

CAMO FAQ

Presentatör

Johan Brunnberg

Flygteknisk Inspektör

Sjö- och luftfartsavdelningen

Enheten för operatörer, fartyg och luftfartyg

Sektionen för teknisk operation

2022-11-15

CAMO FAQ – Inkomna frågor

- One Business Group CAMO
 - ARC extensions?
- CAME 3.2 Product audit of aircraft?
- Behov för CAMO'n att auditera 145?
 - 3.1 Maintenance contractor selection procedure
 - 2.8.4 Monitoring that all maintenance is **carried out by an appropriate maintenance organisation**
 - 2.8.5 Monitoring that all contracted maintenance is **carried out in accordance with the contract**, including subcontractors used by the maintenance contractor

Begagnade motorer från andra system (regelverk)

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OBS

- För import av **luftfartyg med motorer:**
 - gäller respektive BASA/TIP

Innehåll

- Möjligt?
- Att tänka på:
 - Underhållsorganisationens sammanställning av *"workscape"* för *certifiering*
 - AMC2 145.A.50(d) – pkt 2.8
- Summering

Möjligt?

Att avgöra om *certifiering* är möjligt/lämpligt är upp till:

- en lämpligt klassad underhållsorganisation godkänd enligt EASA Del-145.

Underhållsorganisationen ska:

- identifiera, beakta dokumentationen för att sammanställa vad som krävs för en eventuell *certifiering*
- utföra lämpliga åtgärder enligt MOE (och reglerna)
- *certifiera* på en EASA Form 1 eller ekvivalent.

Underhållsorganisationen – (Vad är Δ)

Ska identifiera, beakta, bedöma & sammanställa t.ex.:

Vad påverkar:

- Ålder, FC, FH
- Typ av komponent
 - LLP, TCC
 - Beg – underhåll (vem, vad, var etc)
 - *"In-service history record"*
 - *"detailed maintenance records"*
 - Underkomponenter
 - LLP, TCC
 - Ny (Ok enligt TIP?)
 - Beg...
- Vilka system har den befunnit sig i ...
- Hur har komponenten lagrats ... (tid, miljö etc)
- Trovärdig/rimlig historik
- *"But not limited to" ...*

Vad är INTE EU-underhåll:

- "Task för task":
 - Utfört planerat underhåll (och enligt gällande AMP) av ...
 - Utfört icke planerat underhåll – Incidenter/accident enligt godkänd instruktion av ...
 - Modifieringar utförda av ... (Godkänd data)
 - Reparationer utförda av ... (Godkänd data)
 - AD utförda av ...
 - X
 - Y
 - Etc
 - *"But not limited to" ...*

AMC2 145.A.50(d) – pkt 2.8

Och pkt 1-2.4

AMC2 145.A.50(d) – pkt 2.8

2.8. **Used aircraft components maintained by organisations not approved in accordance with Part-145.**

For used components maintained by a maintenance organisation not approved under Part-145, due care should be taken before acceptance of such components.

In such cases an **appropriately rated maintenance organisation approved under Part-145** should establish **satisfactory conditions** by:

- (a) **dismantling** the component for sufficient inspection in accordance with the appropriate maintenance data;
- (b) **replacing** all life-limited parts and time-controlled components when no satisfactory evidence of life used is available and/or the components are in an unsatisfactory condition;
- (c) **reassembling and testing** as necessary the component;
- (d) **completing all certification requirements** as specified in 145.A.50.

AMC2 145.A.50(d) – pkt 1 - 2.4

Gäller **alltid alla** alternativ i AMC2 145.A.50(d) – pkt 2.5 – 2.9

- 2.5 New/unused aircraft components
- 2.6 Used aircraft components removed from a serviceable aircraft
- 2.7 Used aircraft components removed from an aircraft withdrawn from service. Serviceable aircraft components removed from a Member State registered aircraft withdrawn from service
- 2.8 Used aircraft components maintained by organisations not approved in accordance with Part-145
- 2.9 Used aircraft components removed from an aircraft involved in an accident or incident

[illegible]

2.4. An EASA Form 1 issued in accordance with this paragraph 2 should be issued by signing in **block 14b** and stating ‘**Inspected/Tested**’ in **block 11**. In addition, **block 12 should specify:**

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.

2.4.4. Detail of life used for life-limited parts and time-controlled components being any combination of fatigue, overhaul or storage life.



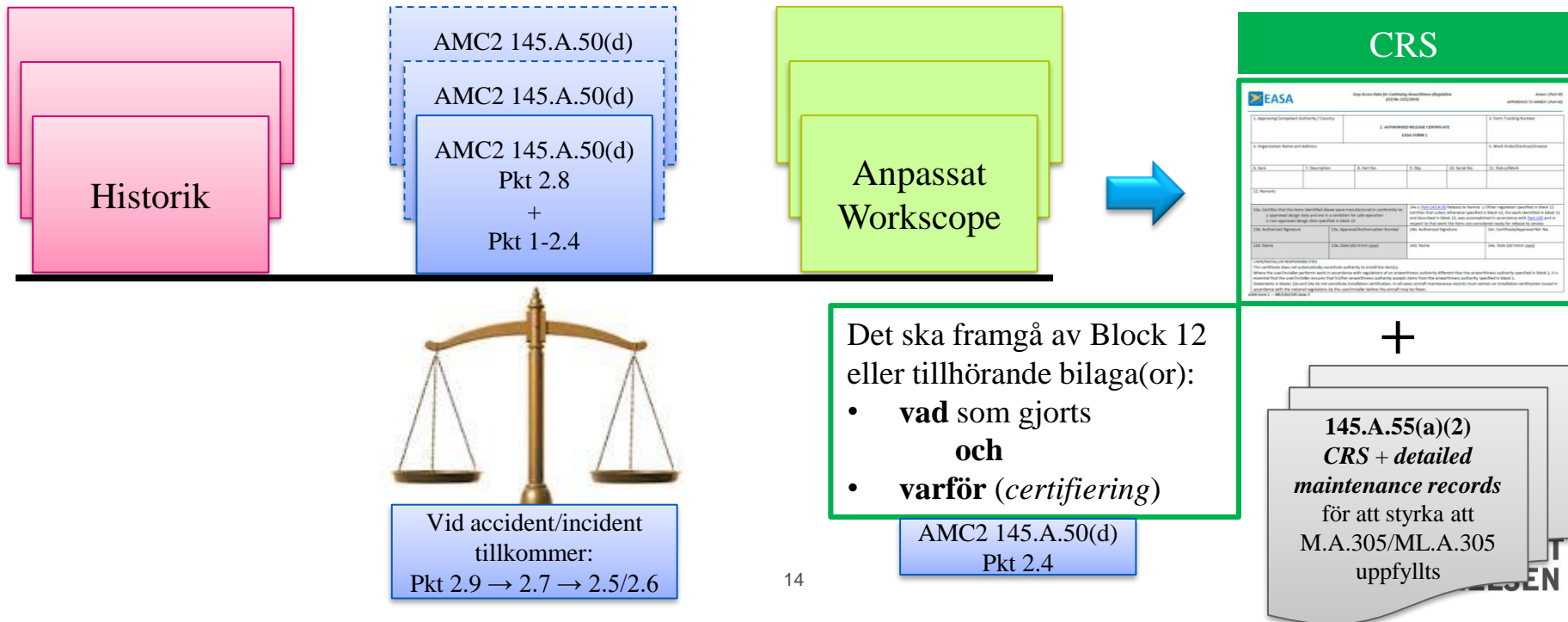
**TRANSPORT
STYRELSEN**

Summering

Begagnad motor från annat system

Anpassat "workscape" beroende på historiken

An appropriately rated maintenance organisation approved under EASA Part-145



Varje fall är unikt!

För **motorer** är det **inte** en generell lösning att t.ex. utföra en:

- a) Boroscopeinspektion
eller
- b) Översyn (overhaul)

OBS: Certifiering **av motorer** måste alltid utföras av en EASA Part-145 med:

- "B-rating" (Engines)
- "rätt" motor
- lämpligt scope
i godkännandet.

Vem beslutar ”Workscope”

AMC2 145.A.50(d)

2.2 An appropriately rated maintenance organisation approved under Part-145 may issue an EASA 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 organisation **is responsible for ensuring that all reasonable measures have been taken to ensure** that only approved and serviceable aircraft components are issued an EASA Form 1 under this paragraph.

2.3. For the purposes of this AMC No 2 only, **appropriately rated means** an organisation with an **approval class rating for the type of component** or for the **product** in which it may be installed.

Summering

- Möjligt?
- Att tänka på:
 - Underhållsorganisationens sammanställning av "workscape" för *certifiering*
 - AMC2 145.A.50(d) – pkt 2.8 (inkl pkt 1 - 2.4)
- ***OBS: Principen gäller alla komponenter***
- Övrigt
 - Regelreferenser som berör, finns som tillägg till presentationen

Regelreferenser

(EU) 1321/2014

1321/2014

Article 2 Definitions

(c) '**component**' means any engine, propeller, part or appliance;

(h) '**maintenance**' means any one or combination of the following activities: overhaul, repair, inspection, replacement, modification or defect rectification of an aircraft or component, with the exception of pre-flight inspection;

SUBPART C — CONTINUING AIRWORTHINESS

Alltid ”EU-underhåll” (*hur mycket måste ”certifieras”*)

- M.A.301(d)
 - Subpart H
 - M.A.802 Component certificate of release to service
 - M.A.502 Component maintenance
 - M.A.502(a)
 - Part-145 (EASA Form 1 - Underhållsintyg)
 - Part-CAO (EASA Form 1 - Underhållsintyg)

SUBPART E — COMPONENTS

M.A.501 Classification and installation

- M.A.501(a)(1)
 - EASA Form 1 or equivalent
 - EASA Form 1
 - Tillverkningsintyg (Part-21)
 - Underhållsintyg (M.A.502)
 - Equivalent
 - Tillverkningsintyg
 - Underhållsintyg

AMC1 M.A.501(a)(1) Classification and installation

EASA FORM 1 OR EQUIVALENT

- (a)(1) – BASA signed by EU
- (b) – EASA Form 1 in acc AMC2 145.A.50(d)
("Möjlighet" - Om inget "equivalent" alternativ finns enligt pkt (a))
 - **Alltid:** pkt 1-2.4
 - Not EASA Part-145:
 - Pkt 2.8
 - Accident/incident:
 - Pkt 2.9 → 2.7 → 2.5/2.6
 - Removed from withdrawn from service:
 - 2.7 → 2.5/2.6

M.A.305 Aircraft continuing airworthiness record system

Regulation (EU) 2021/700

(d) The aircraft continuing airworthiness records shall include the current status specific to components of:

1. **life-limited parts**, including the life accumulated by each affected part in relation to the applicable airworthiness limitation parameter; and
2. **time-controlled components**, including the life accumulated by the affected components in the applicable parameter, since the last accomplishment of scheduled maintenance, as specified in the AMP.

GM M.A.305(d) Aircraft continuing airworthiness record system

ED Decision 2020/002/R

LIFE-LIMITED PARTS AND TIME-CONTROLLED COMPONENTS

- (a) A part is to be considered a life-limited part and a time-controlled component when it complies with both definitions given in paragraphs (c) and (e) of [GM M.A.305](#). For example, the maintenance schedule of the aircraft maintenance programme may include both a mandatory permanent removal for a landing gear sliding tube and a periodic removal for overhaul of the landing gear (including the sliding tube).
- (b) The following table provides a summary of the records' requirements related to life-limited parts and time-controlled components:

Maintenance task from the maintenance schedule of the AMP		Type of component	Continuing airworthiness records
Mandatory instructions (and associated airworthiness limitations) in accordance with Part 21 affecting a component	Permanent removal (replacement)	Life-limited part e.g.: engine HPT disc, landing gear sliding tube	<ul style="list-style-type: none"> Current status (M.A.305(d)(1)); In-service history record (M.A.305(e)(3)(i)); EASA Form 1 and detailed maintenance records for last scheduled maintenance and subsequent unscheduled maintenance (M.A.305(e)(3)(ii)); EASA Form 1 and detailed maintenance records for modifications and repairs (M.A.305(e)(2)(ii))
	Periodic removal for maintenance in an appropriate approved workshop, e.g.: <ul style="list-style-type: none"> Overhaul of horizontal stabiliser actuator or of a landing gear Replacement of a U-joint (of a gearbox) 	Time-controlled component e.g.: horizontal stabiliser actuator, landing gear gearbox	<ul style="list-style-type: none"> Current status (M.A.305(d)(2)); EASA Form 1 and detailed maintenance records for last scheduled maintenance and subsequent unscheduled maintenance (M.A.305(e)(3)(ii)); and EASA Form 1 and detailed maintenance records for modifications and repairs (M.A.305(e)(2)(ii)).

GM M.A.305 Aircraft continuing airworthiness record system

ED Decision 2022/011/R

(d) The ‘**current status**’ when referring to components of **life-limited parts** should indicate, for each affected part, the life limitation, the total life accumulated in any applicable parameter (as appropriate) and the remaining life in any applicable parameter before the life limitation is reached.

(f) The ‘**current status**’ when referring to **time controlled components** refers to the current status of compliance with the required periodic maintenance task(s) from the maintenance schedule of the aircraft maintenance programme specific to the time-controlled components. It should include the life accumulated by the affected components in the applicable parameter, as appropriate, since the last accomplishment of scheduled maintenance specified in the maintenance schedule of the aircraft maintenance programme. Any action that alters the periodicity of the maintenance task(s) or changes the parameter of this periodicity should be recorded.

(l) The term ‘**current status**’ refers to the data which accurately establishes the level of compliance of an aircraft, engine, propeller or component thereof, with a requirement. Each status should:

- (1) identify the aircraft, the engine, the propeller or the component it applies to;
- (2) be dated; and
- (3) include the relevant total in-service life accumulated in the applicable parameter on the date of the status.

GM M.A.305 Aircraft continuing airworthiness record system

ED Decision 2022/011/R

(g) ‘**Detailed maintenance records**’ in this part refers to those records required to be kept by the person or organisation responsible for the aircraft continuing airworthiness in accordance with M.A.201 in order that they may be able to fulfil their obligations under Part M.

These are only a part of the detailed maintenance records required to be kept by a maintenance organisation under point M.A.614, CAO.A.090(a) or 145.A.55(a). Maintenance organisations are required to retain all detailed records to demonstrate that they worked in compliance with their respective requirements and quality procedures.

Not all records need to be transferred from the maintenance organisation to the person or organisation responsible for the aircraft continuing airworthiness in accordance with M.A.201 unless they specifically contain information relevant to aircraft configuration and future maintenance.

Thus, incoming certificates of conformity, batch number references and individual task card sign-offs verified by and/or generated by the maintenance organisation are not required to be retained by the person or organisation responsible in accordance with M.A.201. However, dimensional information contained in the task card sign-off or work pack may be requested by the owner/CAO/CAMO in order to verify and demonstrate the effectiveness of the aircraft maintenance programme.

Information relevant to future maintenance may be contained in specific documents related to:

- modifications;
- airworthiness directives;
- repaired and non-repaired damage;
- components referred in M.A.305(d); and
- measurements relating to defects.

(j) The term ‘**in-service history record**’ embraces records from which the **current status** of **life-limited parts** can be determined. The ‘in-service history record’ template could be adjusted to the relevant characteristics of the life-limited part, e.g. an engine disk being different from a fire extinguisher squib or landing gear sliding tube.

Such records document each time a life-limited part is placed in service or removed from service. They should clearly:

- (1) identify the part by its part number and serial number,
- (2) show the date of installation and removal (i.e. date on/date off),
- (3) show the details of the installation and removal (i.e. type, serial number, weight variant, thrust rating, as appropriate, of the aircraft, engine, engine module, or propeller) at installation and removal of the part when this is necessary to appropriately control the life limitation.
- (4) Show the total in-service life accumulated in any applicable parameter, as appropriate, corresponding to the dates of installation and removal of the part.

Any other events that would affect the life limitation, such as an embodied modification (in accordance with airworthiness directives, service bulletins or any product improvements) that affects the life limitation or changes the limitation parameter, should also be included in the in-service history record. Not all modifications would necessarily be pertinent to the life limitation of the component.

Additionally, if a parameter is not relevant to the life of the part, then that parameter does not need to be recorded.

Relevanta AMC's

AMC M.A.305(a)

Aircraft continuing airworthiness record system

ED Decision 2020/002/R

CERTIFICATE OF RELEASE TO SERVICE

AMC M.A.305(c)3

Aircraft continuing airworthiness record system

ED Decision 2020/002/R

AIRCRAFT MAINTENANCE PROGRAMME

AMC M.A.305(b)1

Aircraft continuing airworthiness record system

ED Decision 2020/002/R

**IN-SERVICE LIFE FOR ENGINES, PROPELLERS AND
APU'S**

AMC M.A.305(c)2

Aircraft continuing airworthiness record system

ED Decision 2020/002/R

MODIFICATIONS AND REPAIRS

AMC M.A.305(c)1

Aircraft continuing airworthiness record system

ED Decision 2020/002/R

AIRWORTHINESS DIRECTIVES