

## RA 5820 - Changes in Type Design (MRP Part 21 Subpart D)

### Rationale

During the life of an Air System there will be changes (previously referred to as Modifications) in the Type Design. It is important that any such changes meet the appropriate Safety requirements to ensure the Airworthiness implications of the change are fully understood. Failure to complete a systematic, independent Certification process for Changes in the Type Design of UK military registered Air Systems may lead to design deficiencies which introduce unacceptable Hazards<sup>1</sup>. Such changes are subject to classification and Approval prior to the implementation of the change.

### Contents

**5820(1): Classification of Changes in Type Design (MRP Part 21.A.91)**

**5820(2): Application (MRP Part 21.A.93)**

**5820(3): Approval of Minor Changes (MRP Part 21.A.95)**

**5820(4): Approval of Major Changes (MRP Part 21.A.97)**

**5820(5): Designation of Applicable Certification Specifications for Airworthiness (MRP Part 21.A.101)**

**5820(6): Record Keeping (MRP Part 21.A.105)**

### Regulation 5820(1)

**Classification of Changes in Type Design (MRP Part 21.A.91)**

5820(1) Any change in Type Design **shall** be classified as 'Minor' or 'Major' by the Type Airworthiness Authority (TAA) or ►by a privileged◄ Design Organization (DO) within ►its◄ scope ►◄ as recorded in its terms of Approval<sup>2</sup>.

### Acceptable Means of Compliance 5820(1)

**Classification of Changes in Type Design (MRP Part 21.A.91)**

- For Civilian-Owned and Civilian Operated Air Systems, the Air System Sponsor has the opportunity to split Type Airworthiness (TAW) Responsibility, with regards to design changes, between the TAA and a Type Airworthiness Manager (TAM). The TAA **should** provide advice to the Sponsor on the most appropriate split of TAW design change Responsibilities<sup>3</sup>.
- A Minor Change has no appreciable effect on the mass, balance, structural strength, reliability, operational characteristics, ►Aircraft Armament System◄ or other characteristics affecting the Airworthiness of the Air System. All other changes **should** be classified as Major Changes.
- The classification decision and supporting justification of all changes to Type Design **should** be recorded in a manner that provides an auditable trail<sup>4</sup>.
- In case of any doubt over the classification of change, the TAA **should** seek advice from the Military Aviation Authority (MAA) Certification Division. The MAA reserves the authority to re-classify a change if deemed appropriate to do so.
- DOs without privileges **should** provide a recommended classification, with supporting justification, to the TAA for all changes in Type Design.◄

<sup>1</sup> ►Any impact on the environmental requirements of the Air System caused by the change in Type Design will be considered and managed in accordance with (iaw) the RA 1800 Series: Environmental.◄

<sup>2</sup> ►◄ For the DO scope of privileges ►and invoking of privileges◄ refer to RA 5850 – Military Design Approved Organization (MRP Part 21 Subpart J).

<sup>3</sup> Where the Air System is not UK MOD-owned, TAW management regulatory Responsibility by either the TAA or TAM needs to be agreed within the Sponsor's approved model; refer to RA 1162 – Air Safety Governance Arrangements for Civilian Operated (Development) and (In-Service) Air Systems or refer to RA 1163 – Air Safety Governance Arrangements for Special Case Flying Air Systems. Dependant on the agreed delegation of TAW Responsibilities TAM may be read in place of TAA as appropriate throughout this RA.

<sup>4</sup> Refer to RA 1225 – Air Safety Documentation Audit Trail.

**Guidance  
Material  
5820(1)**

**Classification of Changes in Type Design (MRP Part 21.A.91)**

6. Refer to the Manual of Military Air System Certification (MMAC)<sup>7</sup> for related Guidance Material.

**Regulation  
5820(2)**

**Application (MRP Part 21.A.93)**

5820(2) An application for a proposed Major Change in Type Design **shall** be made by the TAA using MAA Form 30.

**Acceptable  
Means of  
Compliance  
5820(2)**

**Application (MRP Part 21.A.93)**

7. Where Operational Suitability Data (OSD)<sup>5</sup> is available for the Air System, the application **should** include, or be supplemented after the initial application by, an assessment of the implications on the OSD resulting from military operation.

8. Where the TAA wishes to generate a Type Airworthiness Safety Assessment Report (TASAR) addendum for the Change, rather than a re-issue of the TASAR, this **should** be proposed, with justification, on the MAA Form 30 submission<sup>6</sup>.

9. As the individual Responsible for the Type Design of the Air System, only the TAA **should** apply for Approval of a Major Change in Type Design. The TAA **should** propose, with justification<sup>7</sup>, whether the change will be assured by the MAA or TAA. The MAA will determine, upon review, whether MAA Certification Assurance is required or the Major Change can proceed under TAA Assurance with MAA oversight.

10. The Type Certification Basis (TCB) for a Major change to Type Design **should** be effective for 5 years from the date of Military Type Certificate (MTC) or Approved Design Change Certificate (ADCC) application. If the change to the MTC, Restricted MTC (RMTC), ADCC or Restricted ADCC is not achieved within this timescale, the TAA **should** undertake a review of the Certification Specifications used to define the TCB to assess any shortfalls against Airworthiness Requirements in the latest issue.

**Guidance  
Material  
5820(2)**

**Application (MRP Part 21.A.93)**

11. Refer to the MMAC<sup>8</sup> for related Guidance Material.

**Regulation  
5820(3)**

**Approval of Minor Changes (MRP Part 21.A.95)**

5820(3) A Minor Change in a Type Design **shall** be approved by the TAA or an approved DO within the scope of its privileges as recorded in its terms of Approval<sup>8</sup> when it has been demonstrated that the change and areas affected by the change comply with the requirements of the Military Air System Certification Process (MACP).

**Acceptable  
Means of  
Compliance  
5820(3)**

**Approval of Minor Changes (MRP Part 21.A.95)**

12. A Minor Change to a Type Design **should** only be approved when all the following conditions are met:

- a. When it has been demonstrated that the Type Design change and areas affected by the change comply with the Certification Specifications, as specified in RA 5820(5), through satisfactory completion of the MACP.
- b. When compliance with the TCB has been declared and the justifications of compliance have been recorded in the compliance documents.
- c. When any Airworthiness provisions not complied with are compensated for by controls, factors or mitigations that provide an Equivalent Level of Safety (ELoS).

<sup>5</sup> Refer to RA 5810(3): Application (MRP Part 21.A.15).

<sup>6</sup> Refer to RA 5012 – Type Airworthiness Safety Assessment.

<sup>7</sup> Refer to MMAC Chapter 3 – Changes to Type Design (MRP Part 21 Subpart D).

<sup>8</sup> Refer to RA 5850 – Military Design Approved Organization (MRP Part 21 Subpart J).

**Acceptable  
Means of  
Compliance  
5820(3)**

- d. When no feature or characteristic has been identified that may make the product unsafe for the uses for which Certification is requested.
13. An Approval of a Minor Change to a Type Design **should** be limited to the specific Configuration(s) in the Type Design to which the change relates.
14. The DO **should** provide to the TAA the Instructions for Sustaining Type Airworthiness amendments for the Product, on which the change will be installed, prepared iaw the applicable TCB.
15. Where Operational Suitability Data is available for the Air System, the TAA, or an approved DO within the scope of its privilege(s) **should** assess the implications on the Operational Suitability Data resulting from the change to Type Design.
16. The TAA or approved DO under privilege procedure **should** ensure that the proposed Minor Change has undergone a thorough evaluation process in line with the MACP<sup>9</sup>. The appropriate classification and Approval of changes in Type Design will be subject to routine MAA oversight activity.
17. The Approval of Minor Changes by either the TAA or an approved DO under the privilege procedure **should** be predicated on there being no non-compliances with the applicable TCB requirements and comply with following conditions:
- An approved DO acting under privilege procedure **should** inform the TAA if a TCB non-compliance is identified.
  - Where there is no appreciable effect on Airworthiness, TAAs can approve Equivalent Safety Finding (ESF) for Minor changes and **should** subsequently notify the MAA.
  - Where an appreciable effect on Airworthiness is identified and an ELoS cannot be demonstrated, the TAA **should** seek MAA acceptance of the non-compliance, via a Military Certification Review Item (MCRI) before the change is approved. The MAA will then consider whether the Approval of a Deviation and / or re-classification of the change as Major is appropriate.
18. When a Minor Change is approved by an approved DO under the privilege procedure<sup>2</sup> invoked by the TAA, the DO **should** inform the TAA to ensure that Configuration Control is maintained.

**Guidance  
Material  
5820(3)**

**Approval of Minor Changes (MRP Part 21.A.95)**

19. Refer to the MMAC ▶◀ for related Guidance Material.

**Regulation  
5820(4)**

**Approval of Major Changes (MRP Part 21.A.97)**

- 5820(4) A Major Change to a Type Design **shall** only be approved when it has been demonstrated that the change and areas affected by the change comply with the requirements of the MACP.

**Acceptable  
Means of  
Compliance  
5820(4)**

**Approval of Major Changes (MRP Part 21.A.97)**

20. The TAA **should** demonstrate that the Type Design change and areas affected by the change comply with the Certification Specifications, as specified in RA 5820(5), through satisfactory completion of the MACP<sup>9</sup>.
21. Any non-compliances and proposed Alternative Means of Compliance (AltMoC), Special Conditions, ESFs or Deviations encountered during the MACP **should** be staffed to the MAA through MCRI(s) for agreement prior to Approval of the Change.
22. Where compliance with the TCB, including appropriate ESFs and Deviations, has not been fully demonstrated, but the Certification evidence has been assessed, by the MAA to demonstrate a level of Safety which is adequate with regard to the

<sup>9</sup> Refer to RA 5810 – Military Type Certificate (MRP Part 21 Subpart B).

### Acceptable Means of Compliance 5820(4)

intended use, the TAA **should** be issued with a Restricted Approved Design Change Certificate or RMTC by the MAA.

23. Where a TAA proposes to request credit for Certification activities undertaken by another Certification Authority, the TAA **should** document their approach in a Certification Strategy for agreement with the MAA Certification Division. If not completed during initial Certification, the Strategy **should** detail arrangements to complete a structured 2-part Type Design Examination process to agree the scope of the credit to be awarded.

24. For Major Changes under TAA Assurance, the TAA **should** approve a Type Certification Exposition (TCE) that references the TCB, compliance evidence and the statements detailed in RA 5810(7) AMC<sup>10</sup>.

25. For Major Changes under TAA Assurance, the TAA **should** notify the MAA when the MACP has been completed and, when applicable, Release To Service Recommendations (RTSR) have been submitted. This notification **should** reference the TAA-approved TCE and, if applicable, RTSR. The MAA will then issue or update the ADCC or MTC as appropriate. These changes in Type Design will be subject to routine MAA Oversight activity.

26. An ADCC or MTC **should not** be issued or updated until the Type Design Change is brought Under Ministry Control (UMC)<sup>11</sup>.

#### Impact on the Air System Safety Case (ASSC)

27. The TAA **should** inform the relevant Aviation Duty Holder / Accountable Manager (Military Flying) of the Major Changes to enable a review of the Air System Safety Case<sup>12</sup>.

### Guidance Material 5820(4)

#### Approval of Major Changes (MRP Part 21.A.97)

28. Refer to the MMAC   for related Guidance Material.

### Regulation 5820(5)

#### Designation of Applicable Certification Specifications for Airworthiness (MRP Part 21.A.101)

5820(5) The TAA **shall** ensure that the application for the change in Type Design complies with the Certification Specifications applicable to the changed product on the date of application for the change unless Certification Specifications of later amendments are chosen, or Certification Specifications of earlier amendments are agreed under the Changed Product Rule (CPR).

### Acceptable Means of Compliance 5820(5)

#### Designation of Applicable Certification Specifications for Airworthiness (MRP Part 21.A.101)

29. Where the TAA elects to use CPR, any of the following **should** apply:

- a. A change is Minor<sup>13</sup>.
- b. A change is Not Significant<sup>14</sup>.
- c. An area, System, Part or Appliance is not affected by the change.
- d. Compliance with the latest amendment for a Significant change<sup>15</sup> does not contribute materially to the level of Safety.
- e. Compliance with the latest amendment would be impractical.

<sup>10</sup> Refer to RA 5810(7): Compliance with the Type Certification Basis (MRP Part 21.A.20).

<sup>11</sup> Refer to RA 5301 – Air System Configuration Management.

<sup>12</sup> Refer to RA 1205(2): Ownership of the Air System Safety Case.

<sup>13</sup> Refer to 5820(1) paragraph 2.

<sup>14</sup> A change is considered Not Significant if it is neither Significant nor Substantial.

<sup>15</sup> Refer to the MMAC for definition.

**Acceptable  
Means of  
Compliance  
5820(5)**

30. If the TAA chooses to use requirements from an earlier amendment of the Certification Specifications, they **should** show that the changed product complies with these requirements and any other requirement the MAA finds is directly related. The earlier amended Certification Specifications **should** be no earlier than the corresponding Certification Specifications of the original Type Design.

31. If the TAA elects to comply with requirements that are derived from an amendment to the Certification Specifications that is effective after the filing of the application for a change to a Type, the TAA **should** also comply with any other requirements that the MAA finds are directly related.

32. If the MAA finds that the Certification Specifications referenced in the TCB do not provide adequate standards with respect to the proposed change, the TAA **should** also comply with any Special Conditions, and amendments to those Special Conditions, prescribed under the provisions of RA 5810<sup>5</sup>, in order to provide a level of Safety equivalent to that established in the Certification Specifications in effect at the date of the application for the change.

**Guidance  
Material  
5820(5)**

**Designation of Applicable Certification Specifications for Airworthiness (MRP Part 21.A.101)**

33. Refer to the MMAC ▶◀ for related Guidance Material.

**Regulation  
5820(6)**

**Record Keeping (MRP Part 21.A.105)**

5820(6) The TAA **shall** ensure that all documents supporting Certification of changes are retained and are available to the MAA in order to provide an Audit trail of evidence supporting Air Safety decision-making.

**Acceptable  
Means of  
Compliance  
5820(6)**

**Record Keeping (MRP Part 21.A.105)**

34. Record keeping procedures **should** be iaw RA 5810(16)<sup>16</sup>.

**Guidance  
Material  
5820(6)**

**Record Keeping (MRP Part 21.A.105)**

35. ▶ Nil ◀

<sup>16</sup> Refer to RA 5810(16): Record Keeping (MRP Part 21.A.105).

Intentionally Blank for Print Pagination