



European Aviation Safety Agency — Rulemaking Directorate  
**Notice of Proposed Amendment 2014-11**

Functions and responsibilities  
of B1 and B2 support staff — link with sign-off

RMT.0097 (145.024) — 13.5.2014

**EXECUTIVE SUMMARY**

The objectives of this NPA are the following:

1. Address the need for Part-145 organisations to better evaluate the complexity of each maintenance task and assign it to appropriately qualified personnel authorised to sign off or to non-authorised personnel under supervision.
2. Better define who can be authorised to sign off maintenance tasks, under which qualification criteria and under which authorisation process.
3. Clarify how the licensed support staff evaluate that maintenance tasks are performed to the required standard and which level of supervision they should place on the personnel authorised to sign off.
4. Clarify how the licensed support staff should record that all maintenance tasks have been carried out to the required standard, in particular those carried out by non-licensed 'sign-off' personnel.

Consideration has been given to the fact that, although objectives 3 and 4 above apply only to the base maintenance environment, objectives 1 and 2 can only be achieved in a consistent manner if they are addressed for all the maintenance environments (line and base maintenance, as well as component maintenance).

<b>Applicability</b>		<b>Process map</b>	
Affected regulations and decisions:	Annex II (Part-145) to Commission Regulation (EC) No 2042/2003 and Decision No. 2003/19/RM (AMC/GM to Part-145)	Concept Paper:	No
Affected stakeholders:	Part-145 maintenance organisations	Terms of Reference:	2.11.2011
Driver/origin:	Level playing field	Rulemaking group:	Yes
Reference:	N/A	RIA type:	Light
		Technical consultation during NPA drafting:	No
		Duration of NPA consultation:	3 months
		Review group:	Yes
		Focussed consultation:	No
		Publication of the Opinion:	2018/Q3
		Publication of the Decision:	2019/Q3

## Table of contents

<b>1. Procedural information</b> .....	<b>4</b>
1.1. The rule development procedure .....	4
1.2. The structure of this NPA and related documents .....	4
1.3. How to comment on this NPA .....	4
1.4. The next steps in the procedure .....	4
<b>2. Explanatory Note</b> .....	<b>5</b>
2.1. Overview of the issues to be addressed .....	5
2.2. Objectives .....	6
2.3. Summary of the Regulatory Impact Assessment (RIA) .....	7
2.4. Overview of the proposed amendments .....	8
<b>3. Proposed amendments</b> .....	<b>14</b>
3.1. Draft Regulation (Draft EASA Opinion) .....	14
3.2. Draft Acceptable Means of Compliance and Guidance Material (Draft EASA Decision) .....	20
AMC1 145.A.30(e) Personnel requirements .....	20
GM 145.A.30(i) Personnel requirements .....	21
GM 145.A.32 Maintenance personnel .....	21
GM 145.A.32(a) Maintenance personnel .....	22
GM 145.A.32(d) Maintenance personnel .....	22
AMC 145.A.32(e) Maintenance personnel .....	22
AMC 145.A.47(a) Production planning .....	23
AMC 145.A.50(a) Certification of maintenance .....	24
AMC 145.A.50(a)1 Certification of maintenance .....	25
AMC 145.A.50(a)2 Certification of maintenance .....	25
GM 145.A.65(c)(1) Safety and quality policy, maintenance procedures and quality system .....	26
AMC 145.A.70(a) Maintenance organisation exposition .....	26
Appendix II to AMC 145.B.20(5): EASA Form 6 .....	26
<b>4. Regulatory Impact Assessment (RIA)</b> .....	<b>27</b>
4.1. Issues to be addressed .....	27
4.1.1. Safety risk assessment .....	28
4.1.2. Who is affected? .....	28
4.1.3. How could the issue/problem evolve? .....	28
4.2. Objectives .....	28
4.3. Policy options .....	29
4.4. Analysis of impacts .....	29
4.4.1. Safety impact .....	30

4.4.2. Environmental impact..... 30

4.4.3. Social impact..... 30

4.4.4. Economic impact..... 31

4.4.5. General aviation and proportionality issues..... 32

4.4.6. Impact on 'Better Regulation' and harmonisation ..... 32

4.5. Comparison and conclusion.....33

4.5.1. Comparison of options ..... 33

4.5.2. Conclusion ..... 33

**5. References ..... 34**

5.1. Affected regulations .....34

5.2. Affected AMC and GM.....34

5.3. Reference documents.....34

## 1. Procedural information

### 1.1. The rule development procedure

The European Aviation Safety Agency (hereinafter referred to as the 'Agency') developed this Notice of Proposed Amendment (NPA) in line with Regulation (EC) No 216/2008<sup>1</sup> (hereinafter referred to as the 'Basic Regulation') and the Rulemaking Procedure<sup>2</sup>.

This rulemaking activity is included in the Agency's [4-year Rulemaking Programme](#) under number RMT.0097 (former task number 145.024).

The text of this NPA has been developed by the Agency based on the input of the Rulemaking Group RMT.0097 (145.024). It is hereby submitted for consultation of all interested parties<sup>3</sup>.

The process map on the title page contains the major milestones of this rulemaking activity to date and provides an outlook of the timescale of the next steps.

### 1.2. The structure of this NPA and related documents

Chapter 1 of this NPA contains the procedural information related to this task. Chapter 2 (Explanatory Note) explains the core technical content. Chapter 3 contains the proposed text for the new requirements. Chapter 4 contains the Regulatory Impact Assessment showing which options were considered and what impacts were identified, thereby providing the detailed justification for this NPA.

### 1.3. How to comment on this NPA

Please submit your comments using the automated **Comment-Response Tool (CRT)** available at <http://hub.easa.europa.eu/crt/><sup>4</sup>.

The deadline for submission of comments is **13 August 2014**.

### 1.4. The next steps in the procedure

Following the closing of the NPA public consultation period, the Agency will review all comments collected in the CRT tool.

The outcome of the NPA public consultation will be reflected in the respective Comment-Response Document (CRD).

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<sup>1</sup> Regulation (EC) No 216/2008 of the European Parliament and the Council of 20 February 2008 on common rules in the field of civil aviation and establishing a European Aviation Safety Agency, and repealing Council Directive 91/670/EEC, Regulation (EC) No 1592/2002 and Directive 2004/36/EC (OJ L 79, 19.3.2008, p. 1), as last amended by Commission Regulation (EU) No 6/2013 of 8 January 2013 (OJ L 4, 9.1.2013, p. 34).

<sup>2</sup> The Agency is bound to follow a structured rulemaking process as required by Article 52(1) of the Basic Regulation. Such process has been adopted by the Agency's Management Board and is referred to as the 'Rulemaking Procedure'. See Management Board Decision concerning the procedure to be applied by the Agency for the issuing of Opinions, Certification Specifications and Guidance Material (Rulemaking Procedure), EASA MB Decision No 01-2012 of 13 March 2012.

<sup>3</sup> In accordance with Article 52 of the Basic Regulation and Articles 5(3) and 6 of the Rulemaking Procedure.

<sup>4</sup> In case of technical problems, please contact the CRT webmaster ([crt@easa.europa.eu](mailto:crt@easa.europa.eu)).

## 2. Explanatory Note

### 2.1. Overview of the issues to be addressed

Annex II (Part-145) to the current Regulation (EC) 2042/2003<sup>5</sup> (point 145.A.30(h)) requires that Part-145 maintenance organisations performing **base maintenance of large aircraft** have the following:

- Category C certifying staff responsible for the issuance of a certificate of release to service for the complete aircraft.
- Category B1 and B2 support staff responsible for ensuring that all relevant tasks or inspections have been carried out to the required standard before the category C certifying staff issue the certificate of release to service.

In addition, these organisations typically have, as allowed by AMC 145.A.65(b)(3), paragraph 3, the following:

- Competent persons authorised to 'sign off' tasks after they have performed or supervised the tasks.
- Unauthorised personnel (i.e. temporary staff, trainees, etc.) whose work has to be checked/supervised by personnel authorised to 'sign off'.

However, as described in the Terms of Reference of this task, the current Regulation and AMC/GM material have the following shortcomings:

- The absence of criteria to qualify the personnel in charge of performing and signing the maintenance tasks during base maintenance (personnel authorised to 'sign off'); and
- The lack of a clear definition of the role and responsibilities of the Part-66 licensed B1 and B2 support staff.

These shortcomings also affect some Part-145 maintenance organisations performing **base maintenance of other-than-large aircraft**. The reason is that these organisations can choose between the following two options:

- Having category C certifying staff and B1 and B2 support staff; or
- Having B1, B2 or B3 certifying staff, as appropriate.

Based on the above, and due to the fact that the existence of B1 and B2 support staff is limited to the base maintenance environment, during the first five meetings, the working group focussed the discussions on such base maintenance environment.

However, personnel authorised to 'sign off' tasks already exist (as allowed by AMC 145.A.65(b)(3)) in any maintenance environment (line and base maintenance, as well as component maintenance). As a consequence, the position of the Agency is that any action to clarify the qualification, authorisation process, roles and responsibilities of the personnel authorised to 'sign off' would be incomplete and inconsistent if the clarification

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<sup>5</sup> Commission Regulation (EC) No 2042/2003 of 20 November 2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks (OJ L 315, 28.11.2003, p. 1).

was limited to the base maintenance environment. This led the Agency to propose to the working group additional material related to the 'sign-off' in other maintenance environments, so it could be discussed during the 6<sup>th</sup> meeting (the last one planned).

After this 6<sup>th</sup> meeting, the members of the 'European Transport Workers Federation (ETF)' and 'Aircraft Engineers International (AEI)' submitted to the Agency two letters of '*Notification of non-consensus in accordance with the rule of procedure for rulemaking groups*', where they opposed to the extension of the draft material to line maintenance and requested further discussions to take place if this was going to happen.

During the following five months, an extensive exchange of proposals, amendments and comments took place between the Agency and the members of the working group in order to have an agreed text.

However, after that period of time, it became evident to the Agency that there were fundamental differences between the position of the representatives of ETF/AEI and the position of the representatives of the airlines/maintenance organisations, which made it impossible to reach a mutual agreement. Two additional '*Notification of non-consensus in accordance with the rule of procedure for rulemaking groups*' were submitted; one by AEI regarding the responsibilities of certifying staff and the level of supervision they should perform on 'sign-off' authorised personnel, and another one from the 'European Low Fares Airline Association (ELFAA)' regarding the conditions imposed to the sign-off of tasks by support staff.

This led the Agency, after evaluating and taking into account all the comments and proposals received as well as all the '*Notifications of non-consensus*', to proceed with the external consultation of the NPA in order to seek the opinion of all competent authorities and stakeholders. The proposed text clarifies the issues related to 'B1 and B2 support staff' for base maintenance and the issues related to 'sign-off staff' for all maintenance environments.

## **2.2. Objectives**

As described in the Terms of Reference of this task, the objectives are the following:

1. Address the need for the organisations to better evaluate the complexity of each task and assign it to appropriately qualified personnel authorised to sign off or to non-authorised personnel under supervision;
2. Better define who can be authorised to sign off, under which qualification criteria and under which authorisation process;
3. Clarify how the licensed support staff evaluate that maintenance tasks are performed to the required standard and which level of supervision they should place on the personnel authorised to sign off;
4. Clarify how the licensed support staff should record that all maintenance tasks have been carried out to the required standard, in particular those carried out by non-licensed 'sign-off' personnel.

It is important to note again (as in paragraph 2.1 above) that although objectives 3 and 4 apply only to the base maintenance environment, objectives 1 and 2 can only be achieved in a consistent manner if they are addressed for all the maintenance environments (line and base maintenance, as well as component maintenance).

### 2.3. Summary of the Regulatory Impact Assessment (RIA)

The full RIA is contained in Section 4 of this NPA. The following is a summary of it:

#### **Options identified:**

##### **Selected policy options**

<b>Option No</b>	<b>Short title</b>	<b>Description</b>
0		Baseline option (no change in rules and AMC/GM; risks remain as outlined in the issue analysis).
1		Modify Part-145 and related AMC/GM to clarify the role and duties of the B1 and B2 support staff (applies only to base maintenance).
2		Modify Part-145 and related AMC/GM to clarify the role and duties of the B1 and B2 support staff and the link with other maintenance personnel (personnel authorised to sign off and unauthorised personnel), but only in base maintenance.
3		Modify Part-145 and related AMC/GM to clarify the role and duties of the B1 and B2 support staff and the link with other maintenance personnel (personnel authorised to sign off and unauthorised personnel), including the use of sign-off and unauthorised personnel both in line and base maintenance.

#### **Impacts analysed:**

- Safety impact
- Environmental impact
- Social impact
- Economic impact
- General Aviation and proportionality issues
- Impact on 'Better Regulation' and harmonisation

**In the analysis of the different impacts, the following scores have been used:**

Scale for assessment of impacts	Score
Highly positive (High)	+5
Significantly positive (Medium)	+3
Slightly positive (Low)	+1
Neutral	0
Slightly negative (Low)	-1
Significantly negative (Medium)	-3
Highly negative (High)	-5

**Total score for each option (impacts not mentioned means that they are neutral):**

Option 0: Total Score 0

Option 1: Safety (+1), Economic (-1), Better Regulation and Harmonisation (+1) = Total Score (+1)

Option 2: Safety (+3), Economic (-1), Better Regulation and Harmonisation (+3) = Total Score (+5)

Option 3: Safety (+5), Economic (-1), Better Regulation and Harmonisation (+5) = Total Score (+9)

**The conclusion of the RIA is:**

**Option 3 is retained:** Modify Part-145 and related AMC/GM to clarify the role and duties of the B1 and B2 support staff and the link with other maintenance personnel (personnel authorised to sign off and unauthorised personnel), including the use of sign-off and unauthorised personnel both in line and base maintenance.

**2.4. Overview of the proposed amendments**

The changes introduced in Annex II (Part-145) to Commission Regulation (EC) No 2042/2003 are the following:

**Amendment to point 145.A.30**

145.A.30 has been maintained as the point where it is described which type of personnel is required in Part-145 maintenance organisations depending on their scope of work:

- accountable Manager (145.A.30(a));
- nominated persons (145.A.30(b) and (c));
- staff to plan, perform, supervise, inspect and monitor quality in the organisation (145.A.30(d));
- personnel performing NDT inspections (145.A.30(f));

- certifying staff for line and base maintenance (145.A.30(g) and (h));
- support staff for base maintenance (145.A.30(h));
- component certifying staff (145.A.30(i)); and
- NDT certifying staff (145.A.30(i)).

In addition, this point describes, in paragraph 145.A.30(e), the general competence assessment and control.

The changes introduced in 145.A.30 are the following:

- 145.A.30(f) has been amended to improve the wording and to clearly link the need of this type of personnel to the scope of maintenance performed by the organisation.
- 145.A.30(h) has been amended to eliminate those paragraphs dealing with the responsibilities of certifying staff and support staff. These paragraphs have been transferred to 145.A.50, where they fit better.
- 145.A.30(i) has been amended to describe the certifying staff required by B-, C- and D1-rated organisations.

The objective of these changes are to ensure that it is clearly described which type of personnel is required for each type of organisation, as well as the qualifications required (Part-66, 145.A.35, NDT standard, etc.). Any reference to roles or responsibilities has been removed and transferred to 145.A.50.

In addition, the following changes have been introduced in the AMC/GM linked to 145.A.30:

- AMC1 145.A.30(e) has been amended to improve the wording and to provide more detailed criteria for the competency assessment of support staff and mechanics authorised to sign off.
- A new GM 145.A.30(i) has been introduced to provide guidance on the use of NDT personnel and NDT certifying staff within B-, C- and D1-rated organisations.

### **New point 145.A.32**

As already mentioned above, point 145.A.30 covered all the personnel required within Part-145 organisations. However, only a part of these personnel will be performing maintenance activities and, as a consequence, will be considered 'maintenance personnel'.

The purpose of the new point 145.A.32 is to address in more detail the qualification, assessment, authorisation and privileges of 'maintenance personnel', including:

- authorised maintenance personnel:
  - certifying staff;
  - support staff;
  - personnel authorised to 'sign off' maintenance tasks; and
- unauthorised maintenance personnel.

It is important to note that certifying staff and support staff have a dedicated point (145.A.35) with more detailed requirements regarding their qualification, assessment, authorisation and privileges.

In particular, 145.A.32 contains the following:

- 145.A.32(a) describes the privileges related to the 'sign-off' of maintenance tasks.
    - Certifying staff and support staff can sign off, without a specific authorisation, those tasks which are already part of their certifying staff/support staff authorisation.
    - In addition:
      - certifying staff and support staff may be authorised by the organisation to sign off other maintenance tasks which are not part of their certifying staff/support staff authorisation; and
      - other maintenance personnel may be authorised by the organisation to sign off maintenance tasks.
- These additional authorisations can only be granted if the personnel are appropriately qualified and their competence assessed and controlled in accordance with 145.A.32(c).
- Personnel not authorised to sign off maintenance tasks can only perform such tasks under the supervision of authorised maintenance personnel.
- 145.A.32(b) describes the qualification, assessment and authorisation of certifying staff and support staff by referring to the more detailed requirements contained in 145.A.30(e) and 145.A.35.
  - 145.A.32(c) describes the qualification and competence assessment of personnel specifically authorised to 'sign off' maintenance tasks.
  - 145.A.32(d) describes the authorisation process of personnel specifically authorised to 'sign off' maintenance tasks.
  - 145.A.32(e) describes the 'sign-off' privileges related to an authorisation, making no distinction between privileges which are part of the certifying staff/support staff authorisation (145.A.32(a)1) or part of a specific 'sign-off' authorisation (145.A.32(a)2 and 3). This is further explained in AMC 145.A.32(e).

Additional GM material has been provided in GM 145.A.32, GM 145.A.32(a) and GM 145.A.32(d).

### **Amendment to point 145.A.35**

As already mentioned above, point 145.A.30 covers all the personnel required within Part-145 organisations, and point 145.A.32 addresses in more detail the qualification, assessment, authorisation and privileges of 'maintenance personnel'.

Coming now to 145.A.35, its purpose is to describe in more detail the qualification, assessment, authorisation and privileges of certifying staff and support staff.

The changes introduced in 145.A.35 are the following:

- 145.A.35(a) has been amended in order to properly address the authorisation of support staff;
- 145.A.35(b) through (l) have been amended to ensure that those provisions are applicable not only to certifying staff but also to support staff; and

- 145.A.35(h) and 145.A.35(l) have been amended to replace the term 'authorised person' by a description of the applicable persons. The reason is that the term 'authorised person' was being used for the purpose of describing who is entitled to see the certification authorisation of a person. This created confusion because the term 'authorised person' is also used in order to designate a person who is authorised to perform certain maintenance.

#### **Amendment to point 145.A.50**

145.A.50(a) has been amended in order to make clear the roles and responsibilities of the different maintenance staff (certifying staff, support staff, personnel authorised to sign off tasks), before a certificate of release to service is issued.

In particular, before a certificate of release to service is issued:

- 145.A.50(a)1 requires that all the maintenance personnel who have directly participated are identified in the maintenance records;
- 145.A.50(a)2 requires that each maintenance task is signed off by authorised personnel after:
  - having personally performed the complete task; or
  - having supervised the complete task to a sufficient extent;
- 145.A.50(a)3 requires that, **for base maintenance released by a category C certifying staff**:
  - the support staff have ensured and declared that all maintenance tasks have been carried out to the required standard; and
  - category C certifying staff have ensured that the support staff have complied with the above requirements, and have ensured that all the work required by the customer has been accomplished or properly deferred with the agreement of the operator; and
- 145.A.50(a)4 requires that, **for maintenance released by other than category C certifying staff**, the certifying staff have ensured that all maintenance tasks have been carried out to the required standard.

The Agency is of the opinion that this text, together with the proposed AMC (AMC 145.A.50(a), AMC 145.A.50(a)1 and AMC 145.A.50(a)2), ensures adequate consistency between the line and base maintenance environment.

When talking about personnel authorised to 'sign off' maintenance tasks, it must be noted that this type of authorisations already exists (as allowed by AMC 145.A.65(b)(3)), both in the line and base maintenance environments. The text proposed by the Agency makes the qualification, assessment, authorisation, roles and responsibilities of this type of personnel more clear.

In addition, this text makes clear that the roles and responsibilities of support staff in base maintenance (145.A.50(a)3) are similar to those of certifying staff in line maintenance (145.A.50(a)4) as in both cases:

- they have to ensure that all maintenance tasks have been carried out to the required standard (145.A.50(a)3a and 145.A.50(a)4);

- they have to make sure that all maintenance personnel directly involved are properly identified (145.A.50(a)1) and all tasks have been properly signed off (145.A.50(a)2); and
- the provisions contained in AMC 145.A.50(a) are equally applicable. These provisions define, among others, how the certifying staff and the support staff can fulfil their responsibilities, how they are involved in the allocation of tasks to sign-off staff (taking into account the complexity and risk), how they provide support to maintenance personnel and how they perform effective coordination and oversight of tasks.

Furthermore, these provisions make clear that certifying staff and support staff have the last call on the level of coordination and oversight they want to perform. This is essential because, as stated in AMC 145.A.32(e), the sign-off authorised staff can only supervise unauthorised maintenance personnel who are assisting him/her in the performance of that particular task. However, it was not intended to allow them to supervise/coordinate unauthorised maintenance personnel working on different areas of the aircraft at the same time, which is the final responsibility of certifying staff and support staff.

This parallelism is not a coincidence. As a matter of fact, the qualification criteria for certifying staff and support staff are also identical as both:

- must have a Part-66 licence with the corresponding type ratings;
- must have the same recent experience and continuation training;
- must have training in human factors and company procedures;
- are subject to the same competence assessment; and
- have to be issued with a company authorisation with similar roles and responsibilities.

The only differences are of a non-technical nature:

- The certification attesting that all maintenance tasks have been carried out to the required standard is issued with a release to service (in the case of line maintenance certifying staff) and with a declaration (in the case of base maintenance support staff).
- There is an additional function in the base maintenance environment (the category C certifying staff). However, this function is more administrative (as described in GM 66.A.20(a), paragraph 3) due to the more complex environment.

**Amendments to other AMC/GM material (not associated to 145.A.30, 145.A.32, 145.A.35 and 145.A.50, which were already described above)**

- AMC 145.A.47(a) has been amended to ensure the involvement in production planning of both certifying staff and support staff;
- GM 145.A.65(c)(1) has been amended to include the new point 145.A.32 in the quality audits;
- AMC 145.A.70(a) has been amended to include the procedure of qualification of personnel authorised to 'sign off' and unauthorised personnel; and

- Appendix II to AMC 145.B.20(5) EASA Form 6, has been amended to include the new point 145.A.32 and the qualification of personnel authorised to 'sign off' and unauthorised personnel.

### 3. Proposed amendments

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

- (a) deleted text is marked with ~~strike through~~;
- (b) new or amended text is highlighted in **grey**;
- (c) an ellipsis (...) indicates that the remaining text is unchanged in front of or following the reflected amendment.

#### 3.1. Draft Regulation (Draft EASA Opinion)

##### 145.A.30 Personnel requirements

...

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

**In addition, any organisation performing other specialised tasks shall have personnel appropriately qualified in accordance with officially recognised standards.**

- (g) ...
- (h) Any organisation maintaining aircraft, except where stated otherwise in paragraph (j) shall:
  1. in the case of base maintenance of large aircraft, have appropriate aircraft type rated certifying staff qualified as category C in accordance with Part-66 and 145.A.35. In addition the organisation shall have sufficient aircraft type rated staff qualified as category B1, B2 as appropriate in accordance with Part-66 and 145.A.35 to support the category C certifying staff.
    - ~~(i) B1 and B2 support staff shall ensure that all relevant tasks or inspections have been carried out to the required standard before the category C certifying staff issues the certificate of release to service.~~
    - ~~(ii) The organisation shall maintain a register of any such B1 and B2 support staff.~~
    - ~~(iii) The category C certifying staff shall ensure that compliance with paragraph (i) has been met and that all work required by the customer has been accomplished during the particular base maintenance check or work package, and shall also assess the impact of any work not carried out with a view to either requiring its accomplishment or agreeing with the operator to defer such work to another specified check or time limit.~~

2. in the case of base maintenance of aircraft other than large aircraft have either:
  - (i) appropriate aircraft rated certifying staff qualified as category B1, B2, B3, as appropriate, in accordance with Annex III (Part-66) and point 145.A.35 or,
  - (ii) appropriate aircraft rated certifying staff qualified in category C assisted by support staff as specified in point 145.A.35(a)(i).
- (i) ~~Component certifying staff shall comply with Part 66.~~ Any organisation holding a B, C or D1 rating shall have certifying staff qualified as follows:
  1. Component certifying staff shall be qualified in accordance with paragraph 6 of Article 5 of this Regulation and in accordance with point 145.A.35.
  2. Non-destructive testing certifying staff shall be qualified in accordance with 145.A.30(f) and 145.A.35.
- (j) ...

#### **145.A.32 Maintenance personnel**

##### **(a) Authorised maintenance personnel:**

1. The privileges of certifying staff and support staff required by points 145.A.30(g), (h), (i) and (j) include the sign-off of those maintenance tasks which are under the scope of their certifying staff/support staff authorisation.
2. Additionally, certifying staff and support staff may be issued with an authorisation by the organisation, once complied with point 145.A.32(c), in order to sign off other maintenance tasks which are not under the scope of their certifying staff/support staff authorisation. This authorisation shall be issued in accordance with point 145.A.32(d).
3. The organisation may also issue, once complied with point 145.A.32(c), an authorisation to other maintenance personnel in order to sign off maintenance tasks. This authorisation shall be issued in accordance with point 145.A.32(d).

Personnel not authorised to sign off maintenance tasks shall be considered as unauthorised maintenance personnel and shall only work under the supervision of appropriately authorised maintenance personnel.

- (b) Certifying staff and support staff shall be qualified, their competence established and controlled, and their authorisations issued in accordance with points 145.A.30(e) and 145.A.35.
- (c) Maintenance personnel authorised to sign off maintenance tasks in accordance with 145.A.32(a)2 and (a)3 shall be qualified and their competence established and controlled as follows:
  1. They shall have received task training for the tasks which will be part of the scope of their authorisation.
  2. Their competence shall be established and controlled in accordance with point 145.A.30(e) before issuing the authorisation and every 2 years thereafter.
  3. They shall receive sufficient continuation training, proportional to the scope of their authorisation, in each two-year period to ensure that they have up-to-date knowledge of relevant technology, organisation procedures and human factor issues. This shall be

performed in accordance with a programme and procedure established by the organisation.

(d) Maintenance personnel authorised to sign off maintenance tasks in accordance with 145.A.32(a)2 and (a)3 shall be issued with an authorisation as follows:

1. The organisation shall issue an authorisation that clearly specifies the scope and limits of such authorisation. Continued validity of the authorisation is dependent upon continued compliance with point 145.A.32(c).
2. The authorisation must be in a style that makes its scope clear to the staff and any person who may require to examine the authorisation. Where codes are used to define scope, the organisation shall make a code translation readily available.
3. The person responsible for the quality system shall also be responsible on behalf of the organisation for issuing and revoking authorisations to the staff. Such person may nominate other persons to actually issue or revoke the authorisations in accordance with a procedure as specified in the exposition.
4. The organisation shall maintain a record of all personnel authorised to sign off maintenance tasks, which shall contain:
  - (i) the details of all relevant training completed; and
  - (ii) the scope of the authorisations issued.

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

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

5. The organisation shall provide these staff with a copy of their authorisation in either a documented or electronic format.
6. These staff shall produce their authorisation, within 24 hours, to any official of the competent authority, the Agency or the Member State who has the responsibility for the oversight of the maintenance organisation or for the oversight of the maintained aircraft or component.

(e) The issuance of an authorisation to maintenance personnel permits the following:

1. The authorised maintenance person can perform and sign off the completion of those maintenance tasks included in their scope of authorisation.
2. The authorised maintenance person shall only sign off a maintenance task when this person is confident that the work has been carried out to the required standard after:
  - (i) having personally performed the complete task, or
  - (ii) having supervised the complete task to a sufficient extent.

**145.A.35 Certifying staff and support staff**

- (a) In addition to the appropriate requirements of 145.A.30(g) and (h), the organisation shall ensure that certifying staff and support staff have an adequate understanding of the relevant aircraft and/or components to be maintained together with the associated organisation procedures. ~~In the case of certifying staff, this shall be accomplished before the issue or re-issue of the certification~~ **corresponding authorisation.**
- (i) 'Support staff' means those staff holding a Part-66 aircraft maintenance licence in category B1, B2 and/or B3 with the appropriate aircraft ratings, working in a base maintenance environment while not necessarily holding certification privileges.
- (ii) 'Relevant aircraft and/or components', means those aircraft or components specified in the particular ~~certification~~ authorisation.
- (iii) '~~Certification~~ **Corresponding authorisation**' means:
- ~~n the case of certifying staff, the an~~ authorisation issued ~~to certifying staff~~ by the organisation and which specifies the fact that they may sign certificates of release to service within the limitations stated in such authorisation on behalf of the approved organisation, ~~and which also allows the sign-off of those maintenance tasks included in the scope of their certifying staff authorisation as indicated in point 145.A.32(a)1.~~
  - ~~In the case of support staff, an authorisation issued by the organisation which specifies the fact that they may take the functions and responsibilities associated with support staff, and which also allows the sign-off of those maintenance tasks included in the scope of their support staff authorisation as indicated in point 145.A.32(a)1.~~
- ~~Additionally, these personnel may be authorised by the organisation to sign off maintenance tasks which are not under the scope of their certifying staff/support staff authorisation, as indicated in point 145.A.32(a)2.~~
- (b) Excepting those cases listed in ~~145.A.30(i), 145.A.30(j), 145.A.32(a)2~~ and 66.A.20(a)3(ii) the organisation may only issue ~~an certification~~ authorisation to certifying staff ~~and support staff~~ in relation to the basic categories or subcategories and any type rating listed on the aircraft maintenance licence as required by Annex III (Part-66), subject to the licence remaining valid throughout the validity period of the authorisation and the certifying staff ~~and support staff~~ remaining in compliance with Annex III (Part-66).
- (c) The organisation shall ensure that all certifying staff and 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~~ authorisation and/or has actually carried out maintenance on at least some of the aircraft type or aircraft group systems specified in the particular ~~certification~~ authorisation.
- (d) The organisation shall ensure that all certifying staff and support staff receive sufficient continuation training in each two-year period to ensure that such staff have up-to-date knowledge of relevant technology, organisation procedures and human factor issues.

- (e) The organisation shall establish a programme for continuation training for certifying staff and support staff, including a procedure to ensure compliance with the relevant paragraphs of 145.A.35 as the basis for issuing ~~certification~~ authorisations under this Part to certifying staff and support staff, and a procedure to ensure compliance with Part-66 or paragraph 6 of Article 5 of this Regulation, when applicable.
- (f) Except where any of the unforeseen cases of 145.A.30(j)(5) apply, the organisation shall assess all prospective certifying staff and support 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 an ~~certification~~ authorisation 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 and support staff, the organisation shall issue an ~~certification~~ authorisation that clearly specifies the scope and limits of such authorisation. Continued validity of the ~~certification~~ authorisation is dependent upon continued compliance with paragraphs (a), (b), (d), and where applicable, paragraph (c).
- (h) The ~~certification~~ authorisation must be in a style that makes its scope clear to the certifying staff, support staff and any ~~authorised~~ person who may require to examine the authorisation. Where codes are used to define scope, the organisation shall make a code translation readily available. ~~'Authorised person' means the officials of the competent authorities, the Agency and the Member State who has responsibility for the oversight of the maintained aircraft or component.~~
- (i) The person responsible for the quality system shall also ~~remain~~ be responsible on behalf of the organisation for issuing and revoking ~~certification~~ authorisations to certifying staff and support staff. Such person may nominate other persons to actually issue or revoke the ~~certification~~ authorisations in accordance with a procedure as specified in the exposition.
- (j) The organisation shall maintain a record of all certifying staff and support staff, which shall contain:
1. the details of any aircraft maintenance licence held under Annex III (Part-66); and
  2. all relevant training completed; and
  3. the scope of the ~~certification~~ authorisations issued, ~~where relevant~~; and
  4. particulars of staff with limited or one-off certification authorisations.
- The organisation shall retain the record for at least three years after the staff referred to in this paragraph have ceased employment with the organisation or as soon as the authorisation has been ~~revoked~~ withdrawn. In addition, upon request, the maintenance organisation shall furnish the staff referred to in this paragraph with a copy of their personal record on leaving the organisation.
- The staff referred to in this paragraph shall be given access on request to their personal records as detailed above.
- (k) The organisation shall provide certifying staff and support staff with a copy of their ~~certification~~ authorisation in either a documented or electronic format.
- (l) Certifying staff and support staff shall produce their ~~certification~~ authorisation, within 24 hours, to any ~~authorised person within 24 hours.~~ official of the competent authority, the

Agency or the Member State who has the responsibility for the oversight of the maintenance organisation or for the oversight of the maintained aircraft or component’.

(m) ...

(n) ...

(o) ...

#### 145.A.50 Certification of maintenance

- (a) A certificate of release to service shall be issued by appropriately authorised certifying staff on behalf of the organisation when it has been verified that all maintenance ordered has been properly carried out by the organisation in accordance with the procedures specified in point 145.A.70, taking into account the availability and use of the maintenance data specified in point 145.A.45 and that there are no non-compliances which are known to endanger flight safety.

Prior to issuing a certificate of release to service, the certifying staff shall ensure that:

1. all the maintenance personnel described in point 145.A.32, who have directly participated in the maintenance being released, are identified in a legible and traceable manner for the task(s) they have participated in; and
2. each maintenance task or step in a maintenance task has been signed off, in accordance with point 145.A.32(e), by an authorised maintenance person when that person is confident that the work has been carried out to the required standard after:
  - a. having personally performed the complete task; or
  - b. having supervised the complete task to a sufficient extent;and
3. in the case of base maintenance released by category C certifying staff:
  - a. appropriately authorised support staff have ensured and declared that all maintenance tasks have been carried out to the required standard; and
  - b. the category C certifying staff have:
    - ensured compliance with paragraph (a)3a above, and
    - ensured that all work required by the customer has been accomplished during the particular base maintenance check or work package, or have assessed 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,and
4. in the case of maintenance released by other than category C certifying staff, the certifying staff have ensured that all maintenance tasks have been carried out to the required standard.

Every maintenance task must be covered by a certificate of release to service issued by appropriately authorised certifying staff.

Category A certifying staff shall only certify work that they have personally performed.

- (b) ...
- (c) ...
- (d) ...
- (e) ...
- (f) ...

### **3.2. Draft Acceptable Means of Compliance and Guidance Material (Draft EASA Decision)**

#### **AMC1 145.A.30(e) Personnel requirements**

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

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

Competence should be assessed by evaluation of:

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

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

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

- which level of ~~on-going~~ ongoing supervision would be required or whether unsupervised work could be permitted;
- whether there is a need for additional training; and
- which scope of tasks he/she is authorised to perform and/or supervise and to sign off when applicable.

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

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

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

...

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

...

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

In addition, mechanics authorised to sign off are able to confirm that a maintenance task or a step of a maintenance task where he/she was personally involved in the complete performance, has been performed to the required standard.

...

- Support staff are able to determine that all maintenance tasks or inspections assigned to them have been carried out to the required standard.

...

### **GM 145.A.30(i) Personnel requirements**

Component certifying staff are only required for B- and C-rated organisations. When these organisations need to carry out non-destructive testing (NDT) as part of component maintenance, the NDT is carried out by personnel qualified in accordance with 145.A.30(f). These personnel do not need to be certifying staff (authorising them to sign off the tasks performed will suffice). The component maintenance, including the NDT, is released by appropriately authorised component certifying staff.

The need for non-destructive certifying staff is only required for D1-rated organisations. The approval held by these organisations refers only to particular NDT methods and is not necessarily specific to a particular aircraft, engine or other component. As a consequence, the approval should not be limited to specific aircraft or components.

### **GM 145.A.32 Maintenance personnel**

The availability of certifying staff is required for all maintenance organisations (A-, B-, C- and D1-rated maintenance organisations) being their function to release the maintenance performed by the organisation.

The availability of support staff is required only for those maintenance organisations performing base maintenance and only in the case where such base maintenance will be released by category C certifying staff.

The availability of maintenance personnel authorised to sign off is not mandatory, since all the tasks may be signed by the available certifying staff or support staff. However, any maintenance organisation (A-, B-, C- or D1-rated) may decide to have specific personnel authorised to sign off tasks. In the case of A-rated organisations, this may include line and/or base maintenance tasks.

A sign-off is not a release to service.

Maintenance personnel other than certifying staff and support staff are normally referred to as 'mechanics'.

The term 'authorised maintenance personnel' contained in point 145.A.32(a) includes the following:

- certifying staff and support staff;

- certifying staff and support staff who are additionally authorised to sign off maintenance tasks which are not under the scope of their certifying staff/support staff authorisation; and
- mechanics authorised to sign off maintenance tasks.

The complexity of the tasks authorised to each sign-off authorised maintenance person will depend on the level of competence of the person. As a consequence, the qualification procedures established by the organisation may consider different levels of sign-off authorisations (see also AMC 145.A.50(a) in relation to the determination of the complexity of tasks and their allocation to sign-off authorised persons).

#### **GM 145.A.32(a) Maintenance personnel**

Certifying staff and support staff do not need to hold a sign-off authorisation for tasks which are under the scope of their certifying staff/support staff authorisation. However, they need to hold a sign-off authorisation for signing off tasks which are outside the scope of their certifying staff/support staff authorisation.

#### **GM 145.A.32(d) Maintenance personnel**

Certifying staff and support staff do not need to be issued with a sign-off authorisation for those tasks which are already within the scope of their certifying staff/support staff authorisation, since the sign-off of these tasks is already within their privileges as indicated in 145.A.32(a)1.

Sign-off authorisations, the same as certifying staff authorisations and support staff authorisations, are authorisations issued by the organisation where the person is employed or contracted. These authorisations are not transferable to other organisations.

#### **AMC 145.A.32(e) Maintenance personnel**

This point of the rule allows authorised staff to sign off a task after having supervised the complete task to a sufficient extent which allows him/her to be confident that the work has been carried out to the required standard.

The meaning of this is that, for the purpose of signing off a task:

- the authorised staff can supervise unauthorised maintenance personnel who are assisting him/her in the performance of that particular task, not being the intention to allow authorised staff to supervise/coordinate unauthorised maintenance personnel working on different areas of the aircraft at the same time; and
- the extent of the supervision has to be sufficient to allow the authorised staff to assume the responsibility that the task has been carried out to the required standard, as attested by the sign-off of the task.

When the sign-off of a task is performed directly by certifying staff or support staff under the scope of their certifying staff/support staff authorisation (as allowed by 145.A.32(a)1), their supervision of unauthorised staff, for the purpose of signing off the task, is subject to the same conditions as above. The reason is that the risk of potential maintenance errors by the unauthorised personnel when they perform unsupervised work is the same regardless of whether the sign-off will be performed by certifying staff, support staff or sign-off authorised staff. As a consequence, the level of supervision should be the same.

This does not prevent the certifying staff/support staff from coordinating/inspecting/supervising different maintenance staff working on different areas of the aircraft at the same time for the

purpose of ensuring that all the maintenance tasks have been carried out to the required standard, as required by paragraphs 145.A.50(a)3a and 145.A.50(a)4. However, this is only for the purpose of assuming the responsibilities associated with:

- issuing a certificate of release to service by certifying staff (in the case of line maintenance and base maintenance not released by a category C licence holder) and
- issuing a declaration by support staff (in the case of base maintenance released by a category C licence holder)

and should not be confused with the responsibilities associated with signing off a particular maintenance task, which could be performed directly by certifying staff/support staff or by other authorised sign-off staff but under the conditions described above.

### **AMC 145.A.47(a) Production planning**

1. ...
2. For the purpose of Part-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, organising maintenance teams and shifts and provide all necessary support to ensure the completion of maintenance without undue time pressure. In the case of base maintenance, this should include the involvement of support staff in the allocation of tasks.
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.
4. The sentence 'to plan the availability of all necessary personnel' should include the identification of assigned certifying staff, support staff and personnel authorised to sign off necessary to complete the corresponding maintenance events.

**AMC 145.A.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.

'Directly participated in the maintenance' means that the person was personally involved in the performance, inspection and/or sign-off of the maintenance task.

'To the required standard' means performed in accordance with:

- the instructions contained in the task cards;
- the applicable maintenance data;
- the applicable standard practices; and
- the procedures of the maintenance organisation and/or the operator, as appropriate.

To enable the certifying staff and support staff to ensure and declare (as applicable under 145.A.50(a)3a and 145.A.50(a)4) that all tasks have been carried out to the required standard, the organisation should ensure that certifying staff and support staff:

- identify which tasks are under the responsibility of each certifying staff/support staff (ensuring that all maintenance tasks are allocated);
- in conjunction with production planning, are involved in the allocation of maintenance tasks to personnel authorised to sign off;
- provide the necessary level of support to maintenance personnel;
- perform effective coordination and oversight of the tasks;
- verify that maintenance tasks or group of tasks have been signed off by appropriately authorised sign-off personnel;
- verify that the records required by the task cards have been properly documented; and
- ensure that the points above are completed and declare it in a traceable manner.

In relation to the allocation of tasks to personnel authorised to sign off, such allocation should consider the complexity of the tasks, the risk of potential maintenance errors associated with the performance of the tasks and the scope of the personnel's sign-off authorisation.

The evaluation of risk should take into consideration aspects such as, but not limited to:

- the need for a particular skill, level of knowledge and experience;
- the number of persons and/or shifts required;
- the level of coordination required;
- the potential effect of a maintenance error;
- the tasks carried out infrequently;
- the introduction of a new task (i.e. an extensive modification or repair);
- the level of detail of maintenance instructions; and

- the use of external test equipment or tooling requiring special training.

Since certifying staff and support staff are responsible for ensuring that all tasks have been carried out to the required standard and they certify so by the issuance of the corresponding release to service or declaration, as applicable, they should determine the level of coordination and oversight they want to perform. This is essential because, as stated in AMC 145.A.32(e), the sign-off authorised staff can only supervise unauthorised maintenance personnel who are assisting him/her in the performance of that particular task. However, it is not the intention to allow them to supervise/coordinate unauthorised maintenance personnel working on different areas of the aircraft at the same time, which is the final responsibility of certifying staff and support staff.

The declaration issued by support staff should state that 'the maintenance task(s) specified has (have) been carried out to the required standard'.

For maintenance released by other than category C certifying staff (145.A.50(a)4), the concept of support staff does not exist. Nevertheless, in this case, there is no need for the certifying staff to issue such declaration since this is already attested by the certificate of release to service issued by the certifying staff.

For the declaration issued by support staff and the sign-off issued by personnel authorised to sign off, it is acceptable:

- to use either paper format (with signature or stamp) or electronic signature, and
- to cover individual tasks or groups of tasks.

#### **AMC 145.A.50(a)1 Certification of maintenance**

The identification of any unauthorised maintenance personnel who have directly participated in the maintenance may be performed, for example, by listing their names together with the tasks where they participated or by having these persons introducing their signature in the tasks where they participated. However, in this second case, such signature does not attest any conformity to the corresponding standard, which is done by the corresponding sign-off issued by authorised personnel.

#### **AMC 145.A.50(a)2 Certification of maintenance**

According to 145.A.32(a)1, the sign-off of tasks may be performed directly by certifying staff/support staff under their own privileges, without a separate sign-off issued by another sign-off authorised person. In such a case:

- for line maintenance, there is no need for the certifying staff to issue a separate sign-off for each task, as issuing the certificate of release to service for the task or group of tasks will suffice; and
- for base maintenance, there is no need for the support staff to issue a separate sign-off for each task, as issuing the declaration required by 145.A.50(a)3a for the task or group of tasks will suffice.

In any case, the supervision of unauthorised staff by the certifying staff/support staff/sign-off authorised staff is subject to the same conditions, as indicated in AMC 145.A.32(e). The reason is that the risk of potential maintenance errors by the unauthorised personnel when they perform unsupervised work is the same regardless of whether the sign-off will be performed by certifying

staff, support staff or sign-off authorised staff. As a consequence, the level of supervision should be the same.

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

...

PARA	Comment	HANGAR	ENGINE Workshop	MECH Workshop	AVIONIC Workshop
145.A.25		Yes	Yes	Yes	Yes
145.A.30		Yes	Yes	Yes	Yes
145.A.32		Yes	Yes	Yes	Yes
145.A.35		Yes	Yes	Yes	Yes

...

**AMC 145.A.70(a) Maintenance organisation exposition**

...

3.8 Qualifying mechanics (personnel authorised to sign off tasks and unauthorised maintenance personnel)

...

**Appendix II to AMC 145.B.20(5): EASA Form 6**

...

**Part 2: Part-145 Compliance Audit Report**

...

145.A.30 Personnel requirements

145.A.32 Maintenance personnel

145.A.35 Certifying staff and support staff

...

**Part 3: Compliance with 145.A.70 Maintenance organisation exposition**

...

3.8 Qualifying mechanics (personnel authorised to sign off tasks and unauthorised maintenance personnel)

...

## 4. Regulatory Impact Assessment (RIA)

### 4.1. Issues to be addressed

Annex II (Part-145) to the current Regulation (EC)2042/2003<sup>6</sup> (point 145.A.30(h)) requires that Part-145 maintenance organisations performing **base maintenance of large aircraft** have the following:

- Category C certifying staff responsible for the issuance of a certificate of release to service for the complete aircraft; and
- Category B1 and B2 support staff responsible for ensuring 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.

In addition, these organisations typically have, as allowed by AMC 145.A.65(b)(3), paragraph 3, the following:

- Competent persons authorised to 'sign off' tasks after they have performed or supervised the tasks; and
- Unauthorised personnel (i.e. temporary staff, trainee, etc.) whose work has to be checked/supervised by personnel authorised to 'sign off'.

However, as described in the Terms of Reference of this task, the current Regulation and AMC/GM material have the following shortcomings:

- The absence of criteria to qualify the personnel in charge of performing and signing the maintenance tasks during base maintenance (personnel authorised to 'sign off'); and
- The lack of a clear definition of the role and responsibilities of the Part-66 licensed B1 and B2 support staff.

These shortcomings also affect some Part-145 maintenance organisations performing **base maintenance of other-than-large aircraft**. The reason is that these organisations can choose between the following two options:

- Having category C certifying staff and B1 and B2 support staff; or
- Having B1, B2 or B3 certifying staff, as appropriate.

In addition, the existence of personnel authorised to 'sign off' tasks (as allowed by AMC 145.A.65(b)(3)) is possible (and already exists) in any maintenance environment (line and base maintenance, as well as component maintenance). As a consequence, the position of the Agency is that any action to clarify the qualification, authorisation process, roles and responsibilities of the personnel authorised to 'sign off' would be incomplete and inconsistent if the clarification is limited to the base maintenance environment.

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<sup>6</sup> Commission Regulation (EC) No 2042/2003 of 20 November 2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks (OJ L 315, 28.11.2003, p. 1).

#### 4.1.1. Safety risk assessment

The lack of clear regulation and guidance material in relation to the functions and responsibilities of support staff, in particular regarding the level of supervision they have to perform on other maintenance personnel, and also in relation to the qualification, function and responsibilities of personnel authorised to sign off, creates the following risks:

- The personnel actually performing the maintenance may not be appropriately qualified;
- Unauthorised personnel may not be appropriately supervised;
- There could be a lack of evidence that all maintenance tasks have been completed to the required standard;
- There could be an inadequate coordination between certifying staff/support staff and the other maintenance personnel; and
- There could be a reduced feeling of responsibility among all maintenance personnel since anyone could think that the responsibility belongs to somebody else.

All these risks may lead to an unsafe release to service.

In addition, this lack of clear regulation and guidance material may lead to legal uncertainty when trying to assign responsibilities because of an accident/incident and to an unlevel playing field due to the different approaches permitted in each country.

#### 4.1.2. Who is affected?

The proposed changes may affect Part-145 organisations. The level of the impact will depend on how much they would have to change their existing procedures related to:

- qualification, assessment, authorisation and supervision of maintenance personnel.
- completion of work cards, in particular the signature of maintenance tasks.

#### 4.1.3. How could the issue/problem evolve?

In the case of option 'do nothing', we may continue facing the risks described in paragraph 4.1.1 above.

### 4.2. Objectives

As described in the Terms of Reference of this task, the objectives are the following:

1. Address the need for the organisations to better evaluate the complexity of each task and assign it to appropriately qualified personnel authorised to sign off or to non-authorised personnel under supervision;
2. Better define who can be authorised to sign off, under which qualification criteria and under which authorisation process;
3. Clarify how the licensed support staff evaluate that maintenance tasks are performed to the required standard and which level of supervision they should place on the personnel authorised to sign off.
4. Clarify how the licensed support staff should record that all maintenance tasks have been carried out to the required standard, in particular those carried out by non-licensed 'sign-off' personnel.

It is important to note that although objectives 3 and 4 apply only to the base maintenance environment, objectives 1 and 2 can only be achieved in a consistent manner if they are addressed for all the maintenance environments (line and base maintenance, as well as component maintenance).

Addressing these issues should improve the level playing field and the level of safety.

### 4.3. Policy options

#### Selected policy options

<b>Option No</b>	<b>Short title</b>	<b>Description</b>
0		Baseline option (no change in rules and AMC/GM; risks remain as outlined in the issue analysis).
1		Modify Part-145 and related AMC/GM to clarify the role and duties of the B1 and B2 support staff (applies only to base maintenance).
2		Modify Part-145 and related AMC/GM to clarify the role and duties of the B1 and B2 support staff and the link with other maintenance personnel (personnel authorised to sign off and unauthorised personnel), but only in base maintenance.
3		Modify Part-145 and related AMC/GM to clarify the role and duties of the B1 and B2 support staff and the link with other maintenance personnel (personnel authorised to sign off and unauthorised personnel), including the use of sign-off and unauthorised personnel both in line and base maintenance.

### 4.4. Analysis of impacts

In the analysis of the different impacts, the following scores have been used:

<b>Scale for assessment of impacts</b>	<b>Score</b>
Highly positive (High)	+5
Significantly positive (Medium)	+3
Slightly positive (Low)	+1
Neutral	0
Slightly negative (Low)	-1

Significantly negative (Medium)	-3
Highly negative (High)	-5

#### 4.4.1. Safety impact

Option 0: It means continuing with the current system. As a consequence, the safety impact is neutral (the current safety risks remain the same).

Option 1: Clarifying the requirements/AMC/GM for B1 and B2 support staff, in particular the level of supervision they have to perform on other maintenance personnel, is anticipated to improve safety, although not as much as it would be done with Options 2 and 3.

Option 2: This option is expected to have a higher positive impact than Option 1 because it would also clarify the qualification, functions and responsibilities of personnel authorised to sign off in base maintenance.

Option 3: This option is expected to have the highest positive impact on safety since, in addition to the benefits of Option 2, it would also clarify the level of supervision performed by certifying staff on the personnel authorised to sign off both in base maintenance of other-than-large aircraft (when no support staff is used) and in line maintenance.

Option 0: Score 0

Option 1: Score +1

Option 2: Score +3

Option 3: Score +5

#### 4.4.2. Environmental impact

No environmental impact is anticipated.

Option 0: Score 0

Option 1: Score 0

Option 2: Score 0

Option 3: Score 0

#### 4.4.3. Social impact

A slight social impact is anticipated if the obligation to issue an authorisation for personnel authorised to sign off (other than certifying staff/support staff) would be considered a promotion in certain organisations, which may impact their salary wages.

However, this slight impact would be mostly of an economic nature and would be neutral (positive for the individuals and negative for the organisations).

Option 0: Score 0

Option 1: Score 0

Option 2: Score 0

Option 3: Score 0

#### 4.4.4. Economic impact

The level of economic impact will depend on how much the Part-145 organisations would have to change their existing procedures and practices. In particular:

- The cost associated with issuing an authorisation to personnel authorised to 'sign off' (only applicable if they have personnel authorised to sign off other than certifying staff and support staff, and only if they were not already issuing an authorisation).
- The cost of requiring that all the maintenance personnel who have directly participated in the maintenance are identified and traceable for the task they have participated in. This may require a change in the paper documents (job cards, etc.) or in the IT system, depending on which system is used.
- The cost of evaluating the complexity of the tasks and the associated risks before assigning them to personnel authorised to sign off (only applicable if they have personnel authorised to sign off other than certifying staff and support staff, and they were not evaluating such complexity and risks).
- The cost of changing the work card system or IT system to align with the new requirements/guidance for signature and declaration of completion of maintenance tasks.

It is important to note that the economic impact will be higher for those organisations which, taking profit of the lack of clarity of certain aspects of the current Regulations/AMC/GM, do not have a robust system for ensuring proper qualification, assessment and authorisation of personnel other than certifying staff and support staff, and/or do not have a robust system for ensuring proper evaluation, supervision and traceability of maintenance actions.

Part-145 organisations already holding a robust system are expected to suffer a very limited economic impact. Other Part-145 organisations will be subject to a higher economic burden proportional to how deficient is their current system.

Nevertheless, in the long run, any negative economic impact should be compensated, if not surpassed, by the savings originated from a more robust system and the reduced number of possible maintenance errors and associated accidents/incidents.

*Option 0: Score 0*

Option 1: Score -1

Option 2: Score -1

Option 3: Score -1

**NOTE:**

The score of -1 has been assigned taking into account a Part-145 organisation currently having a reasonably robust system (at least to the level intended by the current Regulation), where some minor improvements may be needed. This score has not taken into account the fact that this slight negative impact is expected to be at least compensated by the savings originated from a more robust system.

Again, organisations currently having a deficient system would be subject to higher economic impact.

#### 4.4.5. General aviation and proportionality issues

If we consider General Aviation (GA) as aircraft other than large when not involved in commercial air transport, then the impact of the proposed changes on General Aviation will be very limited for the following reasons:

- The changes introduced only affect Part-145 organisations.
- Most Part-145 organisations are only involved in the maintenance of large aircraft and aircraft involved in commercial air transport.
- The few Part-145 organisations maintaining General Aviation aircraft still have the option of not using support staff, releasing the maintenance with B1 and B2 certifying staff. In this case, they may only be affected by the material proposed in relation to personnel authorised to sign off.
- Only the very limited number of Part-145 organisations working in General Aviation which have selected to have category C certifying staff and B1 and B2 support staff will be affected in the same way as a normal Part-145 organisation. However, the fact that they have decided to use category C certifying staff and B1 and B2 support staff can most likely be attributed to the fact that they also maintain non-General Aviation aircraft.

Not applying these changes to M.A. Subpart F maintenance organisations, which have a lower level of complexity, was done on purpose.

Based on the above, **only a very limited number** of GA Part-145 organisations may be affected to the same extent as the larger (non-GA) Part-145 organisations. In this case, the economic impact would be classified as -1 (the same as the general economic impact contained in paragraph 4.4.4. above).

Option 0: Score 0

Option 1: Score -1 (only for a very limited number of GA Part-145 organisations)

Option 2: Score -1 (only for a very limited number of GA Part-145 organisations)

Option 3: Score -1 (only for a very limited number of GA Part-145 organisations)

#### 4.4.6. Impact on 'Better Regulation' and harmonisation

The clarification of the requirements/AMC/GM in the areas of qualifications, functions, responsibilities and level of supervision is expected to have a positive impact in the following areas:

- Level playing field and harmonisation between organisations located in different countries.
- Better legal certainty, in particular for the allocation of responsibilities in case of an accident/incident.

Obviously, the grade of the positive impact is higher in Option 3 than in Options 1 and 2.

Option 0: Score 0

Option 1: Score +1

Option 2: Score +3

Option 3: Score +5

#### **4.5. Comparison and conclusion**

##### **4.5.1. Comparison of options**

Once the scores corresponding to the different categories of impacts are added, the total score for each option is the following:

Option 0: Total Score 0

Option 1: Safety (+1), Economic (-1), Better Regulation and Harmonisation (+1) = Total Score (+1)

Option 2: Safety (+3), Economic (-1), Better Regulation and Harmonisation (+3) = Total Score (+5)

Option 3: Safety (+5), Economic (-1), Better Regulation and Harmonisation (+5) = Total Score (+9)

##### **NOTE:**

The impact on General Aviation (paragraph 4.4.5 above) has not been added since it is of an economic nature and it is a duplication of the economic impact contained in paragraph 4.4.4 above (which has already been added to the Total Score).

##### **4.5.2. Conclusion**

Option 3 is retained: Modify Part-145 and related AMC/GM to clarify the role and duties of the B1 and B2 support staff and the link with other maintenance personnel (personnel authorised to sign off and unauthorised personnel), including the use of sign-off and unauthorised personnel both in line and base maintenance.

## **5. References**

### **5.1. Affected regulations**

Annex II (Part-145) to Commission Regulation (EC) No 2042/2003 of 20 November 2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks (OJ L 315, 28.11.2003, p. 1).

### **5.2. Affected AMC and GM**

Annex II (AMC to Part-145) and Annex III (GM to Part-145) to Decision No. 2003/19/RM of the Executive Director of the Agency of 28 November 2003 on acceptable means of compliance and guidance material to Commission Regulation (EC) No 2042/2003 of 20 November 2003 on the continuing airworthiness of aircraft and aeronautical products, parts and appliances, and on the approval of organisations and personnel involved in these tasks.

### **5.3. Reference documents**

None.