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| --- |
| Design Organization Exposition Template |
| Log of amendments  |
| Issue | Issue date | Change description |
| 1.0 | 31 Aug 16 | Initial Issue |
| 1.1 | 07 Aug 19 | Review and Minor Revisions |
| 1.2 | 18 May 20 | MAA contact e-mail address changed in section 1.4 |
| 1.3 | 22 Sep 20 | Minor grammatical changes and annual review |
| 2.0 | 31 Mar 21 | Internal only version. |
| 3.1 | 21 Jun 21 | Uplift following changes in TAE regulations and correction of version numbering. |
| 3.2 | 06 Oct 21 | RA and EASA cross references updated |
| 3.3 | 16 Aug 22 | Correction of typos and grammar and RA references. Small update to align with additions to RA 5850.  |
| 4.0 | 05 Apr 24 | Update to format, typos, grammar and RA / Part 21 references.  |
| 4.1 | 22 Jul 24 | Update in response to MAA\_RFC\_2024\_135 clarifying DOE Template usage requirements at Page 1. Changes are highlighted in red. Previous V4.0 changes have been reverted to black type. |

This exposition template is based upon RA 5850 Annex B and is intended to assist applicants in applying for inclusion in the UK Military Aviation Authority (MAA) Design Approved Organization Scheme (DAOS) and therefore demonstrating the required design capability.

The template refers to both MAA Regulatory Publications (MRP) and EASA/EMAR Part 21 that will support the completion of the document, though they are not exhaustive.

The following instructions should aid the author in compiling the exposition:

1. The required information should be entered below each of the exposition sections. Guidance wording has been entered and should be deleted after organization specific information has been added to produce the final document.
2. The first two pages should be deleted when the document is completed.
3. Text written in *italics* is intended to identify differences between EASA/EMAR Part 21 and the MRP. Organizations proposing to use their civil exposition to support a DAOS approval, should address these differences in their DAOS Supplement in addition to any differences in application of their EASA approved procedures.
4. The required information can be presented entirely in this document, or in external procedures appropriately identified and referred to. However, any referenced procedures need to be listed within this exposition and provided to the MAA.
5. The exposition and the referenced procedures should be written in the most suitable language for the users dealing with it. If the Design Organization Exposition (DOE) is not written in English, an English translation should be made available to UK MAA DAOS Branch Head.
6. It is recommended that the DOE is version controlled using the Issue X.Y principle:
7. X changes after a MAA approved major change of the document.
8. Y changes after a minor change of the document.

This DOE Template:

1. Is not a Standard Manual.
2. Does not introduce new or modified rules.
3. Should not be regarded as formally adopted acceptable means of compliance or guidance material.
4. Does not constitute any legal obligation or right for the MAA or Organization.

This DOE Template is regularly revised to ensure alignment with changes in regulation. The latest amendment was to Rev 4.1 with the last major uplift being issued at Rev 4.0. Organizations utilizing the template at versions prior to the latest Major revision (Rev 4.0) are encouraged to uplift their DOE to the current revision (Rev 4.1), or should be cognisant of the minor changes made and update their expositions accordingly at their next natural uplift. Additionally those Organizations utilizing template at Revision 3.0 or earlier should strongly consider adoption of the latest version, due to the significant cumulative Regulatory change.

Design Organization Exposition

{insert company name}

{Insert company DAOS approval number}

|  |  |  |  |
| --- | --- | --- | --- |
| Date | Prepared by | Date | Checked and approved by |
| dd-mmm-yy | name | dd-mmm-yy | name |
| signature | signature |

# Organization

## Organization Address

|  |  |
| --- | --- |
| Name |  |
| Address | Design Office address(es) |
| Telephone Number |  |
| Email Address(es) |  |

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## Amendment History

List all amendments including issue, date, affected chapter and a short description of the change.

|  |  |  |  |
| --- | --- | --- | --- |
| Issue | Date | Section(s) | Description |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## Distribution List

This section should describe how company staff and contractors gain access to the exposition and how they are informed about amendments to the exposition and all referenced procedures. Each holder of a controlled copy of the exposition should also be recorded in the table below. All subsequent amendments of the exposition and its referenced procedures shall be supplied to the holders of controlled copies.

*The copy supplied to the Military Aviation Authority (MAA) should be sent to the MAA DAOS Branch Head (via e-mail as a pdf-file). To aid the application of design privilege’s a copy should also be supplied to each contracting MOD Organization.*

|  |  |  |  |
| --- | --- | --- | --- |
| No. | Dept. | Post | Remarks |
| 1 | MAA | MAA DAOS Branch Head (DSA-MAA-OA-ACC@mod.gov.uk) |  |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

## Objective of Design Organization Exposition and Binding Statement

*This section should provide a short explanation of the purpose of the exposition for the guidance of the Design Organization’s own personnel and should give a binding statement by the Chief Executive and Head of Design Organization, declaring this Exposition as the basic working document, which should be followed by all personnel (including design contractors, if applicable).*

*Attention should be paid to RA 1005(1) paragraphs 1 and 2, RA 1200(1) paragraph 6, in addition to RA 5850.* {Below is an example of a binding statement and should be checked to see if they are appropriate and changed accordingly by the organization.}

This exposition and associated documents define the Organization and procedures upon which the RA 5850 - Military Design Approved Organization approval of [company name] Design Organization is based as defined in Military Aviation Authority Regulation Publications (MRP) including all applicable amendments. All documents referenced in this exposition are considered as part of the exposition. The exposition is approved by the undersigned.

The undersigned ensure that:

1. This DOE including the referenced documents are maintained in conformity with the Design Management System and is used as a basic working document within the [company name] Design Organization.
2. All personnel including design suppliers are aware of the processes described in this DOE and associated documents and will comply with the requirements of this exposition.
3. [company name] Design Organization has sufficient staff in numbers, competence and experience with the appropriate authority to be able to discharge their allocated responsibilities.
4. [company name] Design Organization’s accommodation, facilities and equipment are adequate to comply with the extant TAE 5000 Series.
5. It is accepted that these procedures do not override the necessity of complying with any new or amended regulation published by the MAA from time to time where these new or amended regulation conflict with these procedures.
6. It is accepted that the MAA may investigate and review any report.
7. It is understood that the MAA will approve this Design Organization whilst the MAA is satisfied that the procedures are being followed and work standards maintained.
8. It is further understood that the MAA reserves the right to restrict, suspend or revoke the RA 5850 approval of the Design Organization if the MAA has evidence that procedures are not followed, standards not upheld, or an approval not maintained.

*Signed by:*

|  |  |
| --- | --- |
| Head of Design Organization | Chief Executive |
| *Signature* | *Signature* |
| PRINTED NAME | PRINTED NAME |
| Date: | *dd-mmm-yy* | Date: | *dd-mmm-yy* |

## Responsible Person(s) For Administration of Exposition Handbook

The official title and contact details of the person responsible for the administration of the exposition handbook should be stated. The nominated person is responsible for ensuring that the exposition is distributed, controlled, and amended or reissued as necessary.

## Amendments (RA 5850(4), 21.A.243(c))

This section should describe which changes to the Design Management System (DMS) should be endorsed by the MAA and which can be approved by the Design Organization (DO). The procedure should also address the internal approval process:

1. Who will approve changes to the DOE? (Usually the Head of DO, or if appropriately delegated, the Head of Airworthiness)
2. How will this approval be formalised? (e.g. signature on the master copy).
3. How will the issue number identify a significant change endorsed by the MAA and a non-significant change approved by the DO?

### Changes in Design Management System (RA 5850(6), 21.A.247)

This section should define how the Organization classifies changes to the DMS and, in particular, what it defines as a significant change in accordance with RA 5850(6) paragraph 47 and RA 5850 (2) paragraph 12 and 13.

### Exposition Amendment Procedure

This section should clearly define the system for carrying out amendments and modification to the DO exposition, including how amendments are identified within the document.

## Presentation of DO

This section should give an introduction or foreword, explaining the purpose of the document for the guidance of the organization’s own personnel.

### Company History

Brief general information concerning the history and development of the organization. If appropriate, the relationships with other organizations which may form part of a group or consortium, should be included to provide background information for the MAA.

### Design Organization Facilities (RA 5850(5), 21.A.245)

This section should detail the DO location(s) and describe the facilities in detail:

1. Design (e.g.: Computer aided design and drawing system, filing and storage, list of software used, etc.).
2. Test facilities (description of what kind of tests can be performed, what kind of equipment is available, etc.).

## Scope of Work (RA 5850(2), 21.A.243(a))

The information given in this section should define the DOs scope of approval.

Applicants should also provide in this section a brief description of the product(s) and appliances including applied technologies and methods.

The MAA DAOS Branch uses S1000D Chapter 8.2.5 system numbers to identify appliances within systems. Organizations designing appliances should identify the component(s) it designs either at system or sub system level.

Organizations only designing software should identify it against the relevant system within Paragraph 1.9.2

### Products

|  |  |
| --- | --- |
| **Class** | **Type(s)** |
| Aeroplanes |  |  |
|  |  |
|  |  |
| Helicopters |  |
| RPAS |  |  |
|  |  |
|  |  |
| Engines | Piston |  |
| Turbine |  |
| Auxiliary Power Units |  |

### Appliances

**Note:** Organizations should populate the relevant fields of the table, and remove any elements not applicable.

|  |  |  |
| --- | --- | --- |
| Group | System[[1]](#footnote-2) |  |
| Air Conditioning/Pressurization | 21. Environmental Control  |  |
| Automatic Flight | 22. Auto Flight |  |
| Communications/Navigation | 23. Communications |  |
| 34. Navigation |  |
| 43. Tactical Communication |  |
| Doors, Hatches | 52. Doors |  |
| Electrical Power | 24. Electrical Power |  |
| 33. Lights |  |
| 91. Wiring |  |
| Equipment | 25. Equipment and Furnishing |  |
| 38. Water and Waste |  |
| 45. Central Maintenance System |  |
| 50. Cargo and Accessory Compartment |  |
| Engine, Auxiliary Power Unit | 49. Airborne Auxiliary Power |  |
| 71. Power Plant |  |
| 72. Engine |  |
| 72. Engine Turbine/Turboprop |  |
| 72. Engine Reciprocating |  |
| 73. Engine Fuel and Control |  |
| 74. Ignition |  |
| 75. Air |  |
| 76. Engine Controls |  |
| 77. Engine Indicating |  |
| 78. Exhaust |  |
| 79. Oil |  |
| 80. Starting |  |
| 81. Turbines |  |
| 82. Water Injection |  |
| 83. Accessory Gearboxes |  |
| 86. Lift System |  |
| Flight Controls | 27. Flight Controls |  |
| Fuel, Airframe | 28. Fuel |  |
| 48. In-Flight Refuelling |  |
| Helicopter, Rotors | 62. Main Rotors |  |
| 63. Tail Rotors |  |
| 66. Folding Blades |  |
| 67. Rotors, Flight Control |  |
| Helicopter, Transmissions | 63. Main Rotor drive |  |
| 65. Tail rotor drive |  |
| Hydraulic | 29. Hydraulic Power |  |
| Instruments | 31. Indicating/Recording Systems |  |
| 46. Systems Integration and Display |  |
| Landing Gear/Recovery | 32. Landing Gear |  |
| 90. Recovery |  |
| Oxygen/Nitrogen | 35. Oxygen |  |
| 47. Liquid Nitrogen |  |
| Propellers | 61. Propeller/Rotor |  |
| Pneumatic | 36. Pneumatic |  |
| 37. Vacuum |  |
| Protection, ice/rain/ fire | 26. Fire Protection |  |
| 30. Ice and Rain Protection |  |
| Windows & Canopies | 56. Windows/Canopies |  |
| Structural | 53. Fuselage |  |
| 54. Nacelles/Pylons |  |
| 57. Wings |  |
| Water Ballast | 41. Water ballast |  |
| Propulsion Augmentation | 84. Propulsion Augmentation |  |
| Attack Systems | 39. Attack System |  |
| 40. Operation Attack |  |
| 42. Cross Technical Attack |  |
| Radar/Surveillance | 92. Radar |  |
| 93. Surveillance |  |
| Weapons Systems[[2]](#footnote-3) | 94. Weapons System |  |
| Crew Escape | 95. Crew Escape and Safety |  |
| Missiles/Drones/Telemetry | 96. Missiles/Drones/Telemetry |  |
| Reconnaissance | 97. Image Recording |  |
| 98. Metrological and Atmospheric Research |  |
| Electronic Warfare | 99. Electronic Warfare |  |
| Weapons |  |  |

### Technologies

Software should be identified at the highest Design Assurance Level (DAL).

|  |  |  |  |
| --- | --- | --- | --- |
| Structures – Metallic | Yes / No | Mechanical Systems | Yes / No |
| Structures – Non-Metallic | Yes / No | Avionics Systems | Yes / No |
| Engine – Piston | Yes / No | Weapons Systems | Yes / No |
| Engine – Turbine | Yes / No | Software | Yes / No*DAL:* |

## Organizational Structure (RA 5850(5), RA 1200(1) Para 1.a.(4), 21.A.245)

This section should contain a diagram showing how the DO fits into the larger organization structure. It should also show the chain of responsibility from the DO Chief Executive to nominated design staff.

## Human Resources (RA 5850(5), RA 1200(1) Para 6.d.(1), 21.A.245)

This section should include a description of the human resources available and give details about their responsibilities and qualification criteria. From the description in this section, it should be apparent that sufficient design and compliance verification staff are available.

Also, the company’s training policy should be defined (i.e. general framework for training plans, defining e.g. the fields of training such as “regulations”, “technical training”, “procedures training”, “safety” etc. and its recurrences) for each affected group of staff (or specialism).

### Design Engineer

This section should describe the responsibilities and tasks of Design Engineer(s).

#### Qualification and Training

The required minimum qualification(s) and a procedure for the assessment and acceptance of Design Engineer(s).

#### Nomination

Reference to the document containing the list of nominated individuals.

### Compliance Verification Engineer

This section should describe the responsibilities and tasks of Certification Verification Engineer(s) (CVE).

#### Qualification and Training

The required minimum qualification(s) for CVE applicants and a procedure for the assessment and acceptance of CVEs. It shall also indicate directly (or by cross-reference to a dedicated document) how each CVE accepts their responsibilities (e.g. signing off a dedicated nomination sheet etc.).

#### Nomination

Reference to the document containing the list of nominated CVE.

## Management Staff (RA 5850(5), RA 1200(1) Para 6.a.(1), 21.A.243)

Management staff can comprise the following functions:

1. Chief Executive
2. Head of DO (HOD)
3. Head of Airworthiness (HoA)
4. Independent System Monitoring (ISM) function postholder
5. Type Airworthiness Manager (TAM) (if applicable)

The credentials of the nominated postholders (HOD, HoA, ISM, and TAM) should be submitted to the MAA on a MAA Form 4 so that they may be assessed as appropriate postholders in terms of relevant knowledge and satisfactory experience related to the nature of the design activities.

Nevertheless, it’s up to the company to choose and accept its management staff. Therefore, this section should describe each postholder’s tasks and responsibilities and define the qualification criteria the Organization has set up to ensure management staff are competent to fulfil their respective obligations.

***Note 1:*** *It is possible that two or more functions are performed by the same person. As mentioned in RA 5850 Annex A paragraph 20 the Chief Executive and the HOD function may be thus combined.*

***Note 2:*** *The Office of Airworthiness responsibilities are defined in RA 5850 Annex A paragraph 23 to 45; these responsibilities include several changes from those defined within EASA Part 21. Organizations with an EASA Part 21 approval should clearly identify these different responsibilities within this section.*

***Note 3:*** *Type Airworthiness Manager (TAM) is only applicable to DO’s who have TAw responsibilities with civil operated air systems, as agreed with the air system Sponsor. The TAM role will be within a DAOS approved organization with an approved TAw Management Supplement, for a named individual who has been assessed by the MAA as competent to hold the MRP delegable TAw responsibilities and has been appointed by the Air System’s Sponsor. The TAM’s responsibilities, once formalized by the Sponsor and directed to the Accountable Manager (Military Flying) (AM(MF)), are to be detailed in a TAw supplement to the respective DAOS approval exposition.*

***Note 4:*** *Where the Air System is Civilian-Owned, ownership of regulatory responsibility by either the TAA or TAM needs to be agreed within the Sponsor’s approved model for TAw management; 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 DOE.*

### Chief Executive

Details of the Chief Executive. Explanation on how Safety Policy related leadership, responsibilities, commitment, and accountabilities are flown down within the business.

### Head of DO (HOD)

#### Tasks and Responsibilities

This section should describe the responsibilities and tasks of HOD.

Refer RA 5850 Annex A paragraph 18 to 20

#### Qualification and Training

The required minimum qualification(s) for HOD applicants and a procedure for the assessment and acceptance.

### Head of Airworthiness (HoA)

#### Tasks and Responsibilities

This section should describe the responsibilities and tasks of HoA.

Refer RA 5850 Annex A paragraph 23 to 45

#### Qualification and Training

The required minimum qualification(s) for HoA applicants and a procedure for the assessment and acceptance.

###  Independent System Monitoring Function (ISM)

#### Tasks and Responsibilities

This section should describe the responsibilities and tasks of ISM.

#### Qualification and Training

The required minimum qualification(s) for ISM applicants and a procedure for the assessment and acceptance.

### Type Airworthiness Manager

This section is only required for a DO with an agreed TAM role with the air system sponsor (See Note 3 & 4)

####  Tasks and Responsibilities

This section should describe the responsibilities and tasks of TAM as discussed and agreed with the sponsor.

Refer RA 1162 and RA 1163

#### Qualification and Training

The required minimum qualification(s) for TAM applicants and a procedure for the assessment and acceptance.

## Certifying Personnel (RA 5850(5), 21.A.243)

This Section should contain a list of authorized signatories or refer to a document that contains the list.

The authorized signatory list should identify all signatories with the documents the respective personnel are authorized to sign, giving their names and positions in the company. This list should include signatories for:

1. Compliance checklist
2. Compliance documents (drawings, analysis, reports…)
3. Manuals (or supplement)
4. Classification of changes and/or repairs
5. Changes and/or repairs (before submission to the TAA/TAM)
6. Service Bulletins, or other documentation used to issue information or instructions to owners of products
7. Unintentional deviations from the approved data occurring in production (concessions or non-conformances).

Example:

|  |
| --- |
| Authorizations |
| Name | Signature | Function | prepare | check/approve |
| *[Person 1]* |  | *HOD* |  | *6, 7, 8, 9, 10, 11* |
| *[Person 1]* |  | *HOA* | *1, 2, 3, 5, 6, 7* | *1, 2* |
| *[Person 1]* |  | *~~HISM~~* | *N/A* | *N/A* |
| *[Person 1]* |  | *TAM* | *As agreed with sponsor* | *As agreed with sponsor* |
| *[Person 1]* |  | *Design Engineer* | *1, 2, 3, 5, 9, 10* |  |
| *[Person 2]* |  |
| *[Person 3]…* |  |
| *[Person 1]* |  | *Compliance Verification Engineer* | *1, 2* | *3, 4, 5* |
| *[Person 2]* |  |
| *[Person 3]…* |  |

List of documents / templates:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | Application and Classification | 5 | Compliance Document | 9 | Service Bulletins |
| 2 | Certification Programme | 6 | Certificate of Design | 10 | Concessions |
| 3 | Test Plan | 7 | Minor Change Approval | 11 | Audit Plan |
| 4 | Statement of Conformity | 8 | Repair Approval |  |  |

## Independent System Monitoring (RA 5850(3), RA 1200(1) Para 6.c.(1) and (3), 21.A.239(e))

The procedure for Independent System Monitoring should include

1. Planning of safety performance measurement and compliance monitoring activities
2. Performance of safety performance measurement and compliance monitoring activities
3. Determination of corrective actions and acceptable timeframes
4. Follow-up of findings
5. Coverage of design suppliers
6. Reporting lines

The ISM shall cover all company processes and all applicable extant MRP requirements in a suitable timeframe but at least within a maximum of three years. It usually consists of all or part of following activities:

1. Process audits
2. Product audits

### Scope of ISM

Details on what the ISM covers within the organization.

### Audit Plan

Details on how the internal audits are planned and approved. Internal audits should cover MRP and DAOS requirements to remain in continued compliance.

### Performance of an Audit

Details on how the audits are performed, including the audits to cover MRP and DAOS requirements.

### Determination and Monitoring of Findings and Corrective Actions (RA 5850(9))

Details on how the internal and external findings and Corrective Actions are monitored within the organization.

## Evidence of Quality Management System Certification (RA 5850(2))

A copy of the organizations AS/EN 9100 or ISO 9001, or equivalent quality management certificate should be included.

# Procedures

## New Design (RA 5810, 21.A.11)

### Changes Requiring A New Military Type Certificate (RA 5810(6), RA 1200(1) Para 6.b.(2) and (3), 21.A.19)

This section should describe the procedure for a new design. The procedure shall define the following aspects:

A concise description is required of the DO's technical procedures covering all aspects of work conducted under DAOS. This should show how matters affecting airworthiness are controlled. The organization shall be such as to ensure that, in all matters affecting airworthiness, full and efficient co-ordination exists between the technical disciplines.

The procedure shall define following aspects:

1. Management of the project
2. Certification programme
3. Compliance Demonstration
4. Tests
5. Compliance summary
6. Certificate of Design
7. Approval

### Specification and Description of The Design (RA 5810(4), 21.A.15)

*This section should describe who in the DO is responsible for specifying and describing the design to be developed and the kind of operations envisaged.*

### Type Certification Basis (RA 5810(4), 21.A.15)

*This section should explain how the Certification Basis is developed; airworthiness codes are selected and include how the Certification Basis is agreed with the Type Airworthiness Authority (TAA) and MAA.*

### Certification Programme (RA 5810(5), 21.A.15)

*This section should describe in general the Certification Programme, including the Certification Programme forms being used. The programme should be agreed by the TAA and MAA prior to demonstration of compliance commencing.*

{Below is an example and should be checked to see if it is appropriate and changed accordingly by the organization.}

In order to guarantee a coordinated and efficient course of design investigation the HOA and relevant CVEs shall develop the Certification Programme.

The Certification Programme includes:

1. The Type Certification Basis
2. The means of compliance including the activities required to show compliance

Type Certification Basis consists of:

1. The applicable airworthiness code including amendment state established by MAA effective on the date of application
2. Any special conditions in accordance with RA 5810(5)
3. Any certification specification not complied with that is compensated for by factors that provide an equivalent level of safety

The following Means of Compliance (MoC) are defined:

|  |  |  |
| --- | --- | --- |
| Type of Compliance | MoC | Associated Compliance Document |
| - | NA | Justification for not applicability of requirement. |
|  | NR | No Requirement – Nomenclature only |
| Engineering Evaluation | (0) Compliance Statement | reference to Type Design documentselection of methods, factorsdefinitionsType Design Documents, recorded Statements |
| (1) Design Review | Description, drawings |
| (2) Calculation, Analysis | Substantiation Reports |
| (3) Safe Assessment | Safety Analysis (FMECA) |
| Tests | (4) Laboratory Test | Test ProgrammesTest Reports |
| (5) Ground Test |
| (6) Flight Test |
| (7) Simulation |
| Inspections | (8) Design Inspection/Audit | Inspection or Audit Reports |
| Equipment Qualification | (9) Equipment Qualification | Note: Equipment qualification is a process which may include all previous MoC. |

After approval by HoA and acceptance by the TAA the certification programme is the binding working document to demonstrate compliance to the relevant certification specification. The issues which are covered are defined by the certification programme form.

If, during the development, it turns out that the defined MoC are not sufficient, the Certification Programme shall be corrected accordingly. The new issue should be checked and approved by the HoA.

The Means of Compliance shall be defined for each airworthiness requirement.

### Compliance with The Type Certification Basis (RA 5810(7), 21.A.20)

This section should describe the Compliance Check List (CCL). Most information should be given within the CCL form being used.

This should describe:

1. The scope of the CCL
2. How the CCL is managed
3. Who is responsible for the CCL
4. When and by whom is the CCL approved

The CCL should cover following issues:

1. Reference to the Certification Program (CP)
2. The certification basis, including special conditions and equivalent safety findings including amendment
3. Means of compliance
4. List of documents which demonstrate compliance with the listed certification specification according to the agreed CP, including their status

### Certificate of Design (RA 5103, 21.A.20(e))

This section should describe the process for issuing a Certificate of Design (RA 5103) and who is responsible for this task. It should also describe what minimum documentation is provided to the TAA with the Certificate of Design.

### Approval of Certificate of Design (RA 5103(1), 21.A.20(e))

This chapter describes the process how new designs are approved by the DO prior to submission to the TAA.

## Changes in Type Design (RA 5820, 21.A.90A)

This section should describe the procedure for a Minor or Major design change. The procedure shall define following aspects:

1. Management of the project
2. Certification programme
3. Compliance Demonstration
4. Tests
5. Compliance summary
6. Certificate of Design
7. Approval

Where an Organization is seeking privilege(s) in accordance with RA 5850(11) paragraphs 71.a and/or 71.b they should ensure that the content of this section meets the requirements of:

1. RA 5850 Annex C paragraphs 1 to 12 for classification of changes to Type Design as minor or major
2. RA 5850 Annex C paragraphs 13 to 21 for approval of minor changes to Type Design

***Note:*** *Unlike the civil system, privileges are not valid until the MAA have assessed the organizations competence, included the relevant privilege on the Organizations Terms of Approval and they are invoked by the TAA or Commodity Chief Engineer (CE).*

### Specification and Description of the Design (RA 5810(4), 21.A.15)

Describe here who in the DO is responsible for specifying and describing the change of the product to be developed.

### Classification of Changes to Type Design (RA 5820(1), 21.A.91)

The procedure should mention directly or by cross reference who is authorized to create, append, modify, and approve the classification internally.

The procedure should describe the classification criteria i.a.w. RA 5820(1).

Changes should be classified (using an appropriate form) as:

1. Major (MAA Form-30)
2. Minor where additional work is necessary to demonstrate compliance with the airworthiness codes
3. Minor requiring no further demonstration of compliance

This section should describe how changes are communicated to the TAA.

#### Minor Changes (RA 5820(3), 21.A.95)

#### Minor Change Requiring No Further Demonstration of Compliance

#### Major Changes (RA 5820(4), 21.A.97)

##### Examples for Major Changes:

The Manual of Military Air System Certification (MMAC) gives some examples of Major Changes. It is not intended to present a comprehensive list of all major changes. The DO should produce a more comprehensive list based on the MMAC examples particular to its design activities.

### Type Certification Basis for Design Changes (RA 5810(4), 21.A.15)

Refer section 2.1.3 (Type Certification Basis).

The MMAC provides guidance for establishing the design certification basis for changed products in accordance with RA 5820.

The MMAC defines the requirements to identify if it will be necessary for the TAA to apply for a new Type Certificate under RA 5810.

### Certification Programme (RA 5810(5), RA 5820(5), 21.A.15)

Refer section 2.1.4 (Certification Programme).

### Compliance with The Type Certification Basis (RA 5810(7), 21.A.20)

Refer section 2.1.5 (Compliance with the Type Certification Basis).

### Certificate of Design (RA 5103, 21.A.20(e))

Refer section 2.1.6 (Certificate of Design).

### Approval of Certificate of Design Changes (RA 5103, 21.A.20(e))

This chapter describes the process of how a Minor or a Major Design Change is approved by the DO.

Minor changes can be approved by either the TAA or the DO under privilege (where this is detailed in the DAOS Schedule and invoked by the relevant TAA).

Major changes are approved by the MAA via the TAA.

#### Approval of Minor Changes

#### Approval of Major Changes

## Repairs (RA 5865, 21.A.431A)

This chapter describes the procedure for Minor or Major design repairs. The procedure should define following aspects:

1. Management of the project
2. Certification Programme
3. Compliance Demonstration,
4. Tests
5. Compliance summary
6. Certificate of Design
7. Approval

Where an Organization is seeking privilege(s) in accordance with RA 5850(11) paragraphs 71.a and/or 71.b they should ensure that the content of this section meets the requirements of:

1. RA 5850 Annex C paragraphs 1 to 12 for classification of repairs as Minor or Major
2. RA 5850 Annex C paragraphs 13 to 21 for approval of Minor repairs

***Note:*** *Unlike the civil system, privileges are not valid until the MAA have assessed the organizations competence, included the relevant privilege on the Organizations Terms of Approval and they are invoked by the TAA or Commodity CE.*

### Specification and Description of The Repair Design (RA 5865(4), 21.A.433)

Describe:

1. How are repair requests received and from who?
2. What happens if there is insufficient information to design a repair?
3. Who in the DO is responsible for specifying and describing the repair to be designed?

### Unrepaired Damage (RA 5865(9), 21.A.445)

Describe how unrepaired damage is evaluated for its airworthiness consequences, who can approve that the damage is left unrepaired and how this is recorded.

### Classification of Repairs (RA 5865(3), 21.A.435)

The procedure should mention directly or by cross reference who is authorized to create, append, modify and approve the classification.

The procedure should describe the classification criteria i.a.w. RA 5865(3)

This section should describe how changes are communicated to the TAA.

Repairs should be classified as:

1. Major
2. Minor where additional work is necessary to demonstrate compliance with the airworthiness codes
3. Minor requiring no further demonstration of compliance

#### Minor Repairs

#### Minor Repair Requiring No Further Demonstration of Compliance

#### Major Repairs

### Type Certification Basis for Repair Design (RA 5810(4), 21.A.15)

Refer section 2.1.3 (Type Certification Basis).

### Certification Programme (RA 5810(5), 21.A.20(b))

Refer section 2.1.4 (Certification Programme).

### Compliance with The Type Certification Basis (RA 5810(7), 21.A.20)

Refer section 2.1.5 (Compliance with the Type Certification Basis).

### Certificate of Design (RA 5103, 21.A.20(e))

Refer section 2.1.6 (Certificate of Design).

### Approval of Design Repairs (RA 5865(5), 21.A.435)

This chapter describes the process how a Minor or a Major Design Repair is approved.

Minor Repairs can be approved by either the TAA or the DO under privilege.

Major Repairs are approved by the TAA and/or MAA.

#### Approval of Minor Repairs

#### Approval of Major Repairs

## Design Process (RA 5850(3), 21.A.239)

Describe here the complete design process (who is taking the project lead, which tools are used, which kind of tasks are delegated to a design supplier, etc.). Describe how the Type Design documents (specifications, drawings, bill of material, production and installation procedures, etc.) are prepared. A link to a separate document describing the design process may be sufficient.

### Initiation of Design Process

A description is required of how the design process is initiated within the DO.

### Management of Design Project

### Drawings, Bill of Material

### Configuration Control (RA 5301(1))

Configuration control is essential to provide identification and traceability of designed and repaired parts and products. This section should describe how this can be assured by the DO.

The following issues should be addressed in addition to the requirements of Defence Standard 05-57:

1. Who is responsible for the configuration control?
2. Description of the tools used
3. Part Number
4. Serial Number
5. Drawing Number
6. Bill of Material
7. Relation between drawing and part number
8. How are issues and revisions handled?

### Marking (RA 5885, 21.A. Sub Part Q)

The procedure should describe how the marking requirements of RA 5885 are taken into account and specified in the design data:

1. Information to be marked, including European Part Approval (EPA) letters, as relevant
2. Marking Size
3. Place to be marked

## Compliance Demonstration (RA 5850(3), 21.A.239)

This section should describe:

1. The scope of compliance documents
2. The document numbering system
3. Who issues compliance documents
4. Who approves compliance documents
5. How the TAA is consulted and agrees their involvement

The compliance document(s) shall cover the following:

1. Reference to the project
2. Reference to the airworthiness codes to which compliance is demonstrated
3. Summary or conclusion which states compliance to the referenced requirements
4. Author (design engineer) signature
5. How the test specimen is assessed against RA 5810(11) **and** by who
6. CVE signature (as checked)

**Note**: Both TAA and MAA reserve the right to witness the tests performed within the certification process.

### Compliance Statements

### Analysis

### Investigation and Testing

### Test Plan

### Conformity Inspection, Conformity Statement

### Witnessing

### Laboratory Tests

### Ground Tests

### Flight Tests

### Test Report

### Compliance Demonstration Document

## Permit to Fly (RA 5880, 21.A.701)

### Determination and Approval of Flight Conditions (RA 5880(3, 4), 21.A.708, 710)

If a DO wishes to obtain the privilege to approve flight conditions (RA 5850(11) paragraph 71.d), a procedure in accordance with RA 5850 Annex C paragraphs 29 to 36 shall be prepared.

DOs not holding the RA 5850(11) paragraph 71.d privilege shall prepare a procedure describing the establishment and application for approval of flight conditions. This procedure shall cover the following points of RA 5850 Annex C paragraphs 29 to 36:

1. Management of the aircraft configuration
2. Determination of the conditions that must be complied with to safely perform a flight
3. Documentation of flight condition substantiations

In addition, it shall include:

1. Identification of the application form to be used and the documents to accompany that application
2. Identification of the person(s) authorized to sign the application

### Application for/Issue of A Military Permit to Fly (RA 5880(5), 21.A.711)

If a DO wishes to obtain the privilege to issue a Military Permit to Fly (MPTF) (RA 5850(11) paragraph 71.e) a procedure in accordance with RA 5850(11) paragraphs 70 to 78 shall be prepared.

DOs not holding the RA 5850(11) paragraph 71.e privilege shall prepare a procedure describing the application for a MPTF. This procedure shall cover the following points:

1. Identification of the application form to be used and the documents to accompany that application
2. Identification of the person(s) authorized to sign the application
3. Identification of issues invalidating a MPTF
4. Communication with the TAA

## Coordination Between Design and Production or Maintenance

### Coordination Between Design and Production (RA 5835(1), 21.A.4(a))

The procedure should:

1. Describe the link established between design and production. In the case where the production is made by a separate legal entity, a formal arrangement shall be signed between the two companies. The minimum information required in RA 5835(1) paragraph 5 should be included in the formal agreement.
2. Cover the transfer of information from the DO to the production organization.
3. Cover the deviation and concession process.
4. The procedures and associated responsibilities to achieve adequate configuration control of manufactured parts (ie traceability).
5. The procedure for requesting and managing changes in manufacturing methods or materials.
6. Mention directly (or by cross reference) who is authorized to sign associated documents.

***Note:*** *Where novel production processes (e.g. additive manufacturing) are used to manufacture components, procedures for the control of such production methods and the verification of conformance to design requirements should also be described here.*

#### Data Exchange

#### Production Deviations and Concessions

### Coordination Between Design and Maintenance

When the first installation of a design change, or a repair design, requires the assistance of a Maintenance and Repair Organization (MRO), the DO needs to ensure effective and efficient coordination with the MRO. This coordination is especially important where the MRO will perform some of the compliance demonstration activities.

In these cases, the Design Organization Approvals (DOA) holder should establish how the transfer of information will be organized, how the tasks performed by the MRO will be supervised, and how the final deliverables will be validated. Topics such as configuration management, component handling, on-aircraft development of the change or repair, etc., should be addressed.

The procedure should list the responsibilities taken on by each organization, including the involvement of the MRO in the preparation and review of design data and the related statement of conformity. In the case where the MRO is a separate legal entity, a formal arrangement shall be signed between the two companies.

## Document Control (RA 5301(2), 5810(16), 5820(6), 5850(13), 5865(10), 5880(12), RA 1200(1) Para 6.c.(4), 21.A.5)

### Record Keeping

The procedure should describe the record keeping or archiving system in place in the DO and define who is responsible for this task.

For each design activity, all relevant design information, drawings, test reports, instructions and limitations issued, justification for classification and evidence of the design approval, shall:

(a) Be held by the design approval holder at the disposal of the *TAA or MAA*, and

(b) Be retained by the design approval holder to provide the information necessary to ensure the continued airworthiness of the products, parts or appliances.

There is no limitation of duration. *Records should be kept available for a minimum of 5 years after the platform out of service date.*

## Continued Airworthiness (RA 5815(1), 21.A.62, 21.A.108, 21.A.120B)

The procedure should describe the system put in place for ensuring safe operation of the product and informing the TAA and operators concerning Instructions for Continued Airworthiness.

Where an Organization is seeking privilege(s) in accordance with RA 5850(11) paragraph 71.c they should ensure that the content of this section meets the requirements of RA 5850 Annex C paragraphs 1 to 12 for classification of repairs as Minor or Major.

*Unlike the civil system, privileges are not valid until the MAA have assessed the organizations competence, included the relevant privilege on the Organizations Terms of Approval and they are invoked by the TAA or Commodity CE.*

### Air System Document Set (RA 1310)

The procedure should explain how the DO is organized to produce, maintain and update copies of all manuals required by the certification basis for the product and provide copies iaw RA 5815(1), on request, to the TAA (RA 5850(13). The manuals referred to in RA 5815(1) include:

1. Aircraft Maintenance Manual
2. Illustrated Parts Catalogue
3. Aircraft Repair Manuals
4. Airworthiness limitations

### Aircrew Publications (RA 5406)

The procedure should explain how the DO:

1. Provides the TAA with all the information required to ensure that Aircrew Publications reflect the Type Certification Basis of the Air System
2. Maintains the master source material (recommended to the TAA, including all graphics) throughout the life of the Air System and make this material available ‘on demand’ to the MOD
3. Generates appropriate text on ‘Effect on Operation and Handling’ when an impact on operation and / or handling is identified
4. Produces a Performance Data Substantiation Document (PDSD) to support all performance data provided for the Aircrew Publications. The PDSD should describe how the Air System performance data are derived and validated. The PDSD should be updated as required to support changes to the provided data

### Instructions for Sustaining Type Airworthiness (RA 5815, 21.A.62, 108, 120B)

The process should describe:

1. How the DO develops the ISTA iaw with Type Certification Basis (TCB)
2. Provide details of the quality assurance process for the development of ISTA
3. Plan for validation process
4. How the changes to ISTA are available to the TAA at the earliest opportunity
5. Details how changes to the ISTA are promulgated

ISTA as a minimum should contain details stated in RA 5815 paragraph 5.

### Special Instructions (Technical) (RA 5405)

When tasked by the TAA to produce SI(T), the DO should have a procedure in place covering the responsibilities stated in RA 5405 paragraph 9.

### Failures, Malfunctions and Defects (RA 5850(8), 5825(1), 21.A.3A)

The procedure should describe the system put in place for collection, investigation and analysis of data related to failures, malfunctions, defects, or other occurrences which cause or might cause adverse effects on the continued airworthiness of DO products, parts or appliances.

The procedure should mention directly or by cross reference with section 1.13, who is authorized to create, append, and modify the data collected and report to the TAA.

The procedure should also explain how the organization carries out any required technical investigation after an occurrence.

Finally, the procedure should explain, in the case where a Special Instructions (Technical) is published, how the organization is cooperating with the TAA (RA 5405).

The procedure should include airworthiness review meetings with the TAA, as appropriate.

#### Monitoring Occurrences

#### Classification and Investigation of Occurrences

#### Occurrence Report

#### Reporting to The Authority

## Design Suppliers (RA 5850(3), 21.A.239)

Where design suppliers are used, the processes should describe:

1. How the technical assessment of partners or design suppliers is carried out by the organization
2. How are design changes initiated by design suppliers and how these changes are notified and accepted by the DO
3. Scope of work of the design suppliers
4. Which chapters of the DOE are to be followed
5. Nomination of Design Engineers or CVEs
6. How scheduled or unscheduled audits at the design supplier are performed by the DO.
7. How reportable defects are communicated to the DO
8. Arrangements to allow MAA or TAA access to perform any supplier investigations necessary to determine compliance and continued compliance with the applicable requirements of RA 5850(7).

### Selection Criteria for Design Suppliers

### Design Supplier, CVE Nomination

It is possible to nominate a person of the design supplier as CVE of the DO for a specific task. Where this is the case, the selection and approval of the design supplier CVE should follow that defined for internal CVE’s, refer section 1.11.2.

## Re-Establishing the Type Design

Where applicable, DOs should describe the relevant processes used for re-establishing the Type Design data for Parts and Appliances of orphaned Products or for obsolete Parts and Appliances (where the original design drawings or data no longer exist). The Organization should consider the need for relevant inspections, analysis and testing of the original components and the need for recertifying any redesign activity undertaken.

# Appendices

## Appendix A – Abbreviations

The DO should complete this section with abbreviations appropriate to their organization and the MRP. Below is an example of typical abbreviations.

|  |  |  |  |
| --- | --- | --- | --- |
| AMC | Acceptable Means of Compliance | MAA | Military Aviation Authority |
| DAOS | Design Approved Organization Scheme | MRP | Military Aviation Authority Regulatory Publications |
| DO | Design Organization | RA | Regulatory Article |
| DOE | Design Organization Exposition | TAA | Type Airworthiness Authority |
| EMAR | European Military Airworthiness Requirements | TAE | Type Airworthiness Engineering Regulations |
| GM | Guidance Material | TAM | Type Airworthiness Manager |
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## Appendix B – List of Referenced Procedures

The DO should add in this section a list of procedures appropriate to their organization*.*

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| Reference | Title | Revision |
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## Appendix C – List of Forms and Templates

{Below is an example list of the forms and templates, these should be checked to see if they are appropriate and changed accordingly by the organization.}

| Reference | Title | Revision |
| --- | --- | --- |
|  | Application and Classification |  |
|  | Certification Programme |  |
|  | Certificate of Design Template |  |
|  | Compliance Demonstration Report |  |
|  | Compliance Check List |  |
|  | Test Plan |  |
|  | Statement of Conformity |  |
|  | Test Witness Report |  |
|  | Minor Change Approval |  |
|  | Declaration of Compliance |  |
|  | Service Bulletin |  |
|  | Occurrence Record Form |  |
|  | Alert Service Bulletin |  |
|  | Repair Approval Sheet |  |
|  | CVE nomination sheet |  |
|  | Audit Plan |  |
|  | Audit Report |  |
|  | Action and Finding List |  |
|  | Type Airworthiness Management Supplement |  |

1. Refer S1000D Chapter 8.2.5 [↑](#footnote-ref-2)
2. The section covers the integration of the Weapon System. For the development of specific Weapons please populate the Weapons field at the end of the table. [↑](#footnote-ref-3)