

YEMEN CIVIL AVIATION REQUIREMENTS (YCARs)

YCAR PART V

AIRWORTHINESS REQUIREMENTS

Chapter 3

YCAR 145 APPROVED MAINTENANCE ORGANIZATIONS

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AMENDMENTS HISTORY

Amendment	Source(s)	Subject(s)	Applicable Date

AIRWORTHINESS REQUIREMENTS

Chapter 3

YCAR 145 APPROVED MAINTENANCE ORGANIZATIONS

Including

AMC/GM YCAR 145

Issue: September 2011
(Based on EASA Part 145 Issue: November 2010)

CONTENTS - GENERAL

YCAR 145

APPROVED MAINTENANCE ORGANIZATION

- REQUIREMENTS**
- ACCEPTABLE MEANS OF COMPLIANCE**
- GUIDANCE MATERIAL**

FOREWORD

1. The Civil Aviation and Met. Authority, known in these requirements as the “Authority” has implemented YCAR 145 based on the European Aviation Safety Agency EASA Part145 and with a view to harmonizing legislation
2. The Authority has adopted associated compliance or interpretative material wherever possible and, unless specifically stated otherwise, clarification will be based on this material or other CAMA documentation.
3. Future development of the requirements of YCAR 145 will be in accordance with Notice of Proposed Amendment (NPA) procedures. These procedures allow for the amendment of YCAR 145 to be harmonized with amendments to EASA and ICAO Annexes in a timely manner.
4. **Where reference is made in YCAR Part 145 to YCAR Part 66 , YCAR FCL, YCAR 21 codes which have not yet been implemented the equivalent existing national regulations will apply until such time as the reference code has been implemented..**
5. Reserved.
6. New, amended and corrected text will be highlighted by a revision bar against the amended paragraph.
7. Requirements are presented in Times New Roman font and guidance material is presented in Arial font.
8. This issue is dated: September, 2011 and the organization is required to comply with this REQUIREMENT by 01 January 2012. However existing CAMA approved YCAR 145 organizations may continue to follow the Amendment Number 01 of YCAR-145(January 2011) until 31 December 2011

Changes made under ISSUE September 2011:

- a. Title Page - To highlight new issue —September 2011
 - b. FOREWORD - To highlight revised YCAR 145 Issue No and description of changes
 - c. AMC No. 2 to 145.50(d) (2) - Typo error
 - d. APPENDIX 1 to YCAR 145 - To amend AW Form 1 and instruction to reflect maintenance release.
 - e. APPENDIX IV to YCAR 145 - Typo error
 - f. APPENDIX V to YCAR 145 - Typo error
9. Conformity with the guidance material presented in —Section AMC of this Chapter is mandatory unless other means of compliance meet the equivalent level of safety, acceptable to the CAMA.

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YCAR 145.1 General

Organizations involved in the maintenance of all aircraft registered in YEMEN in all categories of operations (except aircraft below 5700 kg Mass take-off Weight Authorized in non commercial air transport), and components intended for fitment thereto, shall be approved in accordance with YCAR 145.

Unless maintained by YCAR 145 organization, non commercial air transport category aircraft below 5700 kg MTOA shall comply with the requirement stipulated in YCAR Part IV subpart M.

The approved maintenance organization shall establish procedures acceptable to the authority to comply with the requirements of YCAR Part V Chapter 2 Section 9 for performing Duplicate Inspections

The approved maintenance organization, if applicable, shall establish procedures acceptable to the authority to comply with the following requirements of YCAR Part V Chapter 2:

- (a) Section 11 Certificate of Fitness for flight

YCAR 145.10 Scope

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

AMC 145.10 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 powerplant 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 (AD's, SB's) the Quality Manager may accept base maintenance tasks to be performed by a line maintenance organization

provided all requirements are fulfilled as defined by the 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. For an organization based in the Republic of Yemen and to be approved in accordance with CAR 145.10 means that the management as specified in 145.30(a) and (b) should be located in the Republic of Yemen

3. Where the organization uses facilities both inside and outside the Republic of Yemen such as satellite facilities, sub-contractors, and line stations etc., such facilities may be included in the approval without being identified on the approval certificate subject to the maintenance organization exposition identifying the facilities and containing procedures to control such facilities and the Authority being satisfied that they form an integral part of the approved maintenance organization.

GM 145.10 Scope

This Guidance Material (GM) provides guidance on how the smallest organizations satisfy the intent of YCAR 145:

1. By inference, the smallest maintenance organization 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 organization.
2. It is recognized that a YCAR 145 approval may be required by two quite different types of small organizations, 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 organizations approved under YCAR 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.

3.1 145.30 (b): The minimum requirement is for one full-time person who meets the CAR66 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 145.65(c) may be contracted to an appropriate organization approved under CAR145 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 authority.

Note: Full-time for the purpose of CAR145 means not less than 35 hrs per week except during vacation periods.

3.1.2 145.35. 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 authority of the GTFNPA-001 Form. With only one person the requirement for a separate record of authorization is unnecessary because the AWF-AMO-007 approval schedule defines the authorization. An appropriate statement, to reflect this situation, should be included in the exposition.

3.1.3 145.65(c). It is the responsibility of the contracted quality monitoring organization or person to make a minimum of 2 visits per 12 months and it is the responsibility of this organization or person to carry out such monitoring on the basis of 1 pre-announced visit and 1 not announced visit to the organization. It is the responsibility of the organization to comply with the findings of the contracted quality monitoring organization or the person.

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

4. Recommended operating procedure for a CAR145 approved maintenance organization based upon up to 10 persons involved in maintenance.

4.1. 145.30 (b): The normal minimum requirement is for the employment on a fulltime basis of two persons who meet the 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 145.30(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 engineer⁴ should have similar qualifications and status to the maintenance engineer⁴ 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 organization to nominate a post holder for the quality monitoring function, this function may be contracted in accordance to paragraph 3.1.1.

YCAR 145.15 Application

An application for the issue, renewal or variation of an approval shall be made to the Authority in a form and manner established by the Authority.

AMC 145.15 Application

In a form and in a manner established by the Authority means that the application should be made on the appropriate CAMA application form available on the CAMA website.

YCAR 145.20 Terms of approval

The organization shall specify the scope of work deemed to constitute approval in its exposition (Appendix ii to this Regulation contains a table of all classes and ratings)

AMC 145.20 Terms of approval

The following table identifies the ATA specification 100 chapter for the category C component rating.

CLASS	RATING	ATA CHAPTERS
COMPONENTS OTHER THAN COMPLETE ENGINES OR APUs	C1 Air Cond & Press	21
	C2 Auto Flight	22
	C3 Comms & Nav	23 - 24
	C4 Doors - Hatches	52
	C5 Electrical Power	24 - 33
	C6 Equipment	25 - 38 - 45
	C7 Engine - APU	49 - 71 - 72 - 73 - 74 - 75 - 76 - 77 - 78 - 79 - 80 - 81
	C8 Flight Controls	27 - 55 - 57 - 40 - 57.50 - 57.60 - 57.70
	C9 Fuel - Airframe	28
	C10 Helicopter - Rotors	62 - 64 - 66 - 67
	C11 Helicopter - Trans	63 - 65
	C12 Hydraulic	29
	C13 Instruments	31
	C14 Landing Gear	32
	C15 Oxygen	35
	C16 Propellers	61
	C17 Pneumatic	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

YCAR 145.25 Facility requirements

The organization shall ensure that:

- (a) Facilities are provided appropriate for all planned work, ensuring in particular, protection from the weather elements. Specialized workshops and bays are segregated, as appropriate, to ensure that environmental and work area contamination is unlikely to occur.
1. For base maintenance of aircraft, aircraft hangars are both available and large enough to accommodate aircraft on planned base maintenance;
 2. For component maintenance, component workshops are large enough to accommodate the components on planned maintenance.
- (b) Office accommodation is provided for the management of the planned work referred to in paragraph (a), and certifying staff so that they can carry out their designated tasks in a manner that contributes to good aircraft maintenance standards.
- (c) The working environment including aircraft hangars, component workshops and office accommodation is appropriate for the task carried out and in particular special requirements observed. Unless otherwise dictated by the particular task environment, the working

environment must be such that the effectiveness of personnel is not impaired:

1. temperatures must be maintained such that personnel can carry out required tasks without undue discomfort.
 2. dust and any other airborne contamination are kept to a minimum and not be permitted to reach a level in the work task area where visible aircraft/component surface contamination is evident. Where dust/other airborne contamination results in visible surface contamination, all susceptible systems are sealed until acceptable conditions are re-established.
 3. lighting is such as to ensure each inspection and maintenance task can be carried out in an effective manner.
 4. noise shall not distract personnel from carrying out inspection tasks. Where it is impractical to control the noise source, such personnel are provided with the necessary personal equipment to stop excessive noise causing distraction during inspection tasks.
 5. where a particular maintenance task requires the application of specific environmental conditions different to the foregoing, then such conditions are observed. Specific conditions are identified in the maintenance data.
 6. the working environment for line maintenance is such that the particular maintenance or inspection task can be carried out without undue distraction. Therefore where the working environment deteriorates to an unacceptable level in respect of temperature, moisture, hail, ice, snow, wind, light, dust/other airborne contamination, the particular maintenance or inspection tasks must be suspended until satisfactory conditions are re-established.
- (d) Secure storage facilities are provided for components, equipment, tools and material. Storage conditions ensure segregation of serviceable components and material from unserviceable aircraft components, material, equipment and tools. The conditions of storage are in accordance with the manufacturer's instructions to prevent deterioration and damage of stored items. Access to storage facilities is restricted to authorized personnel.

AMC 145.25(a) Facility requirements

1. Where the hangar is not owned by the organization, it may be necessary to establish proof of tenancy. In addition, sufficiency of hangar space to carry out planned base maintenance should be demonstrated by the preparation of a projected aircraft hangar visit plan relative to the maintenance programme. The aircraft hangar visit plan should be updated on a regular basis.
2. Protection from the weather elements relates to the normal prevailing local weather elements that are expected throughout any twelve month period. Aircraft hangar and component workshop structures should prevent the ingress of rain, hail, ice, snow, wind and dust etc. Aircraft hangar and component workshop floors should be sealed to minimize dust generation.

3. For line maintenance of aircraft, hangars are not essential but it is recommended that access to hangar accommodation be demonstrated for usage during inclement weather for minor scheduled work and lengthy defect rectification.
4. Aircraft maintenance staff should be provided with an area where they may study maintenance instructions and complete maintenance records in a proper manner.

AMC 145.25(b) Facility requirements

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

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

AMC 145.25(d) Facility requirements

Storage facilities for serviceable aircraft components should be clean, well ventilated and maintained at a constant dry temperature to minimize the effects of condensation. Manufacturer's storage recommendations should be followed for those aircraft components identified in such published recommendations.

1. Storage racks should be strong enough to hold aircraft components and provide sufficient support for large aircraft components such that the component is not distorted during storage.
2. All aircraft components, wherever practicable, should remain packaged in protective material to minimize damage and corrosion during storage.

YCAR 145.30 Personnel requirements

(a) The organization 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 Part. The accountable manager shall:

1. ensure that all necessary resources are available to accomplish maintenance in accordance with YCAR 145.65(b) to support the organization approval.
2. establish and promote the safety and quality policy specified in YCAR 145.65(a).
3. demonstrate a basic understanding of this Part.

-
- (b) The organization shall nominate a person or group of persons, whose responsibilities include ensuring that the organization 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 organization and be responsible for all 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 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 deputizes 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 monitoring the quality system, including the associated feedback system as required by YCAR 145.65(c). 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 organization shall have a maintenance man-hour plan showing that the organization has sufficient staff to plan, perform, supervise, inspect and quality monitor the organization in accordance with the approval. In addition the organization 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 organization 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 Authority. In addition to the necessary expertise related to the job function, competence must include an understanding of the application of human factors and human performance issues appropriate to that person's function in the organization. ‘Human factors’ 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. ‘Human performance’ means human capabilities and limitations which have an impact on the safety and efficiency of aeronautical operations.
- (f) The organization 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 recognized by the Authority. Personnel who carry out any other specialized task shall be appropriately qualified in accordance with officially recognized Standards. By derogation to this paragraph those personnel specified in paragraphs (g) and (h)(1) and (h)(2), qualified in YCAR 66 category B1 may carry out and/or control color contrast dye penetrant tests.

(g) Any organization maintaining aircraft, except where stated otherwise in paragraph (j), shall in the case of aircraft line maintenance, have appropriate aircraft type rated certifying staff qualified as category B1 and B2 in accordance with YCAR 66 and YCAR 145.35. In addition such organizations may also use appropriately task trained certifying staff qualified as category A in accordance with YCAR 66 and YCAR 145.35 to carry out minor scheduled line maintenance and simple defect rectification. The availability of such category A certifying staff shall not replace the need for YCAR 66 category B1 and B2 certifying staff to support the category A certifying staff. However, such YCAR 66 category B1 and B2 staff need not always be present at the line station during minor scheduled line maintenance or simple defect rectification.

(h) Any organization 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 YCAR 66 and YCAR 145.35. In addition the organization shall have sufficient aircraft type rated staff qualified as category B1 and B2 in accordance with YCAR 66 and YCAR 145.35 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 organization 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 type rated certifying staff qualified as category B1 and B2 in accordance with YCAR 66 and YCAR 145.35 or,
- ii. appropriate aircraft type rated certifying staff qualified in category C assisted by B1 and B2 support staff as specified in paragraph (1).

(i) Component certifying staff shall comply with YCAR 66.

(j) By derogation to paragraphs (g) and (h), the organization may use certifying staff qualified in accordance with the following provisions:

1. For organization facilities located outside the Yemen territory, certifying staff may be qualified in accordance with their national aviation regulation of the state in which the organization facility is registered subject to the conditions specified in Appendix IV to this Regulation.
2. Reserve
3. For a repetitive pre-flight airworthiness directive which specifically states that the flight crew may carry out such airworthiness directive, the organization may issue a limited certification authorization to the aircraft commander and/or the flight engineer on the basis of the flight crew license held. However, the organization shall ensure that sufficient practical training has been carried out to ensure that such aircraft commander or flight engineer can accomplish the airworthiness directive to the required standard.
4. In the case of aircraft operating away from a supported location the organization may issue a limited certification authorization to the commander and/or the flight engineer on the basis of the flight crew license held subject to being satisfied that sufficient practical training has been carried out to ensure that the commander or 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 organization contracted to provide maintenance support may issue a one-off certification authorization;
 - i. to one of its employees holding equivalent type authorizations 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 license rated for the aircraft type requiring certification provided there is no organization appropriately approved under this Part at that location and the contracted organization obtains and holds on file evidence of the experience and the license of that person.

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

AMC 145.30(a) Personnel requirements

With regard to the accountable manager, it is normally intended to mean the chief executive officer of the approved maintenance organization, who by virtue of position has overall (including in particular financial) responsibility for running the organization. The accountable manager may be the accountable manager for more than one organization and is not required to be necessarily knowledgeable on technical matters as the maintenance organization

exposition defines the maintenance standards. When the accountable manager is not the chief executive officer the Authority will need to be assured that such an accountable manager has direct access to chief executive officer and has a sufficiency of ‘maintenance funding’ allocation.

AMC 145.30(b) Personnel requirements

1. Dependent upon the size of the organization, the YCAR 145 functions may be subdivided under individual managers or combined in any number of ways.
2. The organization should have, dependent upon the extent of approval, a base maintenance manager, a line maintenance manager, a workshop manager and a quality manager, all of whom should report to the accountable manager except in small YCAR 145 organization where anyone manager may also be the accountable manager, as determined by the 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 standards specified in YCAR 145.65(c). The base maintenance manager is also responsible for any corrective action resulting from the quality compliance monitoring of YCAR 145.65(d).
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 YCAR 145.65(b) and also responsible for any corrective action resulting from the quality compliance monitoring of YCAR 145.65(c).
5. The workshop manager is responsible for ensuring that all work on aircraft components is carried out to the standards specified in YCAR 145.65(b) and also responsible for any corrective action resulting from the quality compliance monitoring of YCAR 145.65(c).
6. The quality manager’s responsibility is specified in YCAR 145.30(c).
7. Notwithstanding the example sub-paragraphs 2 - 6 titles, the organization may adopt any title for the foregoing managerial positions but should identify to the Authority the titles and persons chosen to carry out these functions.
8. Where an organization chooses to appoint managers for all or any combination of the identified YCAR 145 functions because of the size of the undertaking, it is necessary that these managers report ultimately through either the base maintenance manager or line maintenance manager or workshop manager or quality manager, as appropriate, to the accountable manager.

NOTE: Certifying staff may report to any of the managers specified depending upon which type of control the approved maintenance organization uses (for example licensed engineers/independent inspection/dual function supervisors etc.) so long as the quality compliance monitoring staff specified in YCAR 145.65(c)(1) remain independent.

AMC 145.30(c) Personnel requirements

Monitoring the quality system includes requesting remedial action as necessary by the accountable manager and the nominated persons referred to in YCAR 145.30(b).

AMC 145.30(d) Personnel requirements

Has sufficient staff means that the organization employs or contracts such staff of which at least half the staff that perform maintenance in each workshop, hangar or flight line on any shift should be employed to ensure organizational stability. Contract staff, being part time or full time should be made aware that when working for the organization they are subjected to compliance with the organization's procedures specified in the maintenance organization exposition relevant to their duties. For the purpose of this sub-paragraph, employed means the person is directly employed as an individual by the maintenance organization approved under YCAR 145 whereas contracted means the person is employed by another organization and contracted by that organization to the maintenance organization approved under YCAR 145.

The maintenance man-hour plan should take into account any maintenance carried out on aircraft /aircraft components from outside the State and should also take into account all work carried out outside the scope of the YCAR 145 approval.

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

In the case of aircraft base maintenance, the maintenance man-hour plan should relate to the aircraft hangar visit plan as specified in AMC 145.25(a).

In the case of aircraft component maintenance, the maintenance man-hour plan should relate to the aircraft component planned maintenance as specified in YCAR 145.25(a) (2).

The quality monitoring compliance function man-hours should be sufficient to meet the requirement of YCAR 145.65(c) which means taking into account AMC145.65(c). Where quality monitoring staff perform other functions the time, allocated to such functions, needs to be taken into account in determining quality monitoring staff numbers.

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

Significant deviation from the maintenance man-hour plan should be reported through the departmental manager to the quality manager and the accountable manager for review. Significant deviation means more than a 25% shortfall in available man-hours during a calendar month for any one of the functions specified in YCAR 145.30(d).

AMC 145.30(e) Personnel requirements (refer to Appendix IV to AMC to 145.30(e))

1. The referenced procedure requires amongst others that planners, mechanics, specialized services staff, supervisors and certifying staff are assessed for competence by 'on the job' evaluation and/or by examination relevant to their particular job role within the organization before unsupervised work is permitted. A record of the qualification and competence assessment should be kept.
2. Adequate initial and recurrent training should be provided and recorded to ensure continued competence.
3. To assist in the assessment of competence, job descriptions are recommended for each job role in the organization. Basically, the assessment should establish that:
 - (a) Planners are able to interpret maintenance requirements into maintenance tasks, and have an appreciation that they have no authority to deviate from the maintenance data.
 - (b) Mechanics are able to carry out maintenance tasks to any standard specified in the maintenance data and will notify supervisors of mistakes requiring rectification to re-establish required maintenance standards.
 - (c) Specialized services staff are able to carry out specialized maintenance tasks to the standard specified in the maintenance data and will both inform and await instructions from their supervisor in any case where it is not possible to complete the specialized maintenance in accordance with the maintenance data.
 - (d) 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 YCAR 145.30(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.
 - (e) Certifying staff are able to determine when the aircraft or aircraft component is ready to release to service and when it should not be released to service.
4. In the case of planners, specialized services staff, supervisors and certifying staff acknowledge of organization procedures relevant to their particular role in the organization is important. The aforementioned list is not exclusive and may include other categories of personnel.
5. Quality audit staff are able to monitor compliance with YCAR 145 identifying non compliance in an effective and timely manner so that the organization may remain in compliance with YCAR 145.
6. In respect to the understanding of the application of human factors and human performance issues, maintenance, management, and quality audit personnel should be assessed for the need to receive Initial human factors training, but in any case all maintenance, management, and quality audit personnel should receive human factors continuation training. This should

concern to a minimum:

- Post-holders, managers, supervisors;
 - Certifying staff, technicians, and mechanics;
 - Technical support personnel such as, planners, engineers, technical record staff;
 - Quality control/assurance staff;
 - Specialized services staff;
 - Human factors staff/ human factors trainers;
 - Store department staff, purchasing department staff;
 - Ground equipment operators;
 - Contract staff in the above categories.
7. Initial human factors training should cover all the topics of the training syllabus specified in GM 145.30(e) either as a dedicated course or else integrated within other training. The syllabus may be adjusted to reflect the particular nature of the organization. The syllabus may also be adjusted to meet the particular nature of work for each function within the organization. For example:
- small organizations not working in shifts may cover in less depth subjects related to teamwork and communication,
 - planners may cover in more depth the scheduling and planning objective of the syllabus and in less depth the objective of developing skills for shift working.
- Depending on the result of the evaluation as specified in paragraph 6, initial training should be provided to personnel within 6 months of joining the maintenance organization, but temporary staff may need be trained shortly after joining the organization to cope with the duration of employment.
- Personnel being recruited from another maintenance organization approved under YCAR 145 and temporary staff should be assessed for the need to receive any additional Human factors training to meet the new maintenance organization's approved under YCAR 145 human factors training standard.
8. The purpose of human factors continuation training is primarily to ensure that staff remain current in terms of human factors and also to collect feedback on human factors issues. Consideration should be given to the possibility that such training has the involvement of the quality department. There should be a procedure to ensure that feedback is formally passed from the trainers to the quality department to initiate action where necessary.
- Human factors continuation training should be of an appropriate duration in each two year period in relation to relevant quality audit findings and other internal/external sources of information available to the organization on human errors in maintenance.
9. Human factors training may be conducted by the maintenance organization itself, or independent trainers or any training organizations acceptable to the Authority.
10. The Human factors training procedures should be specified in the maintenance organization exposition.

11. Additional training in fuel tank safety as well as associated inspection standards and maintenance procedures should be required for maintenance organizations' technical personnel, especially technical personnel involved in the compliance of CDCCL tasks.

Current guidance is provided for training to maintenance organization personnel in Appendix IV to AMC to 145.30(e).

AMC 145.30(f) Personnel requirements

1. Continued airworthiness non-destructive testing means such testing specified by the type certificate holder/aircraft or engine or propeller manufacturer in accordance with the maintenance data as specified in YCAR 145.45 for in service aircraft/aircraft components for the purpose of determining the continued fitness of the product to operate safely.
2. Appropriately qualified means to Level 1, 2 or 3 as defined by the European Standard 4179:2000 (EN 4179), MIL-STD-410E, ATA Specification 105, or any other equivalent standard acceptable to the Authority dependent upon the non-destructive testing function to be carried out.
3. Notwithstanding the fact that Level 3 personnel may be qualified via EN 4179, MIL-STD-410E, ATA Specification 105, to establish and authorize methods, techniques, etc., this does not permit such personnel to deviate from methods and techniques published by the type certificate holder/manufacturer in the form of continued airworthiness data, such as in non-destructive test manuals or service bulletins, unless the manual or service bulletin expressly permits such deviation.
4. —Notwithstanding the general references in EN 4179, MIL-STD-410E, ATA Specification 105, or any other equivalent standard acceptable to the Authority to a national aerospace non-destructive testing (NDT) board, all examinations should be conducted by personnel or organizations under the general control of such a board. In the absence of a national aerospace NDT board, an aerospace NDT board of approved in an EASA member state, or as defined by the Authority.
5. Particular non-destructive test means any one or more of the following; Dye reentrant, magnetic particle, eddy current, ultrasonic and radiographic methods including X ray and gamma ray.
6. It should be noted that new methods are and will be developed, such as, but not limited to thermography and shearography, Until such time as an agreed standard is established such methods should be carried out in accordance with the particular equipment manufacturers' recommendations including any training and examination process to ensure competence of the personnel in the process.
7. Any maintenance organization approved under YCAR 145 that carries out NDT should establish NDT specialist qualification procedures detailed in the exposition and accepted by the Authority.

8. Boroscoping and other techniques such as de-lamination coin tapping are non-destructive inspections rather than non-destructive testing. Notwithstanding such differentiation, the maintenance organization should establish an exposition procedure accepted by the Authority to ensure that personnel who carry out and interpret such inspections are properly trained and assessed for their competence in the process. Non-destructive inspections, not being considered as NDT by YCAR 145 are not listed in Appendix 2 under class rating D1.
9. The referenced standards, methods, training and procedures should be specified in the maintenance organization exposition.
10. Any such personnel who intend to carry out and/or control a non-destructive test for which they were not qualified prior to the effective date of YCAR 145 should qualify for such non-destructive test in accordance with EN 4179, MIL-STD-410E, ATA Specification 105, or any other equivalent standard acceptable to the Authority.
11. In this context officially recognized standard means those standards established or published by an official body whether having legal personality or not, which are widely recognized by the CAMA as constituting good practice.

AMC 145.30 (g) Personnel requirements

1. For the purposes of category A minor scheduled line maintenance means any minor scheduled inspection/check up to and including a weekly check specified in the operators approved aircraft maintenance programme. For aircraft maintenance programmes that do not specify a weekly check, the Authority will determine the most significant check that is considered equivalent to a weekly check.
2. Typical tasks permitted after appropriate task training to be carried out by the category A for the purpose of the category A issuing an aircraft certificate of release to service as specified in YCAR 145.50 as part of minor scheduled line maintenance or simple defect rectification are contained in the following list:
 - (a) Replacement of wheel assemblies.
 - (b) Replacement of wheel brake units.
 - (c) Replacement of emergency equipment.
 - (d) Replacement of ovens, boilers and beverage makers.
 - (e) Replacement of internal and external lights, filaments and flash tubes.
 - (f) Replacement of windscreen wiper blades.
 - (g) Replacement of passenger and cabin crew seats, seat belts and harnesses.
 - (h) Closing of cowlings and re-fitment of quick access inspection panels.
 - (i) Replacement of toilet system components but excluding gate valves.
 - (j) Simple repairs and replacement of internal compartment doors and placards but excluding doors forming part of a pressure structure.
 - (k) Simple repairs and replacement of overhead storage compartment doors and cabin furnishing items.
 - (l) Replacement of static wicks.

- (m) Replacement of aircraft main and APU aircraft batteries.
- (n) Replacement of in flight entertainment system components but excluding public address.
- (o) Routine lubrication and replenishment of all system fluids and gases.
- (p) 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 Authority as a simple task.
- (q) Inspection for and removal of de-icing/anti-icing fluid residues, including removal/closure of panels, cowls or covers or the use of special tools.
- (r) Replacement of any other component as agreed by the Authority for a particular aircraft type only where it is agreed that the task is simple.

NOTE: This list will be periodically updated in the light of ongoing experience and technological changes.

AMC 145.30(h)(1) Personnel requirements

The category B1 and B2 support staff need not hold a certifying authorization in accordance with YCAR 145.35 (b) but the organization may use such appropriately authorized certifying staff to satisfy the requirement.

AMC 145.30(j)(4) Personnel requirements

1. For the issue of a limited certification authorization the commander or flight engineer should hold either a valid air transport pilots license (ATPL), commercial pilot license (CPL) or flight engineer (F/EL) license in accordance with YCAR-FCL , on the aircraft type. In addition the limited certification authorization is subject to the maintenance organization exposition containing procedures to address the personnel requirements of YCAR 145.30 (e) and associated AMC and guidance material.

Such procedures should include as a minimum:

- (a) Completion of adequate maintenance airworthiness regulation training.
- (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 YCAR 145.

The above procedures should be specified in the maintenance organization exposition and be accepted by the Authority.

2. (i) 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 re-fitment 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 Authority.

2. (ii) Holders of a valid YCAR FCL Flight engineer license, on the aircraft type may only exercise this limited certification authorization 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 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 Authority as a simple task.
- (k) Re-setting of tripped circuit breakers under the guidance of maintenance control.
- (l) Any other simple task as agreed by the Authority for a particular aircraft type only where it is agreed that the task is simple.

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

AMC 145.30(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 authorization should only be considered for issue by the quality department of the contracted organization after it has made a reasoned judgment that such a requirement is appropriate under the circumstances and at the same time maintaining the required airworthiness standards. The organization's quality department will need to assess each situation individually prior to the issuance of a one-off authorization.
3. A one-off authorization should not be issued where the level of certification required could

exceed the knowledge and experience level of the person it is issued to. In all cases, due consideration should be given to the complexity of the work involved and the availability of required tooling and/or test equipment needed to complete the work.

AMC 145.30(j)(5)(i) Personnel requirements

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

1. Flight crew should communicate full details of the defect to the operator's supporting maintenance organization. If necessary the supporting maintenance organization will then request the use of a one off authorization from the quality department.
2. When issuing a one off authorization, the quality department of the organization should verify that:
 - (a) Full technical details relating to the work required to be carried out have been established and passed to the certifying staff.
 - (b) The organization 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 authorization.
 - (c) The person to whom a one-off Authorization is issued has been provided 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 organization, communicated to the one off authorization holder.
 - (d) The person holds authorizations of equivalent level and scope on other aircraft type of similar technology, construction and systems.
3. The one off authorization 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 YCAR 145 maintenance facility.

AMC 145.30(j)(5)(ii) Personnel requirements

This paragraph addresses staff not employed by the maintenance organization who meet the requirements of YCAR 145.30(j) (5). In addition to the items listed in AMC 145.30(j) (5) (i), paragraph 1, 2(a), (b) and (c) and 3 the quality department of the organization may issue such one off authorization providing full qualification details relating to the proposed certifying personnel are verified by the quality department and made available at the location.

GM 145.30(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 organization may combine, divide, change the order of any subject of the syllabus to suit its own needs, so long as all subjects are covered to a level of detail appropriate to the organization 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/Organizational factors
3. Human 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

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- 4.11. Workload management
 - 4.12. Fatigue
 - 4.13. Alcohol, medication, drugs
 - 4.14. Physical work
 - 4.15. Repetitive tasks/complacency
5. Environment
- 5.1. Peer pressure
 - 5.2. Stressors
 - 5.3. Time pressure and deadlines
 - 5.4. Workload
 - 5.5. Shift Work
 - 5.6. Noise and fumes
 - 5.7. Illumination
 - 5.8. Climate and temperature
 - 5.9. Motion and vibration
 - 5.10. Complex systems
 - 5.11. 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 behavior
 - 9.3. Assertiveness
10. Organization's HF program

- 10.1. Reporting errors
- 10.2. Disciplinary policy
- 10.3. Error investigation
- 10.4. Action to address problems
- 10.5. Feedback

GM 145.30(j)(4) Personnel requirements (Flight crew)

NOTE: The equivalent YCAR Part II, Chapter 2 clauses shall be referred to when reference is made to YCAR FCL.

1. For the holder of an ATPL or CPL issued in accordance with YCAR FCL 1 or YCAR FCL 2 the theoretical knowledge and examination subjects are detailed in appendix 1 to YCAR FCL 1.470 and appendix 1 to YCAR FCL 2.470 and shall include the following subjects:
 - Air law
 - Airframe/systems/power plant
 - Instruments/electronics
 - Mass and balance
 - Performance
 - Flight planning and monitoring
 - Human performance and limitations
 - Meteorology
 - General navigation
 - Radio Navigation
 - Operational Procedures
 - Principles of Flight
 - VFR Communications
 - IFR Communications
2. For the holder of a YCAR FCL F/EL, YCAR FCL 4 subpart D gives details on the theoretical and practical knowledge and skill requirements from which appendix 1 to YCAR FCL 4.160 Technical Training Course (TTC) must include details of the following subjects: (See YCAR - FCL 4.160(b)(1))

Familiarization 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).

The theoretical knowledge instruction consists of 100 hours and includes the following elements:

- 1) Airframe and systems
- 2) Electrical system
- 3) Power plant and emergency equipment
- 4) Flight instruments and automatic flight control systems

Practical skills training provided by an organization approved under YCAR 145 is given which includes 35 hours practical experience in the following subjects:

- Fuselage and flight controls
- Engines
- Instruments
- Landing gear and brakes
- Cabin/cockpit/emergency equipment
- De-icing/anti-icing related maintenance activities,
- Ground handling and servicing
- Certificate of completion

Following successful completion of the technical training, the training organization 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.

YCAR 145.35 Certifying staff and category B1 and B2 support staff

- (a) In addition to the appropriate requirements of YCAR 145.30(g) and (h), the organization shall ensure that certifying staff and category B1 and B2 support staff have an adequate understanding of the relevant aircraft and/or components to be maintained together with the associated organization procedures. In the case of certifying staff, this must be accomplished before the issue or re-issue of the certification authorization.

Category B1 and B2 support staff means those category B1 and B2 staff in the base maintenance environment who do not hold necessarily certification privileges. Relevant aircraft and/or components mean those aircraft or components specified in the particular certification authorization. Certification authorization means the authorization issued to certifying staff by the organization and which specifies the fact that they may sign certificates of release to service within the limitations stated in such authorization on behalf of the approved organization.

- (b) Excepting those cases listed in YCAR 145.30(j) the organization may only issue a certification authorization to certifying staff in relation to the basic categories or subcategories and any type rating listed on the aircraft maintenance license as required by YCAR 66, subject to the license remaining valid throughout the validity period of the authorization and the certifying staff remaining in compliance with YCAR 66.
- (c) The organization shall ensure that all certifying staff and category B1 and B2 support staff are involved in at least six months of actual relevant aircraft or component maintenance experience in any consecutive two year period. For the purpose of this paragraph involved in actual relevant aircraft or component maintenance means that the person has worked in an aircraft or component maintenance environment and has either exercised the privileges of the certification authorization and/or has actually carried out maintenance on at least some of the aircraft type systems specified in the particular certification authorization.
- (d) The organization shall ensure that all certifying staff and category B1 and B2 support staff receive sufficient continuation training in each two year period to ensure that such staff have up-to-date knowledge of relevant technology, organization procedures and human factor issues.

- (e) The organization shall establish a programme for continuation training for certifying staff and category B1 and B2 support staff, including a procedure to ensure compliance with the relevant paragraphs of YCAR 145.35 as the basis for issuing certification authorizations under this Part to certifying staff, and a procedure to ensure compliance with YCAR 66.
- (f) Except where any of the unforeseen cases of YCAR 145.30(j)(5) apply, the organization shall assess all prospective certifying staff for their competence, qualification and capability to carry out their intended certifying duties in accordance with a procedure as specified in the exposition prior to the issue or re-issue of a certification authorization under this Part.
- (g) When the conditions of paragraphs (a), (b), (d), (f) and, where applicable, paragraph (c) have been fulfilled by the certifying staff, the organization shall issue a certification authorization that clearly specifies the scope and limits of such authorization. Continued validity of the certification authorization is dependent upon continued compliance with paragraphs (a), (b), (d), and where applicable, paragraph (c).
- (h) The certification authorization must be in a style that makes its scope clear to the certifying staff and any authorized person who may require examining the authorization. Where codes are used to define scope, the organization shall make a code translation readily available.
‘Authorized person’ means the officials of the Authority who has responsibility for the oversight of the maintained aircraft or component.
- (i) The person responsible for the quality system shall also remain responsible on behalf of the organization for issuing certification authorizations to certifying staff. Such person may nominate other persons to actually issue or revoke the certification authorizations in accordance with a procedure as specified in the exposition.
- (j) The organization shall maintain a record of all certifying staff and category B1 and B2 support staff.

The staff records shall contain:

- 1) the details of any aircraft maintenance license held under YCAR 66; and
- 2) all relevant training completed; and
- 3) the scope of the certification authorizations issued, where relevant, and
- 4) particulars of staff with limited or one-off certification authorizations.

The organization shall retain the record for at least three years after the staff referred in this paragraph have ceased employment with the organization or as soon as the authorization has been withdrawn. In addition, upon request, the maintenance organization shall furnish staff referred to in this paragraph with a copy of their personal record on leaving the organization.

The staff referred to in this paragraph shall be given access on request to their personal records as detailed above.

- (k) The organization shall provide certifying staff with a copy of their certification authorization in either a documented or electronic format.

- (l) Certifying staff shall produce their certification authorization to any authorized person within 24 hours.
- (m) The minimum age for certifying staff and category B1 and B2 support staff is 21 years.

AMC 145.35(a) Certifying staff and category B1 and B2 support staff

1. Adequate understanding of the relevant aircraft and/or aircraft component(s) to be maintained together with the associated organization procedures means that the person has received training and has relevant maintenance experience on the product type and associated organization procedures such that the person understands how the product functions, what are the more common defects with associated consequences.
2. The organization should hold copies of all documents that attest to qualification, and to recent experience.

AMC 145.35(b) Certifying staff and category B1 and B2 support staff

The organization issues the certification authorization when satisfied that compliance has been established with the appropriate paragraphs of YCAR 145 and YCAR 66. In granting the certification authorization the maintenance organization approved under YCAR 145 needs to be satisfied that the person holds a valid aircraft maintenance license and may need to confirm such fact with the Authority.

AMC 145.35(d) Certifying staff and category B1 and B2 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 organization 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 quality department to ensure that feedback is actioned. Alternatively, there should be a procedure to ensure that feedback is formally passed from the training department to the quality department to initiate action.
2. Continuation training should cover changes in relevant requirements such as YCAR 145, changes in organization procedures and the modification standard of the products being maintained plus human factor issues identified from any internal or external analysis of incidents. It should also address instances where staff failed to follow procedures and the reasons why particular procedures are not always followed. In many cases the continuation training will reinforce the need to follow procedures and ensure that incomplete or incorrect procedures are identified to the company in order that they can be corrected. This does not preclude the possible need to carry out a quality audit of such procedures.
3. Continuation training should be of sufficient duration in each 2 year period to meet the intent of YCAR 145.35(d) and may be split into a number of separate elements. YCAR 145.35(d)

requires such training to keep certifying staff updated in terms of relevant.

AMC 145.35(e) Certifying staff and category B1 and B2 support staff

The programme for continuation training should list all certifying staff and support staff and when training will take place, the elements of such training and an indication that it was carried out reasonably on time as planned. Such information should subsequently be transferred to the certifying staff and support staff record as required by 145.35 (j).

AMC 145.35(f) Certifying staff and category B1 and B2 support staff

1. As stated in 145.35 (f), with one exception, all prospective certifying staff are required to be assessed for competence, qualification and capability related to intended certifying duties. There are a number of ways in which such assessment may be carried out but the following points need to be considered to establish an assessment procedure that fits the particular organization.
2. Competence and capability can be assessed by working the person under the supervision of either another certifying person or a quality auditor for sufficient time to arrive at a conclusion. Sufficient time could be as little as a few weeks if the person is fully exposed to relevant work. It is not required to assess against the complete spectrum of intended duties. When the person has been recruited from another approved maintenance organization and was a certifying person in that organization than the organization should accept a written confirmation from the person responsible for running the quality system about the person.
3. Qualification assessment means collecting copies of all documents that attest to qualification, such as the license and/or any authorization held. This should be followed by a confirmation check with the organization(s) that issued such document(s) and finally a comparison check for differences between the product type ratings on the qualification documents and the relevant product types maintained by the organization. This latter point may reveal a need for product type differences training

AMC 145.35(j) Certifying staff and category B1 and B2 support staff

1. The following minimum information as applicable should be kept on record in respect of each certifying person or category B1 or B2 support person:
 - (a) Name
 - (b) Date of Birth
 - (c) Basic Training
 - (d) Type Training
 - (e) Continuation Training
 - (f) Experience
 - (g) Qualifications relevant to the authorization
 - (h) Scope of the authorization
 - (i) Date of first issue of the authorization

- (j) If appropriate - expiry date of the authorization
 - (k) Identification Number of the authorization
2. The record may be kept in any format but should be controlled by the organization's quality department. This does not mean that the quality department should run the record system.
 3. Persons authorized to access the system should be maintained at a minimum to ensure that records cannot be altered in an unauthorized manner or that such confidential records become accessible to unauthorized persons.
 4. The Authority is an authorized person when investigating the records system for initial and continued approval or when the Authority has cause to doubt the competence of a particular person.

YCAR 145.40 Equipment, tools and material

- (a) The organization shall have available and use the necessary equipment, tools and material to perform the approved scope of work:
 1. Where the manufacturer specifies a particular tool or equipment, the organization shall use that tool or equipment, unless the use of alternative tooling or equipment is agreed by the Authority via procedures specified in the exposition.
 2. Equipment and tools must be permanently available, except in the case of any tool or equipment that is so infrequently used that its permanent availability is not necessary. Such cases shall be detailed in an exposition procedure.
 3. An organization approved for base maintenance shall have sufficient aircraft access equipment and inspection platforms/docking such that the aircraft can be properly inspected.
- (b) The organization shall ensure that all tools, equipment and particularly test equipment, as appropriate, are controlled and calibrated according to an officially recognized standard at a frequency to ensure serviceability and accuracy. Records of such calibrations and traceability to the standard used shall be kept by the organization.

AMC 145.40(a) Equipment, tools and material

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

AMC 145.40(b) Equipment, tools and material

1. The control of these tools and equipment requires that the organization has a procedure to inspect/service and, where appropriate, calibrate such items on a regular basis and indicate to users that the item is within any inspection or service or calibration time-limit. A clear system of labeling all tooling, equipment and test equipment is therefore necessary giving information on when the next inspection or service or calibration is due and if the item is unserviceable for any other reason where it may not be obvious. A register should be maintained for all precision tooling and equipment together with a record of calibrations and standards used.
2. Inspection, service or calibration on a regular basis should be in accordance with the equipment manufacturers' instructions except where the organization can show by results that a different time period is appropriate in a particular case.
3. In this context officially recognized standard means those standards established or published by an official body whether having legal personality or not, which are widely recognized by the air transport sector as constituting good practice or any other standard accepted by the Authority.

YCAR 145.42 Acceptance of components

- (a) All components shall be classified and appropriately segregated into the following categories:
 1. Components which are in a satisfactory condition, released on a AW Form 1 or equivalent and marked in accordance with YCAR 21 Subpart Q.
 2. Unserviceable components which shall be maintained in accordance with this section.
 3. Unsalvageable components which are classified in accordance with YCAR 145.42(d).
 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 organization 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 conformity to specification statement plus both the manufacturing and supplier source.
- (b) Prior to installation of a component, the organization shall ensure that the particular component is eligible to be fitted when different modification and/or airworthiness directive standards may be applicable.
- (c) The organization 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.

- (d) 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 YCAR 21.
- (e) The organization shall ensure that it is in compliance with CAMA Airworthiness Notice No. 22.

AMC 145.42(a) Acceptance of components

1. An equivalent document to an AW Form 1 may be:
 - (a) a release document issued by an organization under the terms of a bilateral agreement signed by the Authority; or
 - (b) an EASA Form 1 issued by a Part 145 organization approved by an EASA Member State;
 - (c) a JAA Form 1 issued prior to September 28, 2003; or
 - (d) a JAA Form One issued prior to 28 September 2005 by a production organization approved by a competent authority in accordance with its national regulations;
 - (e) FAA Form 8130-3; or
 - (f) Transport Canada Form 24-0078; or
 - (g) Form issued by Type Certificate holder under Authority of the State of Design; or
 - (h) Any other equivalent certification acceptable to the Authority.
2. For acceptance of standard parts, raw material and consumable material, refer to AMC M.501(c) and AMC M.501(d)

AMC 145.42(b) Acceptance of components

The AW form 1 or equivalent identifies the status of an aircraft component. Block 12 "Remarks" of the AW form1 in some cases contain vital airworthiness related information which may need appropriate and necessary actions.

The receiving organization should be satisfied that the component in question is in satisfactory condition and has been appropriately released to service. In addition, the organization should ensure that the component meets the approved data/standard, such as the required design and modification standard. This may be accomplished by reference to the manufacturer's parts catalogue or other approved data (i.e. Service Bulletin). Care should also be taken in ensuring compliance with applicable airworthiness directives, the status of any life-limited parts fitted to the aircraft component as well as Critical Design Configuration Control Limitations.

AMC 145.42(c) Acceptance of components

1. The agreement by the Authority for the fabrication of parts by the approved maintenance organization should be formalized through the approval of a detailed procedure in the Maintenance Organization Exposition. This AMC contains principles and conditions to be taken into account for the preparation of an acceptable procedure.
2. Fabrication, inspection assembly and test should be clearly within the technical and procedural capability of the organization;
3. All necessary data to fabricate the part should be approved either by the Authority or the type certificate (TC) holder or YCAR 21 design organization approval holder, or supplemental type certificate (STC) holder;
4. Items fabricated by an organization approved under YCAR 145 may only be used by that organization in the course of overhaul, maintenance, modifications, or repair of aircraft or components undergoing work within its own facility. The permission to fabricate does not constitute approval for manufacture, or to supply externally and the parts do not qualify for certification on AW Form 1. This prohibition also applies to the bulk transfer of surplus inventory, in that locally fabricated parts are physically segregated and excluded from any delivery certification.
5. Fabrication of parts, modification kits etc. for onward supply and/or sale may not be conducted by an organization approved under YCAR 145.
6. The data specified in paragraph 3 may include repair procedures involving the fabrication of parts. Where the data on such parts is sufficient to facilitate fabrication, the parts may be fabricated by an organization approved under YCAR 145. Care should be taken to ensure that the data include details of part numbering, dimensions, materials, processes, and any special manufacturing techniques, special raw material specification or/and incoming inspection requirement and that the approved organization has the necessary capability. That capability should be defined by way of exposition content. Where special processes or inspection procedures are defined in the approved data which are not available at the organization the organization cannot fabricate the part unless the TC/STC-holder gives an approved alternative.
7. Examples of fabrication under the scope of a YCAR 145 approval can include but are not limited to the following:
 - (a) Fabrication of bushes, sleeves and shims.
 - (b) Fabrication of secondary structural elements and skin panels.
 - (c) Fabrication of control cables.
 - (d) Fabrication of flexible and rigid pipes.
 - (e) Fabrication of electrical cable looms and assemblies.
 - (f) Formed or machined sheet metal panels for repairs.

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

Authority.

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

8. Where a TC-holder or an approved production organization is prepared to make available complete data which is not referred to in aircraft manuals or service bulletins but provides manufacturing drawings for items specified in parts lists, the fabrication of these items is not considered to be within the scope of an approval unless agreed otherwise by the Authority in accordance with a procedure specified in the exposition.
9. Inspection and Identification.
Any locally fabricated part should be subjected to an inspection stage before, separately, and preferably independently from, any inspection of its installation. The inspection should establish full compliance with the relevant manufacturing data, and the part should be unambiguously identified as fit for use by stating conformity to the approved data. Adequate records should be maintained of all such fabrication processes including, heat treatment and the final inspections. All parts, except those having not enough space, should carry a part number which clearly relates it to the manufacturing/inspection data. Additional to the part number the organization's identity should be marked on the part for traceability purposes.

AMC 145.42(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 cannot 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 Organizations 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.

YCAR 145.45 Maintenance data

- (a) The organization shall hold and use applicable current maintenance data in the performance of maintenance, including modifications and repairs. ‘Applicable’ means relevant to any aircraft, component or process specified in the organization's approval class rating schedule and in any associated capability list.

In the case of maintenance data provided by an operator or customer, the organization shall hold such data when the work is in progress, with the exception of the need to comply with YCAR 145.55(c).

- (b) For the purposes of this Part, applicable maintenance data shall be any of the following:
1. Any applicable requirement, procedure, operational directive or information issued by the Authority responsible for the oversight of the aircraft or component;
 2. Any applicable airworthiness directive issued by the Authority responsible for the oversight of the aircraft or component;
 3. Instructions for continuing airworthiness, issued by type certificate holders supplementary type certificate holders, any other organization required to publish such data by YCAR 21 and in the case of aircraft or components from third countries the airworthiness data mandated by the Authority responsible for the oversight of the aircraft or component;
 4. Any applicable standard, such as but not limited to, maintenance standard practices recognized by the Authority as a good standard for maintenance;
 5. Any applicable data issued in accordance with paragraph (d).
- (c) The organization shall establish procedures to ensure that if found, any inaccurate, incomplete or ambiguous procedure, practice, information or maintenance instruction contained in the maintenance data used by maintenance personnel is recorded and notified to the author of the maintenance data.
- (d) The organization may only modify maintenance instructions in accordance with a procedure specified in the maintenance organization's exposition. With respect to those changes, the organization shall demonstrate that they result in equivalent or improved maintenance standards and shall inform the type-certificate holder of such changes. Maintenance instructions for the purposes of this paragraph means instructions on how to carry out the particular maintenance task: they exclude the engineering design of repairs and modifications.
- (e) The organization shall provide a common work card or worksheet system to be used throughout relevant parts of the organization. In addition, the organization shall either transcribe accurately the maintenance data contained in paragraphs (b) and (d) onto such work cards or worksheets or make precise reference to the particular maintenance task or tasks contained in such maintenance data. Work cards and worksheets may be computer generated and held on an electronic database subject to both adequate safeguards against unauthorized alteration and a back-up electronic database which shall be updated within 24 hours of any entry made to the main electronic database. Complex maintenance tasks shall be

transcribed onto the work cards or worksheets and subdivided into clear stages to ensure a record of the accomplishment of the complete maintenance task.

Where the organization provides a maintenance service to an aircraft operator who requires their work card or worksheet system to be used then such work card or worksheet system may be used. In this case, the organization shall establish a procedure to ensure correct completion of the aircraft operators' work cards or worksheets.

- (f) The organization shall ensure that all applicable maintenance data is readily available for use when required by maintenance personnel.
- (g) The organization shall establish a procedure to ensure that maintenance data it controls is kept up to date. In the case of operator/customer controlled and provided maintenance data, the organization shall be able to show that it has written confirmation from the operator/customer that all such maintenance data is up to date and it has work orders specifying the amendment status of the maintenance data to be used.

AMC 145.45(b) Maintenance data

1. Except as specified in sub-paragraph 5, each maintenance organization approved under YCAR 145 should hold and use the following minimum maintenance data relevant to the organization's approval class rating. All maintenance related Implementing Rules and associated AMCs, approval specifications and Guidance Material, all applicable national maintenance requirements and notices which have not been superseded by any requirement, procedure or directive and all applicable airworthiness directives plus any airworthiness directive supplied by a contracted operator or customer as well as Critical Design Configuration Limitation.
2. In addition to sub-paragraph 1, an organization with an approval class rating in category A - Aircraft, should hold and use the following maintenance data where published. The appropriate sections of the operator's aircraft maintenance programme, aircraft maintenance manual, repair manual, supplementary structural inspection document, corrosion control document, service bulletins, service letters, service instructions, modification leaflets, NDT manual, parts catalogue, type certificate datasheet and any other specific document issued by the type certificate or supplementary type certificate holder as maintenance data.
3. In addition to sub-paragraph 1, an organization with an approval class rating in category B - Engines/APUs, should hold and use the following maintenance data where published. The appropriate sections of the engine/APU maintenance and repair manual, service bulletins, service letters, modification leaflets, non-destructive testing(NDT) manual, parts catalogue, type certificate data sheet and any other specific document issued by the type certificate holder as maintenance data.
4. In addition to sub-paragraph 1, an organization with an approval class rating in category C - Components other than complete engines/APUs, should hold and use the following maintenance data where published. The appropriate sections of the vendor maintenance and repair manual, service bulletins and service letters plus any document issued by the type certificate holder as maintenance data on whose product the component may be fitted

when applicable.

5. Appropriate sections of the sub-paragraphs 2 to 4 additional maintenance data means in relation to the maintenance work scope at each particular maintenance facility. For example, a base maintenance facility should have almost complete set(s) of the maintenance data whereas a line maintenance facility may need only the maintenance manual and the parts catalogue.
6. An organization only approved in class rating category D - Specialized services, should hold and use all applicable specialized service(s) process specifications.

AMC 145.45(c) Maintenance data

1. The referenced procedure should ensure that when maintenance personnel discover inaccurate, incomplete or ambiguous information in the maintenance data they should record the details. The procedure should then ensure that the YCAR 145 approved maintenance organization notifies the problem to the author of the maintenance data in a timely manner. A record of such communications to the author of the maintenance data should be retained by the YCAR 145 approved organization until such time as the type certificate holder has clarified the issue by e.g. amending the maintenance data.
2. The referenced procedure should be specified in the maintenance organization exposition.

AMC 145.45(d) Maintenance data

The referenced procedure should address the need for a practical demonstration by the mechanic to the quality personnel of the proposed modified maintenance instruction. When satisfied the quality personnel should approve the modified maintenance instruction and ensure that the 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 YCAR 21.

AMC 145.45(e) Maintenance data

1. The maintenance organization should:
 - transcribe accurately the maintenance data onto such work cards or worksheets, or
 - make precise reference to the particular maintenance task(s) contained in such maintenance data, which already identifies the task as a CDCCL where applicable.
2. Relevant parts of the organization means with regard to aircraft base maintenance, aircraft line workshops. Therefore, engine workshops for example should have a common system throughout such engine workshops that may be different to that in the aircraft base maintenance.
3. The workcards should differentiate and specify, when relevant, disassembly, accomplishment of task, reassembly and testing. In the case of a lengthy maintenance task involving a succession of personnel to complete such a task, it may be necessary to use supplementary workcards or worksheets to indicate what was actually accomplished by each individual person.

AMC 145.45(f) Maintenance data

1. Data being made available to personnel maintaining aircraft means that the data should be available in close proximity to the aircraft being maintained for supervisors mechanics and certifying staff to study.
2. Where computer systems are used, the number of computer terminals should be sufficient in relation to the size of the work programme to enable easy access, unless the computer system can produce paper copies. Where microfilm or microfiche readers/printers are used, a similar requirement is applicable.

AMC 145.45(g) Maintenance data

1. To keep data up to date a procedure should be set up to monitor the amendment status of all data and maintain a check that all amendments are being received by being a subscriber to any document amendment scheme. Special attention should be given to TC related data such as certification life-limited parts, airworthiness limitation and Airworthiness Limitation Items (ALI), etc.
2. Data being made available to personnel maintaining aircraft means that the data should be available in close proximity to the aircraft being maintained, for supervisors, mechanics and certifying staff to study.
3. Where computer systems are used, the number of computer terminals should be sufficient in relation to the size of the work programme to enable easy access, unless the computer system can produce paper copies. Where microfilm or microfiche readers/printers are used, a

similar requirement is applicable.

YCAR 145.47 Production planning

- (a) The organization shall have a system appropriate to the amount and complexity of work to plan the availability of all necessary personnel, tools, equipment, material, maintenance data and facilities in order to ensure the safe completion of the maintenance work.
- (b) The planning of maintenance tasks, and the organizing of shifts, shall take into account human performance limitations.
- (c) When it is required to hand over the continuation or completion of maintenance tasks for reasons of a shift or personnel changeover, relevant information shall be adequately communicated between outgoing and incoming personnel.

AMC 145.47(a) Production planning

1. Depending on the amount and complexity of work generally performed by the maintenance organization, the planning system may range from a very simple procedure to a complex organizational set-up including a dedicated planning function in support of the production function.
2. For the purpose of YCAR 145, the production planning function includes two complementary elements:
 - scheduling the maintenance work ahead, to ensure that it will not adversely interfere with other work as regards the availability of all necessary personnel, tools, equipment, material, maintenance data and facilities.
 - during maintenance work, organizing maintenance teams and shifts and provide all necessary support to ensure the completion of maintenance without undue time pressure.
3. When establishing the production planning procedure, consideration should be given to the following:
 - logistics,
 - inventory control,
 - square meters of accommodation,
 - man-hours estimation,
 - man-hours availability,
 - preparation of work,
 - hangar availability,
 - environmental conditions (access, lighting standards and cleanliness),
 - co-ordination with internal and external suppliers, etc.
 - scheduling of safety-critical tasks during periods when staff are likely to be most alert.

AMC145.47(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 of when planning work and shifts.

AMC145.47(c) Production planning

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

- The outgoing person's ability to understand and communicate the important elements of the job or task being passed over to the incoming person.
- The incoming person's ability to understand and assimilate the information being provided by the outgoing person.
- A formalized process for exchanging information between outgoing and incoming persons and a planned shift overlap and a place for such exchanges to take place.

YCAR 145.50 Certification of maintenance

- (a) A certificate of release to service shall be issued by appropriately authorized certifying staff on behalf of the organization when it has been verified that all maintenance ordered has been properly carried out by the organization in accordance with the procedures specified in YCAR 145.70, taking into account the availability and use of the maintenance data specified in YCAR 145.45 and that there are no non-compliances which are known to endanger the flight safety.
- (b) A certificate of release to service shall be issued before flight at the completion of any maintenance.
- (c) New defects or incomplete maintenance work orders identified during the above maintenance shall be brought to the attention of the aircraft operator for the specific purpose of obtaining agreement to rectify such defects or completing the missing elements of the maintenance work order. In the case where the aircraft operator declines to have such maintenance carried out under this paragraph, paragraph (e) is applicable.
- (d) A certificate of release to service shall be issued at the completion of any maintenance on a component whilst off the aircraft. The authorized release certificate —AW Form1 referred to in Appendix I to YCAR 145 constitutes the component certificate of release to service. When an organization maintains a component for its own use, an AW Form 1 may not be necessary

depending upon the organization's internal release procedures defined in the exposition.

- (e) By derogation to paragraph (a), when the organization is unable to complete all maintenance ordered, it may issue a certificate of release to service within the approved aircraft limitations. The organization shall enter such fact in the aircraft certificate of release to service before the issue of such certificate.
- (f) By derogation to paragraph (a) and YCAR 145.42, when an aircraft is grounded at a location other than the main line station or main maintenance base due to the nonavailability of a component with the appropriate release certificate, it is permissible to temporarily fit a component without the appropriate release certificate for a maximum of 30 flight hours or until the aircraft first returns to the main line station or main maintenance base, whichever is the sooner, subject to the aircraft operator agreement and said component having a suitable release certificate but otherwise in compliance with all applicable maintenance and operational requirements. Such components shall be removed by the above prescribed time limit unless an appropriate release certificate has been obtained in the meantime under paragraph (a) and YCAR 145.42.

AMC 145.50(a) Certification of maintenance

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

AMC145.50(b) Certification of maintenance

1. The certificate of release to service should contain the following statement:

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

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

2. It is acceptable to use an alternate abbreviated certificate of release to service consisting of the following statement 'YCAR 145 release to service' instead of the full certification statement specified in paragraph 1. When the alternate abbreviated certificate of release to service is used, the introductory section of the technical log should include an example of the full certification statement from paragraph 1.
3. The certificate of release to service should relate to the task specified in the (S)TC holder's or operator's instructions or the aircraft maintenance program which itself may cross-refer to maintenance data.

4. The date such maintenance was carried out should include when the maintenance took place relative to any life or overhaul limitation in terms of date/flying hours cycles/landings etc., as appropriate.
5. When extensive maintenance has been carried out, it is acceptable for the certificate of release to service to summarize the maintenance as long as there is a unique cross reference to the work package containing full details of maintenance carried out. Dimensional information should be retained in the work-pack record.

AMC No 1 to 145.50(d) Certification of maintenance

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

The certificate is to be used for export/import purposes, as well as for domestic purposes, and serves as an official certificate for items from the manufacturer/maintenance organization to users.

It can only be issued by organizations approved by the particular competent authority within the scope of the approval.

The certificate may be used as a rotatable tag by utilising the available space on the reverse side of the certificate for any additional information and dispatching the item with two copies of the certificate so that one copy may be eventually returned with the item to the maintenance organization. The alternative solution is to use existing rotatable tags and also supply a copy of the certificate.

A certificate should not be issued for any item when it is known that the item is unserviceable except in the case of an item undergoing a series of maintenance processes at several maintenance organizations approved under YCAR 145 and the item needs a certificate for the previous maintenance process carried out for the next maintenance organization approved under YCAR 145 to accept the item for subsequent maintenance processes. In such a case, a clear statement of limitation should be endorsed in Block 12.

AMC No 2 to 145.50(d) Certification of maintenance

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

When an organization maintains a component for use by the same organization, an AW FORM 1 may not be necessary depending upon the organization's internal release procedures defined in the maintenance organization exposition.

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2. In the case of the issue of AW FORM 1 for components in storage before YCAR 145 and YCAR 21 became effective and not released on an AW FORM 1 or equivalent in accordance with 145.42(a) or removed serviceable from a serviceable aircraft or an aircraft which has been withdrawn from service the following applies:
- 2.1 An AW FORM 1 may be issued for an aircraft component which has been:
- Maintained before YCAR 145 became effective or manufactured before CAR21 became effective.
 - Used on an aircraft and removed in a serviceable condition. Examples include leased and loaned aircraft component.
 - Removed from aircraft which have been withdrawn from service, or from aircraft which have been involved in abnormal occurrences such as accidents, incidents, heavy landings or lightning strikes.
 - Maintained by an unapproved organization.
- 2.2 An appropriately rated maintenance organization approved under YCAR 145 may issue an AW FORM 1 as detailed in this AMC subparagraph 2.5 to 2.9, as appropriate, in accordance with procedures detailed in the exposition as approved by the competent authority.
The appropriately rated organization is responsible for ensuring that all reasonable measures have been taken to ensure that only approved and serviceable aircraft components issued an AW FORM 1 under this paragraph.
- 2.3 For the purposes of this AMC No 2 only, appropriately rated means an organization with an approval class rating for the type of component or for the product in which it may be installed.
- 2.4 An AW FORM 1 issued in accordance with this paragraph 2 should be issued by signing in block 14b and stating ‘_Inspected’ in block 11. In addition, block 12 should specify:
- 2.4.1 When the last maintenance was carried out and by whom.
 - 2.4.2 If the component is unused, when the component was manufactured and by whom with a cross-reference to any original documentation which should be included with the Form.
 - 2.4.3 A list of all airworthiness directives, repairs and modifications known to have been incorporated. If no airworthiness directives or repairs or modifications are known to be incorporated, then this should be so stated.
 - 2.4.4 Detail of life used for service life-limited parts being any combination of fatigue, overhaul or storage life.

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

2.5 New/unused aircraft components

- 2.5.1 Any unused aircraft component in storage without an AW FORM 1 up to the effective date(s) for CAR21 that was manufactured by an organization acceptable to the competent authority at that time may be issued with an AW FORM 1 by an appropriately rated maintenance organization approved under YCAR 145. The AW FORM 1 should be issued in accordance with the following subparagraphs which should be included in a procedure within the maintenance organization manual.

NOTE 1: It should be understood that the release of a stored but unused aircraft component in accordance with this paragraph represents a maintenance release under YCAR 145 and not a production release under CAR21. It is not intended to bypass the production release procedure agreed by the CAMA for parts and subassemblies intended for fitment on the manufacturers' own production line.

- (a) An acceptance test report or statement should be available for all used and unused aircraft components that are subjected to acceptance testing after manufacturing or maintenance as appropriate.
- (b) The aircraft component should be inspected for compliance with the manufacturer's instructions and limitations for storage and condition including any requirement for limited storage life, inhibitors, controlled climate and special storage containers. In addition or in the absence of specific storage instructions the aircraft component should be inspected for damage, corrosion and leakage to ensure good condition.
- (c) The storage life used of any storage life-limited parts should be established.

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

2.6 Used aircraft components removed from a serviceable aircraft

- 2.6.1 Serviceable aircraft components removed from a YEMEN registered aircraft may be issued with an AW FORM 1 by an appropriately rated organization subject to compliance with this subparagraph.

- (a) The organization 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 AW 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 its operation.
 - (e) A maintenance history record should be available for all used serialized 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 AW 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 foreign registered aircraft may only be issued with an AW FORM 1 if the components are leased or loaned from the maintenance organization approved under YCAR 145 who retains control of the airworthiness status of the components. An AW FORM 1 may be issued and should contain the information as specified in paragraph 2.4 including the aircraft from which the aircraft components was removed.
- 2.7 Used aircraft components removed from an aircraft withdrawn from service. Serviceable aircraft components removed from a YEMEN registered aircraft withdrawn from service may be issued with an AW FORM 1 by a maintenance organization approved under YCAR 145 subject to compliance with this subparagraph.

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- (a) Aircraft withdrawn from service are sometimes dismantled for spares. This is considered to be a maintenance activity and should be accomplished under the control of an organization approved under YCAR 145, employing procedures approved by the competent authority.
 - (b) To be eligible for installation, components removed from such aircraft may be issued with an AW FORM 1 by an appropriately rated organization following a satisfactory assessment.
 - (c) As a minimum, the assessment will need to satisfy the standards set out in paragraphs 2.5 and 2.6 as appropriate. This should, where known, include the possible need for the alignment of scheduled maintenance that may be necessary to comply with the maintenance programme applicable to the aircraft on which the component is to be installed.
 - (d) Irrespective of whether the aircraft holds a certificate of airworthiness or not, the organization responsible for certifying any removed component should ensure that the manner in which the components were removed and stored are compatible with the standards required by YCAR 145.
 - (e) A structured plan should be formulated to control the aircraft disassembly process. The disassembly is to be carried out by an appropriately rated organization under the supervision of certifying staff who will ensure that the aircraft components are removed and documented in a structured manner in accordance with the appropriate maintenance data and disassembly plan.
 - (f) All recorded aircraft defects should be reviewed and the possible effects these may have on both normal and standby functions of removed components are to be considered.
 - (g) Dedicated control documentation is to be used as detailed by the disassembly plan, to facilitate the recording of all maintenance actions and component removals performed during the disassembly process. Components found to be unserviceable are to be identified as such and quarantined pending a decision on the actions to be taken. Records of the maintenance accomplished to establish serviceability are to form part of the component maintenance history.
 - (h) Suitable YCAR 145 facilities for the removal and storage of removed components are to be used which include suitable environmental conditions, lighting, access equipment, aircraft tooling and storage facilities for the work to be undertaken. While it may be acceptable for components to be removed, given local environmental conditions, without the benefit of an enclosed facility, subsequent disassembly (if required) and storage of the components should be in accordance with the manufacturer's recommendations.

- 2.8 Used aircraft components maintained by organizations not approved in accordance with YCAR 145. For used components maintained by a maintenance organization not approved under YCAR 145, due care should be taken before acceptance of such components. In such cases an appropriately rated maintenance organization approved under YCAR 145 should establish satisfactory conditions by:
- (a) dismantling the component for sufficient inspection in accordance with the appropriate maintenance data;
 - (b) replacing all service life-limit components when no satisfactory evidence of life used is available and/or the components are in an unsatisfactory condition;
 - (c) reassembling and testing as necessary the component;
 - (d) completing all certification requirements as specified in 145.50.
- 2.9 Used aircraft components removed from an aircraft involved in an accident or incident. Such components should only be issued with an AW FORM 1 when processed in accordance with paragraph 2.7 and a specific work order including all additional necessary tests and inspections deemed necessary by the accident or incident. Such a work order may require input from the TC holder or original manufacturer as appropriate. This work order should be referenced in block 12.

AMC 145.50(e) Certification of maintenance

1. Being unable to establish full compliance with sub-paragraph YCAR 145.50(a) means that the maintenance required by the aircraft operator could not be completed due either to running out of available aircraft maintenance downtime for the scheduled check or by virtue of the condition of the aircraft requiring additional maintenance downtime.
2. The aircraft operator is responsible for ensuring that all required maintenance has been carried out before flight and therefore YCAR 145.50(e) requires such operator to be informed in the case where full compliance with YCAR 145.50(a) cannot be achieved within the operators limitations. If the operator agrees to the deferment of full compliance, then the certificate of release to service may be issued subject to details of the deferment, including the operator's authority being endorsed on the certificate.

NOTE: Whether or not the aircraft operator does have the authority to defer maintenance is an issue between the aircraft operator and its Authority. In case of doubt concerning such a decision of the operator, the approved maintenance organization should inform the Operator Authority of such doubt, before issue of the certificate of release to service. This will allow the Operator Authority to investigate the matter as appropriate

3. The procedure should draw attention to the fact that YCAR 145.50 (a) does not normally permit the issue of a certificate of release to service in the case of non-compliance and should state what action the mechanic, supervisor and certifying staff should take to bring the matter

to the attention of the relevant department or person responsible for technical co-ordination with the aircraft operator so that the issue may be discussed and resolved with the aircraft operator. In addition, the appropriate person(s) as specified in YCAR 145.30(b) should be kept informed in writing of such possible non-compliance situations and this should be included in the procedure.

AMC 145.50(f) Certification of maintenance

1. Suitable release certificate means a certificate which clearly states that the aircraft component is serviceable; that clearly specifies the organization releasing said component together with details of the Authority under whose approval the organization works including the approval or authorization reference.
2. Compliance with all other YCAR 145 and operator requirements means making an appropriate entry in the aircraft technical log, checking for compliance with type design standards, modifications, repairs, airworthiness directives, life limitations and condition of the aircraft component plus information on where, when and why the aircraft was grounded.

GM 145.50(d) AW FORM 1 Block 12 „Remarks“

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

Maintenance documentation used, including the revision status, for all work performed and not limited to the entry made in block 11.

A statement such as „in accordance with the CMM“ is not acceptable.

- NDT methods with appropriate documentation used when relevant.
- Compliance with airworthiness directives or service bulletins.
- Repairs carried out.
- Modifications carried out.
- Replacement parts installed.
- Life-limited parts status.
- Shelf life limitations.
- Deviations from the customer work order.
- Release statements to satisfy a foreign Civil Aviation Authority maintenance requirement.
- Information needed to support shipment with shortages or re-assembly after delivery.
- References to aid traceability, such as batch numbers.

YCAR 145.55 Maintenance records

- (a) The organization shall record all details of maintenance work carried out. As a minimum, the organization shall retain records necessary to prove that all requirements have been met for issuance of the certificate of release to service, including subcontractor's release documents.

- (b) The organization shall provide a copy of each certificate of release to service to the aircraft operator, together with a copy of any specific approved repair/modification data used for repairs/modifications carried out.
- (c) The organization shall retain a copy of all detailed maintenance records and any associated maintenance data for three years from the date the aircraft or component to which the work relates was released from the organization.
1. Records under this paragraph shall be stored in a manner that ensures protection from damage, alteration, and theft.
 2. Computer backup discs, tapes etc. shall be stored in a different location from that containing the working discs, tapes etc., in an environment that ensures they remain in good condition.
 3. Where an organization approved under this Part terminates its operation, all retained maintenance records covering the last two years shall be distributed to the last owner or customer of the respective aircraft or component or shall be stored as specified by the Authority.

AMC 145.55(c) Maintenance records

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

GM 145.55(a) Maintenance records

1. 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 serialized 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 YCAR 145.45.
2. Some gas turbine engines are assembled from modules and a true total time in service for a total engine is not kept. When 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. 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 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. 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 unauthorized personnel to alter the database.

YCAR 145.60 Occurrence reporting

- (a) The organization shall report to the Authority, the state of registry and the organization responsible for the design of the aircraft or component any condition of the aircraft or component identified by the organization that has resulted or may result in an unsafe condition that hazards seriously the flight safety.
- (b) The organization 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 organization 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) The organization shall make such reports in a form and manner established by the Authority and ensure that they contain all pertinent information about the condition and evaluation results known to the organization.
- (d) Where the organization is contracted by a commercial operator to carry out maintenance, the organization shall also report to the operator any such condition affecting the operator's aircraft or component.
- (e) The organization shall produce and submit such reports as soon as practicable but in any case within 72 hours of the organization identifying the condition to which the report relates.

AMC 145.60(a) Occurrence reporting

CAAP 22 provides further guidance on occurrence reporting.

AMC 145.60(b) Occurrence reporting

1. The aim of occurrence reporting is to identify the factors contributing to incidents, and to make the system resistant to similar errors.
2. An occurrence reporting system should enable and encourage free and frank reporting of any (potentially) safety related occurrence. This will be facilitated by the establishment of a just culture. An organization should ensure that personnel are not inappropriately punished for reporting or co-operating with occurrence investigations.
3. The internal reporting process should be closed-loop, ensuring that actions are taken internally to address safety hazards.
4. Feedback to reportees, both on an individual and more general basis, is important to ensure their continued support for the scheme.

GM 145.60(a) Occurrence reporting

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

GM 145.60(c) Occurrence reporting

Each report should contain at least the following information:

- i. Organization name and approval reference.
- ii. Information necessary to identify the subject aircraft and/or component.
- iii. Date and time relative to any life or overhaul limitation in term of flying hours/cycles/landings etc. as appropriate.
- iv. Details of the condition as required by 145.60(b).
- v. Any other relevant information found during the evaluation or rectification of the condition.

YCAR 145.65 Safety and quality policy, maintenance procedures and quality system

- (a) The organization shall establish a safety and quality policy for the organization to be included in the exposition under YCAR 145.70.

NOTE: As of 31 December 2010, the organization's safety policy required by paragraph (a) shall be submitted to the Authority in compliance with the requirements of Safety Management System established and implementation as specified in YCAR PART X.

(b) The organization shall establish procedures agreed by the 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 YCAR 145.50.

1. The maintenance procedures under this paragraph apply to YCAR 145.25 to YCAR 145.95.
2. The maintenance procedures established or to be established by the organization under this paragraph shall cover all aspects of carrying out the maintenance activity, including the provision and control of specialized services and lay down the standards to which the organization intends to work.
3. With regard to aircraft line and base maintenance, the organization shall establish procedures to minimize 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 organization'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. Maintenance organization must also establish procedures for duplicate inspections as per YCAR Part V, Chapter 2, Section 9.
4. Maintenance procedures shall be established to ensure that damage is assessed and modifications repairs are carried out using data approved by the Authority or by an approved YCAR 21 design organization, as appropriate.

(c) The organization 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 organizations the independent audit part of the quality system may be contracted when authorized by the authority to another organization approved under this Part or a person with appropriate technical knowledge and proven satisfactory audit experience who is specifically authorized by the authority for this task; and
2. A quality feedback reporting system to the person or group of persons specified in YCAR 145.30(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).

AMC 145.65(a) Safety and quality policy, maintenance procedures and quality system

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

- Recognize safety as a prime consideration at all times

- Apply Human factors principles
- Encourage personnel to report maintenance related errors/incidents
- Recognize that compliance with procedures, quality standards, safety standards and regulations is the duty of all personnel
- Recognize the need for all personnel to cooperate with the quality auditors.

AMC 145.65(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 organization. It is the responsibility of all organization's employees to report any differences via their organization'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 145.65(b)(2) Safety and quality policy, maintenance procedures and quality system

Specialized services include any specialized activity, such as, but not limited to non-destructive testing requiring particular skills and/or qualification. 145.30(f) covers the qualification of personnel but, in addition, there is a need to establish maintenance procedures that cover the control of any specialized process.

AMC 145.65(b)(3) Safety and quality policy, maintenance procedures and quality system

1. The purpose of this procedure is to minimize 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 multiengine aircraft resulting in major oil loss from all engines.

Another example is the case of removal and re-fitment 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 a 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 YCAR 145.60,
- Authority 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 unauthorized personnel (i.e. temporary staff, trainee) should be checked by authorized 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 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. “Authorized personnel” means personnel formally authorized by the maintenance organization approved under YCAR 145 to sign-off tasks. “Authorized personnel” are not necessarily “certifying staff”.

4. The maintenance organization 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 organization. The maintenance organization 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 organizations can prevent adverse effects associated with wiring changes by standardizing 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. Current guidance is provided for training to maintenance organization personnel in an Appendix IV to AMC YCAR 145.30e.

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. (refer to appendix to AMC 706 (f))

AMC 145.65(c)(1) Safety and quality policy, maintenance procedures and quality system

1. The primary objectives of the quality system are to enable the organization to ensure that it can deliver a safe product and that organization remains in compliance with the requirements.
2. An essential element of the quality system is the independent audit.
3. The independent audit is an objective process of routine sample checks of all aspects of the organization's ability to carry out all maintenance to the required standards and includes some product sampling as this is the end result of the maintenance process. It represents an objective overview of the complete maintenance related activities and is intended to complement the YCAR 145.50(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 carried out on a sample basis when maintenance is being carried out. This means some audits during the night for those organizations that work at night.
4. Except as specified in sub-paragraphs 7 and 9, the independent audit should ensure that all aspects of YCAR 145 compliance are checked every 12 months and may be carried out as a complete single exercise or subdivided over the 12 month period in accordance with a scheduled plan. The independent audit does not require each procedure to be checked against each product line when it can be shown that the particular procedure is common to more than one product line and the procedure has been checked every 12 months without resultant findings. Where findings have been identified, the particular procedure should be rechecked against other product lines until the findings have been rectified after which the independent audit procedure may revert back to 12 monthly for the particular procedure.
5. Except as specified otherwise in sub-paragraphs 7, the independent audit should sample check one product on each product line every 12 months as a demonstration of the effectiveness of maintenance procedures compliance. It is recommended that procedures and product audits be combined by selecting a specific product example, such as an aircraft or engine or instrument and sample checking all the procedures and requirements associated with the specific product example to ensure that the end result should be an airworthy product.

For the purpose of the independent audit a product line includes any product under an Appendix 2 approval class rating as specified in the approval schedule issued to the particular organization. It therefore follows for example that a maintenance organization approved under YCAR 145 with a capability to maintain aircraft, repair engines, brakes and autopilots would need to carry out 4 complete audit sample checks each year except as specified otherwise in subparagraphs 5, 7 or 9.

6. The sample check of a product means to witness any relevant testing and visually inspect the product and associated documentation. The sample check should not involve repeat disassembly or testing unless the sample check identifies findings requiring such action.
7. Except as specified otherwise in sub-paragraph 9, where the smallest organization, that is an organization with a maximum of 10 personnel actively engaged in maintenance, chooses to

contract the independent audit element of the quality system in accordance with YCAR 145.65 (c)(1) it is conditional on the audit being carried out twice in every 12 month period.

8. Except as specified otherwise in sub-paragraph 9, where the organization has line stations listed as per YCAR 145.75 (d) the quality system should describe how these are integrated into the system and include a plan to audit each listed line station at a frequency consistent with the extent of flight activity at the particular line station. Except as specified otherwise in sub-paragraph 9 the maximum period between audits of a particular line station should not exceed 24 months.
9. Except as specified otherwise in sub-paragraph 5, the Authority may agree to increase any of the audit time periods specified in this AMC 145.65 (c)(1) by up to 100% provided that there are no safety related findings and subject to being satisfied that the organization has a good record of rectifying findings in a timely manner.
10. A report should be raised each time an audit is carried out describing what was checked and the resulting findings against applicable requirements, procedures and products.
11. The independence of the audit should be established by always ensuring that audits are carried out by personnel not responsible for the function, procedure or products being checked. It therefore follows that a large maintenance organization approved under YCAR 145, being an organization 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 organization approved under YCAR 145, being an organization with less than about 500 maintenance staff, it is acceptable to use competent personnel in accordance with YCAR 145.30(e 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. Organizations 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 organization or a qualified and person approved by the Authority.

AMC 145.65(c)(2) Safety and quality policy, maintenance procedures and quality system

1. An essential element of the quality system is the quality feedback system.
2. The quality feedback system 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 organization 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 YCAR 145.
3. The independent quality audit reports referenced in AMC 145.65(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 YCAR 145.65(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 organizations 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 AMC145.65(c)(1) sub- paragraph 9 audit time periods, whichever is the longer.

GM 145.65(c)(1) Safety and quality policy, maintenance procedures and quality system

1. The purpose of this GM is to give guidance on just one acceptable working audit plan to meet part of the needs of 145.65 (c)1. There is any number of other acceptable working audit plans.
2. The proposed plan lists the subject matter that should be covered by the audit and attempts to indicate applicability in the various types of workshops and aircraft facilities. The list should therefore be tailored for the particular situation and more than one list may be necessary. Each list should be shown against a timetable to indicate when the particular item is scheduled for audit and when the audit was completed

PARA	Comment	HANGAR	ENGINE Workshop	MECH Workshop	AVIONIC Workshop
145.25		Yes	Yes	Yes	Yes
145.30		Yes	Yes	Yes	Yes
145.35		Yes	Yes	Yes	Yes
145.40		Yes	Yes	Yes	Yes
145.42		Yes	Yes	Yes	Yes
145.45		Yes	Yes	Yes	Yes
145.47		Yes	Yes	Yes	Yes
145.50		Yes	Yes	Yes	Yes
145.55		Yes	Yes	Yes	Yes
145.60		Yes	Yes	Yes	Yes
145.65		Yes	Yes	Yes	Yes
2.1	MOE	Yes	Yes	Yes	Yes
2.2	MOE	Yes	Yes	Yes	Yes
2.3	MOE	Yes	Yes	Yes	Yes
2.4	MOE	Yes	Yes	Yes	Yes
2.5	MOE	Yes	Yes	Yes	Yes
2.6	MOE	Yes	Yes	Yes	Yes
2.7	MOE	Yes	Yes	Yes	Yes
2.8	MOE	Yes	Yes	Yes	Yes

2.9	MOE	Yes	Yes	Yes	Yes
2.10	MOE	Yes	No	No	No
2.11	MOE	Yes	Yes	Yes	Yes
2.12	MOE	Yes	Yes	Yes	Yes
2.13	MOE	Yes	Yes	Yes	Yes
2.14	MOE	Yes	Yes	Yes	Yes
2.15	MOE	Yes	No	No	No
2.16	MOE	Yes	Yes	Yes	Yes
2.17	MOE	if appl	if appl	if appl	if appl
2.18	MOE	Yes	Yes	Yes	Yes
2.19	MOE	Yes	Yes	Yes	Yes
2.20	MOE	Yes	Yes	Yes	Yes
2.21	MOE	if appl	if appl	if appl	if appl
2.22	MOE	Yes	Yes	No	NO
2.23	MOE	Yes	No	No	No
2.24	MOE	Yes	Yes	Yes	Yes
2.25	MOE	Yes	Yes	Yes	Yes
2.26	MOE	Yes	Yes	Yes	Yes
2.27	MOE	Yes	Yes	Yes	Yes
2.28	MOE	Yes	Yes	Yes	Yes
L2.1	MOE	if appl	No	No	No
L2.2	MOE	if appl	No	No	No
L2.3	MOE	if appl	No	No	No
L2.4	MOE	if appl	No	No	No
L2.5	MOE	if appl	No	No	No
L2.6	MOE	if appl	No	No	No
L2.7	MOE	if appl	No	No	No
3.9	MOE	if appl	if appl	if appl	if appl
3.10	MOE	if appl	if appl	if appl	if appl
3.11	MOE	if appl	if appl	if appl	if appl
3.12	MOE	Yes	Yes	No	No
3.13	MOE	Yes	Yes	Yes	Yes
3.14	MOE	Yes	Yes	Yes	Yes
145.70		Yes	Yes	Yes	Yes
145.75		Yes	Yes	Yes	Yes
145.80		Yes	Yes	Yes	Yes
145.85		Yes	Yes	Yes	Yes
145.95		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 AMC 145.65(c)(1).

YCAR 145.70 Maintenance Organization Exposition

- (a) Maintenance organization exposition means the document or documents that contain the material specifying the scope of work deemed to constitute approval and showing how the organization intends to comply with this Part. The organization shall provide the Authority with a maintenance organization exposition, containing the following information:
1. A statement signed by the accountable manager confirming that the maintenance organization exposition and any referenced associated manuals define the organization's compliance with this Part and will be complied with at all times. When the accountable manager is not the chief executive officer of the organization then such chief executive officer shall countersign the statement;
 2. the organization's safety and quality policy as specified by YCAR 145.65;
 3. the title(s) and name(s) of the persons nominated under YCAR 145.30(b);
 4. the duties and responsibilities of the persons nominated under YCAR 145.30(b), including matters on which they may deal directly with the Authority on behalf of the organization;
 5. an organization chart showing associated chains of responsibility between the persons nominated under YCAR 145.30(b);
 6. a list of certifying staff and B1 and B2 support staff;
 7. a general description of manpower resources;
 8. a general description of the facilities located at each address specified in the organization's approval certificate;
 9. a specification of the organization's scope of work relevant to the extent of approval;
 10. the notification procedure of YCAR 145.85 for organization changes;
 11. the maintenance organization exposition amendment procedure;
 12. the procedures and quality system established by the organization under YCAR 145.25 to YCAR 145.90;
 13. a list of commercial operators, where applicable, to which the organization provides an aircraft maintenance service;
 14. a list of subcontracted organizations, where applicable, as specified in YCAR 145.75(b);
 15. a list of line stations, where applicable, as specified in YCAR 145.75(d);
 16. a list of contracted organizations, where applicable.

- (b) The exposition shall be amended as necessary to remain an up-to-date description of the organization. The exposition and any subsequent amendment shall be approved by the Authority.
- (c) Reserved

AMC 145.70(a) Maintenance Organization Exposition

The following information should be included in the maintenance organization exposition:

The information specified in YCAR 145.70 (a) sub - paragraphs (6) and (12) to (16) inclusive, whilst a part of the maintenance organization 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 so long as all applicable subjects are covered. Where an organization 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 in the exposition the subject matter can be found in the exposition.

The exposition should contain information, as applicable, on how the maintenance organization complies with Critical Design Configuration Control Limitation (CDCCL) instructions.

Small maintenance organizations may combine the various items to form a simple exposition more relevant to their needs.

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

PART 0 GENERAL ORGANIZATION

PART 1 MANAGEMENT

- 1.1 Corporate commitment by the accountable manager.
- 1.2 Safety and quality policy.
- 1.3 Management personnel.
- 1.4 Duties and responsibilities of the management personnel.
- 1.5 Management organization chart.
- 1.6 List of certifying staff and B1 and B2 support staff.
- 1.7 Manpower resources.
- 1.8 General description of the facilities at each address intended to be approved.
- 1.9 Organizations intended scope of work.
- 1.10 Notification procedure to the Authority regarding changes to the organization's activities/approval/location/personnel.
- 1.11 Exposition amendment procedures including, if applicable, delegated procedures.

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 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 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

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 SYSTEM PROCEDURES

- 3.1 Quality audit of organization procedures.
- 3.2 Quality audit of aircraft.
- 3.3 Quality audit remedial action procedure.
- 3.4 Certifying staff and category B1 and B2 support staff qualification and training procedures.
- 3.5 Certifying staff and category B1 and B2 support staff records.
- 3.6 Quality audit personnel.
- 3.7 Qualifying inspectors.
- 3.8 Qualifying mechanics.
- 3.9 Aircraft or aircraft component maintenance tasks exemption process control.
- 3.10 Concession control for deviation from organizations' procedures.
- 3.11 Qualification procedure for specialized 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.

PART 4

- 4.1 Contracted operators.
- 4.2 Operator procedures and paperwork.
- 4.3 Operator record completion.

PART 5

- 5.1 Sample of documents.
- 5.2 List of Sub-contractors as per YCAR 145.75 (b).
- 5.3 List of Line maintenance locations as per YCAR 145.75 (d).
- 5.4 List of contracted organizations as per YCAR 145.70(a)(16).

PART 6 OPERATORS MAINTENANCE PROCEDURES

This section is reserved for those maintenance organizations approved under YCAR 145 who are also operators.

PART 7 Reserved

PART 8 Reserved

GM 145.70(a) Maintenance organization exposition

1. The purpose of the maintenance organization exposition (MOE) is to set forth the procedures, means and methods of the organization.
2. Compliance with its contents will assure compliance with the requirements of YCAR 145, which is a pre-requisite to obtaining and retaining an approved maintenance organization approval certificate.
3. YCAR 145.70 (a)(1) to (a)(11) constitutes the 'management' part of the MOE and therefore could be produced as one document and made available to the person(s) specified under YCAR 145.30 (b) who should be reasonably familiar with its contents. YCAR 145.70(a)(6) list of certifying staff and B1 and B2 support staff may be produced as a separate document.
4. YCAR 145.70 (a)(12) constitutes the working procedures of the organization and therefore as stated in the requirement may be produced as any number of separate procedures manuals. It should be remembered that these documents should be cross referenced from the management MOE.
5. Personnel are expected to be familiar with those parts of the manuals that are relevant to the maintenance work they carry out.
6. The organization should specify in the MOE who should amend the manual particularly in the case where there are several parts.
7. The quality manager should be responsible for monitoring the amendment of the MOE, unless otherwise agreed by the Authority, including associated procedures manuals and submission of the proposed amendments to the Authority. However the 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 Authority.
8. The MOE should cover four main parts:
 - a) The management MOE covering the parts specified earlier.
 - b) The maintenance procedures covering all aspects of how aircraft components may be accepted from outside sources and how aircraft will be maintained to the required standard.
 - c) The quality system procedures including the methods of qualifying mechanics inspection, certifying staff and quality audit personnel.

d) Contracting operator procedures and paperwork.

9. The accountable manager's exposition statement as specified under YCAR 145.70(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 organization and procedures upon which the (Authority) YCAR 145 approval is based as required by YCAR 145.70. 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 YCAR 145 approval.

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

It is understood that the (Authority) will approve this organization whilst the (Authority) is satisfied that the procedures are being followed and work standards maintained. It is further understood that the (Authority) reserves the right to suspend, limit or revoke the approval of the organization if the (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 organization's name)...

NOTE: Whenever the accountable manager changes it is important to ensure that the new accountable manager signs the paragraph 9 statement at the earliest opportunity.

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

When an organization 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.

YCAR 145.75 Privileges of the organization

In accordance with the approved exposition, the organization and the CAMA approval 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 organization that is working under the quality system of the organization. This refers to work being carried out by an organization not itself appropriately approved to carry out such maintenance under this Part and is limited to the work scope permitted under YCAR 145.65(b) 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 organization 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 YCAR 145.50.

AMC 145.75(b) Privileges of the organization

1. Working under the quality system of an organization appropriately approved under YCAR 145 (sub contracting) refers to the case of one organization, not itself appropriately approved to YCAR 145 that carries out aircraft line maintenance or minor engine maintenance or maintenance of other aircraft components or a specialized service as a subcontractor for an organization appropriately approved under YCAR 145. To be properly approved to subcontract the organization should have a procedure for the control of such subcontractors as described below. Any approved maintenance organization that carries out maintenance for another approved maintenance organization within its own approval scope is not considered to be subcontracting for the purpose of this paragraph.

NOTE: For those organizations approved under YCAR 145 that are also 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 sub-contracted to another maintenance organization. It is therefore recommended that any listing of contracted or sub-contracted maintenance organizations should identify which meet the YCAR 145 criteria and which meet the FAR Part 145 criteria.

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

3. FUNDAMENTALS OF SUB-CONTRACTING UNDER YCAR 145

- 3.1 The fundamental reasons for allowing an organization approved under YCAR 145 to sub-contract certain maintenance tasks are:

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- (a) To permit the acceptance of specialized maintenance services, such as, but not limited to, plating, heat treatment, plasma spray, fabrication of specified parts for minor repairs/modifications, etc., without the need for direct approval by the Authority in such cases.
 - (b) To permit the acceptance of aircraft maintenance up to but not including a base maintenance check as specified in YCAR 145.75(b) by organizations not appropriately approved under YCAR 145 when it is unrealistic to expect direct approval by the Authority. The Authority will determine when it is unrealistic.
 - (c) To permit the acceptance of component maintenance.
 - (d) To permit the acceptance of engine maintenance up to but not including a workshop maintenance check or overhaul of an engine or engine module as specified in CAR145.75(b) by organizations not appropriately approved under YCAR 145 when it is unrealistic to expect direct approval by the Authority. The determination of unrealistic is as per sub-paragraph (b).
- 3.2 When maintenance is carried out under the sub-contract control system it means that for the duration of such maintenance, the YCAR 145 approval has been temporarily extended to include the sub-contractor. It therefore follows that those parts of the sub-contractor's facilities personnel and procedures involved with the maintenance organization's products undergoing maintenance should meet YCAR 145 requirements for the duration of that maintenance and it remains the organization's responsibility to ensure such requirements are satisfied.
- 3.3 For the criteria specified in sub-paragraph 3.1 the organization is not required to have complete facilities for maintenance that it needs to sub-contract but it should have its own expertise to determine that the sub-contractor meets the necessary standards. However an organization cannot be approved unless it has the in-house facilities, procedures and expertise to carry out the majority of maintenance for which it wishes to be approved in terms of the number of class ratings.
- 3.4 The organization 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 authorize the use of such subcontractors, the Authority will need to be satisfied that the organization has the necessary expertise and procedures to control such subcontractors.
- 3.5 An organization working outside the scope of its approval schedule is deemed to be not approved. Such an organization may in this circumstance operate only under the sub-contract control of another organization approved under YCAR 145.
- 3.6 Authorization to sub-contract is indicated by the Authority accepting the maintenance organization exposition containing a specific procedure on the control of sub-contractors.

4. PRINCIPAL YCAR 145 PROCEDURES FOR THE CONTROL OF SUB-CONTRACTORS NOT APPROVED UNDER YCAR 145

- 4.1 A pre audit procedure should be established whereby the maintenance organizations' subcontract control section, which may also be the YCAR 145.65(c) quality system independent audit section, should audit a prospective sub-contractor to determine whether those services of the sub-contractor that it wishes to use meets the intent of YCAR 145.
- 4.2 The organization approved under YCAR 145 needs to assess to what extent it will use the sub-contractor's facilities. As a general rule the organization 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 sub-contractor as long as such tools, equipment and personnel meet the requirement of YCAR 145. In the case of sub-contractors who provide specialized services it may for practical reasons be necessary to use their specialized services personnel, approved data and material subject to acceptance by the organization approved under YCAR 145.
- 4.3 Unless the sub-contracted maintenance work can be fully inspected on receipt by the organization approved under YCAR 145 it will be necessary for such organization to supervise the inspection and release from the sub-contractor. Such activities should be fully described in the organization procedure. The organization will need to consider whether to use its own staff or authorize the sub-contractor's staff.
- 4.4 The certificate of release to service may be issued either at the sub-contractor or at the organization facility by staff issued a certification authorization in accordance with YCAR 145.30 as appropriate, by the organization approved under YCAR 145. Such staff would normally come from the organization approved under YCAR 145 but may otherwise be a person from the sub-contractor who meets the approved maintenance organization certifying staff standard which itself is approved by the Authority via the maintenance organization exposition. The certificate of release to service and the A/W Form 1 will always be issued under the maintenance organization approval reference.
- 4.5 The sub-contract 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 sub-contractors who do not meet the YCAR 145 approved maintenance organization's requirements.
- 4.6 The YCAR 145 quality audit staff will need to audit the sub-contract control section and sample audit sub-contractors unless this task is already carried out by the quality audit staff as stated in sub-paragraph 4.1.
- 4.7 The contract between the YCAR 145 approved maintenance organization and the sub-contractor should contain a provision for the Authority team staff to have right of access to the sub-contractor.

YCAR 145.80 Limitations on the organization

The organization shall only maintain an aircraft or component for which it is approved when all the necessary facilities, equipment, tooling, material, maintenance data and certifying staff are available.

AMC 145.80 Limitations on the organization

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

YCAR 145.85 Changes to the organization

The organization shall notify the Authority of any proposal to carry out any of the following changes before such changes take place to enable the 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 organization;
2. the main location of the organization;
3. additional locations of the organization;
4. the accountable manager;
5. any of the persons nominated under YCAR 145.30(b);
6. the facilities, equipment, tools, material, procedures, work scope or certifying staff that could affect the approval.

AMC 145.85 Changes to the organization

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

YCAR 145.90 Continued validity

(a) An approval once issued shall be valid for the period specified in the approval certificate and shall remain valid subject to:

1. the organization remaining in compliance with YCAR 145, in accordance with the provisions related to the handling of findings as specified report (YCAR 145.95) and

2. the Authority being granted access to the organization to determine continued compliance with this Regulation, and
 3. the certificate not being surrendered or revoked.
- (b) Upon surrender or revocation, the approval shall be returned to the authority.

YCAR 145.95 Findings

- (a) A level 1 finding is any significant non-compliance with YCAR 145 requirements which lowers the safety standard and hazards seriously the flight safety.
- (b) A level 2 finding is any non-compliance with the YCAR 145 requirements which could lower the safety standard and possibly hazard the flight safety.
- (c) After receipt of notification of findings from the authority, the holder of the maintenance organization approval shall define a corrective action plan and demonstrate corrective action to the satisfaction of the Authority within a period agreed with this Authority.

APPENDICES
TO THE YCAR 145 REQUIREMENTS

**APPENDIX I
to YCAR 145**

1. Civil Aviation & Met Authority Republic of Yemen		2. AUTHORISED RELEASE CERTIFICATE AW FORM 1			3. Form Tracking Number	
4. Organisation Name and Address					5. Work Order/Contract/Invoice	
6. Item	7. Description	8. Part Number	9. Qty.	10. Serial Number	11. Status/Work	
12. Remarks						
13a. Certifies that the items identified above were manufactured in conformity to: ● Approved design data and are in condition for safe operation ● Non-approved design data specified in block 12			14a. ● YCAR 145.50 Release to Service ● Other regulation, specified in block 12 Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12, was accomplished in accordance with YCAR 145 and in respect to that work the items are considered ready for release to service.			
13b. Authorised Signature		13c. Approved/Authorised Number		14b. Authorised Signature		14c. Certified/Approved Ref. Number
13d. Name		13e. Date (dd mmm yyyy)		14d. Name		14e. Date (dd mmm yyyy)
<p>USER/INSTALLER RESPONSIBILITIES This certificate does not automatically constitute authority to install the item(s). Where the user/installer performs work in accordance with regulations of an airworthiness authority different than the airworthiness authority specified in block 1, it is essential that the user/installer ensures his/her airworthiness authority accepts items from the airworthiness authority specified in block 1. Statements in blocks 13a and 14a do not constitute installation certification. In all cases aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.</p>						

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Issue: 2

Use of the AW Form 1 for maintenance

GENERAL

The certificate shall comply with the format attached including block numbers in that each block must be located as per the layout. The size of each block may however be varied to suit the individual application, but not to the extent that would make the certificate unrecognizable. The overall size of the certificate may be significantly increased or decreased so long as the certificate remains recognizable and legible. If in doubt consult the Authority.

All printing shall be clear and legible to permit easy reading.

The certificate shall either be pre-printed or computer generated but in either case the printing of lines and characters must be clear and legible. Pre-printed wording is permitted in accordance with the attached model but no other certification statements are permitted.

All entries must be in the English language.

The details to be entered on the certificate can be either machine/computer printed or handwriting using block letters and must permit easy reading.

Abbreviations must be restricted to a minimum.

The space remaining on the reverse side of the certificate may be used by the originator for any additional information but must not include any certification statement.

The original certificate must accompany the items and correlation must be established between the certificate and the items. A copy of the certificate must be retained by the organization that manufactured or maintained the item. Where the certificate format and data is entirely computer generated, it is permissible to retain the certificate format and data on a secure database.

Where a single certificate was used to release a number of items and those items are subsequently separated out from each other, such as through a parts distributor, then a copy of the original certificate must accompany such items and the original certificate must be retained by the organization that received the batch of items. Failure to retain the original certificate could invalidate the release status of the items.

NOTE: There is no restriction in the number of copies of the certificate sent to the customer or retained by the originator.

The certificate that accompanies the item may be attached to the item by being placed in an envelope for durability.

AUTHORISED RELEASE CERTIFICATE - AW FORM 1

These instructions relate only to the use of the AW Form 1 for maintenance purposes.

1. PURPOSE AND USE

A primary purpose of the Certificate is to declare the airworthiness of maintenance work undertaken on products, parts and appliances (hereafter referred to as item(s)).

The Certificate is acceptable to many airworthiness authorities, but may be dependent on bilateral agreements and/or the policy of the airworthiness authority. The approved design data mentioned in this Certificate then means approved by the airworthiness authority of the importing country.

The Certificate is not a delivery or shipping note.

Aircraft are not to be released using the Certificate.

The Certificate does not constitute approval to install the item on a particular aircraft, engine, or propeller but helps the end user determine its airworthiness approval status.

A mixture of items certified in conformity with approved data and to non-approved data is not permitted on the same Certificate.

2. GENERAL FORMAT

The Certificate must comply with the format attached including block numbers and the location of each block. The size of each block may however be varied to suit the individual application, but not to the extent that would make the Certificate unrecognizable.

The Certificate must be in landscape format but the overall size may be significantly increased or decreased so long as the Certificate remains recognizable and legible. If in doubt consult the CAMA.

The User/Installer responsibility statement can be placed on reverse side or on the front by reducing the depth of the Certificate.

All printing must be clear and legible to permit easy reading.

The Certificate may either be pre-printed or computer generated but in either case the printing of lines and characters must be clear and legible and in accordance with the defined format.

The Certificate should be in English.

The details to be entered on the Certificate may be either machine/computer printed or hand-

written using block letters and must permit easy reading.

Limit the use of abbreviations to a minimum, to aid clarity.

The space remaining on the reverse side of the Certificate may be used by the originator for any additional information but must not include any certification statement.

3. COPIES

Correlation must be established between the Certificate and the item(s).

The originator must retain the Certificate in a form that allows verification of the original data

There is no restriction in the number of copies of the Certificate sent to the customer or retained by the originator.

4. ERROR(S) ON A CERTIFICATE

If an end-user finds an error(s) on a Certificate, he must identify it/them in writing to the originator. The originator may issue a new Certificate if they can verify and correct the error(s).

The new Certificate must have a new tracking number, signature and date.

The request for a new Certificate may be honoured without re-verification of the item(s) condition. The new Certificate is not a statement of current condition and should refer to the previous Certificate in block 12 by the following statement; —This Certificate corrects the error(s) in block(s) [enter block(s) corrected] of the Certificate [enter original tracking number] dated [enter original issuance date] and does not cover conformity/condition/release to service. Both Certificates should be retained according to the retention period associated with the first.

COMPLETION OF THE RELEASE CERTIFICATE BY THE ORIGINATOR

Except as otherwise stated, there must be an entry in all blocks to make the document a valid certificate.

Block 1 Pre-Printed “General Civil Aviation Authority, United Arab Emirates”

**Block 2 Pre-printed “AUTHORISED RELEASE CERTIFICATE”
AW FORM 1.**

Block 3 Form Tracking Number

Enter the unique number established by the numbering system/procedure of the organization identified in block 4; this may include alpha/numeric characters.

Block 4 Organization Name and Address

Enter the full name and address of the production organization releasing the item(s) covered by this Certificate. Logos, etc., of the organization are permitted if they can be contained within the block.

Block 5 Work Order/Contract/Invoice

To facilitate customer traceability of the item(s), enter the work order number, contract number, invoice number, or similar reference number.

Block 6 Item

Enter line item numbers when there is more than one line item. This block permits easy crossreferencing to the Remarks block 12.

Block 7 Description

Enter the name or description of the item. Preference should be given to the term used in the instructions for continued airworthiness or maintenance data (e.g. Illustrated Parts Catalogue, Aircraft Maintenance Manual, Service Bulletin, Component Maintenance manual).

Block 8 Part Number

Enter the part number as it appears on the item or tag/packaging. In case of an engine or propeller the type designation may be used.

Block 9 Quantity

State the quantity of items.

Block 10 Serial Number

If the item is required by regulation to be identified with a serial number, enter it here. Additionally, any other serial number not required by regulation may also be entered. If there is no serial number identified on the item, enter —N/All.

Block 11 Status/Work

The following table describes the permissible entries for Block 11. Enter only one of these terms - where more than one may be applicable, use the one that most accurately describes the majority of the work performed and/or status of the article.

Entry	Meaning
Overhauled	Means a process that ensures the item is in complete conformity with the applicable service tolerance specified in the type certificate holder's or equipment manufacturer's instructions for continued airworthiness or in the

	data which is approved or accepted by the CAMA The item will be at least disassembled, cleaned, inspected, repaired as necessary, reassembled and tested in accordance with the above specified data.
Repaired	Rectification of defect(s) using an applicable standards*
Inspected/Tested	Examination, measurement, etc. in accordance with an applicable standard* (e.g. by visual inspection, functional testing, bench testing and operational checks). The results shall be described or referenced in Block 12
Modified	Alteration of an item to conform to an applicable standards*

* Applicable Standard means a manufacturing/design/maintenance/quality norm, method, technique, practice approved or acceptable by the CAMA. The Applicable Standards shall be described in Block 12.

If printing the data from an electronic AW Form 1 any data not appropriate in other blocks should be entered in this block.

Block 12 Remarks

State any information in this block, either directly or by reference to supporting documentation, necessary for the user or installer to determine the airworthiness of the item in relation of the works being certified. If necessary a separate sheet may be used and referenced from the main certificate. Each statement must be clearly identified as to which item in Block 6 it relates. If there is no statement, state None.

Examples of statement in Block 12:

- Maintenance documentation used, including the revision status.
- Compliance with airworthiness directives or service bulletins.
- Repairs carried out.
- Modifications carried out.
- Replacement parts installed.
- Life limited parts status,
- Deviation from customer order.

Block 13a - 13e

General requirements for Blocks 13a - 13b:

Not used for maintenance release. shade, darken, or otherwise mark to preclude in advertent or unauthorized use.

Block 14a-14e

General Requirements for blocks 14a-14e:

Mark the box indicating which regulations apply to the completed work. If the other box —other

regulation specified in block 12 is marked, then the regulations of the other airworthiness authority(ies) must be identified in block 12. At least one box must be marked, or both boxes must be marked, as appropriate..

Block 14b Authorised Signature

The space shall be completed with the signature of the authorized person. Only person specifically authorized under the rules and policies of the CAMA are permitted to sign this block. To aid recognition, a unique number identifying the authorized person may be added.

Block 14c Approval/Authorisation Number

Enter the approval/authorization number/reference. The number or reference is issued by the CAMA.

Block 14d Name

Enter the name of the person signing Block 14b in a legible form

Block 14e Date (dd/mmm/yyyy)

The date must be in the format dd/mmm/yyyy
(dd = 2 digit day, mmm = first 3 letter of the month, yyyy = 4 digit year).

User/Installer Responsibilities

Place the following statement on the Certificate to notify end users that they are not relieved of their responsibilities concerning installation and use of any item accompanied by the form:

—This Certificate does not automatically constitute authority to install.

Where the user/installer performs work in accordance with regulations of an airworthiness authority different than the airworthiness authority specified in block 1, it is essential that the user/installer ensures that his/her airworthiness authority accepts items from the airworthiness authority specified in block 1.

Statements in blocks 13a and 14a do not constitute installation certification. In all cases aircraft maintenance records must contain an installation certification issued in accordance with the CAMA regulations by the user/installer before the aircraft may be flown.¶

APPENDIX II to YCAR 145

ORGANIZATIONS APPROVAL CLASS AND RATING SYSTEM

1. Except as stated otherwise for the smallest organization in paragraph 12, Table 1 outlines the full extent of approval possible under YCAR 145 in a standardized form. An organization must be granted an approval ranging from a single class and rating with limitations to all classes and ratings with limitations.
2. In addition to Table 1 the YCAR 145 approved maintenance organization is required by YCAR 145.20 to indicate scope of work in the maintenance organization exposition. See also paragraph 11.
3. Within the approval class(es) and rating(s) granted by the Authority, the scope of work specified in the maintenance organization exposition defines the exact limits of approval. It is therefore essential that the approval class(es) and rating(s) and the organization's scope of work are compatible.
4. A category A class rating means that the YCAR 145 approved maintenance organization may carry out maintenance on the aircraft and any component (including engines/APUs) only whilst such components are fitted to the aircraft except that such components can be temporarily removed for maintenance when such removal is expressly permitted by the aircraft maintenance manual to improve access for maintenance subject to a control procedure in the maintenance organization exposition. The limitation section will specify the scope of such maintenance thereby indicating the extent of approval.
5. A category B class rating means that the YCAR 145 approved maintenance organization may carry out maintenance on the uninstalled engine/APU (‘Auxiliary Power Unit’) and engine/APU components only whilst such components are fitted to the engine/APU except that such components can be temporarily removed for maintenance when such removal is expressly permitted by the engine/APU manual to improve access for maintenance. The limitation section will specify the scope of such maintenance thereby indicating the extent of approval. A YCAR 145 approved maintenance organization with a category B class rating may also carry out maintenance on an installed engine during ‘base’ and ‘line’ maintenance subject to a control procedure in the maintenance organization exposition. The maintenance organization exposition scope of work shall reflect such activity where permitted by the Authority.
6. A category C class rating means that the YCAR 145 approved maintenance organization may carry out maintenance on uninstalled components (excluding engines and APUs) intended for fitment to the aircraft or engine/APU. The limitation section will specify the

scope of such maintenance thereby indicating the extent of approval. A YCAR 145 approved maintenance organization with a category C class rating may also carry out maintenance on an installed component during base and line maintenance or at an engine/APU maintenance facility subject to a control procedure in the maintenance organization exposition. The maintenance organization exposition scope of work shall reflect such activity where permitted by the Authority.

7. A category D class rating is a self contained class rating not necessarily related to a specific aircraft, engine or other component. The D1 — Non-Destructive Testing (NDT) rating is only necessary for a YCAR 145 approved maintenance organization that carries out NDT as a particular task for another organization. A YCAR 145 approved maintenance organization with a class rating in A or B or C category may carry out NDT on products it is maintaining subject to the maintenance organization exposition containing NDT procedures, without the need for a D1 class rating.
8. Category A class ratings are subdivided into Base[‘] or Line[‘] maintenance, a YCAR 145 approved maintenance organization may be approved for either Base[‘] or Line[‘] maintenance or both. It should be noted that a Line[‘] facility located at a main base facility requires a Line[‘] maintenance approval.
9. The ‘limitation[‘] section is intended to give the Authority maximum flexibility to customize the approval to a particular organization. Table 1 specifies the types of limitation possible and whilst maintenance is listed last in each class rating it is acceptable to stress the maintenance task rather than the aircraft or engine type or manufacturer, if this is more appropriate to the organization. An example could be avionic systems installations and maintenance.
10. Table 1 makes reference to series, type and group in the limitation section of class A and B. Series means a specific type series such as Airbus 300 or 310 or 319 or Boeing 737-300 series or RB211-524 series etc. Type means a specific type or model such as Airbus 310-240 type or RB 211-524 B4 type etc. Any number of series or types may be quoted. Group means for example Cessna single piston engined aircraft or Lycoming non-supercharged piston engines etc.
11. When a lengthy capability list is used which could be subject to frequent amendment, then such amendment shall be in accordance with a procedure acceptable to the Authority and included in the maintenance organization exposition. The procedure shall address the issues of who is responsible for capability list amendment control and the actions that need to be taken for amendment. Such actions include ensuring compliance with YCAR 145 for products or services added to the list.
12. A YCAR 145 approved maintenance organization which employs only one person to both plan and carry out all maintenance can only hold a limited scope of approval rating. The maximum permissible limits are:

CLASS AIRCRAFT	RATING A2 AEROPLANES	PISTON ENGINED LINE & BASE 5700 KG AND BELOW
CLASS AIRCRAFT	RATING A2 AEROPLANES	TURBINE ENGINED LINE 5700 KG AND BELOW
CLASS AIRCRAFT	RATING A3 HELICOPTERS	SINGLE ENGINED LINE & BASE LESS THAN 3175 KG
CLASS AIRCRAFT	RATING A4 AIRCRAFT OTHER THAN A1, A2 AND A3	NO LIMITATION
CLASS ENGINES	RATING B2 PISTON	LESS THAN 450 HP
CLASS COMPONENTS RATING OTHER THAN COMPLETE ENGINES OR APUs	C1 TO C22	AS PER CAPABILITY LIST
CLASS SPECIALISED	D1 NDT	NDT METHODS(S) TO BE SPECIFIED

It should be noted that such an organization may be further limited by the Authority in the scope of approval dependent upon the capability of the particular organization.

Table 1

CLASS	RATING	LIMITATION	BASE	LINE
AIRCRAFT	A1 Aeroplanes/ above 5700 kg	Will state aeroplane/series or type and/or the maintenance tasks(s)		
	A2 Aeroplanes/ 5700 kg and below	Will state aeroplane/manufacturer or group or series or type and/or the maintenance tasks(s)		
	A3 helicopters	Will state helicopter manufacturer or group or series or type and/or the maintenance tasks(s)		
	A4 Aircraft other than A1, A2 and A3	Will state aircraft series or type and/or the maintenance task(s)		
ENGINES	B1 Turbine	Will state engine series or type and/or the maintenance task(s)		
	B2 Piston	Will state engine manufacturer or group or series or type and/or the maintenance task(s)		
	B3 APU	Will state engine manufacturer or series or type and/or the maintenance task(s)		
COMPONENTS OTHER THAN COMPLETE ENGINES OR APUs	C1 Air Cond & Press	Will state aircraft type or aircraft manufacturer or component manufacturer or the particular component and/or cross refer to a capability list in the exposition and/or maintenance task(s)		
	C2 Auto Flight			
	C3 Comms & Nav			
	C4 Doors - Hatches			
	C5 Electrical Power			
	C6 Equipment			
	C7 Engine - APU			
	C8 Flight Controls			
	C9 Fuel - Airframe			
	C10 Helicopter - Rotors			
	C11 Helicopter - Trans			
	C12 Hydraulic			
	C13 Instruments			
	C14 Landing Gear			
	C15 Oxygen			
	C16 Propellers			
	C17 Pneumatic			
	C18 Protection			
	C19 Windows			
	C20 Structural			
	C21 Water Ballast			
	C22 Propulsion			

SPECIALIZED SERVICES	D1 Non Destructive Testing	Will state particular NDT Method(s)
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**APPENDIX III
to YCAR 145**

(AWF-AMO-007 YCAR 145 Approval Certificate)
(For CAMA Use)

APPENDIX IV to YCAR 145**CONDITIONS FOR THE USE OF STAFF NOT QUALIFIED TO YCAR 66 IN ACCORDANCE WITH 145.30 (J)**

1. Certifying staff in compliance with the following conditions will meet the intent of 145.30(j)(1) and (2):
 - (a) The person shall hold a license or a certifying staff authorization issued under the country's National regulations in compliance with ICAO Annex 1.
 - (b) The scope of work of the person shall not exceed the scope of work defined by the National license/certifying staff authorization.
 - (c) The person shall demonstrate he has received training on human factors and airworthiness regulations as detailed in YCAR 66.
 - (d) The person shall demonstrate five years maintenance experience for line maintenance certifying staff and eight years for base maintenance certifying staff. However, those persons whose authorized tasks do not exceed those of a YCAR 66 category A certifying staff, need to demonstrate three years maintenance experience only.
 - (e) Line maintenance certifying staff and base maintenance support staff shall receive type training at a level corresponding to YCAR 66 Appendix III level 3 for every aircraft on which they are authorized to make certification. However those persons whose authorized tasks do not exceed those of a YCAR 66 category A certifying staff may receive task training in lieu of complete type training.
 - (f) Base maintenance certifying staff must receive type training at a level corresponding to at least YCAR 66 Appendix III level 1 for every aircraft on which they are authorized to make certification.
2. Protected rights
 - (a) 145.30(j) personnel before the entry into force of YCAR 66 may continue to exercise their privileges without the need to comply with paragraph 1(c) to 1(f).
 - (b) However after that date any certifying staff willing to extend the scope of their authorization to include additional privileges shall comply with paragraph 1 above.
 - (c) Notwithstanding subparagraph 2(b) above, in the case of additional type training, compliance with paragraph 1(c) and 1(d) is not required.

APPENDIX V to YCAR 145**SUPPLIERS OF AERONAUTICAL COMPONENTS****1. APPLICABILITY**

- (a) This Appendix prescribes requirements for the approval of a Maintenance Organization Certificate to include approval of suppliers of aeronautical components, assemblies and items of equipment that have been manufactured, inspected and tested in conformity with acceptable specifications/standards and to CAMA satisfaction.
- (b) Approval of suppliers as outlined above does not necessarily have to be made a part of Maintenance Organization approval and can be realized separately.

2. ELIGIBILITY

The CAMA will only accept an application for the inclusion of a supplier of aeronautical components to the maintenance organization certificate of approval if:

- (a) all aeronautical parts/components/products are procured directly from the manufacturer by the Organization, or from an agent who is duly approved by the State of manufacture of the parts and/or the manufacturer itself. In case the agent is located in the territory of United Arab Emirates, the distributor shall obtain the approval from the CAMA;
- (b) the organization shall, in the opinion of the CAMA, be capable of handling this activity;
- (c) the qualifications and experience of the organization staff shall be adequate to conduct the work involved;
- (d) the organization is equipped with the necessary means to determine the origin as well as the authenticity of the aeronautical products or components distributed by the suppliers;
- (e) adequate methods for record keeping of all aeronautical products and component exist;
- (f) there is a quality system to:
 - 1. inspect aeronautical products or components in accordance with recommended standards;
 - 2. keep a list of life items (hours and cycles) and shelf life items;
 - 3. properly store critical items such as aircraft tires, 'O' rings, rotating components, chemical, hazardous materials, etc.
- (g) details of compliance requirements are listed Airworthiness Notice No. 22.

3. APPLICATION AND ISSUE

- 3.1 The application shall be made in a form and in a manner prescribed in this chapter.
- 3.2 Among other maintenance capabilities, suppliers' approval can be added to the application form.
- 3.3 The application shall include a brief description of the type of aeronautical products and components that will be handled by the organization.
- 3.4 The exposition document of the maintenance organization should include a section explaining the relevant procedures for handling the aeronautical product suppliers' activities.
- 3.5 The CAMA will review the application as well as the submitted technical documents and, if acceptable, terms of approval shall be issued as part of the maintenance approval certificate. The certificate will show, among the other maintenance capabilities, aeronautical products suppliers' approval.
- 3.6 Required fees for a maintenance organization approval certificate with aeronautical product suppliers' capability will be collected by the CAMA before the issuance of the certificate.

4. PRIVILEGES

- 4.1 The holder of the CAMA supplier certificates will be authorized to use the privileges of his certificate within the YEMEN and he will have the right to advertise and solicit customers to supply airworthy aeronautical products and components.

**APPENDICES TO
ALTERNATIVE MEANS OF COMPLIANCE**

APPENDIX I
to AMC

Use appropriate CAMA form
(GTF-NPA-001 Application for Nominated Personnel Accepted by CAMA)

**APPENDIX II
to AMC**

RESERVED

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**APPENDIX III
to AMC**

Use appropriate CAMA Form
(AWF-AMO-001 Application for YCAR 145 Approval)

**APPENDIX IV
to AMC 145.30(e)**

FUEL TANK SAFETY TRAINING

This appendix includes general instructions for providing training on Fuel Tank Safety issues.

A) Effectivity

- Large aeroplanes as 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 which contain CS25 amendment 1 or later in their certification basis.

B) Affected organisations

- YCAR 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.
- Reserved

C) Persons from affected organisations who should receive training

Phase 1 only:

- The group of persons representing the maintenance management structure of the organisation, the quality manager and the staff required to quality monitor the organisation.
- Personnel of the CAMA responsible for the oversight of YCAR 145 approved maintenance organizations

Phase 1 + Phase 2 + Continuation training:

- Personnel of the YCAR 145 approved maintenance organization 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.

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

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

Objectives:

The trainee should, after the completion of the training:

1. Be familiar with the basic elements of the fuel tank safety issues.
2. Be able to give a simple description of the historical background and the elements requiring a safety consideration, using common words and showing examples of non conformities.
3. Be able to use typical terms.

Content: The course should include:

- A short background showing examples of FTS accidents or incidents,
- The description of concept of fuel tank safety and CDCCL,
- 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

Training requirements shall be complied by January 2012

The persons who have already attended the Level 2 Detailed training course from a YCAR 145 maintenance organisation or from a CAR147 training organisation are already in compliance with Phase 2 with the exception of continuation training.

Staff should have received Phase 2 training by **January 2012** or within 12 months of joining the organization, whichever comes later.

Type: Should be a more in-depth internal or external course. It should not take the form of a training bulletin, or other self study. An examination should be required at the end, which should be in the form of a multi choice 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 authorized to move to the next step;
 - The content and results of examinations should be recorded;
 - Access to an instructor in person or at distance should be possible in case support is needed.

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

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

Objectives:

The attendant should, after the completion of the training:

- Have knowledge of the history of events related to 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 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 program initiatives and goals, to identify unsafe conditions and to correct them, to systematically improve fuel tank maintenance),
- iv. Explain briefly the concepts that are being used: the results of SFAR 88 of the FAA and JAA INT/POL 25/12: modifications, airworthiness limitations items and CDCCL,
- v. Where relevant information can be found and how to use and interpret this information in the instructions for continuing airworthiness (aircraft maintenance manuals, component maintenance manuals, Service Bulletins...)
- vi. 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 YCAR 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 exposition. The necessary changes to the MOE to meet the content of this decision should be made and implemented at the time requested by the CAMA.