assessment conclusions and recommendations. Communication and consultation should take place at all relevant stages of the process.

(2) Regulatory requirements

Regulations are generally developed to control common safety risks that stem from specific or general hazards through prescriptive, technical standards in the areas of technology, training, or task performance. Such hazards controlled by regulations do not need to be further addressed in the organisation's risk assessment unless evidence exists that the regulatory treatment is not sufficient. If the regulation is not specific, has several options, or directly calls for a risk assessment, the hazard obviously should be assessed, and the appropriate treatment implemented.

(3) Organisation's resources

Available resources are relevant with respect both to capacity and competence:

(i) for the risk assessment process itself (see below); and

(ii) for the activity being assessed, (aircraft, equipment, personnel, finances, etc.).

The organisation's current resources in terms of equipment and personnel are normally considered in the risk assessment. One outcome of a risk assessment may be that the operator does not possess the right equipment or personnel for the activity.

(d) Risk acceptance criteria

Risk acceptance criteria should be established based on the organisation's safety policy and objectives. Furthermore, management responsibility for the acceptability of safety risks should be defined as part of the management system. Risk acceptance criteria may be fixed targets, or refer to accepted methods, standards and norms, such as regulations, certification specifications, AMC, or GM. The maximum acceptable risk is in most cases directly or indirectly influenced, or determined by regulations which either specify a target or an acceptable means on how to achieve the minimum required safety level.

Safety risk acceptance criteria should, at least, address the following, as applicable to the organisation's scope of work:

(i) third parties;

(ii) maintenance personnel;

(iii) the natural environment; and

(v) corporate well-being.

As low as reasonably practicable (ALARP) is a commonly used risk acceptance criterion that is not exclusively based on fixed risk level targets, but on a systematic and documented process to reduce safety risk below the maximum allowed by regulations or standards, or when the risk is otherwise considered unacceptable.

ALARP means that the safety risk is managed to a level as low as reasonably practicable whilst at all times staying below the maximum allowed risk. It also implies that the risk level should be monitored, and ALARP considerations applied to any new identified risk mitigation measures to contribute to a further reduction in the risk level. An increase in the risk level at any time should be considered unacceptable even if the safety risk is below the maximum allowed.

Consideration should be given both to the technical feasibility of further reducing the safety risk and the cost. Acceptance criteria with regard to the costs of implementing mitigation measures, and the expected benefits are to be defined by senior management. Showing that the safety risk is ALARP means that any further risk reduction is either impracticable or grossly outweighed by the cost. It should, however, be borne in mind that when an organisation 'accepts' a safety risk, this does not mean that the safety risk has been completely eliminated In the case where a residual safety risk remains, the organisation has accepted that this residual safety risk is sufficiently low that it is outweighed by the benefits.

Related responsibilities and decisions should be documented to justify why no further risk reduction measures have been implemented, and that the risk finally retained is still acceptable.

(e) Risk assessment process steps

(1) Planning

Proper planning should be considered in the case of extensive risk assessments, in particular when assessing an organisation's existing management system and processes, and changes thereto. In such cases, the following may be considered.

The safety risk assessment should be initiated in time for the results to be available before the decisions regarding the activity have to be made. The person responsible for the risk assessment should be made aware of the background, objectives, conditions, and the context for the assessment, and of the risk acceptance criteria in order to be able to determine the resources required.

The following should be documented:

(i) background;

(ii) purpose; and, if relevant,

(iii) needs and expectations of third parties with whom the organisation interacts.

(2) System description

The scope of what should be analysed should be described in terms of system and processes. The system includes the organisational structures, processes and procedures, including people, equipment, and facilities. To enable effective safety risk assessment, the system description should explain the interfaces between the

different processes and components, and the nature of the interactions between them.

The system description should make use of the elements already described in the organisation's MOE and related procedures.

(3) Working group

The person responsible for performing the risk assessment should determine the need for a dedicated working group, or existing safety action group comprised of suitable subject matter experts and personnel that will be involved in the activity.

For complex issues the person(s) involved in the risk assessment should have:

(i) knowledge of, and experience with the use of relevant risk analysis methods;

(ii) knowledge of the scope of work and associated hazards;

(iii) knowledge of the relationship between the activity and relevant internal and external factors;

(iv) knowledge of human factors principles; and

(v) familiarity with all relevant disciplines associated with the activity.

It should be determined to what extent, and how third parties with which the organisation interacts (customers, partners, and suppliers) and other business areas of the organisation should be involved. The safety risk exposure of those interactions should be particularly considered.

(4) Selection of methods and data basis

The objective is to perform a basic analysis to determine, record, assess, and mitigate safety risk. This method may be complemented by other methods when the analysis in hand dictates so. Methods to determine causes and likelihood (e.g. failure mode, effects and criticality analysis (FMECA), influence diagrams) as well as consequences (e.g. event tree analysis, bow-tie diagrams) of hazards may be useful.

Data sources should be assessed for suitability in terms of relevance, currency, representative amount of data and accuracy.

The organisation should ensure that its own experience is available and considered. Data containing relevant safety information from investigation of internal occurrences, accident and incident reports, hazards, near-misses and errors reported internally, if available, would support accurate analysis. Whenever possible, it should be supported with similar data exchanged with other organisations. Analysis of relevant experience data should provide input to a risk assessment.

A risk assessment can often build upon parts of existing risk assessments. For example, for an assessment of the extension of the scope of work to a new type of aircraft, the organisation might already have a risk assessment for similar aircraft types. What would be required for a complete new risk assessment is the assessment of new features.

(5) Hazard identification

Through the hazard identification, a list of all hazards relevant to the activity and the causes that could release them should be established. Consequences will be described based on the hazard information, specifying the place, time, extent, nature, etc., of the event as required.

It must be noted that the absence of past incidents/accidents does not mean absence of risk. It is also important to group similar events to find the underlying hazards.

Potential aids to the identification of possible consequences are the following:

(i) other risk assessments;

(ii) occurrence and accident reports;

(iii) audits/non-compliance reports;

(iv) internal reviews;

(vi) brainstorming; and

(vii) threat assessments.

(6) Analysis of likelihood

Each possible consequence of a hazard should be analysed to establish causes, contributing factors, and existing barriers. Causes, contributing factors, and existing barriers should then be analysed to determine likelihood of occurrence.

The causal analysis should normally be of a descriptive (qualitative) nature but where relevant calculations (quantitative) exist, they should be applied. A qualitative analysis describes the hazards and the chains of events that could lead to the consequence. Quantitative analysis calculates the probability of the consequence.

In the causal analysis of each consequence, human and organisational factors should always be considered for their possible contributing effects. It is normally necessary to consider direct causes ('unsafe acts'), workplace factors, and organisational factors ('error provoking or latent conditions').

The effects of existing defences and barriers that reduce the likelihood of events occurring should be considered and documented, taking into account the following:

(i) certification requirements;

(ii) maintenance procedures;

(iii) technical measures/equipment;

(iv) training; and

(vi) other human and organisational factors.

Likelihood may be expressed using terminology such as 'very low, low, medium, high, and very high'. In such cases, the terms should be explained to indicate their meaning. The meaning of each term could be expressed in words and/or numbers/ranges.

Causal analysis should be done to the level of detail necessary to establish relevant probabilities.

Below are examples of methods that may be used for causal and likelihood analysis:

(i) Failure Mode, Effects and Criticality Analysis (FMECA);

(ii) influence diagrams;

(iii) bow-tie diagrams; and

(iv) brainstorming.

When using such methods, care should be taken not to oversimplify causality.

(7) Analysis of severity

The severity of consequence resulting from the hazards identified should be analysed. The analysis should consider both short term and long term consequences.

Consequences could be grouped such as loss or damage of life/health, environment, material values/assets, functions, and reputation.

The determination of severity should normally be of a descriptive (qualitative) nature. A qualitative analysis describes the chains of events that could follow from the hazard, and its possible consequences. Quantitative analysis could calculate the extent of damage that could be caused.

The effects of existing recovery controls and barriers that influence the consequence itself or the consequence chain should be considered, as applicable:

(i) certification requirements (e.g. fire protection);

(ii) technical measures/equipment;

(iii) training;

(iv) human and organisational factors; and

(vi) emergency preparedness.

Severity may be expressed using terminology like 'negligible, minor, major, hazardous, and catastrophic'. In such cases, the terms should be further explained to indicate their meaning.

(8) Risk assessment

Risk should be classified as a combination of the likelihood of occurrence and the associated severity. If a hazard has more than one consequence, the risk may be expressed as a combination of the likelihood and severity for each of the consequences.

Depending on the analysis method and the risk acceptance criteria, the description could be qualitative and/or quantitative. The level of detail will depend on the level of detail in the likelihood and severity analysis.

Uncertainties in the risk assessment should be identified and documented. If the analysis is based on critical assumptions or other conditions that could affect the assessment, they should be identified and documented.

One method that may be used for risk classification is a risk assessment matrix combining likelihood and severity.

An example of a risk assessment matrix is included below:

Risk likelihood	Risk severity				
	Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
frequent 5	5A	5B	5C	5D	5E
occasional 4	4A	4B	4C	4D	4E
remote 3	3A	3B	3C	3D	3E
improbable 2	2A	2B	2C	2D	2E
extremely improbable 1	1A	1B	1C	1D	1E

(9) Risk evaluation

The results of the risk analysis may be categorised using a risk tolerability matrix using appropriate risk acceptance criteria.

Suggested criteria	Assessment risk index	Suggested criteria
intolerable	5A, 5B, 5C, 4A, 4B, 3A	Unacceptable under the existing circumstances
tolerable	5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C, 1A	Acceptable based on risk mitigation requiring a management decision.
acceptable	3E, 2D, 2E, 1B, 1C, 1D, 1E	Acceptable

(10) Identification of risk mitigation actions

The risk evaluation forms the basis for deciding on mitigating actions, and assessing the effects of these actions.

Risk mitigation actions should be identified for consequences with an unacceptable risk, and for consequences where further risk reduction actions are feasible and reasonable. Identification of possible mitigation should be based on the risk assessment and tolerability evaluation considering in particular any uncertainties identified and critical assumptions made. Actions that could eliminate the consequence of a hazard, likelihood-reducing actions, and severity-reducing actions should be identified. These actions could be related to human factors (e.g. training and competence), equipment, or organisational factors (e.g. procedures).

Risk mitigation actions should be implemented based on the following priorities with respect to possible outcomes:

(i) elimination of the consequences of the hazard ;

(ii) reduction of the likelihood of occurrence; and

(iii) reduction of the severity.

The following are examples of risk controls:

(i) passive technical controls (e.g. system redundancy);

(ii) active technical controls (e.g. automatic fire extinguishing system); and

(iii) controls by procedure (e.g. duplicate inspections).

The risk mitigating effect of the controls should be assessed with respect to:

(i) functionality (does the measure influence the ability to perform the activity?);

(ii) robustness (will the measure be effective under varying conditions and over time?); and

(iii) possible other effects such as introduction of new risks.

When identifying risk mitigation actions, the organisation needs to consider any new risks that may arise from the implementation of such actions, (sometimes called 'substitution risks'). For example, if the action consists of acquiring different equipment or employing and/or training personnel, the organisation needs to assess the risks related to the delivery and certification/approval of new equipment, and of the effects of employing or training personnel to accommodate, for example, the more advanced and complex technology.

(11) Conclusions and documentation

The risk assessment should contain conclusions. The conclusions should be unambiguous, precise, and robust to enable decision makers to accept the risk assessment.

The risk assessment should be documented. Any references to other documents should be specified. Any need for further work should be pointed out. The risk assessment documentation should include, or reference, as required, descriptions of the following:

(i) the purpose of the risk assessment;

(ii) the system/activity/issue analysed;

(iii) involvement of personnel and other parties with whom the organisation interacts;

(iv) context/framework for the activity/issue;

(v) the assessment of who is affected by the activity/issue, and how;

(vi) data used;

(vii) the analysis method;

(viii) the hazard(s);

(ix) the contributing factors and consequences;

(x) uncertainties and assumptions made for the assessment ;

(xi) the likelihood and severity;

(xii) the risk mitigation measures;

(xiii) the risk evaluation; and

(xiv) the conclusions.

It is recommended that organisations establish and maintain a register of significant hazards, and the corresponding risk assessments and mitigations. This 'risk register' should be a valuable source of information on the various hazards

that are inherent in a particular activity, and how these have been addressed in the past, and are currently treated in existing activities. Any future risk assessment may then draw upon the information already available.

The risk register should reflect that different types of activities may be exposed to different hazards. It may also reflect that different mitigation measures could be required and that different risk levels may be acceptable.

(f) Continued validity

The validity of the conclusions of a risk assessment exercise may be affected by:

(i) significant changes in the preconditions and context;

(ii) new knowledge of risks involved (experience from accidents and occurrences, reporting of safety concerns, research, better risk analysis methods, internal inspections, audits and reviews, and hazard reporting);

(iii) significant changes in the underlying data used for the assessment;

(iv) significant organisational changes that could affect the assessment because of their effect on risk mitigation; and

(v) several smaller changes that together might constitute a significant change.

Depending on the type of activity affected, and the nature and extent of the changes, it may be necessary to reassess the safety risk.

GM4 145.A.65(a)(3) Management system

THE MANAGEMENT OF CHANGE

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

(b) Regardless of the magnitude of change, large or small, there must always be a proactive consideration for safety implications. This is primarily the responsibility of the team proposing and/or implementing the change. However, change can only be successful if all personnel affected by the change are engaged, involved, and participate in the process. The magnitude of change, its safety criticality, and its potential impact on human performance should be assessed in any change management process.

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

(d) Change is the catalyst for the organisation to performing the hazard identification and risk management process.

Some examples of change include, but are not limited to:

(1) organisational restructuring;

(2) acquisition of equipment;

(3) new aircraft type included in the approval;

(4) additional aircraft or equipment of the same or similar type;

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

(6) new or amended regulations;

(7) competition;

(8) customer base;

(9) security;

(10) financial status;

(11) new schedule(s), location(s), type(s) of maintenance, equipment, and/or operational procedures;

(12) the generation or alteration of maintenance data under the provisions of 145.A.45(d); and

(13) change of a safety significant subcontractor.

(e) The organisation should also identify the changes likely to occur in its business which would have a noticeable impact on:

(1) resources (material and human);

(2) management direction (processes, procedures, and training); and

(3) management control.

(f) The change also has the potential to introduce new, or exacerbate pre-existing, human factors issues. For example, changes in machinery, equipment, technology, procedures, work organisation, or work processes are likely to affect performance.

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

(h) Special consideration, including any human factors issues, should be given to the 'transitional period'. In addition, the activities utilised to manage these issues should be integrated into the change management plan.

(i) The organisation should demonstrate that:

(1) it has established a process, and conducts formal hazard analyses/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) safety case/risk assessments are aviation safety focused;

(3) key stakeholders are involved in the change management process, as appropriate;

(4) during the change management process previous risk assessments and existing hazards are reviewed for possible effect; and

(5) for larger, more complex organisations:

(i) a validation of the safety performance is carried out after organisational changes to assure assumptions remain valid, and the change was effective;

(ii) all organisational changes are subject to the change management process; and

(iii) safety accountabilities, authorities, and responsibilities are reviewed as part of any change.

GM5 145.A.65(a)(3) Management system

EMERGENCY RESPONSE PLAN (ERP)

(a) An ERP typically defines the procedures, roles, responsibilities, and actions of key personnel and third parties that may be affected by an emergency, considering all activities of the organisation which may affect safety of flight, and all locations for such activities. The organisation's ERP should consider the actions to be taken as a result of an accident which has occurred to a recently released aircraft or component.

(b) The organisation should have a process to distribute the ERP procedures and to communicate the content to all affected personnel and third parties if required. In an emergency key personnel need to have easy access to the ERP at all times.

(c) The ERP should be periodically tested for the adequacy of the plan and the results reviewed to improve its effectiveness.

GM6 145.A.65(a)(3) Management system

EMERGENCY RESPONSE PLANNING

(a) For a maintenance organisation, the ERP needs to be focussed on events which can affect safety of flight for aircraft, or components. The need for ERP will vary significantly between different types of maintenance organisation.

(b) For aircraft maintenance organisations, the ERP scenarios may include, as required:

(1) emergency response to a major aircraft occurrence during maintenance operations, such as oxygen fire, or engine major failure during a ground run;

(2) response to requests for expert advice from aircraft and/or aerodrome operators during an occurrence; and

(3) response to requests for expert emergency aircraft recovery assistance from aircraft and/or aerodrome operators in the case of occurrence on or around the airfield where the maintenance services are provided.

(c) For component maintenance organisations, the ERP will have less scope. For some non-complex component maintenance organisations, the scope of the ERP might only include:

(1) quarantine of components and/or maintenance documents related to an aircraft occurrence; and

(2) where the organisation detects that measurement tool(s) are found to be out of calibration limits and need a documented and formally agreed process to urgently inform owners/operators at risk.

(d) Both aircraft and component maintenance organisations may also consider including personnel-related considerations in their ERP, such as:

(3) appropriate personal behaviours during and after the incident; and

(4) welfare and deployability of affected personnel immediately following a major occurrence.

(e) The ERP could be documented in a separate manual, or incorporated into the organisation's MOE, or a combination of these. Many organisations find it effective

to document relatively stable information in their MOE (such as ERP policies, roles and responsibilities, succession plans, training requirements, etc.) and immediate response information (such as procedures, checklists, phone numbers, locations, etc.) in separate, easily accessible booklets.

GM7 145.A.65(a)(3) Management system

FATIGUE RISK MANAGEMENT SCHEME

A. GENERAL

(a) Fatigue Risk Management (FRM) is a set of processes/procedures that aim to ensure that personnel involved in any maintenance, management, and/or audit are appropriately rested and fit for duty to perform their roles safely. Procedures and practices to identify and mitigate fatigue challenges support effective safety management .

(b) There are various definitions of fatigue, but for the purposes of this Guidance Material, fatigue is:

(c) '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 safety related duties.' (adapted from ICAO, 2012, ICAO Manual for Regulators).

(d) Fatigue is a significant human factors hazard because it affects most aspects of a person's ability to work safely. It has negative implications for personal and public safety.

(e) There are three primary factors that contribute to fatigue:

(1) the amount of proper sleep (8 hours of uninterrupted sleep);

(2) the amount of time awake; and

(3) the time of day.

(f) Fatigue is also impacted by high workload (mental and/or physical activity) and also by physical and mental health.

B. FRM POLICY

(a) As part of its safety policy, the organisation should define and document its FRM policy with all the elements of FRM clearly identified. The policy should describe the organisation's commitment and approach to the management of fatigue risk.

(b) The FRM policy should:

(1) reflect the shared responsibility of management, certifying staff and support staff, and all other personnel involved in maintenance activities;

(2) clearly state the safety objectives of FRM;

(3) require that clear lines of accountability for management and all other involved personnel are identified;

(4) declare management commitment to the provision of adequate resources for FRM;

(5) be signed by the accountable manager;

(6) declare management commitment to continual improvement of FRM;

(7) be communicated, with visible endorsement, to all the relevant areas and levels of the organisation;

(8) declare management commitment to effective safety reporting with the emphasis on the reporting of fatigue;

(9) require periodic reviews to ensure it remains relevant and appropriate; and

(10) align with the organisation's just culture policy to support effective fatigue reporting.

C. FRM DOCUMENTATION

(a) The FRM documentation describes the FRM scheme implemented by the organisation, including FRM policy and procedures. The documentation can be centralised in a dedicated FRM manual, or integrated into the organisation's management system documentation. It should include all the material necessary for an internal and external audit of the FRM policy and procedures. The documentation should be accessible to all personnel.

(b) Typical subjects to be addressed in the FRM documentation:

(1) FRM policy and objectives;

(2) FRM processes and procedures;

(3) accountabilities, responsibilities, and authorities for these processes and procedures;

(4) mechanisms for ongoing involvement of management, certifying staff and support staff, and all other personnel involved in maintenance activities;

(5) FRM training programmes, training requirements, and attendance records; and

(6) work schedule design principles and mechanisms for determining shift rosters, maximum duty periods, and rest periods as defined in 145.A.47; and related AMC and GM.

D. FATIGUE HAZARD IDENTIFICATION

Hazard identification related to fatigue requires at least two types of data:

(a) Personnel fatigue issues, and

(b) Organisational situations that may induce fatigue.

To obtain this data, two types of data collection processes may be used:

(a) Reactive data collection process

The reactive process aims to identify the contribution of fatigue related issues to reports and events associated with potential negative safety consequences in order to determine how the impact of fatigue could have been minimised.
At a minimum, the process may be triggered by any of the following:

(1) Incident or accident reports;

(2) Fatigue reports through the internal safety reporting scheme, including confidential and voluntary reports; and

(3) Audit reports.

(b) Proactive Data Collection Process

Proactive data collection is often the product of ongoing safety programmes and not necessarily triggered by an event. It is about identifying and addressing challenges as early as possible. Front line staff see the hazards before management does. Organisations should make it easy for staff to proactively report hazards, and to speak up.

The internal reporting system is likely the best means to identify fatigue hazards within current maintenance activities. Other means are :

(1) audit reports;

(2) fatigue surveys;

(3) relevant key performance data, such as an analysis of planned versus actual time worked; and

(4) data collected in similar types of operations.

E. FATIGUE RISK ASSESSMENT AND MITIGATION

An organisation implementing a FRM scheme should apply their risk assessment procedures to determine the likelihood and potential severity of fatigue related events, and identify when the associated risks require mitigation. The risk assessment procedures should review identified hazards and link them to:

(a) maintenance processes;

(b) their likelihood of occurrence;

(c) possible consequences; and

(d) the effectiveness of existing safety barriers and controls.

To assist in the fatigue risk assessment, the following example questions may be used:

(a) What is the level of severity of an event caused by a fatigued worker?

(b) When is fatigue related risk increased for our organisation?

(c) Is there a specific group of personnel within the organisation that is at increased risk due to the nature of their work assignments?

(d) What impact does the increased risk have on the organisation?

(e) What tasks are susceptible to fatigue?

(f) How does individual performance change with increased fatigue?

(g) Is the individual or maintenance activity at risk or both?

(h) How does the organisation reduce the risk (e.g. work practices)?

Risk controls and mitigation strategies can be centred on, at least, three objectives, including:

(a) Reduce Fatigue Reduction

The first key objective is fatigue reduction. Interventions are intended to minimise fatigue in the workplace. Example interventions include:

(1) Hours of service limitations (whether voluntary or mandatory);

(2) Scheduling based on scientific studies;

(3) Napping strategies;

(4) Education;

(5) Excused absences due to fatigue;

(6) Medical screening and treatment (where appropriate);

(7) Breaks (regular and 'on condition');

(8) Protection from heat and cold;

(9) Provision of water; and

(10) Changes in hangar lighting conditions.

(b) Reduction or capture of fatigue-related errors

Despite efforts to ensure that staff are well-rested and alert when they report for duty, it is not possible to completely eliminate fatigue from the workplace. There

must be a second line of defence with the objective of reducing the probability of error among fatigued staff.

Intervention measures may take two approaches. Measures may be directed either towards individuals or towards the task.

Individual measures. Example interventions directed toward individuals may include: self-assessment, use of fatigue detection technology, breaks, changes in the workplace environment, use of stimulants such as caffeine, and progressive restriction of work responsibilities.

Task measures. In addition to managing fatigue at the individual level, it is also possible to break the link between fatigue and error by changing aspects of the task assigned to the individual. Task-based approaches are based on the idea that maintenance tasks vary along a continuum, from tasks that are highly susceptible to fatigue, to those that are less susceptible. Task-based approaches to minimising risk can involve two complimentary strategies: changing when the task is performed, and changing how it is performed.

(c) Minimisation of the harm caused by fatigue related errors

A final line of defence in controlling and mitigating fatigue related errors is to minimise the harm caused by these errors. Although all maintenance tasks can affect flight safety, tasks vary along a continuum from the most safety critical to the least critical. Harm minimisation differs from the interventions described in the preceding sections, as the focus is on the severity of the error's consequences, rather than on the likelihood of occurrence of the error.

To minimise the consequences of fatigue related errors, the most safety-critical tasks should be kept out of the hands of the most fatigued people. For example, if an overnight task involves a disassembly stage, followed by an assembly stage, it may be feasible to schedule the disassembly for the time of maximum fatigue and the assembly for a time at which fatigue is less likely. This arrangement is based on the assumption that an error during assembly is likely to be more serious than an error during disassembly. This approach does not prevent engineers/technicians from making a fatigue related error, but minimises the likely consequences of that error.

Communication of mitigations

Mitigations should be documented as part of the FRM scheme and the strategies should be communicated to the appropriate personnel. In addition, individuals implementing or applying mitigations need training and education necessary to make the mitigation successful.

F. FRM PROMOTION

FRM promotion processes support the ongoing development of FRM, the continuous improvement of its overall performance, and the attainment of optimum safety levels. The organisation should promote the FRM policies in order for them to be effective. Managers and all personnel should understand that humans have fatigue limitations, and those limits cannot be exceeded without risk to individuals and to flight safety.

An effective FRM communication plan explains FRM policies, procedures, and responsibilities to all relevant staff and stakeholders, and describes communication channels used to gather and disseminate FRM related information.

AMC1 145.A.65(a)(4) Management system

COMMUNICATION ON SAFETY

(a) The organisation should establish communication about 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 relating 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 where information, actions and procedures are discussed may be used to communicate safety matters.

GM1 145.A.65(a)(5) Management system

MANAGEMENT SYSTEM DOCUMENTATION

(a) The organisation may document all management system key processes in a separate Safety Management Manual (SMM) or in its MOE. Organisations approved in accordance with other Parts may prefer a separate SMM in order to avoid duplication. The SMM or MOE, depending on the case, should be the key instrument for communicating the approach to safety management for the whole of the organisation. The organisation should document all aspects of safety management, including the safety policy, objectives, procedures, and individual safety responsibilities.

(b) The organisation may also choose to document some of the information required to be documented in separate documents (e.g. procedures). In this case, it should ensure that manuals contain adequate references to any document kept separately. Any such documents are then to be considered an integral part of the organisation's management system documentation.

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

~~1. The purpose of this procedure is to minimise the rare possibility of an error being repeated whereby the identical aircraft components are not reassembled thereby compromising more than one system. One example is the remote possibility of failure to reinstall engine gearbox access covers or oil filler caps on all engines of a multi-engined aircraft resulting in major oil loss from all engines.~~

~~Another example is the case of removal and refitment of oil filler caps, which should require a re-inspection of all oil filler caps after the last oil filler cap has supposedly been refitted.~~

~~2. Procedures should be established to detect and rectify maintenance errors that could, as minimum, result in a failure, malfunction, or defect endangering the safe operation of the aircraft if not performed properly. The procedure should identify the method for capturing errors, and the maintenance tasks or processes concerned.~~

~~In order to determine the work items to be considered, the following maintenance tasks should primarily be reviewed to assess their impact on safety:~~

- ~~Installation, rigging and adjustments of flight controls,~~
- ~~Installation of aircraft engines, propellers and rotors,~~
- ~~Overhaul, calibration or rigging of components such as engines, propellers, transmissions and gearboxes~~

~~but additional information should also be processed, such as:~~

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

- ~~Information arising from the 'occurrence reporting system' required by 145.A.60,~~
- ~~Member State requirements for error capturing, if applicable.~~

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

~~Note: A 'sign-off' is a statement by the competent person performing or supervising the work, that the task or group of tasks has been correctly performed. A sign-off relates to one step in the maintenance process and is therefore different to the release to service of the aircraft. 'Authorised personnel' means personnel formally authorised by the maintenance organisation approved under Part-145 to sign-off tasks. 'Authorised personnel' are not necessarily 'certifying staff'.~~

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

~~Maintenance organisations can prevent adverse effects associated with wiring changes by standardising maintenance practices through training, rather than by periodic inspection. Training should be provided to end indiscriminate routing and splicing of wire and to provide comprehensive knowledge of critical design features of fuel tank systems that would be controlled by a Critical Design Configuration Control Limitation. EASA guidance is provided for training to maintenance organisation personnel in an Appendix IV to be added to AMC to Part-145.~~

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

AMC1 145.A.65(a)(6) Management system

COMPLIANCE MONITORING — GENERAL

(a) Compliance monitoring

(1) The primary objective of the compliance monitoring function is to enable the organisation to ensure that the organisation remains in compliance with the applicable requirements.

(2) Compliance monitoring through independent audits is an essential element of the management system.

(b) The independence of the compliance monitoring function should be established by ensuring that audits and inspections are carried out by personnel not responsible for the function, procedure or products being audited.

(c) The implementation and use of a compliance monitoring function should enable the organisation to monitor compliance with the relevant requirements of this Part and other applicable Parts.

(1) The organisation should specify the basic structure of the compliance monitoring function applicable to the activities conducted.

(2) The compliance monitoring function should be structured according to the size of the organisation and the complexity of the activities to be monitored.

(d) Organisations should monitor compliance with the procedures they have designed to ensure safe activities. In doing so, they should as a minimum, and where appropriate, monitor compliance with:

(1) privileges of the organisation;

(2) maintenance procedures;

(3) training standards; and

(4) management system procedures and manuals.

AMC2 145.A.65 ~~(c)(1)~~ (a)(6) ~~Safety and quality policy, maintenance procedures and quality system~~ Management system

COMPLIANCE MONITORING – MAINTENANCE PROCEDURES

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

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

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

4(b) ~~Except as specified in subparagraphs 7 and 9,~~The~~the~~ independent audit should ensure that all aspects of Part-145 compliance are checked during the applicable audit planning cycle ~~every 12 months~~ and may be carried out as a complete single exercise or subdivided over the applicable audit planning cycle ~~the 12 month period~~ in accordance with an audit schedule ~~scheduled plan~~. The independent audit does not require each procedure to be checked against each product line when it can be shown that the particular procedure is common to more than one product line and the procedure has been checked at least once during the applicable audit planning cycle ~~every 12 months~~ without resultant findings. Where findings have been identified, the particular procedure should be rechecked against other product lines until the findings have been closed ~~rectified~~ after which the independent audit procedure may revert back to the agreed audit planning cycle ~~12 monthly~~ for the particular procedure.

~~5~~(c). ~~Except as specified otherwise in subparagraphs 7,~~ The independent audit should sample ~~check~~ one product on each product line at least once during the applicable audit planning cycle ~~every 12 months~~ as a demonstration of the effectiveness of maintenance procedures compliance. It is recommended that procedures and product audits be combined by selecting a specific product example, such as an aircraft or engine or ~~instrument~~ component and sample checking all the

procedures and requirements associated with the specific product example to ensure that the end result should be an airworthy product.

For the purpose of conducting product audits ~~the independent audit~~, a product line includes any product under an ~~Appendix II~~ approval class rating as specified in the approval schedule issued to the particular organisation.

It therefore follows for example that a maintenance organisation approved under Part-145 with a capability to maintain aircraft, repair engines, brakes and autopilots would need to carry out four complete product audit sample checks at least once during the applicable audit planning cycle ~~each year except as specified otherwise in subparagraphs 5, 7 or 9~~.

~~6~~(d) The sample check of a product means to witness any relevant testing and visually inspect the product against the ~~and~~ associated documentation and procedures. The sample check should not involve repeat disassembly or testing unless the sample check identifies findings requiring such action.

~~7. Except as specified otherwise in subparagraph 9, where the smallest organisation, that is an organisation with a maximum of 10 personnel actively engaged in maintenance, chooses to contract the independent audit element of the quality system in accordance with 145.A.65 (c)(1) it is conditional on the audit being carried out twice in every 12 month period.~~

~~8~~(e) ~~Except as specified otherwise in subparagraph 9, w~~ Where the organisation has line stations listed as per 145.A.75 (d) the compliance monitoring documentation ~~system~~ should include a ~~describe~~ description of how these are integrated into the system and include a plan to audit each listed line station at a frequency consistent with the extent of flight activity at the particular line station and related safety hazards identified. ~~Except as specified otherwise in subparagraph 9~~ The maximum period between ~~audits~~ inspections of a particular line station should not exceed 24 months.

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

~~10~~(f) A report should be raised each time an audit or inspection is performed ~~is carried out~~ describing what was checked and the resulting findings against applicable requirements and procedures ~~and products.~~

~~11. The independence of the audit should be established by always ensuring that audits are carried out by personnel not responsible for the function, procedure or products being checked. It therefore follows that a large maintenance organisation approved under Part-145, being an organisation with more than about 500 maintenance staff should have a dedicated quality audit group whose sole function is to conduct audits, raise finding reports and follow up to check that findings are being rectified. For the medium sized maintenance organisation approved under Part-145, being an organisation with less than about 500 maintenance staff, it is acceptable to use competent personnel from one section/department not responsible for the production function, procedure or product to audit the section/department that is responsible subject to the overall planning and implementation being under the control of the quality manager. Organisations with a maximum of 10 maintenance staff actively engaged in carrying out maintenance may contract the independent audit element of the quality system to another organisation or a qualified and competent person approved by the competent authority~~

AMC3 145.A.65(a)(6) Management system

COMPLIANCE MONITORING — AUDIT PLANNING CYCLES

(a) The organisation should implement an audit planning cycle not exceeding 12 months, during which all management system key processes, maintenance procedures, and products should be completely audited against the applicable requirements. When determining the audit planning cycle, the organisation should consider the results of its safety risk assessment and of past compliance monitoring in order to adapt the audit planning to the level of risk identified.

(b) Notwithstanding point (a), the competent authority may agree to increase the audit planning cycle by up to 100 % provided that there are no safety related findings, and subject to being satisfied that the organisation has a good record of rectifying findings in a timely manner~~.~~

AMC4 145.A.65(a)(6) Management system

COMPLIANCE MONITORING — INDEPENDENCE OF THE AUDIT

(a) The independence of the audit should be established by always ensuring that audits and inspections are carried out by personnel not responsible for the function, procedure, or products being audited or inspected. It, therefore, follows that a large maintenance organisation approved under Part-145, being an organisation with more than about 200 maintenance staff (FTEs) should have a dedicated group of auditors whose sole function is to conduct audits and inspections, raise finding reports, and follow-up to check that findings are being acted upon. For the medium sized maintenance organisation approved under Part-145, being an organisation with no more than 200 maintenance staff, it is acceptable to use competent personnel from one section/department, not responsible for the production, function, procedure, or product, to audit the section/department that is responsible subject to the overall planning and implementation being under the control of the compliance monitoring manager.

(b) The compliance monitoring manager of a non-complex organisation may perform all audits and inspections himself/herself or appoint one or more auditors. He/she may also elect to contract the independent audit element of the compliance monitoring function to another organisation, or a qualified and competent person approved by the competent authority.

(c) In case external personnel are used to perform compliance audits or inspections:

(1) any such audits or inspections are performed under the responsibility of the compliance monitoring manager; and

(2) the organisation remains responsible to ensure that the external personnel has relevant knowledge, background, and experience as appropriate to the activities being audited or inspected, including knowledge and experience in compliance monitoring.

(d) 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.

AMC5 145.A.65~~(c)(2)~~ (a)(6) ~~Safety and quality policy, maintenance procedures and quality system~~ Management system

FEEDBACK SYSTEM OF FINDINGS

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

~~2. The quality feedback system may not be contracted to outside persons. The principal function of the quality feedback system is to ensure that all findings~~

~~resulting from the independent quality audits of the organisation are properly investigated and corrected in a timely manner and to enable the accountable manager to be kept informed of any safety issues and the extent of compliance with Part-145.~~

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

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

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

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

(b) The feedback system of findings should not be contracted to outside persons. The principal function of such feedback system is 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 any safety issues, and of the extent of compliance with Part-145.

(c) The independent audit reports referred to in AMC2 145.A.65(a)(6) point 6. should be sent to the relevant department(s) for correction and corrective action giving target dates for these actions. Such target dates should be discussed with the relevant department(s) before the compliance monitoring manager or nominated auditor confirms such dates in the report. The relevant department(s) should act on findings and inform the compliance monitoring manager or nominated auditor(s) of such action.

(d) The accountable manager should hold regular meetings with personnel to check progress on correction and corrective action.

(e) By derogation from point (d), in a large organisation , being an organisation with more than 200 maintenance staff (FTEs), such meetings may be delegated on a day-to-day basis to the compliance monitoring manager provided that:

(1) the overall safety performance, and compliance record are reviewed at least twice a year by the safety review board; and

(2) the accountable manager receives at least twice a year a summary report on non-compliance findings.

(f) All records pertaining to the independent audit and the feedback system of findings should be retained for at least 2 years after the date of closure of the finding to which they refer to, or for such periods as to support changes to the audit planning cycle in accordance with AMC2 145.A.65(a)(6), whichever is the longer.

AMC6 145.A.65 (a)(6) Management system

CONCESSION CONTROL FOR DEVIATIONS FROM ORGANISATION'S PROCEDURES

(a) In exceptional situations, it may temporarily be impossible for the organisation to comply with specific conditions stipulated in the procedures set forth in its management system documentation. For any deviation from those conditions a concession request should be submitted to the compliance monitoring manager. Such request should specify the reason for the request, and provide a justification, the condition/event concerned and its duration, as well as any compensatory measures that may be applied.

(b) The compliance monitoring manager, in consultation with the safety manager or person having designated safety management responsibilities, should assess the deviation envisaged and compensatory measures proposed to ensure they do not affect compliance with the applicable Part-145 requirements. If required he/she should define additional compensatory measures to be applied.

(c) The deviation and compensatory measures should only be implemented upon formal acceptance by the compliance monitoring manager.

(d) It falls within the remit of the compliance monitoring function to ensure:

(1) follow-up of all concessions granted until the organisation reverts back to the conditions stipulated in the procedures set forth in its management system documentation; and

(2) that records are kept of all concessions granted and compensatory measures implemented, in accordance with 145A.68.

GM1 145.A.65~~(c)(1)~~ (a)(6) ~~Safety and quality policy, maintenance procedures and quality system~~ Management system

COMPLIANCE MONITORING — MAINTENANCE PROCEDURES

(a) The purpose of this GM is to give guidance on just one acceptable working audit plan to meet part of the needs of 145.A.65 ~~(c)(1)~~ (a)(6). There ~~is~~ are any number of other acceptable working audit plans.

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

PARA	Comment	HANGAR	ENGINE	MECH	AVIONIC
			Workshop	Workshop	Workshop
145.A.25		Yes	Yes	Yes	Yes
145.A.30		Yes	Yes	Yes	Yes
145.A.35		Yes	Yes	Yes	Yes
145.A.40		Yes	Yes	Yes	Yes
145.A.42		Yes	Yes	Yes	Yes
145.A.45		Yes	Yes	Yes	Yes
145.A.47		Yes	Yes	Yes	Yes
145.A.50		Yes	Yes	Yes	Yes
145.A.55		Yes	Yes	Yes	Yes
145.A.60		Yes	Yes	Yes	Yes
145.A.62		Yes	Yes	Yes	Yes
145.A.65		Yes	Yes	Yes	Yes
2.1	MOE	Yes	Yes	Yes	Yes
2.2	MOE	Yes	Yes	Yes	Yes
2.3	MOE	Yes	Yes	Yes	Yes
2.4	MOE	Yes	Yes	Yes	Yes
2.5	MOE	Yes	Yes	Yes	Yes

PARA	Comment	HANGAR	ENGINE	MECH	AVIONIC
2.6	MOE	Yes	Yes	Yes	Yes
2.7	MOE	Yes	Yes	Yes	Yes
2.8	MOE	Yes	Yes	Yes	Yes
2.9	MOE	Yes	Yes	Yes	Yes
2.10	MOE	Yes	No	No	No
2.11	MOE	Yes	Yes	Yes	Yes
2.12	MOE	Yes	Yes	Yes	Yes
2.13	MOE	Yes	Yes	Yes	Yes
2.15	MOE	Yes	No	No	No
2.16	MOE	Yes	Yes	Yes	Yes
2.17	MOE	if appl	if appl	if appl	if appl
2.18	MOE	Yes	Yes	Yes	Yes
2.19	MOE	Yes	Yes	Yes	Yes
2.20	MOE	Yes	Yes	Yes	Yes
2.21	MOE	if appl	if appl	if appl	if appl
2.22	MOE	Yes	Yes	No	No
2.23	MOE	Yes	No	No	No
2.24	MOE	Yes	Yes	Yes	Yes
2.25	MOE	Yes	Yes	Yes	Yes
2.26	MOE	Yes	Yes	Yes	Yes
2.27	MOE	Yes	Yes	Yes	Yes
2.28	MOE	Yes	Yes	Yes	Yes
L2.1	MOE	if appl	No	No	No
L2.2	MOE	if appl	No	No	No
L2.3	MOE	if appl	No	No	No
L2.4	MOE	if appl	No	No	No
L2.5	MOE	if appl	No	No	No
L2.6	MOE	if appl	No	No	No
L2.7	MOE	if appl	No	No	No
3.9	MOE	if appl	if appl	if appl	if appl
3.10	MOE	if appl	if appl	if appl	if appl
3.11	MOE	if appl	if appl	if appl	No
3.12	MOE	Yes	Yes	No	No
3.13	MOE	Yes	Yes	Yes	Yes
3.14	MOE	Yes	Yes	Yes	Yes
3.15	MOE	Yes	Yes	Yes	Yes
3.16	MOE	Yes	Yes	Yes	Yes
3.17	MOE	Yes	Yes	Yes	Yes
3.18	MOE	Yes	Yes	Yes	Yes
3.19	MOE	Yes	Yes	Yes	Yes
3.20	MOE	Yes	Yes	Yes	Yes
3.21	MOE	Yes	Yes	Yes	Yes
3.22	MOE	Yes	Yes	Yes	Yes
3.23	MOE	Yes	Yes	Yes	Yes
3.24	MOE	Yes	Yes	Yes	Yes
145.A.70		Yes	Yes	Yes	Yes
145.A.75		Yes	Yes	Yes	Yes
145.A.71		Yes	Yes	Yes	Yes
145.A.80		Yes	Yes	Yes	Yes
145.A.82		Yes	Yes	Yes	Yes
145.A.85		Yes	Yes	Yes	Yes
145.A.92		if appl	if appl	if appl	if appl
145.A.95		if appl	if appl	if appl	if appl

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

Note 2: In the line station case all line stations should be audited at the frequency agreed with the competent authority within the limits of AMC2 and AMC3 to 145.A.65(a)(6). ~~AMC 145.A.65(c)(1).~~

GM2 145.A.65(a)(6) Management system

TERMINOLOGY

(a) 'Audit' means a systematic, independent, and documented process for obtaining evidence and evaluating it objectively to determine the extent to which requirements are complied with.

(b) 'Inspection' means 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.

AMC1 145.A.65(b) Management system

SIZE, NATURE AND COMPLEXITY OF THE ACTIVITY

(a) An organisation should be considered as complex when it has more than 20 Full Time Equivalent (FTE) maintenance staff actively engaged in carrying out maintenance under the Part-145 certificate .

(b) Organisations with up to 20 FTE maintenance staff actively engaged in carrying out maintenance under the Part-145 certificate may also be considered complex based on an assessment of the following factors:

(1) in terms of complexity, the extent and scope of subcontracted activities subject to the Part-145 certificate; and

(2) in terms of risk criteria, the number and variety of aircraft (A), engine (B), component (C) type ratings, and specialised services (D) ratings.

(c) Notwithstanding points (a) and (b) above, the following organisations should always be considered as non-complex:

(1) organisations only holding a D rating; and

(2) organisations only holding three or less of the following C ratings: C2, C3, C4, C5,C6, C9, C12, C13, C14, C15, C17, C18, C19, or C20.

GM1 145.A.~~10~~ 65(b) ~~Scope~~ Management system

SMALLEST ORGANISATION

This Guidance Material (GM) provides guidance on how the smallest organisations satisfy the intent of Part-145:

~~1.~~(a) By inference, the smallest maintenance organisation would only be involved in a limited number of light aircraft, or aircraft components, used for commercial air transport. It is therefore a matter of scale; light aircraft do not demand the same level of resources, facilities or complex maintenance procedures as the large organisation.

~~2.~~(b) It is recognised that a Part-145 approval may be required by two quite different types of small organisations, the first being the light aircraft maintenance hangar, the second being the component maintenance workshop, e.g. small piston engines, radio equipment, etc.

~~3.~~(c) Where only one person is employed (in fact having the certifying function and others), these organisations approved under Part-145 may use the alternatives provided in point ~~3.1~~ (c)(1) limited to the following:

Class A2 Base and Line maintenance of aeroplanes of 5700 kg and below (piston

engines only).

Class A3 Base and Line maintenance of single-engined helicopters of less than 3175 kg.

Class A4 Aircraft other than A1, A2 and A3

Class B2 Piston engines with maximum output of less than 450 HP.

Class C Components.

Class D1 Non-destructive Testing.

~~3.1~~(1) 145.A.30 (b): The minimum requirement is for one full-time person who meets the Part-66 requirements for certifying staff and holds the position of 'accountable manager, safety manager, maintenance engineer and is also certifying staff'. No other person may issue a certificate of release to service and therefore if absent, no maintenance may be released during such absence.

~~3.1.1~~ (i)The ~~quality~~ compliance monitoring function of 145.A.~~65(c)~~ 65(a)(6) may be contracted in accordance with AMC4 145.A.65(a)(6) ~~to an appropriate organisation approved under Part-145 or to a person with appropriate technical knowledge and extensive experience of quality audits employed on a part-time basis, with the agreement of the competent authority~~.

~~Note: Full-time for the purpose of Part-145 means not less than 35 hrs per week except during vacation periods.~~

~~3.1.2~~ (ii)145.A.35. In the case of an approval based on one person using a ~~sub~~contracted ~~quality~~ compliance monitoring arrangement, the requirement for a record of certifying staff is satisfied by the submission to and acceptance by the competent authority of the EASA Form 4. With only one person the requirement for a separate record of authorisation is unnecessary because the EASA Form 3 approval schedule defines the authorisation. An appropriate statement, to reflect this situation, should be included in the exposition.

~~3.1.3~~ (iii) 145.A.~~65(c)~~ 65(a)(6) . It is the responsibility of the contracted compliance ~~quality~~ monitoring organisation or person to carry out ~~make~~ a minimum of 2 on-site audits ~~visits per~~ within every 12-month period and it is the responsibility of this organisation or person to carry out such monitoring on the basis of ~~1~~one pre-announced visit and ~~1~~one unannounced visit to the organisation.

It is the responsibility of the organisation to ensure the effectiveness of the compliance monitoring function ~~comply with the findings of the contracted quality monitoring organisation or the person~~.

~~CAUTION: it should be understood that if the contracted organisation or the above mentioned person loses or gives up its approval, then the organisation's approval will be suspended.~~

~~4.~~(d) Recommended operating procedure for a Part-145 ~~approved~~ maintenance organisation based upon up to 10 persons involved in maintenance (FTEs).

~~4.1~~(1) 145.A.30 (b): The normal minimum requirement is for the employment on a full-time basis of two persons who meet the applicable ~~competent authorities'~~ requirements for certifying staff, whereby one holds the position of 'maintenance engineer' and the other holds the position of '~~quality audit~~ compliance monitoring engineer'.

(2) Either person can assume the responsibilities of the accountable manager and safety manager providing that they can comply in full with the applicable elements of 145.A.30(a) and AMC 145.A.30(b), but the 'maintenance engineer' should be the certifying person to retain the

independence of the 'compliance monitoring ~~quality audit~~ engineer' to carry out audits. Nothing prevents either engineer from undertaking maintenance tasks providing that the 'maintenance engineer' issues the certificate of release to service.

(3) The 'compliance monitoring ~~quality audit~~ engineer' should have similar qualifications and status to the 'maintenance engineer' for reasons of credibility, unless he/she has a proven track-record in aircraft compliance monitoring ~~quality assurance~~, in which case some reduction in the extent of maintenance qualifications may be permitted.

In cases where the competent authority agrees that it is not practical for the organisation to nominate a person ~~postholder~~ for the compliance ~~quality~~ monitoring function, this function may be contracted in accordance ~~to~~ with AMC4 145.A.65(a)(6) ~~paragraph 3.1.1.~~

GM2 145.A.65(b) Management system

FULL TIME EQUIVALENT

'Full time' for the purpose of Part-145 means not less than 35 hours per week except during vacation periods.

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

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

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

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

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

~~Specialised services include any specialised activity, such as, but not limited to non-destructive testing requiring particular skills and/or qualification. 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.~~

145.A.68 Management system record keeping

(a) The organisation shall establish a system of record keeping that allows adequate storage and reliable traceability of all management system processes as defined in 145.A.65.

(b) The format of the records shall be specified in the organisation's procedures.

(c) Records shall be stored in a manner that ensures protection from damage, alteration, and theft.

AMC1 145.A.68 Management system record keeping

GENERAL

(a) The record keeping system should ensure that all records are accessible whenever needed within a reasonable time. These records should be organised in a way that

ensures traceability and retrievability throughout the required retention period.

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

(c) Paper systems should use robust material which can withstand normal handling and filing. Computer systems should have at least one backup system which should be updated within 24 hours of any new entry. Computer systems should include safeguards against the ability of unauthorised personnel to alter the data.

(d) All computer hardware used to ensure data backup should be stored in a different location from that containing the working data, and in an environment that ensures they remain in good condition. When hardware or software changes take place, special care should be taken that all necessary data continues to be accessible at least through the full period specified in the relevant provision. In the absence of such indication, all records should be kept for a minimum period of 5 years.

GM1 145.A.68 Management system record keeping

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.

145.A.70 Maintenance organisation exposition

(a) 'Maintenance organisation exposition' means the document or documents that contain the material specifying the scope of work deemed to constitute approval and showing how the organisation intends to comply with this Regulation ~~Part~~. The organisation shall provide the competent authority with a maintenance organisation exposition, and where applicable any referenced associated manuals containing the following information:

1. A statement signed by the accountable manager confirming that the maintenance organisation exposition and any referenced associated manuals define the organisation's compliance with this Regulation ~~Part~~ and will be complied with at all times. When the accountable manager is not the chief executive officer of the organisation then such chief executive officer shall countersign the statement;
2. the organisation's safety ~~and quality~~ policy as specified by 145.A.65;
3. the title(s) and name(s) of the persons nominated under 145.A.30(b);
4. the duties and responsibilities of the persons nominated under 145.A.30(b), including matters on which they may deal directly with the competent authority on behalf of the organisation;
5. an organisation chart showing associated chains of accountability and responsibility between the persons nominated under 145.A.30~~(b)~~and related to 145.A.65(a)(1);
6. a list of certifying staff and support staff;
7. a general description of manpower resources;
8. a general description of the facilities located at each address specified in the organisation's ~~approval~~ certificate;
9. a specification of the organisation's scope of work relevant to the extent of approval;
10. the notification procedure of 145.A.85 for organisation changes;

11. the maintenance organisation exposition amendment procedure;

12. ~~the procedures and quality system established by the organisation under 145.A.25 to 145.A.90;~~

    the documentation of management system key processes as required by 145.A.65(a)(5) and maintenance procedures established in accordance with 145.A.71;

13. a list of commercial operators, where applicable, to which the organisation provides an aircraft maintenance service;

14. a list of subcontracted organisations, where applicable, as specified in 145.A.75(b);

15. a list of all approved locations, including line stations, where applicable, as specified in 145.A.75(d);

16. a list of contracted organisations, where applicable.

(b) The exposition shall be amended as necessary to remain an up-to-date description of the organisation. The exposition and any subsequent amendment shall be approved by the competent authority.

(c) Notwithstanding paragraph (b) minor amendments to the exposition may not require prior approval and may be managed in accordance with the procedure referred to in 145.A.85(c) approved in accordance with 145.B.32 ~~be approved through an exposition procedure(hereinafter called indirect approval).~~

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

The following information should be included in the maintenance organisation exposition:

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

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

The exposition should contain information, as applicable, on how the ~~maintenance~~ organisation complies with Critical Design Configuration Control Limitations' (CDCCL) instructions.

Small ~~maintenance~~ organisations may combine the various items to form a simple exposition more relevant to their needs.

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

~~**PART 0 GENERAL ORGANISATION (Operators within the European Union)**~~

~~This section is reserved for those maintenance organisations approved under Part-145 who are also operators within the European Union.~~

PART 1 ~~MANAGEMENT~~ GENERAL

1.1 Corporate commitment by the accountable manager

1.2 Safety ~~and quality~~ policy and objectives

1.3 Management personnel

1.4 Duties and responsibilities of the management personnel, including safety responsibilities

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 Notification procedure to the competent authority regarding changes to the organisation's activities/approval/location/personnel

1.11 Exposition amendment procedures including, if applicable, ~~delegated procedures~~ procedure for the management of changes not requiring prior approval

1.12 Alternative means of compliance procedure.

PART 2 MAINTENANCE PROCEDURES

2.1 Supplier evaluation and subcontract control procedure

2.2 Acceptance/inspection of aircraft components and material from outside contractors

2.3 Storage, tagging and release of aircraft components and material to aircraft maintenance

2.4 Acceptance of tools and equipment

2.5 Calibration of tools and equipment

2.6 Use of tooling and equipment by staff (including alternate tools)

2.7 Cleanliness standards of maintenance facilities

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

2.9 Repair procedure

2.10 Aircraft maintenance programme compliance

2.11 Airworthiness directives procedure

2.12 Optional modification procedure

2.13 Maintenance documentation in use and completion of same

2.14 Technical record control

2.15 Rectification of defects arising during base maintenance

2.16 Release to service procedure

2.17 Records for the operator

2.18 Reporting of defects to the competent authority/operator/manufacturer

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 Control of flight safety sensitive maintenance tasks ~~critical tasks~~

2.24 Reference to specific maintenance 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, to the type certificate holder

2.28 Production planning procedures

PART L2 ADDITIONAL LINE MAINTENANCE PROCEDURES

L2.1 Line maintenance control of aircraft components, tools, equipment, etc.

L2.2 Line maintenance procedures related to servicing/fuelling/de-icing, including inspection for/removal of de-icing/anti-icing fluid residues, etc.

L2.3 Line maintenance control of defects and repetitive defects

L2.4 Line procedure for completion of technical log

L2.5 Line procedure for pooled parts and loan parts

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

L2.7 Line procedure control of critical tasks

PART 3 ~~QUALITY~~ MANAGEMENT SYSTEM PROCEDURES

3.1 Compliance monitoring ~~Quality audit~~ of organisation procedures

3.2 Product audit (~~Quality audit of~~ aircraft)

3.3 Audit findings –corrective ~~Quality audit remedial~~ action procedure

3.4 Certifying staff and support staff qualification and training procedures

3.5 Certifying staff and support staff records

3.6 Compliance monitoring ~~Quality audit~~ personnel

3.7 Qualifying supervisors

3.8 Qualifying mechanics

3.9 Aircraft or aircraft component maintenance tasks exemption process control

3.10 Concession control for deviation from organisations' procedures

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

3.12 Control of manufacturers' and other maintenance working teams

3.13 Human factors training procedure

3.14 Competence assessment of personnel

3.15 Training procedures for on-the-job training as per Section 6 of Appendix III to Part-66 (limited to the case where the competent authority for the Part-145 approval and for the Part-66 licence is the same).

3.16 Procedure for the issue of a recommendation to the competent authority for the issue of a Part-66 licence in accordance with 66.B.105 (limited to the case where the competent authority for the Part-145 approval and for the Part-66 licence is the same).

3.17 Hazard identification and safety risk management schemes (including FRMS where relevant)

3.18 Safety action planning

3.19 Safety performance monitoring

3.20 Incident investigation and safety reporting

3.21 Emergency response planning

3.22 Management of change (including organisational changes with regard to safety responsibilities)

3.23 Safety promotion

3.24 Management system record keeping

PART 4 EXTERNAL PARTIES

4.1 Contracting operators

4.2 Operator procedures and paperwork

4.3 Operator record completion

PART 5 SUPPORTING DOCUMENTS

5.1 Sample ~~of~~ documents

5.2 List of Subcontractors as per 145.A.75 (b)

5.3 List of ~~Line~~ maintenance locations as per 145.A.75 (d)

5.4 List of contracted organisations as per 145.A.70(a)(16)

PART 6 OPERATORS MAINTENANCE PROCEDURES

This section is reserved for those maintenance organisations approved under Part-145 who are also operators.

PART 7 FAA SUPPLEMENTARY PROCEDURES FOR A FAR PART-145 REPAIR STATION

This section is reserved for those maintenance organisations approved under Part-145 who are also certificated as a FAA FAR Part-145 repair station.

The content of this Part reflects the differences between EASA Part-145 and FAR Parts 43/145 ~~which will change over the time as harmonisation and experience with the FAA progresses~~.

~~FAA Advisory Circular 145-7A Appendix~~ 2 The FAA-EASA Maintenance Annex Guidance (MAG) contains details of the Part 7 contents.

PART 8 TRANSPORT CANADA CIVIL AVIATION (TCCA) SUPPLEMENTARY PROCEDURES FOR A TCCA AM573 MAINTENANCE ORGANISATION

This section is reserved for those Part-145 approved maintenance organisations who are also approved as a TCCA AM 573 maintenance organisation.

The content of this Part reflects the difference between EASA Part-145 and TCCA AM 573 ~~and will change over the time as harmonisation and experience with Transport Canada Civil Aviation progresses~~.

~~TCCA Aircraft Maintenance & Manufacturing Staff Instruction MSI 10 Appendix A~~ The TCCA-EASA Maintenance Annex Guidance (MAG) contains details of the Part 8 contents.

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

(a) The purpose of the maintenance organisation exposition (MOE) is to set forth the procedures, means and methods of the organisation.

(b) Compliance with its contents will assure compliance with the requirements of Part-145, which is a prerequisite to obtaining and retaining a maintenance organisation approval certificate.

(c) 145.A.70 (a)(1) to (a)(11) constitutes the 'general' ~~management'~~ part of the MOE

and therefore could be produced as one document and made available to the person(s) specified under 145.A.30 (b) who should be reasonably familiar with its contents. 145.A.70(a)(6) list of certifying staff and ~~B1 and B2~~ support staff may be produced as a separate document.

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

(e) Personnel are expected to be familiar with those parts of the manuals that are relevant to the ~~maintenance~~ work they carry out.

(f) The organisation should specify in the MOE who should amend the ~~manual~~ exposition particularly in the case where there are several parts.

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

(h) The MOE should cover four main parts:

(1) The general part of the ~~management~~ MOE covering the parts specified earlier;

(2) The maintenance procedures covering all aspects of how aircraft components may be accepted from outside sources and how aircraft will be maintained to the required standard;

(3) The ~~quality~~ management system procedures including the methods of qualifying mechanics, inspection, certifying staff ~~and~~ compliance monitoring and safety management ~~quality audit~~ personnel; and

(4) Contracting operator procedures and paperwork.

(i) The accountable manager's corporate commitment ~~exposition~~ statement as specified under 145.A.70 (a)(1) should embrace the intent of the following paragraph and in fact this statement may be used without amendment. Any modification to the statement should not alter the intent.

This exposition and any associated referenced manuals define the organisation and procedures upon which the (competent authority*) Part-145 approval is based as required by 145.A.70. These procedures are approved by the undersigned and should be complied with, as applicable, when work orders are being progressed under the terms of the Part-145 approval.

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

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

Signed .....

Dated .....

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

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

NOTE: Where it states (competent authority*) please insert the actual name of the competent authority, for example, EASA, CAA-NL, LBA, DGAC, CAA, etc.

Whenever the accountable manager changes, it is important to ensure that the new accountable manager signs the paragraph (i) ~~9~~ statement at the earliest opportunity.

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

~~10. When an organisation is approved against any other Part containing a requirement for an exposition, a supplement covering the differences will suffice to meet the requirements except that the supplement should have an index showing where those parts missing from the supplement are covered.~~

(j) When the organisation holds one or more additional organisation certificates within the scope of Regulation (EC) No 216/2008 containing a requirement for an exposition or manual, it may choose to combine the MOE with such exposition or manual in order to avoid duplication. An index showing where each requirement is addressed should be kept up to date and made available to the competent authority upon request

145.A.71 Maintenance procedures

(a) The organisation shall establish procedures taking into account human factors and human performance to ensure good maintenance practices and compliance with this Regulation, which shall include a clear work order or contract such that aircraft and components may be released to service in accordance with point 145.A.50.

(b) The maintenance procedures established, or to be established by the organisation under (a) shall cover all aspects of carrying out the maintenance activity, including the provision and control of specialised services, and lay down the standards to which the organisation intends to work.

(c) With regard to aircraft line and base maintenance, the organisation shall establish procedures to minimise the risk of multiple errors and capture errors in flight safety sensitive maintenance tasks, and to ensure that no person is required to carry out and inspect in relation to a maintenance task involving some element of disassembly/reassembly of several components of the same type fitted to more than one system on the same aircraft during a particular maintenance check. However, when only one person is available to carry out these tasks then the organisation's work card or worksheet shall include an additional stage for re-inspection of the work by this person after completion of all the same tasks.

(d) Maintenance procedures shall be established to ensure that damage is assessed, and modifications and repairs are carried out using data specified in point M.A.304.

AMC1 145.A.71 Maintenance procedures

GENERAL

(a) Maintenance procedures should be held current such that they reflect best practice within the organisation. It is the responsibility of all personnel to report any differences via the organisation's internal safety reporting scheme.

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

(c) All technical procedures should be designed and presented in accordance with

good human factors principles.

AMC1 145.A.71(b) Maintenance procedures

SPECIALISED SERVICES

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

GM1 145.A.71 Maintenance procedures

HUMAN FACTORS PRINCIPLES

CAA UK CAP 716 chapter 6 provides guidance on designing and presenting technical procedures in accordance with good human factors principles and includes the following key points:

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

(b) All procedures, and changes to those procedures, should be verified and validated before use where practicable;

(c) Ensure procedures are accurate, appropriate and usable, and reflect best practice;

(d) Take account of the level of expertise and experience of the user; where appropriate, provide an abbreviated version of the procedure for use by experienced technicians;

(e) Take account of the environment in which they are to be used;

(f) Ensure that all key information is included without the procedure being unnecessarily complex;

(g) Where appropriate, explain the reason for the procedure;

(h) The order of tasks and steps should reflect best practice, with the procedure clearly stating where the order of steps is critical, and where the order is optional;

(i) Ensure consistency in the design of procedures and use of terminology, abbreviations, references, etc.; and

(j) Use 'Simplified English'; ASD Simplified Technical English for Aerospace and Defence (ASD-STE100[13]).

145.A.75 Privileges of the organisation

In accordance with the exposition, the organisation shall be entitled to carry out the following tasks:

(a) Maintain any aircraft and/or component for which it is approved at the locations identified in the approval certificate and in the exposition;

(b) Arrange for maintenance of any aircraft or component for which it is approved at another organisation that is working under the management ~~quality~~ system of the organisation. This refers to work being carried out by an organisation not itself appropriately approved to carry out such maintenance under this Regulation ~~Part~~ and is limited to the work scope permitted under ~~145.A.65(b)~~ 145.A.71

[13] http://www.asd-ste100.org/

procedures. This work scope shall not include a base maintenance check of an aircraft or a complete workshop maintenance check or overhaul of an engine or engine module;

(c) Maintain any aircraft or any component for which it is approved at any location subject to the need for such maintenance arising either from the unserviceability of the aircraft or from the necessity of supporting occasional line maintenance, subject to the conditions specified in the exposition;

(d) Maintain any aircraft and/or component for which it is approved at a location identified as a line maintenance location capable of supporting minor maintenance and only if the organisation exposition both permits such activity and lists such locations;

(e) Issue certificates of release to service in respect of completion of maintenance in accordance with 145.A.50.

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

~~1.~~(a) Working under the management ~~quality~~ system of an organisation appropriately approved under Part-145 (sub contracting) refers to the case of one organisation, not itself appropriately approved to Part-145 that carries out aircraft line maintenance or minor engine maintenance or maintenance of other aircraft components or a specialised service as a subcontractor for an organisation appropriately approved under Part-145. To be appropriately approved to subcontract the organisation should have a procedure for the control of such subcontractors as described below. Any approved maintenance organisation that carries out maintenance for another approved maintenance organisation within its own approval scope is not considered to be subcontracting for the purpose of this paragraph.

Note: For those organisations approved under Part-145 that are also certified ~~certificated~~ by the FAA under FAR Part-145 it should be noted that FAR Part-145 is more restrictive in respect of maintenance activities that can be contracted or subcontracted to another maintenance organisation. It is therefore recommended that any listing of contracted or subcontracted maintenance organisations should identify which meet the Part-145 criteria and which meet the FAR Part-145 criteria.

~~2.~~(b) 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.~~(c) FUNDAMENTALS OF SUBCONTRACTING UNDER PART-145

~~3.1~~(1) The fundamental reasons for allowing an organisation approved under Part-145 to subcontract certain maintenance tasks are:

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

~~(b)~~(ii) To permit the acceptance of aircraft maintenance up to but not including a base maintenance check as specified in 145.A.75(b) by organisations not appropriately approved under Part-145 when it is unrealistic to expect direct approval of those organisations by the competent authority. The competent authority will determine when it is unrealistic but in general it is considered unrealistic if only one or two organisations intend to use the subcontract organisation.

~~(c)~~(iii) To permit the acceptance of component maintenance.

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

~~3.2~~(2) When maintenance is carried out under the ~~sub-contract~~ subcontract control system it means that for the duration of such maintenance, the Part-145 approval has been temporarily extended to include the subcontractor. It therefore follows that those parts of the subcontractor`s facilities personnel and procedures involved with the maintenance organisation's products undergoing maintenance should meet Part-145 requirements for the duration of that maintenance and it remains the organisation's responsibility to ensure such requirements are satisfied.

~~3.3~~(3) For the criteria specified in sub-paragraph ~~3.1~~ (c)(1) the organisation is not required to have complete facilities for maintenance that it needs to subcontract but it should have its own expertise to determine that the subcontractor meets the necessary standards. However an organisation cannot be approved unless it has the in -house facilities, procedures and expertise to carry out the majority of maintenance for which it wishes to be approved in terms of the number of class ratings.

~~3.4~~(4) The organisation may find it necessary to include several specialist subcontractors to enable it to be approved to completely certify the release to service of a particular product. Examples could be specialist welding, electro-plating, painting, etc. To authorise the use of such subcontractors, the competent authority will need to be satisfied that the organisation has the necessary expertise and procedures to control such subcontractors.

~~3.5~~(5) An organisation working outside the scope of its approval schedule is deemed to be not approved. Such an organisation may in this circumstance operate only under the subcontract control of another organisation approved under Part-145.

~~3.6~~(6) Authorisation to subcontract is indicated by the competent authority accepting the maintenance organisation exposition containing a specific procedure on the control of ~~sub-contract~~ subcontractors.

~~4.~~(d) PRINCIPAL PART-145 PROCEDURES FOR THE CONTROL OF SUBCONTRACTORS NOT APPROVED UNDER PART-145

~~4.1~~(1) ~~A pre-audit procedure should be established whereby the maintenance organisations' subcontract control section, which may also be the 145.A.65(c) quality system independent audit section should audit a prospective subcontractor to determine whether those services of the subcontractor that it wishes to use meets the intent of Part-145.~~

A pre-audit procedure should be established whereby the maintenance organisation should audit a prospective subcontractor to determine whether those services of the subcontractor that it wishes to use meet the intent of Part-145. This audit should be performed by the 145.A.65(a)(6) compliance monitoring function or by the function in charge of subcontractor control, under the responsibility of the compliance monitoring function.

In order to determine the pre-audit plan, the organisation may consider any certificates held by the subcontractor attesting compliance with industry standards directly relevant to the services to be provided, such as EN 9110. A risk assessment should be conducted considering the type and complexity of tasks that the organisation intends to subcontract, as well as possible certification in accordance with industry standards.

~~4.2~~(2) The organisation approved under Part-145 needs to assess to what extent

it will use the ~~sub-contract~~ subcontractor`s facilities. As a general rule the organisation should require its own paperwork, approved data and material/spare parts to be used, but it could permit the use of tools, equipment and personnel from the subcontractor as long as such tools, equipment and personnel meet the requirement of Part-145. In the case of subcontractors who provide specialised services it may for practical reasons be necessary to use their specialised services personnel, approved data and material subject to acceptance by the organisation approved under Part-145.

~~4.3~~(3) Unless the subcontracted maintenance work can be fully inspected on receipt by the organisation approved under Part-145 it will be necessary for such organisation to supervise the inspection and release from the subcontractor. Such activities should be fully described in the organisation procedure. The organisation will need to consider whether to use its own staff or authorise the subcontractor's staff.

~~4.4~~(4) The certificate of release to service may be issued either at the subcontractor or at the organisation facility by staff issued a certification authorisation in accordance with 145.A.30 as appropriate, by the organisation approved under Part-145. Such staff would normally come from the organisation approved under Part-145 but may otherwise be a person from the subcontractor who meets the approved maintenance organisation certifying staff standard which itself is approved by the competent authority via the maintenance organisation exposition. The certificate of release to service and the EASA Form 1 will always be issued under the maintenance organisation approval reference.

~~4.5 The subcontract control procedure will need to record audits of the subcontractor, to have a corrective action follow up plan and to know when subcontractors are being used. The procedure should include a clear revocation process for subcontractors who do not meet the Part-145 approved maintenance organisation's requirements.~~

(5) The subcontract control procedure will need to address relevant management system key processes such as hazard identification, safety risk assessment and management, internal safety reporting, and compliance monitoring. The procedure should ensure that records of all subcontractor audits and assessments, and corresponding actions are kept, and provide information on when subcontractors are being used. The procedure should include a clear revocation process for subcontractors who do not meet the Part-145 approved maintenance organisation's requirements.

~~4.6~~(6) The Part-145 compliance monitoring ~~quality audit~~ staff will need to audit the subcontract control section and sample audit subcontractors unless this task is already carried out by the compliance monitoring ~~quality audit~~ staff as stated in subparagraph 4.1.

~~4.7~~(7) ~~The contract between the Part-145 approved maintenance organisation and the subcontractor should contain a provision for the competent authority and EASA standardisation team staff to have right of access to the subcontractor.~~

The contract between the Part-145 approved maintenance organisation and the subcontractor should cover the right of access of competent authority staff and EASA (in the context of standardisation) to the subcontractor, in accordance with 145.A.92.

145.A.82 Means of compliance

(a) Alternative means of compliance to the AMC adopted by the Agency may be used by an organisation to establish compliance with this Regulation .

(b) When an organisation wishes to use an alternative means of compliance, it shall, prior to implementing it, provide the competent authority with a full description of the alternative means of compliance. The description shall include any revisions to manuals or procedures that may be relevant, as well as an assessment demonstrating compliance with this Regulation.

The organisation may implement these alternative means of compliance subject to prior approval by the competent authority and upon receipt of the notification as prescribed in 145.B.12(d).

AMC1 145.A.82 Means of compliance

DEMONSTRATION OF COMPLIANCE

In order to demonstrate that the Implementing Rules are met, a risk assessment should be completed and documented. The result of this risk assessment should demonstrate that an equivalent level of safety to that established by the AMC adopted by the Agency is reached.

145.A.85 Changes to the organisation

~~The organisation shall notify the competent authority of any proposal to carry out any of the following changes before such changes take place to enable the competent authority to determine continued compliance with this Part and to amend, if necessary, the approval certificate, except that in the case of proposed changes in personnel not known to the management beforehand, these changes must be notified at the earliest opportunity:~~

~~1. the name of the organisation;~~

~~2. the main location of the organisation;~~

~~3. additional locations of the organisation;~~

~~4. the accountable manager;~~

~~5. any of the persons nominated under 145.A.30(b);~~

~~6. the facilities, equipment, tools, material, procedures, work scope or certifying staff that could affect the approval.~~

(a) Any change affecting:

(1) the scope of the certificate or the terms of approval of the organisation; or

(2) any of the elements of the organisation's management system as required in 145.A.65(a)(1) and (a)(2),

shall require prior approval by the competent authority.

(b) For any changes requiring prior approval in accordance with (a) the organisation shall apply for, and obtain an approval issued by the competent authority. The application shall be submitted before any such change takes place, in order to enable the competent authority to determine continued compliance with this Regulation and to amend, if necessary, the organisation certificate and related terms of approval attached to it.

The organisation shall provide the competent authority with any relevant documentation.

The change shall only be implemented upon receipt of formal approval by the competent authority in accordance with 145.B.35.

The organisation shall operate under the conditions prescribed by the competent authority during such changes, as applicable.

(c) All changes not requiring prior approval shall be managed and notified to the competent authority as defined in the procedure referred to in 145.A.15 and approved by the competent authority in accordance with 145.B.32(h).

AMC1 145.A.85 Changes to the organisations

APPLICATION TIME FRAMES

(a) The application for the amendment of an organisation certificate should be submitted at least 30 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 competent authority at least 10 days before the date of the proposed change.

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

AMC2 145.A.85 Changes to the organisations

MANAGEMENT OF CHANGES

The organisation should manage safety risks related to any changes to the organisation in accordance with AMC1 145.A.65(a)(3) point 5. For changes requiring prior approval, it should provide the safety risk assessment to the competent authority upon request.

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

GENERAL

(a) Typical examples of changes that may affect the certificate, or the terms of approval are listed below:

(1) the name of the organisation;

(2) a change of legal entity;

(3) the organisation's principal place of business;

(4) the organisation's scope of work;

(5) additional locations of the organisation;

(6) the accountable manager;

(7) any of the persons referred to in 145.A.30(b) or 145.A.30(c);

(8) the organisation's documentation as required by this Regulation, safety policy and procedures;

(9) the facilities, equipment, tools, material, procedures, work scope or certifying staff;

(10) the fatigue risk management scheme established in accordance with AMC2 145.A.47(b); and

(11) the detailed procedures for the fabrication of parts in accordance with AMC1 145.A.42(c).

(b) Prior approval by the competent authority is required for any changes to the organisation's procedure describing how changes not requiring prior approval will be managed and notified to the competent authority.

(c) Changes requiring prior approval may only be implemented upon receipt of formal approval by the competent authority.

GM2 145.A.85 (a) Changes to the organisation

CHANGE OF NAME OF THE ORGANISATION

A change of name requires the organisation to submit a new application as a matter of urgency.

Where this is the only change to report, the new application can be accompanied by a copy of the documentation previously submitted to the competent authority under the previous name, as a means of demonstrating how the organisation complies with the applicable requirements.

145.A.90 Continued validity

(a) ~~An approval shall be issued for an unlimited duration. It~~ The organisation's certificate shall remain valid subject to:

(1) the organisation remaining in compliance with this Regulation ~~Annex II (Part-145)~~, taking into account ~~in accordance with~~ the provisions related to the handling of findings as specified under point 145.B.50; and

(2) the competent authority being granted access to the organisation as defined in 145.A.92 to determine continued compliance with this Regulation ~~Part~~; and

(3) the certificate not being surrendered or revoked.

(b) Upon revocation or surrender ~~surrender or revocation~~, the certificate ~~approval~~ shall be returned to the competent authority without delay.

145.A.92 Access

For the purpose of determining compliance with the relevant requirements of this Regulation, the organisation shall grant access at any time to any facility, aircraft, document, records, data, procedures, or any other material relevant to its activity subject to certification, whether it is subcontracted or not, to any person authorised by one of the following authorities:

(a) the competent authority responsible for the certificate; and/or

(b) the authority acting under the provisions of 145.B.30(d).

145.A.95 Findings

After receipt of notification of findings according to 145.B.50, the organisation shall:

(a) identify the root cause of the non-compliance;

(b) define a corrective action plan; and

(c) demonstrate corrective action implementation to the satisfaction of the competent authority within a period agreed with that authority as defined in 145.B.50 (d).

~~(a) A level 1 finding is any significant non-compliance with Part-145 requirements which lowers the safety standard and hazards seriously the flight safety.~~

~~(b) A level 2 finding is any non-compliance with the Part-145 requirements which could lower the safety standard and possibly hazard the flight safety.~~

~~(c) After receipt of notification of findings according to 145.B.50, the holder of the maintenance organisation approval shall define a corrective action plan and demonstrate corrective action to the satisfaction of the competent authority within a period agreed with this authority.~~

AMC1 145.A.95 Findings

GENERAL

The corrective action plan defined by the organisation should address the effects of the non-compliance, as well as its root cause(s) and contributing factors.

GM1 145.A.95 Findings

GENERAL

(a) 'Preventive action' is the action to eliminate the cause of a potential non-compliance, or other undesirable potential situation.

(b) 'Corrective action' is the action to eliminate or mitigate the root cause(s), and prevent recurrence of an existing detected non-compliance, or other undesirable condition or situation. Proper determination of the root cause(s) is crucial for defining effective corrective actions to prevent reoccurrence.

(c) 'Correction' is the action to eliminate a detected non-compliance.

GM2 145.A.95 Findings

ROOT CAUSE ANALYSIS

(a) It is important that the analysis does not primarily focus on establishing who or what caused the non-compliance but why it was caused. Establishing the root cause or causes of a non-compliance often requires an overarching view of the events and circumstances that lead to it, to identify all possible systemic and contributing factors (regulatory, human factors, organisational, managerial, cultural, technical, etc.) in addition to the direct factors. A narrow focus on single events or failures, or the use of a simple, linear model, such as fault tree, to identify the chain of events that lead to the non-compliance may not properly reflect the complexity of the issue, and, therefore, bears the risk that important factors required to be addressed in order to prevent reoccurrence will be ignored.

(b) Such inappropriate or partial root cause analysis often leads to defining 'quick fixes' addressing the symptoms of the nonconformity only. A peer review of the results of the root cause analysis may increase its reliability and objectivity.

(c) A system description of the organisation considering organisational structures, processes and their interfaces, procedures, staff, equipment, facilities, and the environment in which the organisation operates will support both effective root cause (reactive) and hazard (proactive) analysis.

145.A.97 Immediate reaction to a safety problem

The organisation shall implement:

(a) any safety measures mandated by the competent authority in accordance with 145.B.14(d); and

(b) any relevant mandatory safety information issued by the Agency.

Section B

Procedures for Competent Authorities

145.B.01 Scope

This section establishes the administrative procedures which the competent authority shall follow when exercising its tasks and responsibilities regarding issue ~~issuance~~, continuation, change, suspension or revocation of Part-145 maintenance organisation approvals.

~~**145.B.10 Competent authority**~~

~~1. General~~

~~The Member State shall designate a competent authority with allocated responsibilities for the issuance, continuation, change, suspension or revocation of a maintenance approval. This competent authority shall establish documented procedures and an organisational structure.~~

~~2. Resources~~

~~The number of staff must be appropriate to carry out the requirements as detailed in this section.~~

~~3. Qualification and training~~

~~All staff involved in Part-145 approvals must:~~

~~(a) be appropriately qualified and have all necessary knowledge, experience and training to perform their allocated tasks.~~

~~(b) have received training/continuation training on Part-145 where relevant, including its intended meaning and standard.~~

~~4. Procedures~~

~~The competent authority shall establish procedures detailing how compliance with this Section B is accomplished.~~

~~The procedures must be reviewed and amended to ensure continued compliance~~

~~**AMC 145.B.10(1) Competent authority – General**~~

~~1. In deciding upon the required organisational structure, the competent authority should review the number of certificates to be issued, the number and size of potential Part-145 approved maintenance organisations within that Member State, as well as the level of civil aviation activity, number and complexity of aircraft and the size of the Member State's aviation industry.~~

~~2. The competent authority should retain effective control of important surveillance functions and not delegate them in such a way that Part-145 organisations, in effect, regulate themselves in airworthiness matters.~~

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

AMC 145.B.10(3) Competent authority – Qualification and training

1. Competent authority surveyors should have:

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

   1.2 comprehensive knowledge of:

      a. relevant parts of implementing rules, certification specifications and guidance material;

      b. the competent authority's procedures;

      c. the rights and obligations of a surveyor;

      d. quality systems;

      e. continuing airworthiness management;

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

   1.3 training on auditing techniques.

   1.4 five years relevant work experience to be allowed to work as a surveyor independently. This may include experience gained during training to obtain the 1.5 qualification.

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

   1.6 knowledge of maintenance standards, including Fuel Tank Safety (FTS) training as described in Appendix IV to AMC to 145.A.30(e) and 145.B.10(3).

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

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

AMC 145.B.10(4) Competent authority – Procedures

The documented procedures should contain the following information:

(a) The Member State's designation of the competent authority(ies).

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

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

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

(e) A general description of the facilities.

(f) Procedures specifying how the competent authority(ies) ensure(s) compliance with Part-145.

145.B.11 Oversight documentation

The competent authority shall provide all legislative acts, standards, rules, technical publications, and related documents to relevant personnel in order to allow them to perform their tasks, and to discharge their responsibilities.

145.B.12 Means of compliance

(a) The Agency shall develop Acceptable Means of Compliance (AMC) that may be used to establish compliance with Regulation (EC) No 216/2008 and its Implementing Rules. When the AMC are complied with, the related requirements of the Implementing Rules are met.

(b) Alternative means of compliance may be used to establish compliance with the Implementing Rules.

(c) The competent authority shall establish a system to consistently evaluate that all alternative means of compliance used by itself, or by organisations and persons under its oversight allow the establishment of compliance with Regulation (EC) No 216/2008 and its Implementing Rules.

(d) The competent authority shall evaluate all alternative means of compliance proposed by an organisation in accordance with 145.A.82(b) by analysing the documentation provided and, if considered necessary, conducting an inspection of the organisation.

When the competent authority finds that the alternative means of compliance are in accordance with the Implementing Rules, it shall without undue delay:

(1) notify the applicant that the alternative means of compliance may be implemented and, if applicable, amend the approval or certificate of the applicant accordingly; and

(2) notify the Agency of their content, including copies of all relevant documentation;

(3) inform other Member States about alternative means of compliance that were accepted.

(e) When the competent authority itself uses alternative means of compliance to achieve compliance with this Regulation it shall:

(1) make them available to all organisations and persons under its oversight; and

(2) without undue delay notify the Agency.

The competent authority shall provide the Agency with a full description of the alternative means of compliance, including any revisions to procedures that may be relevant, as well as an assessment demonstrating that the Implementing Rules are met.

AMC1 145.B.12 (d)(3) Means of compliance

The information to be provided to other Member States following approval of an alternative means of compliance should contain a reference to the Acceptable Means of Compliance (AMC) to which such means of compliance provides an alternative, as well as a reference to the corresponding Implementing Rule, indicating as applicable the subparagraph(s) covered by the alternative means of compliance.

GM1 145.B.12 Means of compliance

Alternative means of compliance used by a competent authority or by organisations under its oversight may be used by other competent authorities or organisations only if processed again in accordance with 145.B.82 (d) and (e).

145.B.13 Information to the Agency

(a) The competent authority shall without undue delay notify the Agency in case of any significant problems with the implementation of this Regulation .

(b) The competent authority shall provide the Agency with safety significant information stemming from the occurrence reports it has received pursuant to 145.A.60.

145.B.14 Immediate reaction to a safety problem

(a) Without prejudice to Directive 2003/42/EC of the European Parliament and of the Council[14], the competent authority shall implement a system to appropriately collect, analyse, and disseminate safety information.

(b) The Agency shall implement a system to appropriately analyse any relevant safety information received and without undue delay provide to Member States and the Commission any information, including recommendations or corrective actions to be taken, necessary for them to react in a timely manner to a safety problem involving products, parts, appliances, persons or organisations subject to Regulation (EC) No 216/2008 and its Implementing Rules.

(c) Upon receiving the information referred to in (a) and (b), the competent authority shall take adequate measures to address the safety problem.

(d) Measures taken under (c) shall immediately be notified to all persons or organisations which need to comply with them under Regulation (EC) No 216/2008 and its Implementing Rules. The competent authority shall also notify those measures to the Agency and, when combined action is required, the other Member States concerned.

~~**145.B.15 Organisations located in several Member States**~~

~~Where maintenance facilities are located in more than one Member State the investigation and continued oversight of the approval must be carried out in conjunction with the competent authorities from the Member States in whose territory the other maintenance facilities are located.~~

145.B.20 Management system

(a) The competent authority shall establish and maintain a management system, including as a minimum:

(1) documented policies and procedures to describe its organisation, means, and methods to achieve compliance with Regulation (EC) No 216/2008 and its Implementing Rules. The procedures shall be kept up to date, and serve as the basic working documents within that competent authority for all related tasks;

[14] *OJ L 167, 4.7.2003, p. 23*

(2) a sufficient number of personnel to perform its tasks and discharge its responsibilities. A system shall be in place to plan the availability of personnel, in order to ensure the proper completion of all tasks;

(3) personnel qualified to perform their allocated tasks, and have the necessary knowledge, experience, initial and recurrent training to ensure continuing competence;

(4) adequate facilities and office accommodation to perform the allocated tasks;

(5) a function to monitor compliance of the management system with the relevant requirements and adequacy of the procedures, including the establishment of an internal audit process and a safety risk management process. Compliance monitoring shall include a feedback system of audit findings to the senior management of the competent authority to ensure implementation of corrective actions as necessary; and

(6) a person or group of persons, ultimately responsible to the senior management of the competent authority for the compliance monitoring function.

(b) The competent authority shall, for each field of activity, including management system, appoint one or more persons with the overall responsibility for the management of the relevant task(s).

(c) The competent authority shall establish procedures for participation in a mutual exchange of all necessary information and assistance with other competent authorities concerned, including on all findings raised and follow-up actions taken as a result of oversight of persons and organisations exercising activities in the territory of a Member State, but certified by the competent authority of another Member State or the Agency.

(d) A copy of the procedures related to the management system and their amendments shall be made available to the Agency for the purpose of standardisation.

AMC1 145.B.20 ~~10(1)~~ Management system ~~Competent authority – General~~

~~1.~~(a) All of the following should be considered when deciding upon the required organisational structure: ~~In deciding upon the required organisational structure, the competent authority should review~~

(1) the number of certificates to be issued, and the number and size of potential Part-145 approved maintenance organisations within that Member State;

(2) the possible use of qualified entities, and of resources of other Member States' competent authorities to fulfil the continuing oversight obligations;

(3) ~~as well as~~ the level of civil aviation activity, number and complexity of aircraft, and the size and complexity of the Member State's aviation industry; and

(4) the potential growth of activities in the field of civil aviation

~~2. The competent authority should retain effective control of important surveillance functions, and not delegate them in such a way that Part-145 organisations, in effect, regulate themselves in airworthiness matters.~~

~~3.~~(b) The set-up of the organisational structure should ensure that the various tasks and obligations of the competent authority do not ~~are not~~ rely~~ing~~ solely on individuals. ~~That means that a~~ A continuous ~~continuing~~ and undisturbed fulfilment of these tasks and obligations of the competent authority should also be guaranteed in case of illness, accident, or leave of individual employees.

GM1 145.B.20 Management system

(a) The competent authority designated by each Member State should be organised in such a way that:

(1) there is specific and effective management authority in the conduct of all relevant activities;

(2) the functions and processes described in the applicable requirements of Regulation (EC) No 216/2008 and its Implementing Rules and AMC, Certification Specifications (CSs) and Guidance Material (GM) may be properly implemented;

(3) the competent authority's organisation and operating procedures for the implementation of the applicable requirements of Regulation (EC) No 216/2008 and its Implementing Rules are properly documented and applied;

(4) all competent authority personnel involved in the related activities are provided with training where necessary;

(5) specific and effective provision is made for the communication and interface as necessary with the Agency and the competent authorities of other Member States; and

(6) all functions related to implementing the applicable requirements are adequately described.

(b) A general policy in respect of activities related to the applicable requirements of Regulation (EC) No 216/2008 and its Implementing Rules 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 competent authority that is responsible for such activities.

(c) Appropriate steps should be taken to ensure that the policy is known and understood by all personnel involved, and all necessary steps should be taken to implement and maintain the policy.

(d) The general policy, whilst also satisfying additional national regulatory responsibilities, should in particular take into account:

(1) the provisions of Regulation (EC) No 216/2008;

(2) the provisions of the applicable Implementing Rules, and their AMC, CSs and GM;

(3) the needs of industry; and

(4) the needs of the Agency, and of the competent authority.

(e) The policy should define specific objectives for key elements of the organisation, and processes for implementing related activities, including the corresponding control procedures, and the measurement of the achieved standard.

AMC1 145.B.20(a)(1) Management system

DOCUMENTED POLICIES AND PROCEDURES

(a) The various elements of the organisation involved with the activities related to Regulation (EC) No 216/2008 and its Implementing Rules 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 personnel involved in the related activities.

(c) The documented procedures should cover, as a minimum, all of the following aspects:

(1) policy and objectives;

(2) organisational structure;

(3) responsibilities and associated authority;

(4) procedures and processes;

(5) internal and external interfaces;

(6) internal control procedures;

(7) training of personnel;

(8) cross references to associated documents; and

(9) assistance from other competent authorities or the Agency (where required).

(d) It is likely that the information is held in more than one document or series of documents, and suitable cross referencing should be provided. For example, 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 include an index of cross references to all such other related information, and the related documentation should be readily available when required.

AMC1 145.B.20(a)(3) Management system

QUALIFICATION AND TRAINING — GENERAL

(a) The competent authority should ensure appropriate and adequate training of its personnel to meet the standard that is considered necessary to perform the work. To ensure personnel remain qualified, arrangements should be made for initial and recurrent training as required.

(b) The basic capability of the competent authority's personnel is a matter of recruitment and normal management functions in selection of personnel for particular duties. Moreover, the competent authority should provide training in the basic skills as required for those duties. However, to avoid differences in understanding and interpretation, all personnel should be provided with further training specifically related to Regulation (EC) No 216/2008, its Implementing Rules and related AMC, CSs and GM, as well as related to the assessment of alternative means of compliance.

(c) The competent authority may provide training through its own training organisation with qualified trainers, or through another qualified training source.

(d) When training is not provided through an internal training organisation, adequately experienced and qualified persons may act as trainers, provided their training skills have been assessed. If required, an individual training plan should be established covering specific training skills. Records should be kept of such training and of the assessment, as appropriate.

~~**AMC 145.B.10(3)Competent authority**~~ **AMC2 145.B.20(a)(3) Management system**

QUALIFICATION AND TRAINING — INSPECTORS

~~**Qualification and training**~~

~~1.~~(a) Competent authority ~~surveyor~~ inspectors should have:

~~1.1~~(1) practical experience and expertise in the application of aviation safety standards and safe operating practices;

~~1.2~~(2) comprehensive knowledge of:

~~a.~~ (i) relevant parts of implementing rules, certification specifications and guidance material;

~~b.~~ (ii) the competent authority's procedures;

~~c.~~ (iii) the rights and obligations of an ~~surveyor~~ inspector;

~~d.~~ (iv) quality and safety management systems;

~~e.~~ (v) continuing airworthiness management;

~~f.~~ (vi) operational procedures when affecting the continuing airworthiness management of the aircraft or the maintenance.

(vii) maintenance related human factors and human performance principles

~~1.3~~(3) training on auditing techniques and assessing and evaluating safety management systems.

~~1.4~~(4) five years relevant work experience to be allowed to work as an ~~surveyor~~ inspector independently. This may include experience gained during training to obtain the ~~1.5~~ qualification referred to in (a)(5).

~~1.5~~(5) a relevant engineering degree or an aircraft maintenance technician qualification with additional education. 'relevant engineering degree' means an engineering degree from aeronautical, mechanical, electrical, electronic, avionic or other studies relevant to the maintenance and continuing airworthiness of aircraft/aircraft components.

~~1.6~~(6) knowledge of maintenance standards, including Fuel Tank Safety (FTS) training as described in Appendix IV to AMC to 145.A.30(e) and ~~145.B.10(3)~~ AMC2 145.B.20(a)(3).

~~2.~~(b) In addition to technical competency, ~~surveyor~~ 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.

~~3.~~(c) A programme for continuation training should be developed ensuring that the ~~surveyor~~ inspectors remain competent to perform their allocated tasks.

AMC3 145.B.20(a)(3) Management system

INITIAL AND RECURRENT TRAINING

(a) Initial training programme:

The initial training programme for inspectors should include, as appropriate to their role, current knowledge, experience, and skills in at least all of the following:

(1) aviation legislation, organisation, and structure;

(2) the Chicago Convention, relevant ICAO annexes, and documents;

(3) the applicable requirements and procedures;

(4) management systems, including auditing, risk assessment, and reporting techniques;

(5) Safety Management Systems, and the evaluation of such systems

(6) human factors principles;

(7) Fatigue Risk Management Schemes

(8) rights and obligations of inspecting personnel of the competent authority;

(9) 'on-the-job' training;

(10) suitable technical training appropriate to the role and tasks of the inspector, in particular for those areas requiring approvals.

(b) Recurrent training programme:

The recurrent training programme should reflect, at least, changes in aviation legislation and industry. The programme should also cover the specific needs of the inspectors and the competent authority and significant issues identified by the State Safety Programme or the European Aviation Safety plan (EASp).

AMC4 145.B.20(a)(3) Management system

COMPETENCE ASSESSMENT

The competent authority should periodically assess the competence of its inspectors. The current version of 'Authority Inspectors Qualification Criteria' defined by the Common Training Initiative Group should be used[15]. The results of such assessment, as well as any actions taken following such assessment, should be recorded.

AMC1 145.B.20(d) Management system

PROCEDURES AVAILABLE TO THE AGENCY

(a) Copies of the procedures related to the competent authority's management system and their amendments to be made available to the Agency for the purpose of standardisation should provide at least the following information:

(1) Regarding continuing oversight functions undertaken by the competent authority, the competent authority's organisational structure with description of the main processes. This information should demonstrate the allocation of responsibilities within the competent authority, and that the competent authority is capable of carrying out the full range of tasks regarding the size and complexity of the Member State's aviation industry. It should also consider overall proficiency and authorisation scope of competent authority personnel.

(2) For personnel involved in oversight activities, the minimum professional qualification requirements and experience, and principles guiding appointment (e.g. assessment).

(3) How the following are carried out: assessing applications and evaluating compliance, issuance of certificates, performance of continuing oversight, follow-up of findings, enforcement measures, and resolution of safety concerns.

(4) Principles of managing exemptions and derogations.

(5) Processes in place to disseminate applicable safety information for timely reaction to a safety problem.

(6) Criteria for planning continuing oversight (oversight programme), including adequate management of interfaces when conducting continuing oversight (air operations, continuing airworthiness management for example).

(7) Outline of the initial training of newly recruited oversight personnel (taking future activities into account), and the basic framework for continuation training of oversight personnel.

[15] http://easa.europa.eu/approvals-and-standardisation/technical-training-common-training-initiative-group-CTIG.php

(b) As part of the continuous monitoring of a competent authority, the Agency may request details of the working methods used, in addition to the copy of the procedures of the competent authority's management system (and amendments). These additional details are the procedures and related Guidance Material describing working methods for competent authority personnel conducting oversight.

(c) Information related to the competent authority's management system may be submitted in electronic format.

GM1 145.B.20(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 personnel required to perform tasks subject to any national regulatory requirements.

(b) The elements to be considered, when determining 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 certified by the competent authority; and

(iii) the number of line stations within the territory of the Member States of organisations established in another Member State.

(2) Qualitative elements:

(i) the size, nature, and complexity of activities of certified organisations, taking into account:

(A) privileges of the organisation;

(B) type of approval, scope of approval;

(C) possible certification to industry standards;

(D) number of personnel; and

(E) organisational structure, 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) number and level of findings;

(B) time frame for implementation of corrective actions; and

(C) maturity of management systems implemented by organisations, and their ability to effectively manage safety risks; and

(iv) the size and complexity of the Member State's aviation industry, and the potential growth of activities in the field of civil aviation which may be an indication of the number of new applications, and changes to existing certificates to be expected.

(c) Based on existing data from previous oversight planning cycles and taking into account the situation within the Member State's aviation industry, the competent authority 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 competent authority's oversight policy, the following planning data should be determined:

(1) standard number of audits to be performed per oversight planning cycle;

(2) standard duration of each audit;

(3) standard working time for audit preparation, on-site audit, reporting, and follow-up, per inspector;

(4) standard number of unannounced inspections to be performed;

(5) standard duration of inspections, including preparation, reporting and follow-up, per inspector; and

(6) minimum number and required qualification of inspectors for each audit/inspection.

(e) 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 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 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 working time available for certification, oversight and enforcement activities should also consider:

(1) the possible use of qualified entities;

(2) possible cooperation with other competent authorities for approvals involving more than one Member State; and

(3) oversight activities under a bilateral aviation safety agreement.

(i) Based on the elements listed above, the competent authority should be able to:

(1) monitor dates when audits and inspections are due, and when they have been carried out;

(2) implement a system to plan the availability of personnel; and

(3) identify possible gaps between the number and qualification 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.

145.B.21 Allocation of tasks to qualified entities

(a) Tasks related to the initial certification or continuing oversight of persons or organisations subject to Regulation (EC) No 216/2008 and its Implementing Rules shall be allocated by Member States only to qualified entities. When allocating tasks, the competent authority shall ensure that it has:

(1) put a system in place to initially and continuously assess that the qualified entity complies with Annex V to Regulation (EC) No 216/2008.

This system and the results of the assessments shall be documented;

(2) established a documented agreement with the qualified entity, approved by both parties at the appropriate management level, which clearly defines:

(i) the tasks to be performed;

(ii) the declarations, reports, and records to be provided;

(iii) the technical conditions to be met in performing such tasks;

(iv) the related liability coverage; and

(v) the protection given to information acquired in carrying out such tasks.

(b) The competent authority shall ensure that the internal audit process and safety risk management process required by 145.B.20(a)(4) covers all certification or continuing oversight tasks performed on its behalf.

GM1 145.B.21 Allocation of tasks to qualified entities

CERTIFICATION TASKS

The tasks that may be performed by a qualified entity on behalf of the competent authority include those related to the initial certification, and continuing oversight of persons and organisations as defined in this Regulation, with the exclusion of the issuance of certificates, licences, ratings, or approvals.

145.B.22 Changes in the management system

(a) The competent authority shall have a system in place to identify changes that affect its capability to perform its tasks, and discharge its responsibilities as defined in Regulation (EC) No 216/2008 and its Implementing Rules. This system shall enable it to take action as appropriate to ensure that its management system remains adequate and effective.

(b) The competent authority shall update its management system to reflect any change to Regulation (EC) No 216/2008 and its Implementing Rules in a timely manner, so as to ensure effective implementation.

(c) The competent authority shall notify the Agency of changes affecting its capability to perform its tasks and discharge its responsibilities as defined in Regulation (EC) No 216/2008 and its Implementing Rules.

~~**145.B.25 Issue of approval**~~

~~1. The competent authority shall formally approve the exposition and issue to the applicant a Form 3 approval certificate, which includes the approval ratings. The competent authority shall only issue a certificate when the organisation is in~~

~~compliance with Part-145.~~

~~2. The competent authority shall indicate the conditions of the approval on the Form 3 approval certificate.~~

~~3. The reference number shall be included on the Form 3 approval certificate in a manner specified by the Agency.~~

~~AMC 145.B.25(2) Issue of approval~~

~~The validity of the Part-145 approval should be of unlimited duration.~~

~~AMC 145.B.25(3) Issue of approval~~

~~The numeric sequence should be unique to the particular approved maintenance organisation.~~

~~145.B.30 Continuation of an approval~~

~~The continuation of an approval shall be monitored in accordance with the applicable 'initial approval' process under 145.B.20. In addition:~~

~~1. The competent authority shall keep and update a programme listing the approved maintenance organisations under its supervision, the dates when audit visits are due and when such visits were carried out.~~

~~2. Each organisation must be completely reviewed for compliance with Part-145 at periods not exceeding 24 months.~~

~~3. A meeting with the accountable manager shall be convened at least once every 24 months to ensure he/she remains informed of significant issues arising during audits.~~

~~AMC 145.B.30(1) Continuation of an approval~~

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

- ~~the specific item audit should be the same as that required by Part-145 latest amendment, and~~
- ~~there should be satisfactory evidence on record that such specific item audits were carried out and that all corrective actions have been taken, and~~
- ~~the competent authority surveyor(s) should be satisfied that there is no reason to believe standards have deteriorated in respect of those specific item audits being granted a back credit, and~~
- ~~the specific item audit being granted a back credit should be audited not later than 24 months after the last audit of the item.~~

145.B.30 Oversight principles

(a) The competent authority shall verify:

(1) compliance with the requirements applicable to organisations prior to the issue of an organisation certificate or approval as applicable;

(2) continued compliance with the applicable requirements of organisations it has certified;

(3) implementation of appropriate safety measures mandated by the competent authority as defined in 145.B.14(c) and (d).

(b) This verification shall:

(1) be supported by documentation specifically intended to provide personnel responsible for safety oversight with guidance to perform their functions;

(2) provide the organisations concerned with the results of safety oversight activity;

(3) be based on audits and inspections, including unannounced inspections; and

(4) provide the competent authority with the evidence needed in case further action is required, including the measures foreseen by 145.B.50 'Findings'.

(c) The scope of oversight defined in (a) and (b) shall take into account the results of past oversight activities, and the safety priorities.

(d) Where maintenance facilities are located in more than one State, the competent authority responsible for the certificate as defined in (a) may agree to have oversight tasks performed by the competent authority(ies) of the Member State(s) where facilities are located, or by the Agency for facilities not located in a Member State. Any organisation subject to such agreement shall be informed of its existence and of its scope.

(e) For oversight performed at facilities located in another State, the competent authority responsible for the certificate as defined in (a) shall inform the competent authority of such State, or the Agency for facilities not located in a Member State, before performing any on-site audit or inspection of such facilities.

(f) The competent authority shall collect and process any information deemed useful for oversight, including for unannounced inspections.

AMC1 145.B.30(f) Oversight principles

GENERAL

This information should include, as a minimum:

(a) occurrence reports received by the competent authority;

(b) the reports received following the issue of one-off certification authorisations as defined in 145.A.30(j)(5);

(c) results of the following inspections and surveys when these indicate an issue originating from a Part-145 organisation:

(i) ramp inspections performed in accordance with Subpart RAMP of Annex II (Part-ARO) of Commission Regulation (EC) No 965/2012 'Air Operations';

(ii) product surveys of aircraft pursuant to Part-M paragraph M.B.303;

(iii) results of aircraft sample surveys conducted pursuant to Part-M paragraph M.B.704(b)(1); and

(iv) results of physical surveys or partial airworthiness reviews performed by the competent authority in line with Part-M § M.B.901.

145.B.32~~20~~ Initial certification procedure ~~approval~~

~~1. Provided the requirements of 145.A.30(a) and (b) are complied with, the competent authority shall formally indicate its acceptance of the personnel, specified in 145.A.30(a) and (b), to the applicant in writing.~~

(a) Upon receiving an application for the initial issue of a certificate for an organisation the ~~The~~ competent authority shall verify ~~that~~ organisation's compliance with the applicable requirements.

(b) A meeting with the accountable manager of the organisation shall be convened at least once during the investigation for initial certification to ensure that he/she fully understands the significance of the certification process, and the reason for

signing the commitment in the maintenance organisation exposition for compliance with the procedures specified in the exposition.

(c) The competent authority shall record all findings, closure actions (actions required to close a finding), and recommendations.

(d) The competent authority shall confirm all findings raised during the verification in writing to the organisation. For initial certification all findings must be corrected to the satisfaction of the competent authority before the certificate can be issued.

(e) When satisfied that the organisation is in compliance with the applicable requirements, the competent authority shall:

(1) issue the certificate as established in Appendix III to this Part 'EASA Form 3';

(2) formally indicate its acceptance of the personnel, specified in 145.A.30(a) and (b), to the applicant in writing; and

(3) formally approve the maintenance organisation exposition.

(f) The certificate reference number shall be included on the EASA Form 3 approval certificate in a manner specified by the Agency.

(g) The certificate shall be issued for an unlimited duration. The privileges and scope of the activities that the organisation is approved to conduct, including any limitations as applicable, shall be specified in the approval schedule attached to the certificate.

(h) To enable an organisation to implement changes without prior competent authority approval in accordance with 145.A.85(c), the competent authority shall approve the procedure submitted by the organisation defining the scope of such changes and describing how such changes will be managed and notified.

~~the procedures specified in the maintenance organisation exposition comply with Part-145 and verify that the accountable manager signs the commitment statement.~~

~~3. The competent authority shall verify that the organisation is in compliance with the requirements of Part-145.~~

~~4. A meeting with the accountable manager shall be convened at least once during the investigation for approval to ensure that he/she fully understands the significance of the approval and the reason for signing the exposition commitment of the organisation to compliance with the procedures specified in the exposition.~~

~~5. All findings must be confirmed in writing to the organisation.~~

~~6. The competent authority shall record all findings, closure actions (actions required to close a finding) and recommendations.~~

~~7. For initial approval all findings must be corrected before the approval can be issued.~~

~~AMC 145.B.20(2) Initial approval~~

~~Verification that the organisation complies with the exposition procedures should be established by the competent authority approving the maintenance organisation exposition.~~

AMC1 145.B.32(a) Initial certification procedure

VERIFICATION OF COMPLIANCE

(a) In order to verify the organisation's compliance with the applicable requirements, the competent authority should conduct an audit of the organisation, including interviews of personnel and inspections carried out at the organisation's facilities.

(b) The competent authority should only conduct such audit after being satisfied that

the application shows compliance with the applicable requirements.

(c) The audit should focus on the following areas:

(1) detailed management structure, including names and qualifications of personnel required by 145.A.30 and 145.A.35, and adequacy of the organisation and management structure;

(2) personnel:

(i) adequacy of number and qualifications with regard to the intended approval schedule and associated privileges; and

(ii) validity of licences, ratings, certificates, or attestations as applicable;

(3) processes for safety risk management, and compliance monitoring;

(4) facilities — adequacy with regard to the organisation's scope of work;

(5) documentation based on which the certificate should be granted (organisation documentation as required by 145.A.65 and 145.A.70:

(i) verification that the procedures specified in the maintenance organisation exposition comply with the applicable requirements; and

(ii) verification that the accountable manager signs the commitment statement;

(6) if applicable, the fatigue risk management scheme established in accordance with AMC 145.A.47(b).

(d) In case of non-compliance, the applicant should be informed in writing of the corrections that are required.

(e) In cases where an application for an organisation certificate is refused, the applicant should be informed of the right of appeal as exists under national law.

AMC2 145.B.32~~20~~(a)~~(3)~~ Initial certification procedure ~~approval~~

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

(b)~~It is recommended that the audit is carried out on~~ The audit may be structured so as to verify the organisation's processes related to a product line type ~~basis~~ in that, for example, in the case of an organisation with Airbus A310 and A320 ratings, the audit be concentrated on one type only for a full compliance check and ~~dependant~~ dependent upon the result, the second type may only require a sample check against those ~~activities~~ aspects seen to be weak on compliance for the first type.

(c) The competent authority auditing ~~surveyor~~ inspector should always ensure that he/she is accompanied throughout the audit by a senior ~~technical~~ member of the organisation. Normally this is the compliance monitoring ~~quality~~ manager. The reason for being accompanied is to ensure the organisation is fully aware of any findings during the audit.

(d) The auditing ~~surveyor~~ inspector should inform the senior ~~technical~~ member of the organisation at the end of the audit ~~visit~~ on all findings made during the audit.

AMC1 145.B.~~20(5)~~ 32(c) Initial certification procedure ~~approval~~ (**)

(a) The audit should be recorded using ~~report form should be~~ the audit report form EASA Form 6.

(b) A quality review of the EASA Form 6 audit report form should be carried out by a

competent independent person nominated by the competent authority. The review should take into account the relevant paragraphs of Part-145, the categorisation of finding levels, and the closure action taken. Satisfactory review of the audit form should be indicated by a signature on the audit form.

(c) The final report should include the date each finding was closed together with reference to the competent authority report or letter that confirmed the closure.

AMC1 145.B.~~20(6)~~ 32(d) Initial certification procedure ~~approval~~

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

(a)~~2.~~ Findings should be recorded on the audit report form with a provisional categorisation as a level 1 or 2. Subsequent to the on-site audit ~~visit~~ that identified the particular findings, the competent authority should review the provisional finding levels, adjusting them if necessary and change the categorisation from provisional to confirmed.

(b)~~3~~. There may be occasions when the competent authority ~~surveyor~~ inspector ~~may~~ finds situations in the applicant's organisation on which he/she is unsure about compliance. In this case, the organisation should be informed about possible non-compliance at the time and the fact that the situation will be reviewed within the competent authority before a decision is made. If the decision is a finding of being in compliance then a verbal confirmation to the organisation should ~~will~~ suffice.

(c) All findings should be confirmed in writing to the applicant organisation within 2 weeks of the on-site audit ~~visit~~.

AMC1 145.B.~~25(1)~~ 32(e) ~~Issue of approval~~ Initial certification procedure

~~1. For approvals involving more than one Member State, the approval should be granted in conjunction with the Member State in whose territory the other maintenance facilities are located. For practical reasons it is recommended that the initial approval should be granted on the basis of a joint audit visit by the approving Member State and the Member State in whose territory the facility is located. Audits related to the continuation of the approval should be delegated to the Member State in whose territory the facility is located with the audit form and recommendation submitted to the approving Member State.~~

~~2. The approval should be based only upon the organisational capability (including any associated subcontractors) relative to Part-145 and not limited by reference to EASA/national type certificated products.~~

~~For example, if the organisation is capable of maintaining within the limitation of Part-145 the Boeing 737-200 series aircraft the approval schedule should state A1 Boeing 737-200 series and not Boeing 737-2H6 which is a particular airline designator for one of many -200 series.~~

~~3. The competent authority should indicate approval of the exposition in writing.~~

For certification procedures involving more than one Member State, the initial certificate should be granted in conjunction with the Member State in whose territory the other maintenance facilities are located. For practical reasons, it is recommended that the initial certificate should be granted on the basis of a joint on-site audit by the competent authority responsible for the certificate as determined by the organisation's principal place of business and the competent authority(ies) of the Member State(s) in whose territory(ies) the facility(ies) is(are) are located. Audits related to the continuation of the approval should be delegated to the competent authority(ies) of the Member State(s) in whose territory(ies) the facility(ies) is(are) located. In this case, the audit report form and all recommendations should be submitted to the competent authority responsible for the certificate as determined by the organisation's principal place

of business.

AMC1 145.B. 32(e)(2) ~~20(1)~~ Initial certification procedure ~~approval~~

(a) Formally indicated by the competent authority in writing means that the EASA Form 4 should be used for this ~~activity~~ purpose. With the exception of the accountable manager, an EASA Form 4 should be completed for each person nominated to hold a position as required by 145.A.30(b) and 145.A.30(c).

(b) Formal indication of acceptance should be by use of the EASA Form 4 or in the case of the Accountable Manager via approval of the Maintenance Organisation Exposition containing the Accountable Managers commitment statement.

(c) The competent authority may reject an accountable manager where there is clear evidence that ~~they~~ this person previously held a senior position in any ~~JAR/Part approved~~ organisation approved in accordance with Regulation (EU) No 216/2008 and its Implementing Rules and abused that position by not complying with the applicable ~~particular JAR/Part~~ requirements.

145.B.33 Oversight programme

(a) The competent authority shall establish and maintain an oversight programme covering the oversight activities required by 145.B.30.

(b) For organisations certified by the competent authority, the oversight programme shall be developed taking into account the specific nature of the organisation, the complexity of its activities, the results of past certification and/or oversight activities, and shall be based on the assessment of associated risks. It shall include within each oversight planning cycle:

(1) audits and inspections, including unannounced inspections; and
(2) meetings convened between the accountable manager and the competent authority to ensure both remain informed of significant issues.

(c) For organisations certified by the competent authority, an oversight planning cycle not exceeding 24 months shall be applied.

The oversight planning cycle may be reduced if there is evidence that the safety performance of the organisation has decreased.

(d) The oversight planning cycle may be extended to a maximum of 36 months if the competent authority has established that, during the previous 24 months:

(1) the organisation has demonstrated an effective identification of aviation safety hazards and management of associated risks;

(2) the organisation has continuously demonstrated under 145.A.85 that it has full control over all changes;

(3) no level 1 findings have been issued; and

(4) all corrective actions have been implemented within the time period accepted or extended by the competent authority as defined in 145.B.50(d)(2).

The oversight planning cycle may be further extended to a maximum of 48 months if, in addition to the above, the organisation has established, and the competent authority has approved, an effective continuous reporting system to the competent authority on the safety performance and regulatory compliance of the organisation itself.

(e) The oversight programme shall include records of the dates when audits, inspections and meetings are due, and when such audits, inspections, and meetings have been carried out.

(f) At the completion of each oversight planning cycle, the competent authority shall issue a recommendation report on the continuation of the approval which shall consider possible limitations to the terms of approval on the basis of the results of

oversight and the volume of activities for the different ratings during the completed oversight cycle .

AMC1 145.B.33(a);(b) Oversight programme

ANNUAL REVIEW

(a) The oversight planning cycle and related oversight programme for each organisation should be reviewed annually to ensure they remain adequate with regards to any changes in the nature, complexity or safety performance of the organisation.

(b) When reviewing the oversight planning cycle and related oversight programme, the competent authority should also consider any relevant information collected in accordance with 145.A.60 and 145.B.30(f).

AMC1 145.B.33(b) Oversight programme

SPECIFIC NATURE AND COMPLEXITY OF THE ORGANISATION, RESULTS OF PAST OVERSIGHT

(a) When determining the oversight programme for an organisation, the competent authority 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 industry standards, directly relevant to the organisation's activity subject to this Regulation;

(3) the procedure applied for, and scope of changes not requiring prior approval;

(4) specific procedures implemented by the organisation related to any alternative means of compliance used;

(5) if applicable, the number of approved locations and the activities performed at each location ; and

(6) the volume of activity for each A, B, C and D rating, as applicable.

(b) For the purpose of assessing the complexity of an organisation's management system, AMC1 145.A.65(b) should be used.

AMC2 145.B.33(b) Oversight programme

INDUSTRY STANDARDS

(a) For organisations having demonstrated compliance with industry standards, the competent authority may adapt its oversight programme in order to avoid duplication of specific audit items.

(b) Demonstrated compliance with industry standards, such as ISO 9000 series or EN 9110, should not be considered in isolation from the other elements to be considered for the competent authority's risk-based oversight.

(c) In order to be able to credit any audits performed as part of certification in accordance with industry standards, the following should be considered:

(1) the demonstration of compliance is based on certification auditing schemes providing for independent and systematic verification;

(2) the existence of an accreditation scheme and accreditation body for certification in accordance with the industry standards has been verified;

(3) certification audits are relevant to the requirements defined in Part-145 and

other Parts as applicable;

(4) the scope of such certification audits can easily be mapped against the scope of oversight in accordance with Part-145;

(5) audit results are accessible to the competent authority and open to exchange of information in accordance with Article 15(1) of Regulation (EC) No 216/2008; and

(6) the audit planning intervals of certification audits, in .accordance with industry standards, are compatible with the oversight planning cycle.

AMC1 145.B.33 (b)(1) Oversight programme

AUDIT

(a) The oversight programme should indicate which aspects of the approval will be covered with each audit.

(b) Part of an audit should concentrate on the organisation's compliance monitoring reports produced by the compliance monitoring personnel to determine if the organisation is identifying and correcting its problems.

(c) At the conclusion of the audit, an audit report should be completed by the auditing inspector, identifying the areas and processes audited, and including all findings raised.

AMC1 145.B.33 (c) Oversight programme

OVERSIGHT PLANNING CYCLE

(a) When determining the oversight planning cycle and defining the oversight programme, the competent authority should assess the risks related to the activity of each organisation and adapt the oversight to the level of risk identified, and to the organisation's ability to effectively manage safety risks.

(b) The competent authority should establish a schedule of audits and inspections appropriate to each organisation. The planning of audits and inspections should take into account the results of the hazard identification and 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 competent authority, having regard to an organisation's safety performance, 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.33(c) Oversight programme

OVERSIGHT PLANNING CYCLE

(a) For each organisation certified by the competent authority, all processes should be completely audited at periods not exceeding 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 competent authority wishes to align the oversight planning cycle with the calendar year, it should shorten the first oversight planning cycle accordingly.

(b) The interval between two audits for a particular process should not exceed the interval of the applicable oversight planning cycle.

(c) Audits should include at least one on-site audit within each oversight planning

cycle. For organisations exercising their regular activity at more than one site, the determination of the sites to be audited should consider the results of past oversight, the volume of activity at each site, as well as main risk areas identified.

(d) For organisations holding more than one certificate, the competent authority may define an integrated oversight schedule to include all applicable audit items. In order to avoid duplication of audits, credit may be granted for specific audit items already completed during the current oversight planning cycle, subject to four conditions:

(1) the specific audit item should be the same for all certificates under consideration;

(2) there should be satisfactory evidence on record that such specific audit items were carried out, and that all corrective actions have been implemented to the satisfaction of the competent authority;

(3) the competent authority should be satisfied that there is no reason to believe standards have deteriorated in respect of those specific audit items being granted a credit; and

(4) the interval between two audits for the specific item being granted a credit should not exceed the applicable oversight planning cycle.

AMC3 145.B.33(c) ~~30(2)~~ Oversight programme ~~Continuation of an approval~~

~~1. Where the competent authority has decided that a series of audit visits are necessary to arrive at a complete audit of an organisation, the programme should indicate which aspects of the approval will be covered on each visit.~~

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

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

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

~~5. In the case of line stations the competent authority can adopt a sampling programme based upon number of line stations and complexity.~~

(a) Where the competent authority has decided that a series of on-site audits are necessary to arrive at a complete audit of an organisation, the programme should indicate which aspects of the approval will be covered during each on-site audit.

(b) It is recommended that the audit concentrates on two aspects of the Part-145 approval:

(1) the organisation's compliance monitoring based on the reports produced by the compliance monitoring function to determine if the organisation is identifying, controlling and correcting non-compliances, and controlling concessions granted by the compliance monitoring manager for deviations from the organisation's procedures; and

(2) the organisation's safety management processes to determine how effectively the organisation is managing safety risks.

(c) At the successful conclusion of the audit, including approval of changes to the maintenance organisation exposition, if relevant, an audit report should be issued by the auditing inspector including all recorded findings, closure, actions and recommendation.

(d) At the completion of each oversight planning cycle a new EASA Form 6 should be issued .

AMC1 145.B.33(d) Oversight programme

EXTENSION OF THE OVERSIGHT PLANNING CYCLE BEYOND 24 MONTHS

(a) Where the competent authority applies an oversight planning cycle that exceeds 24 months it should perform at a minimum one oversight programme validation inspection of the organisation within each 12-month segment of the applicable oversight planning cycle.

(b) In case the results of this inspection indicate a decrease in the safety performance of the organisation, the competent authority should revert back to a 24-month oversight planning cycle and review the oversight programme accordingly.

AMC2 145.B.33(d) Oversight programme

EXTENSION OF THE OVERSIGHT PLANNING CYCLE BEYOND 24 MONTHS

(a) In order to be able to apply an oversight planning cycle up to 36 months the competent authority should determine the format and contents of the regular reports to be made by the organisation on its safety performance.

(b) In order to be able to apply an oversight planning cycle up to 48 months the competent authority should have implemented a methodology to evaluate the safety performance of the organisation, focussing on the organisation's ability to effectively identify aviation safety hazards and manage the associated risks.

GM1 145.A.33 Oversight programme

TERMINOLOGY

(a) 'Audit' means a systematic, independent, and documented process for obtaining evidence and evaluating it objectively to determine the extent to which requirements are complied with.

(b) 'Inspection' means 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.

(c) 'Oversight planning cycle' means the timeframe within which all areas of the approval and all processes should be reviewed by means of audits and inspections.

(d) 'Oversight programme' means the detailed oversight schedule defining the number of audits and inspections, the scope and duration of each audit and inspection, including details on product audits and locations, as appropriate, and the tentative timeframe for performing each audit and inspection.

GM1 145.B.33(d) Oversight programme

EVALUATION OF SAFETY PERFORMANCE

The 'Safety Management System Evaluation Tool' developed by the Safety Management

International Collaboration Group may be used[16].

145.B.35 Changes

~~1. The competent authority shall receive notification from the organisation of any proposed change as listed in 145.A.85.~~

~~The competent authority shall comply with the applicable elements of the initial process paragraphs for any change to the organisation.~~

- ~~The competent authority may prescribe the conditions under which organisation may operate during such changes unless it determines that the approval should be suspended.~~

(a) Upon receiving an application for a change that requires prior approval, the competent authority shall verify the organisation's compliance with the applicable requirements before issuing the approval.

(b) The competent authority shall prescribe the conditions under which the organisation may operate during the change unless the competent authority determines that the organisation's certificate needs to be suspended.

(c) When satisfied that the organisation is in compliance with the applicable requirements, the competent authority shall approve the change.

(d) Without prejudice to any additional enforcement measures, when the organisation implements changes requiring prior approval without having received competent authority approval as defined in (c), the competent authority shall suspend, limit, or revoke the organisation's certificate.

(e) For changes not requiring prior approval, the competent authority shall assess the information provided in the notification sent by the organisation in accordance with 145.A.85(c) to verify compliance with the applicable requirements. In case of any non-compliance, the competent authority shall:

(1) notify the organisation about the non-compliance, and request further changes; and

(2) in case of level 1 or level 2 findings, act in accordance with 145.B.50 'Findings'.

AMC1 145.B.35 Changes

GENERAL

(a) Changes in nominated persons:

The competent authority should be informed of any changes to personnel specified in Part-145 that may affect the certificate or terms of approval/approval schedule attached to it. When an organisation submits the name of a new nominee for any of the persons specified in 145.A.30(a), (b) and (c), the competent authority should require the organisation to produce a written résumé of the proposed person's qualifications, in addition to the EASA Form 4 to be provided, as applicable. The competent authority should reserve the right to interview the nominee, or call for additional evidence of his/her suitability before deciding upon his/her acceptability.

(b) A simple management system documentation status sheet should be maintained, which contains information on when an amendment was received by the competent authority and when it was approved.

[16] http://www.skybrary.aero/bookshelf/books/1774.pdf

(c) The organisation should provide each management system documentation amendment to the competent authority, including for the amendments that do not require prior approval by the competent authority.

(d) Where the amendment requires competent authority approval, the competent authority, when satisfied, should indicate its approval in writing. Where the amendment does not require prior approval, the competent authority should acknowledge receipt in writing within 10 working days.

(e) For changes requiring prior approval in order to verify the organisation's compliance with the applicable requirements, the competent authority should conduct an audit of the organisation limited to the extent of the changes, and determine the need for a safety risk assessment to be provided by the organisation. If a safety risk assessment is deemed necessary, the competent authority should inform the organisation accordingly. If required for verification, the audit should include interviews and inspections carried out at the organisation's facilities. If requested, the competent authority should assess the results of the safety risk assessment provided by the organisation.

(f) The applicable part(s) of the EASA Form 6 should be used to document the assessment of changes to the Part-145 approval.

~~**AMC 145.B.35(1) Changes**~~

~~The applicable part(s) of the EASA Form 6 should be used for the changes to the Part-145 approval.~~

GM1 145.B.35 Changes

CHANGE OF NAME OF THE ORGANISATION

(a) On receipt of the application and the amendment to the relevant parts of the management system documentation, the competent authority should reissue the certificate.

(b) A name change alone does not require the competent authority to audit the organisation unless there is evidence that other aspects of the organisation have changed.

~~**AMC**~~**GM1 145.B.35~~(2)~~(b) Changes ~~to the organisation~~**

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

~~**145.B.40 Changes to the Maintenance Organisation Exposition**~~

~~For any change to the Maintenance Organisation Exposition (MOE):~~

~~1. In the case of direct approval of the changes in accordance with point 145.A.70(b), the competent authority shall verify that the procedures specified in the exposition are in compliance with Annex II (Part-145) before formally notifying the approved organisation of the approval.~~

~~2. In the case an indirect approval procedure is used for the approval of the changes in accordance with point 145.A.70(c), the competent authority shall ensure (i) that the changes remain minor and (ii) that it has an adequate control over the approval of the changes to ensure they remain in compliance with the requirements of Annex II (Part-145).~~

~~**AMC 145.B.40 MOE amendments**~~

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

~~2. The competent authority may define some class of amendments to the exposition which may be incorporated without prior authority approval. In this case, a procedure should be stated in the amendment section of the MOE.~~

~~The exposition chapter dealing with scope of work/approval should not be subject to this procedure.~~

~~3. The organisation should submit each exposition amendment to the competent authority whether it is an amendment for approval or a delegated approval amendment. Where the amendment requires approval by the competent authority, the competent authority when satisfied, should indicate its approval in writing. Where the amendment has been submitted under the delegated approval procedure the competent authority should acknowledge receipt in writing.~~

145.B.45 Suspension, limitation and revocation ~~Revocation, suspension and limitation of approval~~

The competent authority shall:

(a) suspend an approval on reasonable grounds in the case of potential safety threat; ~~or~~

(b) suspend, revoke or limit an approval pursuant to 145.B.50; and

(c) suspend an approval in case the competent authority's inspectors are unable over a period of 24 months to discharge their oversight responsibilities through on-site audit(s) due to the security situation in the State where the maintenance facilities are located.

AMC1 145.B.45(c) Suspension, limitation and revocation

(e) The European Commission Security Directorate would generally advise against any, but essential, travel to a country where hostile conditions or a combination of such make security precarious and pose a high level of threat to personnel, as follows:

(1) international or internal armed conflict with frequent armed confrontation taking place, numerous casualties, and/or serious damages to infrastructures;

(2) situation of pre-war, or characterised by high internal or external tensions that could escalate into instability in the short term; very poorly functioning institutions;

(3) relatively frequent terrorist attacks due to the presence of active terrorist groups, either domestic or transnational, and state authorities' inability to ensure a satisfactory level of security; and

(4) frequent criminal violence targeting also non-nationals. State authorities possess limited ability to counter criminal activities and ensure security.

(f) Countries falling under the provisions above should be considered as not compatible with the performance of on-site audit by the competent authority.

145.B.50 Findings and corrective actions

(a) The competent authority shall have a system to analyse findings for their safety significance.

(b) A level 1 finding shall be issued by the competent authority when any significant non-compliance is detected with the applicable requirements of Regulation (EC) No 216/2008 and its Implementing Rules, with the organisation's procedures and manuals, or with the terms of an approval or certificate which lowers safety or seriously hazards flight safety.

The level 1 findings shall include:

(1) failure to give the competent authority access to the organisation's facilities as defined in 145.A.92 during normal operating hours and after two written requests;

(2) obtaining or maintaining the validity of the organisation certificate by falsification of submitted documentary evidence;

(3) evidence of malpractice or fraudulent use of the organisation certificate; and

(4) the lack of an accountable manager.

(c) A level 2 finding shall be issued by the competent authority when any non-compliance is detected with the applicable requirements of Regulation (EC) No 216/2008 and its Implementing Rules, with the organisation's procedures and manuals, or with the terms of an approval or certificate which could lower safety or hazard flight safety.

(d) When a finding is detected during oversight or by any other means, the competent authority shall, without prejudice to any additional action required by Regulation (EC) No 216/2008 and its Implementing Rules, communicate the finding to the organisation in writing, and request corrective action to address the non-compliance(s) identified. Where a finding directly relates to an aircraft, the competent authority shall inform the State in which the aircraft is registered.

(1) In the case of level 1 findings, the competent authority shall take immediate and appropriate action to prohibit or limit activities, and if appropriate, it shall take action to revoke the certificate, or to limit, or suspend it in whole, or in part, depending upon the extent of the level 1 finding until successful corrective action has been taken by the organisation.

(2) In the case of level 2 findings, the competent authority shall:

(i) grant the organisation a corrective action implementation period appropriate to the nature of the finding that in any case initially shall not be more than 3 months. At the end of this period, and subject to the nature of the finding and past safety performance of the organisation, the competent authority may extend the three-month period subject to a satisfactory corrective action plan agreed by the competent authority; and

(ii) assess the corrective action and implementation plan proposed by the organisation and, if the assessment concludes that they are sufficient to address the non-compliance(s), accept these.

(3) Where an organisation fails to submit an acceptable corrective action plan, or to perform the corrective action within the time period accepted or extended by the competent authority, the finding shall be raised to a level 1 finding and action taken as laid down in (d)(1).

(4) The competent authority shall record all findings it has raised or that have been communicated to it and, where applicable, the enforcement measures it has applied, as well as all corrective actions and date of action closure for findings.

(e) Without prejudice to any additional enforcement measures, when the authority of a Member State acting under the provisions of 145.B.30(d) identifies any non-compliance with the applicable requirements of Regulation (EC) No 216/2008 and its Implementing Rules by an organisation certified by the competent authority of another Member State or the Agency, it shall inform that competent authority and provide an indication of the level of finding.

~~(a) When during audits or by other means evidence is found showing non-compliance with the requirements of Part-145, the competent authority shall take the following actions:~~

~~1. For level 1 findings, immediate action shall be taken by the competent authority to revoke, limit or suspend in whole or in part, depending upon the extent of the level 1 finding, the maintenance organisation approval, until successful corrective action has been taken by the organisation.~~

~~2. For level 2 findings, the corrective action period granted by the competent authority must be appropriate to the nature of the finding but in any case initially must not be more than three months. In certain circumstances and subject to the nature of the finding the competent authority may extend the three month period subject to a satisfactory corrective action plan agreed by the competent authority.~~

~~(b) Action shall be taken by the competent authority to suspend in whole or part the approval in case of failure to comply within the timescale granted by the competent authority.~~

~~AMC~~GM1 145.B.50~~(a)~~(b);(c) Findings and corrective actions

~~In practical terms a level 1 finding is where a competent authority finds a significant non-compliance with Part-145.~~

~~The following are example level 1 findings:~~

The following is an example of level 1 finding:

~~• Failure to gain access to the organisation during normal operating hours of the organisation in accordance with 145.A.90(2) after two written requests.~~

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

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

(b) For such ~~a~~ level 1 finding it may be necessary for the competent authority to ensure that further maintenance and re-certification of all affected products is accomplished, dependent upon the nature of the finding.

Furthermore, for a level 1 finding, it may be necessary for the competent authority to ensure that further training by the organisation is carried out and audited by the competent authority before the activity is resumed, dependent upon the nature of the finding.

In practical terms where a competent authority ~~surveyor~~ inspector finds a non-compliance with Part-145 against one product, it is deemed to be a level 2 finding.

The following are example level 2 findings:

(a) One time use of a component without any serviceable tag.

(b) The training records ~~documents~~ of one member of ~~the~~ certifying staff are not completed.

~~**AMC 145.B.50(b) Findings**~~

~~1. Where the organisation has not implemented the necessary corrective action within that period it may be appropriate to grant a further period of up to three months, subject to the competent authority notifying the accountable manager. In exceptional circumstances and subject to a realistic action plan being in place, the competent authority may specifically vary the maximum 6 month corrective action period. However, in granting such a change the past performance of the organisation should be considered.~~

145.B.55 Record keeping

~~1. The competent authority shall establish a system of record keeping with minimum retention criteria that allows adequate traceability of the process to issue, continue, change, suspend or revoke each individual organisation approval.~~

~~2. The records shall include as a minimum:~~

~~(a) the application for an organisation approval, including the continuation thereof.~~

~~(b) the competent authority continued oversight program including all audit records.~~

~~(c) the organisation approval certificate including any change thereto.~~

~~(d) a copy of the audit program listing the dates when audits are due and when audits were carried out.~~

~~(e) copies of all formal correspondence including Form 4 or equivalent.~~

~~(f) details of any exemption and enforcement action(s).~~

~~(g) any other competent authority audit report forms.~~

~~(h) maintenance organisation expositions.~~

~~3. The minimum retention period for the above records shall be four years.~~

~~4. The competent authority may elect to use either a paper or computer system or any combination of both subject to appropriate controls.~~

(a) The competent authority shall establish a system of record keeping that allows adequate storage, accessibility, and reliable traceability of:

(1) the competent authority's management system's documented policies and procedures;

(2) training, qualification and authorisation of competent authority personnel;

(3) the allocation of tasks, covering the elements required by 145.B.21 as well as the details of tasks allocated; and

(4) certification processes, and continuing oversight of certified organisations, including:

(i) the application for an organisation certificate;

(ii) the competent authority continuing oversight programme, including all audit and inspection records;

(iii) the organisation approval certificate, including any change thereto;

(iv) a copy of the oversight programme listing the dates when audits are due and when audits were carried out;

(v) copies of all formal correspondence, including Form 4 or equivalent;

(vi) details of findings, corrective actions, date of action closure, exemption and enforcement action(s);

(vii) any audit and inspection reports issued by other competent authority; and .

(viii) copies of all maintenance organisation expositions and amendments thereto;

(5) the evaluation and notification to the Agency of alternative means of compliance proposed by organisations, and the assessment of alternative means of compliance used by the competent authority itself.

(6) safety information and follow-up measures in accordance with 145.B.14; and

(7) the use of flexibility provisions in accordance with Article 14 of Regulation (EC) No 216/2008;

(b) The competent authority shall maintain a list of all organisation certificates it issued.

(c) The minimum retention period for the above records shall be four years subject to applicable data protection law.

AMC1 145.B.55 Record keeping

~~1.~~(a) The record keeping system should ensure that all records are accessible whenever needed within a reasonable time. These records should be organised in a ~~consistent~~ way that ensures traceability and retrievability throughout the required retention period. ~~competent authority (chronological, alphabetical order, etc.).~~

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

(c) Records should be kept in paper form, or in electronic format, or a combination of both media. Records stored on microfilm or optical disc form are also acceptable. The records should remain legible and accessible throughout the required retention period. The retention period starts when the record has been created.

(d) Paper systems should use robust material, which can withstand normal handling and filing. Computer systems should have at least one backup system which should be updated within 24 hours of any new entry. Computer systems should include safeguards against unauthorised alteration of data.

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

AMC1 145.B.55(1)(a) Record keeping

COMPETENT AUTHORITY MANAGEMENT SYSTEM

Records related to the competent authority's management system should include, as a minimum and as applicable:

(a) the documented policies and procedures;

(b) the personnel files of competent authority personnel, with supporting documents related to training and qualifications;

(c) the results of the competent authority's internal audit and safety risk management processes, including audit findings, corrective and preventive actions; and

(d) the contract(s) established with qualified entities performing certification or oversight tasks on behalf of the competent authority.

GM1 145.B.55 Record keeping

GENERAL

Records are required to document results achieved, or to provide evidence of activities performed. Records become factual when recorded. Therefore, they are not subject to version control. Even when a new record is produced covering the same issue, the previous record remains valid.

~~**145.B.60 Exemptions**~~

~~All exemptions granted in accordance with Article 10(3) of the basic Regulation shall be recorded and retained by the competent authority~~

APPENDICES TO AMC

Appendix I to AMC1 145.B.~~20(1)~~ 32 (e)(2) : EASA Form 4

Only the AMC reference has been amended.

Appendix II to AMC1 145.B.~~20(5)~~ 32(c): EASA Form 6

Part-145 APPROVAL RECOMMENDATION REPORT	**EASA FORM 6**

Part 1: General

Name of organisation:

Approval reference:

Requested approval rating/
EASA Form 3 dated*:

FAA FAR 145 Certificate No (if applicable):

Address of Facility Audited:

Audit period: From to

Date(s) of Audit:

Audit reference(s):

Persons interviewed:

Competent authority ~~surveyor~~ inspector: Signature(s):

Competent authority office: Date of Form 6, Part 1 completion:

*delete where applicable

Part-145 APPROVAL RECOMMENDATION REPORT	EASA FORM 6

Part 2: Part-145 Compliance Audit Review

The five columns may be labelled and used as necessary to record the approval class and/or product line reviewed. Against each column used of the following Part-145 subparagraphs, please either tick (√) the box if satisfied with compliance or cross (X) the box if not satisfied with compliance and specify the reference of the Part 4 finding next to the box, or enter N/A where an item is not applicable, or N/R when applicable but not reviewed.

Paragraph	Subject					
145.A.25	Facility requirements					
145.A.30	Personnel requirements					
145.A.35	Certifying ~~Staff~~ staff and ~~Category B1 and B2~~ support staff					
145.A.40	Equipment, ~~Tools~~ tools and material					
145.A.42	Acceptance of ~~Components~~ components					
145.A.43	Control of unserviceable components					
145.A.45	Maintenance Data					
145.A.47	Production ~~Planning~~planning					
145.A.48	Performance of maintenance					
145.A.50	Certification of ~~Maintenance~~ maintenance					

145.A.55	Maintenance ~~Records~~ records								
145.A.60	External o~~O~~ccurrence ~~R~~reporting								
145.A.62	Internal safety reporting scheme								
145.A.65	~~Safety and Quality Policy, maintenance procedures and Quality System~~ Management system								
145.A.68	Management system record keeping								
145.A.70	Maintenance Organisation Exposition (see Part-3)								
145.A.71	Maintenance procedures								
145.A.75	Privileges of the organisation								
145.A.80	Limitations on the organisation								
145.A.82	Means of compliance								
145.A.85	Changes to the organisation								

145.A.92	Access							
145.A.95	Findings							
145.A.97	Immediate reaction to a safety problem							

Competent ~~surveyor~~ inspector(s): Signature(s):

Competent authority office: Date of EASA Form 6, Part 2 completion:

Part-145 APPROVAL RECOMMENDATION REPORT	EASA FORM 6

~~PART~~ Part 3: Compliance with 145.A.70 Maintenance organisation exposition

Please either tick (√) the box if satisfied with compliance; or cross (X) if not satisfied with compliance and specify the reference of the Part 4 finding; or enter N/A where an item is not applicable; or N/R when applicable but not reviewed.

Part 1	**~~Management~~ General**	
1.1		Corporate commitment by the accountable manager
1.2		Safety policy ~~and Quality Policy~~
1.3		Management personnel
1.4		Duties and responsibilities of the management personnel
1.5		Management ~~Organisation~~ organisation ~~Chart~~ chart
1.6		List of ~~Certifying~~ certifying staff and ~~B1 and B2~~ support staff (Note: a separate document may be referenced)
1.7		Manpower resources
1.8		General description of the facilities at each address intended to be approved
1.9		Organisations intended scope of work
1.10		Notification procedure to the competent authority regarding changes to the organisation's activities/approval/location/personnel

1.11		Exposition amendment procedures, including, if applicable, procedure for the management of changes not requiring prior approval
1.12		Alternative means of compliance procedure
Part 2	**Maintenance Procedures**	
2.1		Supplier evaluation and subcontract control procedure
2.2		Acceptance/inspection of aircraft components and material from outside contractors
2.3		Storage, tagging, and release of aircraft components and material to aircraft maintenance
2.4		Acceptance of tools and equipment
2.5		Calibration of tools and equipment
2.6		Use of tooling and equipment by staff (including alternate tools)
2.7		Cleanliness standards of maintenance facilities
2.8		Maintenance instructions and relationship to aircraft/aircraft component manufacturers' instructions, including updating and availability to staff
2.9		Repair procedure
2.10		Aircraft maintenance programme compliance
2.11		Airworthiness Directives procedure
2.12		Optional modification procedure
2.13		Maintenance documentation in use and completion of same
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~~PART~~ Part 3: Compliance with 145.A.70 Maintenance organisation exposition		
2.14		Technical record control
2.15		Rectification of defects arising during base maintenance
2.16		Release to service procedure
2.17		Records for the operator
2.18		Reporting of defects to the competent authority/~~Operator~~ operator/~~Manufacturer~~ manufacturer
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		Control of critical tasks
2.24		Reference to specific maintenance procedures
2.25		Procedures to detect and rectify maintenance errors
2.26		Shift/task handover procedures
2.27		Procedures for notification of maintenance data inaccuracies and ambiguities to the type certificate holder
2.28		Production planning procedures
Part L2	**Additional Line Maintenance Procedures**	
L2.1		Line maintenance control of aircraft components, tools, equipment,
L2.2		Line maintenance procedures related to servicing/fuelling/de-icing,
L2.3		Line maintenance control of defects and repetitive defects
L2.4		Line procedure for completion of technical log
L2.5		Line procedure for pooled parts and loan parts
L2.6		Line procedure for return of defective parts removed from aircraft
L2.7		Line procedure for control of critical tasks
Part 3	**~~Quality System~~ Management System Procedures**	
3.1		~~Quality audit~~ Compliance monitoring of organisation procedures
3.2		~~Quality~~ Product audit of aircraft
3.3		~~Quality audit remedial~~ Audit findings corrective ~~-~~action procedure
3.4		Certifying staff qualification and training procedure
3.5		Certifying staff records
3.6		~~Quality audit~~ Compliance monitoring ~~-~~personnel

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3.7		Qualifying ~~surveyor~~ inspectors
3.8		Qualifying mechanics
3.9		Aircraft/aircraft component maintenance tasks exemption process
3.10		Concession control for deviation from organisation's procedures
3.11		Qualification procedure for specialised activities such as NDT, welding
3.12		Control of manufacturers' and other maintenance working teams

3.13		Human Factors training procedure
3.14		Competence assessment of personnel
3.15		Training procedures for on-the-job training as per Section 6 of Appendix III to Part-66 (limited to the case where the competent authority for the Part-145 approval and for the Part-66 licence is the
3.16		Procedure for the issue of a recommendation to the competent authority for the issue of a Part-66 licence in accordance with 66.B.105 (limited to the case where the competent authority for the
3.17		Hazard identification and safety risk management schemes
3.18		Safety action planning
3.19		Safety performance monitoring
3.20		Incident investigation and safety reporting
3.21		Emergency response planning
3.22		Management of change (including organisational changes with regard to safety responsibilities)
3.23		Safety promotion
3.24		Management system record keeping
Part 4	**External parties**	
4.1		Contracting operators
4.2		Operator procedures/paperwork
4.3		Operator record completion
Part 5	**~~Appendices~~ Supporting documents**	
5.1		Sample ~~Documents~~ documents
5.2		List of subcontractors
5.3		List of ~~Line~~ line maintenance locations
5.4		List of Part-145 organisations

MOE Reference:	MOE Amendment:
Competent authority audit staff:	Signature(s):
Competent authority office:	Date of Form 6, ~~part~~ Part 3 completion:

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Part 4: Findings Part-145 Compliance status Each level 1 and 2 finding should be recorded whether it has been rectified or not, and should be identified by a simple cross-reference to the Part 2 requirement. All non-rectified findings should be copied in writing to the organisation for the necessary corrective action.					
Part 2 or 3 reference	Audit reference(s): Findings	LEVEL	Corrective action		
			Date Due	Date Closed	 Reference

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Part 5: Part-145 Approval or continued approval or change recommendation*	

Name of organisation:

Approval reference:

Audit reference(s):

The following Part-145 scope of approval is recommended for this organisation:

Or, it is recommended that the Part-145 scope of approval specified in EASA Form 3 referenced ..... be ~~continued~~ confirmed.

Name of recommending competent authority ~~surveyor~~ inspector:

Signature of recommending competent authority ~~surveyor~~ inspector:

Competent authority office:

Date of recommendation:

EASA Form 6 review (quality check) : Date:

Appendix IV to AMC 145.A.30(e) and ~~145.B.10(3)~~ AMC2 145.B.20(a)(3) Fuel Tank Safety Training

This appendix includes general instructions for providing training on Fuel Tank Safety issues.

A) Effectivity:

- Large aeroplanes as defined in Decision 2003/11/RM of the Executive Director of the Agency (CS-25) and certified after 1 January 1958 with a maximum type certified passenger capacity of 30 or more or a maximum certified payload capacity of 7500 lbs (3402 kg) cargo or more, and
- Large aeroplanes as defined in Decision 2003/11/RM of the Executive Director of the Agency (CS-25) which contains CS-25 amendment 1 or later in their certification basis.

B) Affected organisations:

- Part-145 approved maintenance organisations 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.
- Competent authorities responsible as per 145.B.30 for the oversight of the Part-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 ~~quality~~ compliance monitoring manager, safety manager and the staff directly involved in ~~required to quality~~ monitoring compliance of the organisation.
- Personnel of the competent authorities responsible as per 145.B.30 for the oversight of Part-145 approved maintenance organisations specified in paragraph B).

Phase 1 + Phase 2 + Continuation training:

- Personnel of the Part-145 approved maintenance organisation required to plan, perform, supervise, inspect and certify the maintenance of aircraft and fuel system components 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. The persons who have already attended the Level 1 Familiarisation course in compliance with ED decision 2007/002/R Appendix IV are already in compliance with Phase 1.

Type

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

Level

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

Objectives:

The trainee should, after the completion of the training:

1. Be familiar with the basic elements of the fuel tank safety issues.
2. Be able to give a simple description of the historical background and the elements requiring a safety consideration, using common words and showing examples of non-conformities.
3. Be able to use typical terms.

Content:

The course should include:

- a short background showing examples of FTS accidents or incidents,
- the description of concept of fuel tank safety and CDCCL,
- some examples of manufacturers documents showing CDCCL items,
- typical examples of FTS defects,
- some examples of TC holders repair data
- some examples of maintenance instructions for inspection.

Phase 2 — Detailed training

A flexible period may be allowed by the competent authorities to allow organisations to set the necessary courses and impart the training to the personnel, taking into account the organisation's training schemes/means/practices. This flexible period should not extend beyond 31 December 2010.

The persons who have already attended the Level 2 Detailed training course in compliance with ED decision 2007/002/R Appendix IV either from a Part-145 maintenance organisation or from a Part-147 training organisation are already in compliance with Phase 2 with the exception of continuation training.

Staff should have received Phase 2 training by 31 December 2010 or within 12 months of joining the organisation, whichever comes later.

Type

It should be a more in-depth internal or external course. It should not take the form of a training bulletin, or other self-study. An examination should be required at the end, which should be in the form of a multi choice question, 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 Fuel Tank Safety (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 authorised 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 fuel tank safety issues and the theoretical and practical elements of the subject, have an overview of the 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 ALI (including Critical Design Configuration Control Limitations CDCCL, 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 and an Airworthiness Directive.

Content

Following the guidelines described in paragraph E).

Continuation training

The organisation should ensure that the continuation training is required in each two years period. The syllabus of the training programme referred to in 3.4 of the Maintenance Organisation Exposition (MOE) should include the additional syllabus for this continuation training.

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

The continuing training should be updated when new instruction are issued which are related to the material, tools, documentation and manufacturer's or competent authority'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 are being established:

(a) understanding of the background and the concept of fuel tank safety,

(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 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 fuel tank safety: 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 programme initiatives and goals, to identify unsafe conditions and to correct them, to systematically improve fuel tank maintenance),

(iv) Explain the briefly 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,

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

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

(vii) Flammability reduction systems 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 TC / STC holders' maintenance data.

F) Approval of training

For Part-145 approved organisations, the approval of the initial and continuation 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 competent authority.