

## RA 4806 - Personnel Requirements (MRP 145.A.30)

### Rationale

An organization applying for MRP Part 145 Approval is required to appoint ► **several essential positions** ◀, which each have specific responsibilities, and detail them in the Maintenance Organization Exposition (MOE). While Military Maintenance Organizations (MMOs) are not currently required to apply for Approval, this RA remains applicable. Without the appointment of specific roles within a Maintenance organization, personnel leadership and management of essential functions could be compromised, thus increasing the Risk of a Maintenance Occurrence, the organization operating outside its scope of work and potentially increasing Risk to Life. This RA describes the Maintenance organization roles that require Competent individuals to fulfil their responsibilities and provide Assurance that the organization is compliant with MRP Part 145.

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### Definitions

#### Definitions Relevant to this RA

1. ► Refer to RA 4800 – General Requirements (MRP Part 145) for standardized definitions. ◀
2. ► ◀
3. ► ◀

### Regulation 4806(1)

#### Accountable Manager (Maintenance) (MRP 145.A.30(a))

- 4806(1) An Accountable Manager (Maintenance) (AM(M)) **shall** be appointed who has a basic understanding of MRP Part 145, and has organizational authority ► **and Responsibility** ◀ for:
- a. Ensuring that all Maintenance is carried out in compliance with MRP Part 145.
  - b. Ensuring that all necessary resources are available to accomplish Maintenance<sup>1</sup> and, where applicable, support the organization Approval (Approved Maintenance Organizations (AMOs) only).
  - c. Establishing and promoting the Safety and Quality Policy<sup>2</sup> (AMOs only).

<sup>1</sup> Refer to RA 4815(2): Procedures for Good Maintenance Practices (MRP 145.A.65(b)).

<sup>2</sup> Refer to RA 4815(1): Organization Safety and Quality Policy (MRP 145.A.65(a)).

**Acceptable Means of Compliance 4806(1)**

**Accountable Manager (Maintenance) (MRP 145.A.30(a))**

**Common AMC**

4. Nil.

**Additional AMC – MMOs only**

5. The Aviation Duty Holder (ADH) ► **should** ◀ appoint an individual who is responsible for ensuring that Maintenance is carried out in compliance with MRP Part 145. ► **The AM(M)** ◀ **should** have direct access to the Delivery Duty Holder to communicate Safety related issues.

**Additional AMC – AMOs only**

6. ► ◀ The AM(M) is normally intended to mean the Chief Executive Officer (CEO) of the AMO who, by virtue of position, has overall (including financial) Responsibility for running the organization. When the AM(M) is not the CEO, the MAA **should** be assured that such an AM(M) has direct access to the CEO on Safety related issues and has sufficient 'Maintenance funding' allocation.

**Guidance Material 4806(1)**

**Accountable Manager (Maintenance) (MRP 145.A.30(a))**

**Common GM**

7. Nil.

**Additional GM – MMOs only**

8. Nil.

**Additional GM – AMOs only**

9. The AM(M) may be the AM(M) for more than one AMO and is not necessarily required to ► **have in-depth knowledge** ◀ on technical matters, as the MOE defines the Maintenance standards.

10. Where an AMO holds both an Approval under MRP Part 145 and a Civil Aviation Authority (CAA) Part 145, the post title of AM(M) may be shortened to 'Accountable Manager' for clarity if required. However, this appointment must not be confused with the Accountable Manager (Military Flying)<sup>3</sup>.

**Regulation 4806(2)**

**Personnel Responsible to the Accountable Manager (Maintenance) (MRP 145.A.30(b))**

4806(2) The organization **shall** nominate a person or group of persons, whose Responsibilities include ensuring that the organization complies with MRP Part 145. Such person(s) **shall** ultimately be responsible to the AM(M).

- a. The person(s) nominated **shall** represent the Maintenance management structure of the organization and be responsible for all functions specified in MRP Part 145.
- b. The person(s) nominated **shall** be identified and their credentials submitted<sup>4</sup> using an MAA MAOS Form 4 (AMOs only).
- c. The person(s) nominated **shall** be able to demonstrate relevant knowledge, background and satisfactory experience related to Air Systems ► **and** / ◀ or component Maintenance and demonstrate a working knowledge of MRP Part 145.

<sup>3</sup> Refer to RA 1028 – Contractor Flying Approved Organization Scheme.

<sup>4</sup> The MAA MAOS Form 4 can be found on the Maintenance Approved Organization Scheme (MAOS) Approvals page of the MAA Website (► <https://www.gov.uk/government/publications/maintenance-approved-organization-scheme-maos> ◀).

**Regulation  
4806(2)**

- d. Procedures **shall** make clear who deputizes for any **▶nominated◀** person in the case of lengthy absence of the said person.

**Acceptable  
Means of  
Compliance  
4806(2)**

**Personnel Responsible to the Accountable Manager (Maintenance)  
(MRP 145.A.30(b))**

**Common AMC**

11. Nil.

**Additional AMC – MMOs only**

12. An MMO **should** have a Quality manager and, depending on the type and size of MMO, one or more Air System Maintenance manager(s) and / or workshop manager(s) who will hold Responsibility for the Maintenance output of their relevant areas.

13. Individuals to be identified as an MMO's Air System Maintenance manager or workshop manager **should** be appropriately Authorized<sup>5</sup>.

14. The individuals identified in this Regulation **should** have direct access to the AM(M), **▶irrespective of whether the AM(M) is their◀** direct reporting officer for appraisal purposes.

**Additional AMC – AMOs only**

15. An AMO **should** have, dependent upon the extent of Approval, a Base Maintenance manager, a Line Maintenance manager, a workshop manager and a Quality manager **▶6◀**, all of whom **should** report to the AM(M) except in a small AMO, where any one manager can also be the AM(M).

16. The Base Maintenance manager **should** be responsible for ensuring that all Maintenance required to be carried out in the hangar, plus any Fault rectification carried out during Base Maintenance, is carried out to the required<sup>1</sup> design and Quality standards. The Base Maintenance manager **should** also be responsible for any corrective action resulting from Quality compliance monitoring **▶7◀**<sup>8</sup>.

17. The Line Maintenance manager **should** be responsible for ensuring that all Maintenance required to be carried out on the line, including **▶◀** Fault rectification, is carried out to the required<sup>1</sup> standards and **▶◀** for any corrective action resulting from Quality compliance monitoring<sup>7</sup>.

18. The workshop manager **should** be responsible for ensuring that all work on Air System components is carried out to the required<sup>1</sup> standards and also responsible for any corrective action resulting from Quality compliance monitoring<sup>7</sup>.

19. Notwithstanding the example post titles detailed here, the organization can adopt any title for the foregoing managerial positions but AMOs **should** identify to the MAA the titles and persons chosen to carry out these functions on submission of the MAA MAOS Form 4 and in the MOE.

20. Where an organization chooses to appoint **▶subordinate◀** managers for all or any combination of the identified MRP Part 145 functions because of the size of the undertaking, these managers **should** report through either the Base Maintenance manager, Line Maintenance manager, Workshop manager or Quality manager, as appropriate, to the AM(M).

21. Certifying staff can report to any of the managers specified, depending upon which type of control the AMO uses (for example, licensed engineers / Independent

<sup>5</sup> Refer to RA 1006 – Delegation of Engineering Authorizations and RA 4806(5): Personnel Competences and Authorization (MRP 145.A.30(e)).

<sup>6</sup> **▶ For CAA Part 145 Approved organizations, the equivalent compliance monitoring Responsibilities **should** be held by personnel nominated iaw CAA Part 145.A.30(b) Personnel Requirements.**

<sup>7</sup> **For CAA Part 145 Approved organizations, the requirements will be captured under compliance monitoring iaw CAA Part 145.A.200 Management Systems.◀**

<sup>8</sup> Refer to RA 4815(3): Quality Management System (MRP 145.A.65(c)).

**Acceptable Means of Compliance 4806(2)**

Inspection / dual function supervisors etc); however, the Quality compliance monitoring staff<sup>9</sup> **should** remain independent.

**Guidance Material 4806(2)**

**Personnel Responsible to the Accountable Manager (Maintenance) (MRP 145.A.30(b))**

**Common GM**

22. Dependent upon the size of the organization, the MRP Part 145 functions may be subdivided under individual managers or combined in any number of ways.

**Additional GM – MMOs only**

23. Nil.

**Additional GM – AMOs only**

24. Nil.

**Regulation 4806(3)**

**Quality Manager ▶◀**

4806(3) The AM(M)<sup>10</sup> **shall** appoint a person<sup>6</sup>◀ with Responsibility for monitoring the Quality ▶ **Management** ◀ System<sup>7, 8</sup>◀, including the associated feedback system<sup>7</sup>. The appointed person **shall** have direct access to the AM(M) to ensure that the AM(M) is kept properly informed on Quality and compliance matters.

**Acceptable Means of Compliance 4806(3)**

**Quality Manager ▶◀**

25. Monitoring the Quality ▶ **Management** ◀ System **should** include requesting remedial and preventive action, ensuring full Root Cause Analysis, ▶ **on behalf of the AM(M) or other nominated personnel**<sup>11</sup>.◀

**Guidance Material 4806(3)**

**Quality Manager ▶◀**

26. Nil.

**Regulation 4806(4)**

**Maintenance Working Hours Plan (MRP 145.A.30(d))**

4806(4) The organization **shall** have a Maintenance working hours plan demonstrating that the organization has the workforce capacity and Competence to carry out the scope of its Approval, and that the workforce is of sufficient quantity and appropriate composition to plan, perform, supervise, inspect and Quality monitor the organization. In addition, the organization **shall** have a procedure to reassess work intended to be carried out when actual staff availability is less than the planned staffing level for any ▶◀ period.

**Acceptable Means of Compliance 4806(4)**

**Maintenance Working Hours Plan (MRP 145.A.30(d))**

**Common AMC**

27. Nil.

<sup>9</sup> Refer to RA 4806(3): Quality Manager ▶◀.

<sup>10</sup> Refer to RA 4806(1): Accountable Manager (Maintenance) (MRP 145.A.30(a)).

<sup>11</sup> Refer to RA 4806(2): Personnel Responsible to the Accountable Manager (Maintenance) (MRP 145.A.30(b)).

**Acceptable  
Means of  
Compliance  
4806(4)**

**Additional AMC – MMOs only**

28. Where an MMO utilizes Contracted staff, the relevant Maintenance Manager **should** ensure that they adhere to the appropriate Regulations and procedures.

29. In cases where an MMO is required to deviate from the Maintenance working hours plan to meet a temporary increase in the required output (for example, in support of an increase in flying task), the relevant Maintenance manager **should** report the deviation to the AM(M) ▶◀ to assess any Air Safety implications and, if necessary, establish appropriate mitigation strategies. Likewise, if adequate staffing levels cannot be maintained, the AM(M) **should** consider the need for a commensurate reduction in Maintenance tasking, in discussion with the ADH chain where appropriate.

**Additional AMC – AMOs only**

30. The organization **should** demonstrate that they have appropriate workforce capacity by meeting either one, or both, of the following conditions:

a. Employ or contract staff such that at least half the staff who perform Maintenance in each workshop, hangar or flight line on any shift are employed to ensure organizational stability (definitions of 'employed' and 'Contracted' are contained within the Guidance Material to this Regulation).

b. Ensure organizational stability by demonstration in the Maintenance working hours plan of the organization's active assessment and management of:

(1) Staff experience.

(2) Staff time in post.

(3) Supervision ratios.

(4) Staff turnover rates which **should** be below 50% of the staff who perform Maintenance in each workshop, hangar or flight line on any shift in a rolling 12-month period (method of calculation is contained within the Guidance Material to this Regulation).

31. Contract staff, being part time or full time **should** be made aware that when working for the organization they are subjected to compliance with the organization's procedures specified in the MOE relevant to their duties.

32. The Maintenance working hours plan **should** ▶consider◀ any Maintenance carried out on Air Systems and / or components from outside the UK and **should** also ▶consider◀ all work carried out outside the scope of the MRP Part 145 Approval.

33. The Maintenance working hours plan **should** relate to the anticipated Maintenance workload.

34. In the case of Air System Base Maintenance, the Maintenance working hours plan **should** relate to the Air System hangar visit plan<sup>12</sup>.

35. The Quality monitoring▶<sup>7</sup>◀ compliance function working hours **should** be sufficient to meet the Quality ▶Management◀ System requirement<sup>8</sup>. Where Quality-monitoring staff perform other functions, the time allocated to such functions **should** be ▶considered when◀ determining Quality monitoring staff numbers.

36. The Maintenance working hours plan **should** be reviewed at least every 3 months and updated when necessary.

37. Significant deviation from the Maintenance working hours plan **should** be reported through the departmental manager to the Quality manager▶<sup>6</sup>◀ and the AM(M) for review.

<sup>12</sup> Refer to RA 4805(1): Facility Requirements (MRP 145.A.25(a)).

**Guidance  
Material  
4806(4)**

**Maintenance Working Hours Plan (MRP 145.A.30(d))**

**Common GM**

38. The 'Maintenance working hours plan' is a document or set of documents that demonstrate what the organization ►can◄ achieve with the actual workforce resource available and, where applicable for 'Line' or 'forward' ►◄ Maintenance organizations, the Air System Flying Hours that can be made available as a result of this Maintenance.

**Additional GM – MMOs only**

39. An MMO's Maintenance working hours plan may be developed and held by a higher military formation, but individual MMOs will be expected to have access to, and an understanding of, their plan.

40. An MMO's Maintenance working hours plan may be supplemented by several separate plans to cater for differing circumstances, for example, Air System Maintenance organizations supporting expeditionary operations or exercises. However, in all instances the plan will demonstrate that staff levels are adequate to safely perform the functions specified in this Regulation.

**Additional GM – AMOs only**

41. For ►◄ this Regulation, 'employed' means the person is directly employed by the Maintenance organization Approved under MRP Part 145, or the person is a Contractor who has been engaged in one role for a minimum of 6 months. 'Contracted' means the person is employed by another organization and Contracted by that organization to the Maintenance organization Approved under MRP Part 145 (►unless the person has been engaged in one role for a minimum of 6 months,◄ where the Contracted person is considered to be 'employed' ►as stated above◄).

42. In the case of MOD / industrial partnered support arrangements in an AMO, the MOD element of the organization will be considered, for the purpose of this clause, as part of the AMO's 'employed' workforce.

43. Turnover rate is calculated as the number of persons who departed divided by the average number of persons who performed Maintenance, over the rolling 12-month period.

44. 'Maintenance workload' includes all necessary work such as, but not limited to, planning, Maintenance record checks, production of worksheets / cards in paper or electronic form, accomplishment of Maintenance, inspection and the completion of Maintenance records.

45. Significant deviation means more than a 25% shortfall in available working hours during a calendar month for any one of the functions specified in this Regulation.

**Regulation  
4806(5)**

**Personnel Competences and Authorization (MRP 145.A.30(e))**

4806(5) The organization **shall** establish the Competence and control the Authorization of personnel involved in any Maintenance, management and / or Quality Audits. In addition to the necessary expertise related to the job function, Competence **shall** include ►an understanding of the application of Human Factors (HF) and human performance issues that affect an individual or team function in an organization.◄

a. ►◄

b. ►◄

AMOs **shall** detail the procedure for such Competence assessment and the standard to be achieved in their MOE.

**Acceptable  
Means of  
Compliance  
4806(5)**

**Personnel Competences and Authorization (MRP 145.A.30(e))**

**Common AMC**

**Electrical Wiring Interconnection System (EWIS) Training**

46. Personnel<sup>13</sup> who maintain, ► or inspect ◀ Air Systems with ► EWIS ◀, **should** receive EWIS awareness training, ► to reduce inadvertent damage to the electrical Systems. ◀ Refresher training **should** be completed every 2 years as a minimum.
47. As a minimum this training **should** include the following topics:
- General EWIS Safety practises.
  - Wires - typical damage and areas found (Air System specific), Electrical Bonding and grounds.
  - Housekeeping - know the contamination sources, materials, cleaning and protection procedures.
  - Connective devices - know or demonstrate the procedures to identify, inspect, and find the correct Repair for typical types of connective devices found on the applicable Air System.

**Additional AMC – MMOs only**

**Competence Assessment and Authorization**

48. Tradespersons ►<sup>14</sup> ◀ who maintain Air Systems ►<sup>15</sup> ◀, including Contractor staff, **should** be trained, assessed as Competent<sup>16</sup> and Authorized for specific tasks and roles, including, but not limited to:
- All personnel required to sign Maintenance documentation, noting the additional requirements detailed in paras 49-51.
  - Self-supervisors.
  - Elementary self-supervisors.
  - Personnel using ground Maintenance Systems.
  - Personnel required to carry out ground runs on engines and / or Auxiliary Power Units, whether installed in Aircraft, in an engine training facility, or in an Uninstalled Engine Test Facility.
  - Aircraft Ground Engineers, ► ie Aircraft Technicians deployed with Air Systems to undertake a range of Maintenance activities with minimal technical support. ◀
  - Survival Equipment ► and Aircrew Equipment Assemblies ◀ Maintenance staff.
  - Ground Support Equipment Maintenance staff.
49. The individuals conducting a Competence assessment of personnel employed in Air System Maintenance **should** ► confirm ◀ that those being assessed have received an appropriate level of training or familiarization on the Air System type before being Authorized to undertake Maintenance or servicing activities as Tradesperson, Supervisor ►<sup>14</sup> ◀ or Coordinator / Certifying Staff ►<sup>14</sup> ◀, on that Air System type.
50. Individuals receiving an Authorization to undertake the duties of the Tradesperson, **should** first receive an element of type-specific training and / or familiarization appropriate to the scope of their Authorization. Good practice is for such training to ► lead ◀ to the award of a formal qualification ► on ◀ the Air System type; consideration to introducing this qualifying ► criterion ◀ for Tradespersons **should** be given by the Chief Air Engineer.

<sup>13</sup> This includes Aircrew who carry out Maintenance.

<sup>14</sup> ► Refer to RA 4800 – General Requirements (MRP Part 145) for standardized definitions.

<sup>15</sup> Refers to Air Systems (including their Products, Parts and Appliances) and Aircrew Equipment Assemblies, Airborne Equipment and Air Launched Weapons. ◀

<sup>16</sup> Refer to RA 1002 – Airworthiness Competent Persons.

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4806(5)**

51. The individuals conducting a Competence assessment of personnel employed in Air System component / equipment Maintenance **should** ►confirm◀ that those being assessed have received training and / or familiarization on the relevant component(s) / equipment(s) appropriate to their level of Authorization.

52. Engineering Authorizations **should** be recorded using a system that is Auditable.

53. Tradespersons ►◀ who are required to undertake Maintenance on Air Systems from another Service or nation **should** only do so if appropriately Authorized ►for the Maintenance through Recognition or in accordance with (iaw) MMO procedures.

**HF Training**

54. MMO personnel **should** receive HF training iaw RA 1440<sup>17</sup>. Personnel from another nation required to undertake Maintenance on UK Air Systems **should** have received equivalent training.◀

**Additional AMC – AMOs only**

**Competence Assessment and Authorization**

55. The MOE procedure **should** require, amongst others, that planners, Tradespersons, Specialized Services staff, Supervisors and Coordinating / Certifying Staff are assessed for Competence by 'on the job' evaluation and / or by examination relevant to their job role within the organization, before unsupervised work is permitted.

56. A record of the qualification and Competence assessment **should** be kept.

57. The Maintenance organization **should** have in place procedures for:

- a. Ensuring that all personnel are Competent by virtue of their training and experience for the tasks on which they are employed.
- b. Ensuring staff are trained, assessed and Authorized for specific tasks.
- c. Providing initial and continuation training by a suitable organization.
- d. Maintaining a record system detailing the training and qualification of all staff.
- e. Maintaining a record of all personnel Authorizations.

58. The MOE procedure **should** include a method of assessing the training and experience of personnel joining the organization. ►This◀ **should** include as a minimum:

- a. Verification of any qualifications and experience.
- b. A formal technical interview.
- c. A period of on the job assessment.

59. Adequate initial and recurrent training **should** be provided and recorded to ensure continued Competence.

60. To assist in the assessment of Competence, job descriptions are recommended for each job role in the organization. The Competence assessment **should** establish that:

- a. Planners ►can◀ interpret Maintenance requirements into Maintenance tasks and ►know◀ they have no authority to deviate from the Technical Information (TI).
- b. Tradespersons ►can◀ carry out Maintenance tasks to ►the◀ standard specified in the TI and will notify Supervisors of mistakes requiring rectification to re-establish required Maintenance standards.
- c. Specialized Services staff ►can◀ carry out specialized Maintenance tasks to the standard specified in the TI, and will both inform and await

<sup>17</sup> ►Refer to RA 1440 – Air Safety Training.◀

**Acceptable  
Means of  
Compliance  
4806(5)**

instructions from their Supervisor in any case where it is not possible to complete the specialized Maintenance iaw the TI.

d. Supervisors are able to ensure that all required Maintenance tasks are carried out and where not completed or where it is evident that a ►◄ Maintenance task cannot be carried out to the TI, then such problems will be reported to the Quality manager<sup>9</sup> for appropriate action. In addition, for those Supervisors who also carry out Maintenance tasks, that they understand such tasks **should not** be undertaken when incompatible with their management Responsibilities.

e. Coordinating / Certifying Staff ►can◄ determine when the Air System or Air System component is Serviceable and when it is Unserviceable.

61. Planners, Specialized Services staff, Supervisors and Coordinating / Certifying Staff **should** have a knowledge of organization procedures relevant to their ►◄ role in the organization. The ►above◄ list is not exclusive and can include other categories of personnel.

62. Quality Audit►7◄ staff **should** monitor compliance with MRP Part 145, identifying non-compliance in an effective and timely manner in order that the organization remains in compliance with MRP Part 145.

### HF Training

63. ►◄ Maintenance, management, and Quality Audit personnel in AMOs **should** be assessed for the need to receive initial HF training<sup>17</sup>, ►and◄ receive HF continuation training. As a minimum, this **should** concern:

- a. Post-holders, managers.
- b. Tradespersons, Supervisors and Coordinating / Certifying Staff.
- c. Technical support personnel, such as, planners and technical record staff.
- d. Quality control / Assurance staff.
- e. Specialized Services staff.
- f. HF staff / HF trainers.
- g. Store department staff and purchasing department staff.
- h. Ground equipment operators.
- i. Contract staff in the above categories.

64. Depending on the result of the Competence assessment ►◄, initial training **should** be provided to personnel during their induction into the Maintenance organization. Consideration **should** be given to training temporary staff soon after they join the organization ►◄.

65. Personnel being recruited from another AMO and temporary staff **should** be assessed for the need to receive any additional HF training to meet the HF training standard of the new AMO.

66. The purpose of HF continuation training is ►to help◄ ensure that staff remain current in terms of HF and ►◄ to collect feedback on HF issues. Training **should** have the involvement of the Quality department. There **should** be a procedure to ensure that feedback is formally passed from the trainers to the Quality department to initiate action where necessary.

67. HF continuation training **should** be of an appropriate duration in each 2-year period ►and relate◄ to Quality Audit findings, and other internal / external sources of information available to the organization, ►concerning◄ human errors in Maintenance.

68. HF training **should** be conducted by the AMO itself, independent trainers, or a suitable training organization.

69. The HF training procedures **should** be specified in the MOE.

**Guidance  
Material  
4806(5)**

**Personnel Competences and Authorization (MRP 145.A.30(e))**

**Common GM**

70. CAA ► **UK AMC<sup>18</sup>** ◀ provides useful material for personnel creating EWIS training syllabi.

71. 'Human Factors' is defined in MAA02<sup>19</sup>. 'Human performance' means human capabilities and limitations which have an impact on the Safety and efficiency of aeronautical operations.

72. For all relevant personnel in the Defence Air Environment, HF training requirements<sup>17</sup> must be followed.

**Additional GM – MMOs only**

73. ►◀

**Additional GM – AMOs only**

74. Initial HF training will cover the topics of the training syllabus specified in Annex A to this Regulation, either as a dedicated course or else integrated within other training. The syllabus may be adjusted to reflect the ► **nature and functions of the organization.** ◀

**Regulation  
4806(6)**

**Specialized Services (MRP 145.A.30(f))**

4806(6) The organization **shall** ensure that ► **personnel who carry out and / or control Specialized Services are appropriately qualified iaw an officially recognized standard.** This includes:

- a. **Non-Destructive Testing (NDT) of Air System Structures for the method of NDT carried out.**
- b. **Application of surface finish of Air System Structures and / or components for the surface finish task carried out.**
- c. **Any other Specialized Services where there is an officially recognized standard.** ◀

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**Specialized Services (MRP 145.A.30(f))**

**Common AMC**

75. **NDT.** Personnel who carry out and / or control NDT of Air System Structures and / or components **should** be appropriately qualified iaw BS EN 4179<sup>20</sup>, or equivalent.

76. ►◀

**► Aircraft Surface Finish.** ◀

77. ►◀ Surface finish activities **should** be carried out by Competent specialized organizations with appropriately qualified personnel. Training for persons undertaking and authorizing surface finish activities **should** as a minimum, meet the national standards for Aircraft surface finish<sup>21</sup>:

- a. SEMAER233 – Preparing Aircraft components for surface finishing / coating.
- b. SEMAER234 – Preparing Aircraft component coatings / finishes for application.
- c. SEMAER235 – Applying coatings / finishes to Aircraft components by hand.

<sup>18</sup> ► **CAA UK AMC for Airworthiness of Products, Parts and Appliances: AMC 20-22 Aeroplane EWIS Training Programme.** ◀

<sup>19</sup> Refer to MAA02: MAA Master Glossary.

<sup>20</sup> BS EN 4179 – Aerospace series. Qualification and approval of personnel for non-destructive testing.

<sup>21</sup> National Occupational Standards (NOS) are detailed at <https://www.ukstandards.org.uk/>.

**Acceptable  
Means of  
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4806(6)**

- d. SEMAER236 – Applying coatings / finishes to Aircraft components by spray gun.
- e. SEMAER237 – Carrying out the application of transfers, decals and livery to Aircraft components.

78. Tradesperson, Supervisors, Coordinating / Certifying Staff<sup>14</sup> can carry out minor surface finish activities as Maintenance tasks iaw the Air System Document Set.

**Additional AMC – MMOs only**

79. Nil.

**Additional AMC – AMOs only**

**▶ NDT ◀**

80. ▶ ◀ Notwithstanding the general references in BS EN 4179 to a national aerospace NDT board, all examinations and training **should** be conducted by personnel or organizations under the general control of such a board. The referenced standards, methods, training, experience levels and procedures **should** be specified in the MOE.

81. An AMO that carries out NDT **should** establish NDT specialist qualification procedures, detailed in the MOE and accepted by the MAA.

82. ▶ For non-destructive inspections, such as Boroscopying and tap testing (also referred to as 'coin tapping'), ◀ AMOs **should** establish a procedure in their MOE, accepted by the MAA, to ensure that personnel who carry out and interpret such inspections are properly trained and assessed for their Competence with the process. Organizations undertaking non-destructive inspections do not require a D1 class rating Approval<sup>22</sup>.

**Guidance  
Material  
4806(6)**

**Specialized Services (MRP 145.A.30(f))**

**▶ NDT ◀**

**Common GM**

83. 'Continued Airworthiness NDT' means such testing specified by TI for the purpose of determining the continued fitness of the product to operate safely.

84. ▶ Whilst ◀ the organization's Responsible Level 3 may be qualified to establish and authorize ▶ NDT ◀ methods, techniques, etc, this does not permit ▶ deviation ◀ from methods and techniques published by the Type Airworthiness Authority in the form of TI, such as in NDT manuals or Service Bulletins, unless the manual or Service Bulletin expressly permits such deviation.

85. ▶ 'Method of ◀ NDT' means any one or more of the following:

- a. Penetrant testing.
- b. Magnetic testing.
- c. Eddy current testing.
- d. Ultrasonic testing.
- e. Radiographic testing.
- f. Thermographic testing.
- g. Shearographic testing.

**Additional GM – MMOs only**

86. Personnel will become qualified on the successful completion of NDT training, consolidation, and examinations appropriate to the level of NDT qualification being sought.

87. Authorization to conduct NDT will be withdrawn if an individual's qualification becomes invalid. The relevant authorizing individual may re-authorize personnel once

<sup>22</sup> Refer to RA 4804 – Terms of Approval (MRP 145.A.20) - Approved Maintenance Organizations only.

**Guidance  
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the lapsed qualification element(s) has been reassessed and certified as being complete. A Responsible Level 3 can advise on the re-Authorization action required. Under exceptional or operational requirements, the relevant authorizing individual may extend the validity of an NDT Authorization to meet a specific need.

88. NDT Authorizations will be recorded<sup>23</sup>.

89. When MMOs do not have the necessary organic NDT capability, additional services may be requested from specialist organizations (such as 1710 NAS, 71(IR) Squadron or an appropriate AMO with a D1 rating) that are ► **Authorized to undertake the relevant NDT task.** ◀

**Additional GM – AMOs only**

90. Nil.

**Regulation  
4806(7)**

**Air System Certifying Staff (Line Maintenance) (MRP 145.A.30(g)) - Approved Maintenance Organizations only**

4806(7) An AMO undertaking Air System Line Maintenance **shall** have appropriate Coordinating / Certifying Staff qualified on each relevant Air System type and, where applicable, Tradespersons and Supervisors, suitably Authorized ►<sup>23</sup>◀ for Line Maintenance activities ►<sup>24</sup>◀.

**Acceptable  
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Compliance  
4806(7)**

**Air System Certifying Staff (Line Maintenance) (MRP 145.A.30(g)) - Approved Maintenance Organizations only**

91. In the case of an AMO using certifying staff licensed iaw CAA Part 66, a suitable number of Category B1 and B2 Certifying Staff **should** be employed and Authorized. The use of appropriately qualified Category A personnel to conduct minor preventative Line Maintenance and simple Fault rectification **should not** replace this requirement for Category B1 and B2 staff.

92. In the case of an AMO adopting military processes, including the use of the MOD Form 700 as the Air System technical log, and the associated Authorization framework, a suitable number of personnel **should** be employed who are Authorized to:

- a. Undertake the Responsibilities of '1<sup>st</sup> signature', '2<sup>nd</sup> signature' and '3<sup>rd</sup> signature' (Tradesperson, Supervisor and Coordinating / Certifying Staff) ►<sup>14</sup>◀ for Maintenance tasks.
- b. Undertake and coordinate flight servicing activities.
- c. Endorse the Certification of Air System Release ►<sup>25</sup>◀.

**Guidance  
Material  
4806(7)**

**Air System Certifying Staff (Line Maintenance) (MRP 145.A.30(g)) - Approved Maintenance Organizations only**

93. The following Guidance Material is applicable to AMOs employing certifying staff licensed iaw CAA Part 66 in a Line Maintenance environment:

- a. 'Minor scheduled Line Maintenance' means any minor scheduled inspection / check up to and including a weekly check specified in the Approved Aircraft Maintenance Programme<sup>26</sup> (or equivalent), in a Line Maintenance environment<sup>27</sup>.
- b. Where the AMO uses appropriately Authorized Category A Tradespersons to carry out minor scheduled Line Maintenance and simple Fault

<sup>23</sup> Refer to RA 4806(5): Personnel Competences and Authorization (MRP 145.A.30(e)).

<sup>24</sup> ► Refer to RA 4807 – Certifying Staff and Support Staff (MRP 145.A.35).

<sup>25</sup> Refer to RA 4812 – Certification of Air System Release and Component Release (MRP 145.A.50). ◀

<sup>26</sup> Refer to RA 4961 – Aircraft Maintenance Programme ► and Military Continuing Airworthiness Management Organization Responsibilities for Air System Release - MRP Part M Subpart C. ◀

<sup>27</sup> Refer to RA 4802(1): Scope of the MRP Part 145 (MRP 145.A.10(a)).

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Material  
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rectification, Category B1 and B2 staff need not always be present at the line station during such activity.

c. The following list contains typical tasks that a Category A Tradesperson could carry out after appropriate task training, as part of minor scheduled Line Maintenance or simple Fault rectification:

- (1) Replacement of wheel assemblies and brake units.
- (2) Replacement of simple crew escape and emergency equipment (excluding Aircraft Assisted Escape Systems (AAES)).
- (3) Replacement of internal and external lights, filaments and flash tubes.
- (4) Replacement of windscreen wiper blades.
- (5) Replacement of seats (excluding AAES), seat belts and harnesses.
- (6) Closing of cowlings and re-fitment of quick access inspection panels.
- (7) Replacement of static wicks / static dischargers.
- (8) Replacement of Air System batteries.
- (9) Routine lubrication and replenishment of fluids and gases.

**Regulation  
4806(8)**

**Air System Certifying Staff (Base Maintenance) (MRP 145.A.30(h)) - Approved Maintenance Organizations only**

4806(8) An AMO undertaking Air System Base Maintenance **shall** have appropriate Coordinating / Certifying Staff qualified on each relevant Air System type and, where applicable, Tradespersons and Supervisors, suitably Authorized<sup>▶23◀</sup> for Base Maintenance activities<sup>▶24◀</sup>.

**Acceptable  
Means of  
Compliance  
4806(8)**

**Air System Certifying Staff (Base Maintenance) (MRP 145.A.30(h)) - Approved Maintenance Organizations only**

94. In the case of an AMO using certifying staff licensed iaw CAA Part 66 to conduct Base Maintenance, a suitable number of appropriate Air System type-qualified Category C Certifying Staff **should** be employed and Authorized. In addition, the AMO **should** have sufficient Air System type-qualified staff qualified as Category B1 and B2 and Authorized to support the Category C Coordinating / Certifying Staff<sup>▶14◀</sup>. In this instance, the following process **should** be followed:

- a. The Category B1 and B2 Tradespersons<sup>▶14◀</sup> and Supervisor<sup>▶14◀</sup> **should** ensure that all relevant tasks or inspections have been carried out to the required standard before the Category C Certifying Staff endorses the Certification of Air System Release.
- b. The Category C Coordinating / Certifying Staff **should** ensure compliance with sub-para ▶◀a above, and that all work required by the customer has been accomplished during the ▶◀ work package. They **should** also assess the impact of any work not carried out with a view to either requiring its accomplishment or agreeing with the Military Continuing Airworthiness Management Organization or MOD Contracting Authority to defer such work to another specified check or time limit.


95. In the case of an AMO adopting military processes, including the use of the MOD Form 700 as the Air System technical log, and the associated Authorization framework, a suitable number of personnel **should** be employed who are Authorized to:

- a. Undertake the responsibilities of '1<sup>st</sup> signature', '2<sup>nd</sup> signature' and '3<sup>rd</sup> signature' (Tradesperson, Supervisor and Coordinating / Certifying Staff) Maintenance tasks.
- b. Endorse the Certification of Air System Release<sup>▶25◀</sup>.

<b>Guidance Material 4806(8)</b>	<p><b>Air System Certifying Staff (Base Maintenance) (MRP 145.A.30(h)) - Approved Maintenance Organizations only</b></p> <p>96. Nil.</p>
<b>Regulation 4806(9)</b>	<p><b>Component Certifying Staff (MRP 145.A.30(i))</b></p> <p>4806(9) Any organization undertaking component Maintenance <b>shall</b> have appropriately qualified Tradesperson, Supervisor and Coordinating / Certifying Staff, to be suitably Authorized <sup>▶23◀</sup> for component Maintenance activities <sup>▶24◀</sup>.</p>
<b>Acceptable Means of Compliance 4806(9)</b>	<p><b>Component Certifying Staff (MRP 145.A.30(i))</b></p> <p><b>Common AMC</b></p> <p>97. Nil.</p> <p><b>Additional AMC – MMOs only</b></p> <p>98. Persons certifying the Certification of Component Release following Maintenance <b>should</b> be appropriately Authorized.</p> <p><b>Additional AMC – AMOs only</b></p> <p>99. Certification of Component Release following Maintenance <b>should</b> be by appropriately Authorized Coordinating / Certifying Staff <sup>▶14◀</sup>.</p>
<b>Guidance Material 4806(9)</b>	<p><b>Component Certifying Staff (MRP 145.A.30(i))</b></p> <p>100. Nil.</p>
<b>Regulation 4806(10)</b>	<p><b>Non-engineering Staff (MRP 145.A.30(j))</b></p> <p>4806(10) Non-engineering staff, including Aircrew, <b>shall</b> only be permitted to undertake Air System Maintenance and / or flight servicing when Authorized. Where applicable, AMOs <b>shall</b> detail the procedure to grant such Authorization in the MOE.</p>
<b>Acceptable Means of Compliance 4806(10)</b>	<p><b>Non-engineering Staff (MRP 145.A.30(j))</b></p> <p><b>Common AMC</b></p> <p>101. Nil.</p> <p><b>Additional AMC – MMOs only</b></p> <p>102. Aircrew required to undertake Maintenance and / or flight servicing tasks <b>should</b> undertake a Competence assessment prior to Authorization.</p> <p><b>Additional AMC – AMOs only</b></p> <p>103. The MOE procedure <b>should</b> ensure that the scope of permitted Air System Maintenance and / or flight servicing is specified in the Authorization.</p>
<b>Guidance Material 4806(10)</b>	<p><b>Non-engineering Staff (MRP 145.A.30(j))</b></p> <p>104. The requirements for the Authorization of personnel who undertake Maintenance tasks on Air Systems must be adhered to.</p>

**Annex A****HF Training Syllabus (AMOs Only)**

1. The training syllabus below identifies the topics and sub-topics to be addressed during HF training for personnel in an AMO. The Maintenance organization may combine, divide, or change the order of any subject of the syllabus to suit its own needs, so long as all subjects are covered to a level of detail appropriate to the organization and its personnel. ► If ◀ topics ► are ◀ covered in separate training (Health and Safety, Management, Supervisory Skills, etc.), ► ◀ duplication of training is not necessary.
2. Where possible, practical illustrations and examples will be used, especially Accident and Incident reports. Topics will also need to be related to Maintenance where possible; too much unrelated theory will need to be avoided.
3. Required training topics and sub-topics are as follows:
  - a. General / Introduction to HF:
    - (1) Need to address HF.
    - (2) Statistics.
    - (3) Incidents.
  - b. Safety Culture / Organizational factors.
  - c. Human Error:
    - (1) Error models and theories.
    - (2) Types of errors in Maintenance tasks.
    - (3) Violations.
    - (4) Implications of errors.
    - (5) Avoiding and managing errors.
    - (6) Human reliability.
  - d. Human performance and limitations:
    - (1) Vision.
    - (2) Hearing.
    - (3) Information-processing.
    - (4) Attention and perception.
    - (5) Situational awareness.
    - (6) Memory.
    - (7) Claustrophobia and physical access.
    - (8) Motivation.
    - (9) Fitness / Health.
    - (10) Stress.
    - (11) Workload management.
    - (12) Fatigue.
    - (13) Alcohol, medication, drugs.
    - (14) Physical work.
    - (15) Repetitive tasks / complacency.
  - e. Environment:
    - (1) Peer pressure.
    - (2) Stressors.
    - (3) Time pressure and deadlines.
    - (4) Workload.

- (5) Shift Work.
  - (6) Noise and fumes.
  - (7) Illumination.
  - (8) Climate and temperature.
  - (9) Motion and vibration.
  - (10) Complex Systems.
  - (11) Hazards in the workplace.
  - (12) Lack of workforce.
  - (13) Distractions and interruptions.
- f. Procedures, information, tools and practices:
- (1) Visual Inspection.
  - (2) Work logging and recording.
  - (3) Procedure – practice / mismatch / norms.
  - (4) Technical documentation – access and Quality.
- g. Communication:
- (1) Shift / Task handover.
  - (2) Dissemination of information.
  - (3) Cultural differences.
- h. Teamwork:
- (1) Responsibility.
  - (2) Management, supervision and leadership.
  - (3) Decision making.
- i. Professionalism and integrity:
- (1) Keeping up to date / currency.
  - (2) Error provoking behaviour.
  - (3) Assertiveness.
- j. Organization's HF programme:
- (1) Reporting errors.
  - (2) 
  - (3) Error investigation.
  - (4) Action to address problems.
  - (5) Feedback.