

RA 5850 – Military Design Approved Organization (MRP 21 Subpart J)

Rationale

One of the four pillars of airworthiness is the use of competent organizations. The Design Approved Organization Scheme (DAOS) is a mechanism by which the competence of a Design Organization (DO) can be assessed. Approval under DAOS is subject to adherence with the established procedures and rules governing the responsibilities and privileges for Military Design Approved Organizations.

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Regulation 5850(1)

Responsibilities of a Design Organization

5850(1) A DO or Co-ordinating Design Organization (CDO) **shall** fulfil the defined design and development responsibilities under their Terms of Approval.

Acceptable Means of Compliance 5850(1)

Responsibilities of a Design Organization

1. The DO **should**:
 - a. Meet the responsibilities defined in RA 1014¹.
 - b. Maintain its Design Organization Exposition (DOE) in conformity with the design assurance system.
 - c. Ensure that the DOE references the basic working documents within the organization.
 - d. Determine that the design of products, parts and appliances, or changes or repairs thereof, as applicable, comply with applicable airworthiness requirements and have no feature that may lead to an unsafe condition.
 - e. Except for minor changes or repairs approved under the privilege of RA 5850(10), provide to the Type Airworthiness Authority (TAA) or Commodity **►Delivery◄** Team Leader (**►DTL◄**) statements and associated documentation confirming compliance.
 - f. Provide to the TAA or Commodity **►DTL◄** information **►and◄** instructions related to the required actions under RA 5805².

¹ **►Refer to◄** RA 1014 – Design Organizations and Co-ordinating Design Organizations - Airworthiness Responsibilities.

² **►Refer to◄** RA 5805 – Responsibilities of the Holders of a Military Type Certificate and MAA Design Organization Approvals (MRP 21 Subpart A).

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Responsibilities of a Design Organization

2. The role of the DO, CDO or Air System (CDO) to meet the airworthiness responsibilities of RA 1014¹ will be established by the TAA.

**Regulation
5850(2)**

Scheme Inclusion and Approval Award

- 5850(2) An organization **shall** be included in the DAOS and awarded approval for a defined range of products, parts and appliances only when the organization has been assessed and accepted by the Military Aviation Authority (MAA).

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5850(2)**

Scheme Inclusion and Approval Award

3. An organization seeking inclusion in the scheme **should** apply using MAA Form 80, which can be found on the MAA website under Approval Schemes, through the MOD sponsor to the MAA.
4. Before a review of the organization's design, development and post-design support arrangements is undertaken, the ►Delivery◀ Team (►DT◀) **should** satisfy the MAA that:
- It is in the interests of MOD to include the organization in the Scheme.
 - The organization holds Quality Management System (QMS) certification (as defined by the Defence Authority for Technical and Quality Assurance Mandatory Requirement for Appropriate Certification) to AS/EN 9100, or to ISO 9001 providing the scope of certification covers the proposed DO Terms of Approval.

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Scheme Inclusion and Approval Award

5. This regulation applies to both service and civil organizations conducting design activities.
6. Inclusion in DAOS is normally an essential pre-requisite for the award of design and development contracts for Air Systems, and products, parts and appliances, and airborne explosive ordnance and armament equipment. Although it is recognized that an organization may wish to bid for a contract, it is the TAA or Commodity ►DTL◀ responsibility to consider whether, in this case, the organization is capable of holding a DAOS approval. The issue of a DAOS approval is recognition that the MOD accepts certification by the organization and that a specified performance attribute or objective has been achieved.
7. When evidence presented by the organization demonstrates that it satisfies the requirements of RA 5850, a DAOS approval will be issued by the MAA.
8. A list of organizations that have been granted approval will be published by the MAA.

Terms of Approval

9. The Terms of Approval will identify the types of design work, categories of products, parts and appliances for which the designer can operate as a DO, and the functions and duties that the organization is approved to perform in regard to the airworthiness of products, parts and appliances. Those terms will be issued as part of the DO approval.
10. The Terms of Approval encompass the Certificate and Schedule issued by the MAA:
- The Certificate identifies the approved organization and its design locations.
 - The Schedule includes:
 - The scope of work (development, modification and/or repair, and post design services unless otherwise stated), with any appropriate

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limitations against which the approval has been granted.

- (2) The categories of products, parts and appliances.
- (3) Airworthiness and Design signatories.
- (4) Military Permit to Fly (MPTF) signatories.
- (5) Privileges that can be invoked by the relevant TAA or Commodity DTL by contract.
- (6) Reference to the DOE, provided in accordance with RA 5850(4).

Changes to the Terms of Approval

11. An application for a change to the Terms of Approval is to be made on MAA Form 82, which can be found on the MAA website under Approval Schemes.
12. Approval of a change in the Terms of Approval will be confirmed by an appropriate amendment of the Certificate and Schedule.

**Regulation
5850(3)**

Design Assurance System

5850(3) The DO **shall** demonstrate that it has established and is able to maintain a design assurance system for the control and supervision of the design, and of design changes, of products, parts and appliances covered by the application.

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Compliance
5850(3)**

Design Assurance System

13. The design assurance system **should** be such as to enable the organization:
 - a. To ensure that the design of the products, parts and appliances or the design change or repair solution thereof, comply with the applicable airworthiness requirements and establish the extent of compliance with the requirements by Inspection, Demonstration, Analysis and Test.
 - b. To ensure that its responsibilities are properly discharged in accordance with the RA 5000 series as required by the organization's contract with MOD, in particular:
 - (1) The appropriate provisions of RA 5800 series.
 - (2) The Terms of Approval issued under RA 5850(2).
 - (3) Certificate of Design (CofD) under RA 5103³.
 - (4) Defence Air Safety Management under RA 1200⁴.
 - (5) Configuration Management of Design under RA 5301⁵.
 - c. To independently monitor the compliance with, and adequacy of, the documented procedures of the system. This monitoring **should** include a feedback system to a person or a group of persons having the responsibility to ensure corrective actions are resolved.
14. The DO **should** hold regular design reviews to validate the design proposals.
15. The design assurance system **should** include an independent checking function of the showings of compliance with design requirements on the basis of which the organization submits a CofD and associated documentation to the TAA or Commodity **▶DTL.◀**
16. The DO **should** specify and document the manner in which the design assurance system accounts for the acceptability of the parts or appliances designed or the tasks performed by partners or subcontractors.

³ ▶Refer to◀ RA 5103 – Control of Designs.

⁴ ▶Refer to◀ RA 1200 – Defence Air Safety Management.

⁵ ▶Refer to◀ RA 5301 – Configuration Management of Design.

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Design Assurance System

17. The system monitoring function may be undertaken by the existing quality assurance organization when the DO is part of a larger organization. For an explanation of the terms used within a Design Assurance System refer to Annex A.

18. The independent checking function is undertaken by Compliance Verification Engineers (CVE), as detailed within Annex A; this is a DO focussed role to ensure compliance with the applicable certification requirements. This is not to be confused with the role of the Independent Technical Evaluator (ITE) (refer to RA 1220⁶), who is appointed by the ►DT◄ and is to provide independent analysis of the DO evidence, which is to be independent of the DO.

19. However, when the approved DO is introducing a minor change (refer to RA 5820⁷) to the Air System under privilege (refer to RA 5850(10)), the role of the ITE may, in agreement with the TAA, be satisfied by the independent assessment conducted by the CVE.

Regulation 5850(4)

Design Organization Exposition

5850(4) The DO **shall** furnish a DOE to the MAA describing, directly or by cross-reference, the organization, the relevant procedures and the products, parts and appliances to be designed, changed or repaired.

Acceptable Means of Compliance 5850(4)

Design Organization Exposition

20. The DOE **should** be produced and include the content detailed in Annex B. The DOE **should** be concise with sufficient information that is relevant to the Terms of Approval sought by the DO. If the DOE is to be completely or partially integrated into the company organization manual, identification of the information required by RA 5850(4) **should** be provided by giving appropriate cross references, and these documents **should** be made available, to the MAA.

21. Where any products, parts or appliances, or any changes to these are designed by partner organizations or subcontractors, the DOE **should** articulate how the DO is able to give, for all products, parts and appliances, the assurance of compliance required by RA 5850(3) above. The statement **should** contain, directly or by cross-reference, descriptions and information on the design activities and organization of those partners or subcontractors, as necessary to establish this statement.

22. To maintain DAOS approval, the DOE **should** remain an accurate reflection of the organization with any amendment submitted to the MAA for approval. Amendment submission **should not** be taken to confer that DAOS approval is in place.

23. To demonstrate compliance with RA 5850(4), a DO with EASA Part 21 Subpart J approval **should** submit its EASA DOE, providing it covers the required Terms of Approval. In addition, the DO **should** provide the MAA with a supplementary Exposition that identifies the additional measures that have been put in place over and above those set down in its EASA Exposition and associated procedures, to comply with the requirement of RA 5850.

Organization.

24. The DOE **should** show that:

a. The Head of the DO for which an application for approval has been made, has the direct or functional responsibility for all departments of the organization which are responsible for the design of the products, parts and appliances. If the departments responsible for design are functionally linked, the Head of the DO still carries the ultimate responsibility for compliance of the organization with RA 5850.

b. The manager responsible for design has the direct or functional responsibility for all departments of the organisation which are involved in the

⁶ ►Refer to◄ RA 1220 – Project Team Airworthiness and Safety.

⁷ ►Refer to◄ RA 5820 – Changes in Type Design (MRP 21 Subpart D).

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design of minor changes to Type Design or minor repairs to products.

- c. An Office of Airworthiness, or equivalent function, has been established and staffed on a permanent basis to act as the focal point for co-ordinating airworthiness matters; it reports directly to the Head of the DO or is integrated into an independent quality assurance organization reporting to the Head of the DO.
- d. Person(s) have been nominated to liaise with the Authority and to co-ordinate airworthiness matters. Their position in the organisation **should** allow direct report to the manager responsible for design.
- e. Responsibilities for all tasks related to the design and approval of minor changes to Type Design or minor repairs to products are assigned to ensure that all areas are covered.
- f. Responsibilities for all tasks related to Design Investigations are assigned in such a way that gaps in authority are excluded.
- g. The responsibility for a number of tasks may be assigned to one person especially in the case of simple projects.
- h. Co-ordination between technical departments and the persons in charge of the system monitoring required by RA 5850 has been established:
- (1) To ensure quick and efficient reporting and resolution of difficulties encountered using the DO handbook and associated procedures.
 - (2) To maintain the design assurance system.
 - (3) To optimise auditing activities.

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5850(4)**

Design Organization Exposition

25. Nil.

**Regulation
5850(5)**

Approval Requirements

5850(5) The DO **shall** demonstrate that staff in all technical departments are of sufficient numbers and experience and have been given appropriate authority to discharge their allocated responsibilities.

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5850(5)**

Approval Requirements

General

26. The DO **should** ensure that the accommodation, facilities and equipment are adequate to enable the staff to satisfy the airworthiness requirements for the product, part or appliance.

27. The data submitted in accordance with RA 5850(4) **should** show that sufficient skilled personnel are available and suitable technical and organizational provisions have been made for carrying out the Design Investigation defined under RA 5850(3).

Personnel

28. The DO **should** show that the personnel available to comply with RA 5850 are, due to their special qualifications and number, able to provide assurance of the design, modification or repair of products, parts and appliances, as well as the compilation and verification of all data needed to meet the applicable airworthiness codes while taking into account the present state of the art and new experience.

Technical

29. The DO **should** have access to:

- a. Workshops and production facilities which are suitable for manufacturing

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prototype models and test specimens.

b. Accommodation and test facilities which are suitable for carrying out tests and measurements needed to demonstrate compliance with the applicable airworthiness codes. The test facilities may be subjected to additional technical conditions related to the nature of tests performed.

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5850(5)**

Approval Requirements

30. Nil.

**Regulation
5850(6)**

Changes in Design Assurance System

5850(6) After the issue of a DO Approval, each change to the design assurance system that is significant to the showing of compliance or to the airworthiness of the product, part or appliance **shall** require approval by the MAA.

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5850(6)**

Changes in Design Assurance System

31. An application for approval of a change to the DO **should** be made using MAA Form 82 and submitted in writing to the MAA. Before implementation of the change the DO **should** demonstrate to the MAA, on the basis of submission of proposed changes to the DOE that it will continue to comply with RA 5850 after implementation.

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Changes in Design Assurance System

Significant changes in the Design Assurance System

32. In addition to a change in ownership, the following changes to the design assurance system are to be considered as 'significant' to the showing of compliance or to the airworthiness of the products, parts or appliances:

a. **Organization**

(1) Change in the industrial organization (partnership, suppliers, design work-sharing) unless it can be shown that the independent checking function of the showing of compliance is not affected.

(2) Change in the parts of the organization that contribute directly to the airworthiness (independent checking function, office of airworthiness (or equivalent)).

(3) Change to the independent monitoring principles.

b. **Responsibilities**

(1) Change of the management staff assessed for airworthiness competence.

(2) The Head of the DO.

(3) The Chief of the Office of Airworthiness.

(4) The Chief of the independent monitoring function of the design assurance system.

(5) New distribution of responsibilities affecting airworthiness.

c. **Procedures**

(1) Change to the principles of procedures related to:

(a) The design certification.

(b) The classification of changes and repairs as major or minor (RA 5850(10)).

(c) The management of major changes and major repairs.

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- (d) The approval of the design of minor changes and minor repairs (RA 5850(10)).
- (e) The issue of information and instructions.
- (f) Documentary changes to the Aircraft Flight Manual.
- (g) Type airworthiness.
- (h) The configuration control, when airworthiness is affected.
- (i) The acceptance of design tasks undertaken by partners or ►subcontractors◄ (RA 5850(4)).
- (j) MPTF.

d. **Resources**

- (1) Substantial change in the number and/or experience of staff (refer to RA 5850(5)).

**Regulation
5850(7)**

Investigations and Inspections

5850(7) The DO **shall** make arrangements that allow the MAA to make any investigations, inspection, or review any report necessary to determine compliance with RA 5850.

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5850(7)**

Investigations and Inspections

33. Arrangements **should** be made to allow the MAA to make investigations of the DO including partners, subcontractors and suppliers. This includes assisting and co-operating with the MAA in performing inspections and audits conducted during initial assessment and subsequent surveillance.

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5850(7)**

Investigations and Inspections

34. Assistance to the MAA includes all appropriate means associated with the facilities of the DO to allow the MAA to perform these inspections and audits, such as a meeting room and office support.

**Regulation
5850(8)**

Findings

5850(8) After receipt of notification of findings, the DO **shall** demonstrate corrective action appropriate to the level of the finding.

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5850(8)**

Findings

35. After receipt of notification of findings under the applicable administrative procedures established by the MAA:

- a. In case of a level 1 finding, the DO **should** demonstrate corrective action to the satisfaction of the MAA within a period of no more than 21 working days after written confirmation of the finding.
- b. In case of level 2 findings, the corrective action period granted by the MAA **should** be appropriate to the nature of the finding but in any case initially not be more than 6 months. In certain circumstances and subject to the nature of the finding, the 6 month period could be extended subject to a satisfactory corrective action plan agreed by the MAA.
- c. An Observation (or level 3 finding) **should not** require immediate action by the DO. If appropriate, the MAA will specify a compliance time.

36. In case of level 1 or level 2 findings, the DO may be subject to a partial or full suspension or revocation of its approval. The DO **should** provide confirmation of receipt of the notice of suspension or revocation of the DO Approval in a timely manner.

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5850(8)**

Findings

37. When objective evidence is found showing non-compliance of the DO with the applicable requirements of the RA 5000 series, the finding will be classified as follows:

- a. A level 1 finding is any non-compliance with the relevant RA 5000 series which could lead to uncontrolled non-compliances with applicable requirements and which could lead to a major risk affecting the Air Safety.
- b. A level 2 finding is any non-compliance with the relevant RA 5000 series which is not classified as level 1. Where the combination of several level 2 findings together produces a major risk affecting the Air Safety, they may be grouped as a level 1 finding.
- c. An Observation (or level 3 finding), which may also be referred to as an 'observation' is any item where it has been identified, by objective evidence, to contain potential problems that could lead to a non-compliance.

38. The MAA will inform the relevant TAA(s) or Commodity ►DTL◄ of any findings and the proposed corrective action.

**Regulation
5850(9)**

Validity of Approval

5850(9) An approval **shall** be issued for an unlimited duration. It **shall** remain valid subject to:

- a. The DO remaining in compliance with applicable RAs; and
- b. The MAA or its nominated representative being granted access to the organization to determine continued compliance with applicable RAs; and
- c. The approval Certificate not being surrendered, suspended or revoked.

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5850(9)**

Validity of Approval

39. The DO **should** confirm in writing prior to any formal MAA surveillance or not later than every 3 years from the last notification that the contents of their approval Certificate and DOE remain valid. Failure to provide the required confirmation may result in the suspension of the approval.

**Guidance
Material
5850(9)**

Validity of Approval

40. Nil.

**Regulation
5850(10)**

Privileges

5850(10) A DO **shall** operate privileges only when they have been invoked by the appropriate TAA or Commodity ►DTL◄

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Privileges

Invoking specific privileges

41. The DO **should** only operate privileges when they have had their competence assessed by the MAA and their Terms of Approval contain the relevant provision.

42. Once invoked, the DO **should** be entitled, within its Terms of Approval and under the relevant procedures of the design assurance system, to operate the

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privilege to:

- a. Classify changes to Type Design and repairs as minor⁸ or major.
 - b. Approve minor changes to Type Design and minor repairs.
 - c. Issue information ►and◄ instructions, containing the following statement: "The technical content of this documentation is approved under the authority of MAA DAOS ref. [UK.MAA.DAOS.xxx]," where 'xxx' represents the reference number.
 - d. To approve the flight conditions under which a MPTF can be issued in accordance with RA 5880⁹, except for initial flights of:
 - (1) A new type of Air System; or
 - (2) An Air System modified by a major change; or
 - (3) An Air System whose flight and/or piloting characteristics may have been modified; or
 - (4) An Air System dedicated to expanding the agreed flight envelope, as defined within an extant Release to Service¹⁰ (RTS).
 - e. Issue a MPTF in accordance with RA 5880 for an Air System it has designed or modified, or for which it has approved the conditions under which the MPTF can be issued and when the DO itself is controlling the configuration of the Air System under its scope of DO approval.
43. The DO **should** develop its own internal procedures for the relevant privileges identified in para 42, based on the requirements of Annex C.
44. The DO **should** assure the TAA or Commodity ►DTL◄ that any changes approved under the provision of any privilege that has been invoked are accurately classified.
45. The DO **should** assure the TAA or Commodity ►DTL◄ that there is a robust mechanism for managing the configuration control of the Air System or equipment for any changes approved under the provisions of any privilege that has been invoked.

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Privileges

Invoking Specific Privileges

46. In relation to the privileges identified, it is the responsibility of the organization to detail in their DOE, the process to determine the classification of changes and how they manage the process for approval of minor change.
47. The TAA or Commodity ►DTL◄ must be notified of changes or repairs approved under this privilege by submission of a CofD, for subsequent acknowledgement by the TAA or Commodity ►DTL.◄
48. The TAA or Commodity ►DTL◄ must make appropriate arrangements for configuration management in conjunction with the DO, in particular to ensure that the application of design or service modifications, including any Special Instructions (Technical) (SI(T)) (refer to RA 5405¹¹) or Service Bulletins (SB) to the same Air System or equipment, is managed effectively and is transparent to the ODH.
49. Whilst the TAA or Commodity ►DTL◄ will have the ability to revoke privileges, the MAA holds the ultimate sanction of limiting the scope of an organization's approval if it is deemed the ►DT◄ or organization is not fully compliant with the MRP.
50. The information ►and◄ instructions, including the necessary data, are issued by the DO to the TAA or Commodity ►DTL◄ to implement a change, a repair, or an inspection. Some are also issued to provide maintenance organizations with all necessary maintenance data for the performance of maintenance, including

⁸ A minor change is defined in RA 5820; all other changes are classified as major.

⁹ ►Refer to◄ RA 5880 – Military Permit To Fly (MRP 21 Subpart P).

¹⁰ ►Refer to◄ RA 1300 – Release to Service.

¹¹ ►Refer to◄ RA 5405 – Special Instructions (Technical)

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implementation of a change, a repair, or an inspection.

51. The preparation of this data involves design, production and inspection. As the overall responsibility, through the privilege, is allocated to the DO, these aspects must be properly handled by the DO to obtain the privilege "to issue information ► and ◀ instructions containing a statement that the technical content is approved", and a procedure must exist.

**Regulation
5850(11)**

Designs using Government Furnished Equipment

5850(11) The DO **shall** obtain the authority of the MOD before altering the design of any Government Furnished Equipment (GFE).

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5850(11)**

Designs using Government Furnished Equipment

52. If the DO has any doubt about the design suitability of any item, or has proposals for design changes, he **should** advise the MOD at the earliest opportunity.

**Guidance
Material
5850(11)**

Designs using Government Furnished Equipment

53. The installation, functional and environmental interface definitions documentation may be formally referred to as the Interface Control Documentation (ICD).

54. Where GFE is provided without the appropriate supporting design data (eg CofD, ICD), the DO must communicate the omission to the relevant TAA or Commodity DTL for their decision to proceed with the modification.

**Regulation
5850(12)**

Record Keeping

5850(12) All relevant design information, drawings and test reports, including inspection records, **shall** be held by the appropriate DO.

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5850(12)**

Record Keeping

55. Such documentation **should** be held in order to provide the information necessary to ensure the type airworthiness of an Air System and **should** be retained for a minimum of 5 years beyond the aircraft's Out-of-Service date.

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5850(12)**

Record Keeping

56. International or collaborative programmes will be required to co-ordinate custodianship of appropriate documentation.

**Regulation
5850(13)**

Instructions for Sustaining Type Airworthiness

5850(13) DOs **shall** provide the complete Instructions for Sustaining Type Airworthiness (ISTA) ► ◀ to the TAA.

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Instructions for Sustaining Type Airworthiness

57. DOs **should** make available to the TAA the complete ISTA for use by the Military Continuing Airworthiness Manager.

58. DOs **should** comply with the requirements of RA 5401¹².

59. Any changes to the ISTA **should** be made available to the TAA.

60. A programme showing how changes to the ISTA are distributed **should** be

¹² ► Refer to ◀ RA 5401 – Provision of Technical Information.

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submitted to the TAA.

61. The availability of some manual or portion of the changes to the ISTA, dealing with overhaul or other forms of heavy maintenance, may be delayed until after the product has entered into service, but **should** be available before any of the products reaches the relevant age or flight hours/cycles.

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5850(13)****Instructions for Sustaining Type Airworthiness**

62. The ISTA, ► **comprising of descriptive data and accomplishment instructions, ensures** ◀ the type certification airworthiness standard is maintained throughout the operational life of the Air System. Typically, the instructions are in the form of manuals covering, but not limited to:

- a. The Design description covering:
 - (1) Handling instructions.
 - (2) Control and operating information.
 - (3) Servicing information.
- b. Maintenance instructions covering:
 - (1) Scheduling information.
 - (2) Maintenance instructions.
 - (3) Repair instructions.
 - (4) Trouble-shooting (fault-finding) information.
 - (5) Information describing the removal and replacement of parts.
 - (6) Procedural instructions for systems testing.
 - (7) ► **Decontamination instructions.** ◀
- c. Diagrams and instructions for inspections including:
 - (1) Details for the application of special inspection techniques.
 - (2) Information needed to apply protective treatment.
 - (3) Data relative to structural fasteners.
 - (4) A list of special tools needed.
- d. Airworthiness limitations (including where appropriate any Airworthiness Directives (AD), SB ► **or SI(T)** ◀) .
- e. Electrical Wiring Interconnection Systems.

ANNEX A**DESIGN ASSURANCE SYSTEM****Definitions**

1. The system monitoring function may be undertaken by the existing quality assurance organization when the DO is part of a larger organization.
2. The design assurance system is the organizational structure, responsibilities, procedures and resources to ensure the proper functioning of the design organization.
3. Design assurance means all those planned and systematic actions necessary to provide adequate confidence that the organization has the capability:
 - a. To design products, parts or appliances in accordance with the applicable airworthiness codes.
 - b. To show and verify the compliance with the applicable airworthiness codes.
 - c. To demonstrate to the MAA this compliance for the purposes of DAOS approval and to the TAA when required.

Design Assurance System

4. The complete process starts with the airworthiness codes and product, part or appliance specifications and culminates in Type Certification. It establishes the relationship between the design, the Design Investigation¹³ and design assurance processes.
5. Effective design assurance demands a continuing evaluation of factors that affect the adequacy of the design for intended applications, in particular that the product, or part, complies with applicable airworthiness codes and will continue to comply after any change.
6. Two main aspects are to therefore be considered:
 - a. How the planned and systematic actions are defined and implemented, from the very beginning of design activities up to type airworthiness activities;
 - b. How these actions are regularly evaluated and corrective actions implemented as necessary.

Design Assurance System - Independent checking function of the showing of compliance

7. The independent checking function of the showing of compliance is to consist of the verification by a person not creating the compliance data. Such person may work in conjunction with the individuals who prepare compliance data.
8. The verification is to be shown by signing compliance documents, including test programmes and data.
9. There is normally only one CVE nominated for each airworthiness code for a given design activity.
10. A procedure is to cover the non-availability of nominated persons and their replacement when necessary.

Planned and Systematic Actions

11. For the DO carrying out Design Investigation of products, parts or appliances, the subsequent tasks and procedures must be defined and put in place to cover the planned and systematic actions.

General

12. To issue or, where applicable, supplement or amend the DOE in accordance with RA 5850(6), in particular to indicate the initiation of design activities on a product, part or appliance.
13. To assure that all instructions of the DOE are adhered to.
14. To nominate staff as "Compliance Verification Engineers" responsible to approve compliance documents.
15. To nominate personnel belonging to the Office of Airworthiness with appropriate responsibilities.
16. To ensure full and complete liaison between the DO and related organizations having responsibility for products manufactured to the MTC.

¹³ The term 'Design Investigation' means the tasks of the organization in support of the Military Type Certificate or other design approval processes necessary to show and verify and to maintain compliance with the applicable airworthiness codes.

17. To provide the assurance to the TAA or Commodity ►DTL◀ that prototype models and test specimens adequately conform to the Type Design (refer to RA 5810¹⁴).

Chief Executive and Head of DO (or their Deputy)

18. The Chief Executive will provide the necessary resources for the proper functioning of the DO.

19. The Head of the DO, or an authorized representative, is to sign a CofD (refer to RA 5103³) stating compliance with the applicable airworthiness codes after verification of satisfactory completion of the Design Investigation. In accordance with RA 5810¹³ and RA 5820⁵, his or her signature on the CofD confirms that the procedures as specified in the DOE have been followed.

20. The functions of Chief Executive and Head of the DO may be performed by the same person.

Compliance Verification

21. Approval by signing of all compliance documents, including test programmes and data, necessary for the verification of compliance with the applicable airworthiness codes as defined in the ►certification◀ programme.

22. Internal approval of the technical content (eg completeness, technical accuracy), including any subsequent revisions, of the manuals for the subsequent release by the TAA or Commodity ►DTL◀.

Office of Airworthiness

23. Liaison between the DO and the TAA or Commodity ►DTL◀ with respect to all aspects of ►certification programme◀.

24. Ensuring that a DOE is prepared and updated as required in RA 5850(4).

25. Co-operation with the MAA in developing procedures to be used for the design certification process.

26. Issuing of guidelines for documenting compliance.

27. Co-operation in issuing guidelines to ensure compliance with the regulations for the preparation of the manuals, SB, ►SI(T), modifications◀, drawings, specifications, and standards.

28. Ensuring distribution of applicable airworthiness codes and other specifications.

29. Co-operating with the TAA or Commodity ►DTL◀ in proposing the certification basis.

30. Interpretation of airworthiness codes and requesting decisions of the TAA or Commodity DTL.

31. Advising of all departments of the DO in all questions regarding airworthiness approvals and certification.

32. Preparation of the ►certification◀ programme and co-ordination of all tasks related to Design Investigation in concurrence with the TAA or Commodity ►DTL◀.

33. Regular reporting to the TAA or Commodity ►DTL◀ about Design Investigation progress and announcement of scheduled tests in due time.

34. Ensuring co-operation in preparing ►inspection and◀ test programmes needed for demonstration of compliance.

35. Establishing and maintaining the compliance checklist to provide evidence underpinning the Compliance Statement.

36. Checking that all compliance documents are prepared as necessary to show compliance with all airworthiness codes, as well as for completeness, and signing for release of the documents.

37. Checking the required design definition documents described in RA 5810 and ensuring that they are provided to the TAA or Commodity ►DTL◀ for approval when required.

38. Preparation, if necessary, of a draft for a type certificate data sheet and/or type certificate data sheet modification.

39. Providing verification to the Head of the DO that all activities required for Design Investigation have been properly completed.

40. Approving the classification of changes in accordance with RA 5820 and granting the approval for minor changes in accordance with RA 5820 (when appropriate).

¹⁴ ►Refer to◀ RA 5810 – Military Type Certificates (MRP 21 Subpart B).

41. Monitoring of significant events on other aeronautical product, parts and appliances as far as relevant to determine their effect on airworthiness of products, parts and appliances being designed by the DO.
42. Ensuring co-operation in preparing SB ►, SI(T)◄ and the Structural Repair Manual, and subsequent revisions, with special attention being given to the manner in which the contents affect airworthiness codes for subsequent approval by the TAA or Commodity ►DTL.◄
43. Ensuring the initiation of activities as a response to failure (accident/incident/in-service ►occurrence◄) evaluation and complaints from the operation and providing of information to the TAA or Commodity ►DTL◄ in case of airworthiness impairment.
44. Advising the TAA or Commodity ►DTL◄ with regard to the issue of ►SI(T)◄ (refer to RA 5805² and RA 5405¹¹).
45. Ensuring that the manuals to be approved by the TAA or Commodity ►DTL,◄ including any subsequent revisions are checked to determine that they meet the respective requirements, and that they are provided to the TAA or Commodity ►DTL◄ for approval.

Maintenance and Operating Instructions

46. Ensuring the preparation and updating of all maintenance and operating instructions ►◄ needed to maintain airworthiness in accordance with relevant airworthiness codes. For that purpose, the DO must:
- a. Establish the list of all documents it is producing; and
 - b. Define procedures and organization to produce and issue these documents to the TAA or Commodity ►DTL.◄

Continued Effectiveness of the Design Assurance System

47. The organization is to establish the means by which the continuing evaluation (system monitoring) of the design assurance system will be performed in order to ensure that it remains effective.

ANNEX B**DESIGN ORGANIZATION EXPOSITION REQUIREMENTS****Part 1 - Organization**

1. Document title, and Organizations document reference number.
2. Organization name, address, telephone, telex, facsimile numbers, e-mail address.
3. Index.
4. List of effective pages with revision/date/amendment identification for each page.
5. Distribution list.
6. Objective of DOE and binding statement.
 - a. The DOE should be signed by the Chief Executive and the Head of the DO and declared as a binding instruction for all personnel charged with the development and Design Investigation of products, parts and appliances.
7. Responsible person(s) for administration of the DO handbook.
8. Amendments.
 - a. Amendment record sheet.
 - b. A system should be clearly laid down for carrying out amendments and modifications to the DOE, including how amendments are identified within the document.
9. Presentation of DO (including locations).
 - a. An introduction, or foreword, explaining the purpose of the document for the guidance of the organization's own personnel. Brief general information concerning the history and development of the organization and, if appropriate, relationships with other organizations which may form part of a group or consortium, should be included to provide background information for the MAA.
10. Scope of work (with identification of type and models of products, parts and appliances) which can be performed under the approval, according to the following classification:
 - a. General areas, like turbojet and turbo-propeller aircraft, small aircraft, RPAS and rotorcraft.
 - b. Technologies handled by the organization (composite, wood or metallic construction, electronic systems, software, etc.).
 - c. A list of types and models for which the design approval has been granted and for which privileges may be exercised, supported by a brief description for all products, parts and appliances.
 - d. For repair design, classification and (if appropriate) approval activities it is necessary to specify the scope of activity in terms of structures, systems, engines, etc.
11. Organization structure.
 - a. A description of the organization, its departments, their functions and the names of those in charge.
 - b. A description of functional relationships between departments.
 - c. A chart indicating the functional and hierarchical relationship of the design assurance system to Management and to other parts of the organization.
12. Human resources.
 - a. A description of the human resources, facilities and equipment, which constitutes the means for design, and where appropriate, for ground and flight testing.
 - b. An outline of the system for controlling and informing the Staff of the organization of current changes in engineering drawings, specifications and design assurance procedures.
13. Management staff.
 - a. A description of assigned responsibilities and delegated authority of all parts of the organization which, taken together constitute the organization's design assurance system; also the chains of responsibilities within the design assurance system, and the control of the work of all partners and subcontractors.

14. Certifying personnel.
 - a. The names of the DO authorized signatories. Nominated persons with specific responsibilities should be listed.
 - b. A clear definition of the tasks, competence and areas of responsibility of the Office of Airworthiness.
 - c. A statement of suitable qualified and experienced personnel (SQEP) responsible for making decisions affecting airworthiness in the organization.
15. Independent system monitoring.
 - a. A description of the means by which the continuing evaluation of the design assurance system will be performed in order to ensure that it remains effective.
16. Evidence of a QMS certification (as defined by the Defence Authority for Technical and Quality Assurance Mandatory Requirement for Appropriate Certification) to AS/EN 9100, or to ISO 9001 providing the scope of certification covers the proposed DO Terms of Approval.

Part 2 - Procedures

17. A general description of the way in which the organization performs all the design functions in relation to airworthiness approvals including:
 - a. The procedures followed and forms used in the Design Investigation process to ensure that the design of, or the change to the design of, the product, part or appliance as applicable is identified and documented, and complies with the applicable airworthiness requirements, including specific requirements for import by importing authorities.
 - b. The procedures for classifying design changes as major or minor and for the approval of minor changes.
 - c. The procedures for classifying and approving unintentional deviations from the approved design data occurring in production (concessions or non-conformances).
 - d. The procedure for classifying repairs as major or minor and for the approval of minor repairs.
 - e. The procedures for the establishment and the control of the maintenance and operating instructions (refer to RA 5810¹⁴, RA 5820⁷ and RA 5865¹⁵).
 - f. The procedures for the establishment and the control of the MPTF.
18. In addition, the organization controls and records the design documentation and means of compliance for:
 - a. The basic product, part or appliance.
 - b. Modifications to the product, part or appliance.
 - c. The design schemes for product, part or appliance repairs.
 - d. The reporting and response to product, part or appliance failures/malfunctions and defects.
19. The organization will identify (by reference or explicit description) the procedures it uses to select subcontractors and manage the design of parts or appliances ► produced. ◀
20. The organization will identify (by reference or explicit description) the procedures it uses to control design production, including production by subcontractors charged with the design and production of parts and appliances, and ► subcontractors ◀ charged with production of the approved design.
21. Control of design subcontractors.
22. Co-ordination with production.
23. Continuing Airworthiness.
 - a. A description of the way in which the organization performs its functions in relation to the continuing airworthiness of the product, part and appliance it designs.
24. Collecting/Investigating failures, malfunctions and defects.
 - a. A description of the means by which the organization monitors and responds to problems affecting the airworthiness of its product, part and appliance in particular to comply with RA 5805².

¹⁵ ► Refer to ◀ RA 5865 – Repairs (MRP 21 Subpart M).

Part 3 - Statement of Qualifications and Experience

25. Three different types of functions are named or implicitly identified, using qualified and experienced personnel:
- a. The Chief Executive.
 - b. The other management staff:
 - (1) The Head of the DO.
 - (2) The Chief of the Office of Airworthiness.
 - (3) The Chief of the independent monitoring function of the design assurance system.
 - c. Personnel making decisions affecting airworthiness:
 - (1) CVEs.
 - (2) Personnel of the Office of Airworthiness making decisions affecting airworthiness, especially those linked with the Privileges identified in RA 5850(10) approving the classification of changes and repairs, and granting the approval of minor changes.

Chief Executive

26. The Chief Executive is to provide the necessary resources for the proper functioning of the DO. A statement of the qualification and experience of the Chief Executive is normally not required.

Other Management Staff

27. The person or persons nominated are to represent the management structure of the organization and be responsible through the Head of DO to the Chief Executive for the execution of all functions as specified in RA 5850. Depending on the size of the organization, the functions may be subdivided under individual managers.
28. The nominated managers are to be identified and their credentials furnished to the MAA on MAA Form 4 in order that they may be seen to be appropriate in terms of relevant knowledge and satisfactory experience related to the nature of the design activities as performed by the organization.
29. The responsibilities and the tasks of each individual manager are to be clearly defined, in order to prevent uncertainties about the relations, within the organization. Responsibilities of the managers must be defined in a way that all responsibilities are covered.

Personnel making decisions affecting airworthiness

30. For personnel making decisions affecting airworthiness, no individual statement is required. The applicant is to show to the MAA that there is a system to select, train, maintain and identify them for all tasks where they are necessary. The following guidelines for such a system are proposed:
- a. These personnel are to be identified in the DO handbook, or in a document linked to the DO handbook. This and the corresponding procedures are there to enable them to carry out the assigned tasks and to properly discharge associated responsibilities.
 - b. The needs, in terms of quantity of these personnel to sustain the design activities, are to be identified by the organization.
 - c. These personnel are to be chosen on the basis of their knowledge, background and experience.
 - d. When necessary, complementary training is to be established, to ensure sufficient background and knowledge in the scope of their authorization. The minimum standards for new personnel to qualify in the functions are to be established. The training is to lead to a satisfactory level of knowledge of the procedures relevant for the particular role.
 - e. Training policy forms part of the design assurance system and its appropriateness forms part of the investigation by the MAA within the organization approval process and subsequent surveillance of persons proposed by the organization.
 - f. This training is to be adapted in response to experience gained within the organization. The organization must maintain a record of these personnel which includes details of the scope of their authorization. The personnel concerned are to be provided with evidence of the scope of their authorization.
31. The following minimum information is to be kept on record:

- a. Name.
 - b. Experience and training.
 - c. Position in organization.
 - d. Scope of the authorization.
 - e. Date of first issue of the authorization.
 - f. If appropriate, date of expiry of the authorization.
 - g. Identification number of the authorization.
32. The record may be kept in any format and is to be controlled:
- a. Persons authorized to access the system are to be kept to a minimum to ensure that records are not altered in an unauthorized manner or that such confidential records do not become accessible to unauthorized persons.
 - b. Personnel must be given access to their own record.
 - c. Under the provision of RA 5850(7) the MAA is to have access to the data held in such a system.
 - d. The organization is to keep the record for at least two years after a person has ceased employment with the organization or revocation of the authorization, whichever is the sooner.

ANNEX C**INTERNAL PROCEDURES FOR OPERATING SPECIFIC PRIVILEGES****Classify changes to Type Design and repairs as minor or major (refer to RA 5850(10) AMC para 42.a.)****Intent**

1. The DO should develop its own internal procedure for the classification of changes to Type Design and repairs as minor or major in order to obtain the associated privilege.

Content

2. The procedure should address the following points:
 - a. The identification of changes to Type Design or repairs.
 - b. Classification.
 - c. Justification of the classification.
 - d. Authorized signatories.
 - e. Supervision of changes to Type Design or repairs initiated by subcontractors.
3. For changes to Type Design, criteria used for classification should be in compliance with RA 5820.
4. For repairs, criteria used for classification should be in compliance with RA 5865.

Identification of changes to Type Design or repairs

5. The procedure should indicate how the following are identified:
 - a. Major changes to Type Design or major repairs.
 - b. Those minor changes to Type Design or minor repairs where additional work is necessary to show compliance with the applicable airworthiness codes.
 - c. Other minor changes to Type Design or minor repairs requiring no further showing of compliance.

Classification

6. The procedure should show how the effects on airworthiness are analysed, from the very beginning, by reference to the applicable certification requirements.
7. If no specific airworthiness codes are applicable to the change or repairs, the above review should be carried out at the level of the part or system where the change or repair is integrated and where specific airworthiness codes are applicable.

Justification of the classification

8. All decisions of classification of changes to Type Design or repairs as major or minor should be recorded. These records should be easily accessible to the TAA for sample check.

Authorized signatories

9. All classifications of changes to Type Design or repairs should be accepted by an appropriate authorized signatory.
10. The procedure should indicate the authorized signatories for the various products listed in the Terms of Approval.
11. For those changes or repairs that are handled by subcontractors, it should be described how the DO manages its classification responsibility.

Supervision of changes to Type Design or repairs initiated by subcontractors

12. The procedure should indicate, directly or by cross-reference to written procedures, how changes to Type Design or repairs may be initiated and classified by subcontractors and are controlled and supervised by the DO.

Approve minor changes to Type Design and minor repairs (refer to RA ►5850◄ (10) AMC para 42.b.)**Intent**

13. The DO should develop its own internal procedure for the approval of minor changes to Type Design or minor repairs in order to obtain the associated privilege.

Content

14. The procedure should address the following points:
- a. Compliance documentation.
 - b. Approval under the DO privilege.
 - c. Authorized signatories.
 - d. Supervision of minor changes to Type Design or minor repairs handled by subcontractors.

Compliance documentation

15. For those minor changes to Type Design or minor repairs where additional work to show compliance with the applicable airworthiness codes is necessary, compliance documentation should be established and independently checked as required by RA 5850(3).

16. The procedure should describe how the compliance documentation is produced and checked.

Approval under the DO privilege

17. For those minor changes to Type Design or minor repairs where additional work to show compliance with the applicable airworthiness codes is necessary, the procedure should define a document to formalise the approval under the DO privilege.

18. This document should include at least:
- a. Identification and brief description of the change or repair and reasons for change or repair.
 - b. Applicable airworthiness codes and methods of compliance.
 - c. Reference to the compliance documents.
 - d. Effects, if any, on limitations and on the approved documentation.
 - e. Evidence of the independent checking function of the showing of compliance.
 - f. Evidence of the approval under the privilege of RA 5850(10) by an authorized signatory.
 - g. Date of the approval.

19. For the other minor changes to Type Design or minor repairs, the procedure should define a means to identify the change or repair and reasons for the change or repair, and to formalise its approval by the appropriate engineering authority under an authorized signatory. This function may be delegated by the Office of Airworthiness but should be controlled by the Office of Airworthiness, either directly or through appropriate procedures of the DO design assurance system.

Authorized signatories

20. The persons authorized to sign for the approval under privilege should be identified (name, signature and scope of authority) in appropriate documents that are linked to the DO handbook.

Supervision of minor changes to Type Design or minor repairs handled by subcontractors

21. For the minor changes to Type Design or minor repairs that are handled by subcontractors, the procedure should indicate, directly or by cross-reference to written procedures how these minor changes to Type Design or minor repairs are approved at the subcontractor level and the arrangements made for supervision by the DO.

Issue of information ►and◄ instructions (refer to RA 5850(10) AMC para 42.c.)**Intent**

22. The DO should develop its own internal procedure for the issue of information ►and◄ instructions.

Content

23. For the information and instructions issued under this privilege, the DO should establish a procedure addressing the following points:

- a. Preparation.
- b. Verification of technical consistency with corresponding approved change(s), repair(s) or approved data, including effectivity, description, effects on airworthiness, especially when limitations are changed.
- c. Verification of the feasibility in practical applications.
- d. Authorized signatories.

24. The procedure should include the information ►and◄ instructions prepared by subcontractors or vendors and declared applicable to its products, parts and appliances by the DO.

Statement

25. The statement provided in the information ►and◄ instructions should also cover the information ►and◄ instructions prepared by subcontractors or vendors and declared applicable to its products, parts and appliances by the DO.

26. The technical content should be related to the design data and accomplishment instructions, and its approval should mean that:

- a. The design data has been appropriately approved.
- b. The instructions provide for practical and well defined installation/inspection methods, and, when accomplished, the products, parts and appliances are in conformity with the approved design data.

27. Where appropriate, this technical data should be clearly identified within the CofD for the TAA or Commodity ►DTL.◄

28. Information and instructions related to required actions issued under an AD ►or SI(T)◄ should be submitted to the TAA to ensure compatibility with the AD ►or SI(T)◄ content, and should contain a statement that they are, or will be, subject to an AD ►or SI(T)◄ issued.

To approve the flight conditions under which a MPTF can be issued (refer to RA 5850(10) AMC para 42.d.)

Intent

29. The DO should develop its own internal procedure to determine and approve that an Air System can fly under the appropriate restrictions compensating for the lack of an extant RTS.

Content

30. The procedure should address the following points:

- a. Decision to use the privilege.
- b. Management of the aircraft configuration.
- c. Determination of the conditions that should be complied with to perform safe flight.
- d. Documentation of flight conditions substantiations.
- e. Approval under the approved DO privilege, when applicable.
- f. Authorized signatories.

31. The procedure should include a decision to determine:

- a. Flights for which this privilege will be exercised.
- b. Flights for which the approval of flight conditions by the TAA will be required.

32. The procedure should indicate:

- a. How the Air System, for which an application for a MPTF is made, is identified and how changes to the Air System will be managed.

Determination of the conditions that should be complied with to perform safe flight

33. The procedure should describe the process used by the DO to justify that an Air System can perform the intended flight. The process should include:

- a. Identification of deviations from the extant RTS or applicable airworthiness requirements.
- b. Analysis, calculations, tests or other means used to determine the conditions or restrictions under which the Air System can perform safe flight.
- c. The establishment of specific maintenance instructions and conditions to perform these instructions.
- d. Independent technical verification of the analysis, calculations, tests or other means used to determine under which conditions or restrictions the Air System can perform the intended flight(s) safely.
- e. Statement by the office of airworthiness (or equivalent), that the determination has been made in accordance with the procedure and that the Air System has no features and characteristics making it unsafe for the intended operation under the identified conditions and restrictions.
- f. Approval by an authorized signatory.

Documentation of flight conditions substantiations

34. The analysis, calculations, tests, or other means used to determine the conditions or restrictions under which the Air System can perform in flight safely, should be compiled in compliance documents. These documents should be signed by the author and by the person performing the independent technical verification.

35. Each compliance document should have a number and issue date. The various issues of a document should be controlled.

Authorized signatories

36. The person(s) authorized to sign the approval form should be identified (name, signature and scope of authority) in the procedure, or in an appropriate document linked to the DOE.

Issue a MPTF in accordance with RA 5880 (refer to RA 5850(10) AMC para 42.e.)**Intent**

37. The DO should develop its own internal procedure for the issue of a MPTF for an Air System it has designed or modified, ► or for which it has approved under privilege the conditions under which the MPTF can be issued, and ◀ when the DO itself is controlling under its DO Terms of Approval the configuration of the Air System and is attesting conformity with the design conditions approved for the flight.

Content

38. The procedure should address the following points:

- a. Conformity with approved conditions.
- b. Issue of the MPTF under privilege in the scope of the DO approval.
- c. Authorized signatories.
- d. Interface with the TAA for the flight.

Conformity with approved conditions

39. The procedure should indicate how conformity with approved conditions is made, documented and attested by an authorized person.

Issue of the MPTF under the DO privilege

40. The procedure should describe the process to prepare the MPTF and how compliance with RA 5880 is established before signature of the MPTF.

Authorized signatories

41. The person(s) authorized to sign the MPTF under the privilege in the scope of the DO approval should be identified (name, signature and scope of authority) in the procedure, or in an appropriate document linked to the DOE.

Interface with the TAA for the flight

42. The procedure should include provisions describing the communication with the TAA for compliance with the local requirements which are outside the scope of the flight conditions detailed in RA 5880.

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