European Aviation Safety Agency

GOOD PRACTICES

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Issue 10/09/2012

Coordination between Design and Maintenance

First Installation of a Change to a Product

EASA Good Practices intend to clarify specific items of implementing rules for design organisation approvals. They highlight a particular subject and, as non-binding material, provide additional technical explanations to current standards.
EASA Good Practices are published for information purposes only and must not be regarded as formally adopted Acceptable Means of Compliance (AMC) or Guidance Material (GM).

EASA Good Practices do not introduce new or modified rules and do not constitute any legal obligation or right for the Agency or the organisations.

EASA Good Practices will be withdrawn if the corresponding rulemaking task listed on the inventory of EASA results in new published regulations, AMC or GM.

TABLE OF CONTENTS

***

1 INTRODUCTION

1.1 PURPOSE AND SCOPE

These Good Practices intend to help address the first installation of a change to type design with the assistance of a Maintenance Organisation, when further inspections and tests for demonstration of compliance are required.

They point at subjects to be considered when writing and applying the relevant procedures.

Note: to simplify reading of the document, “Change to a product” is replaced with “STC” in the Chapter 3 - Good Practices.

Same practices could be used for repairs, as relevant.

1.2 REGULATORY REFERENCES AND REQUIREMENTS

EC 216/2008 Article 5.2 (d) and (e)

EC 748/2012, Annex Part 21

EC 2042/2003, Annex I, Part M and Annex II, Part 145

1.3 DEFINITIONS AND ACRONYMS

1.3.1 Organisations

CAMO	Continuing Airworthiness Management Organisation
CVE	Compliance Verification Engineer (DOA function)
DO	Design organisation
DOA	DO approval [issued by EASA]
DOAH	DOA holder
DAS	Design Assurance System (DOA function)
EASA	European Aviation Safety Agency
FTO	Flight Test Organisation (department or sub-contractor of a PtF applicant)
MO	Maintenance organisation
MOA	MO approval [issued under Part 145 or part M, subpart F by NAA’s or EASA]
MOAH	MOA holder
aMOAH	aircraft MOAH
Lead aMOAH	aMOAH who host the aircraft and other work parties
cMOAH	component MOAH
NAA	National Aviation Authority [of EU, or associated, countries]
OEM	Original Equipment Manufacturer (design owner of an approved or new component)
PO	Production organisation
POA	PO approval [issued in accordance with Part 21, by NAAs or EASA]
POAH	POA holder

1.3.2 Certificates

CoA	Certificate of Airworthiness
CRS	Certificate of Release to Service
PtF	Permit to fly
STC	Supplemental Type Certificate

1.3.3 Product, Parts and appliances

Component:	Part or appliance, or ETSO approved article
Replacement component:	Part or appliance not approved within the type certificate, bearing the EPA marking, or a PMA part accepted in the EU (see below, under PMA)
EPA	European Part Approval
BFE	Buyer Furnished Equipment, Component supplied by the STC customer (OEM or other origin)
SFE	Seller Furnished Equipment, Component specified by the STC applicant
PMA	Parts Manufacturer Approval (FAA approved replacement parts, accepted in the EU according to the bilateral agreement with the USA)
Prototype	Component or STC installation, conforming to design data which has not been approved yet, for demonstration of compliance with a certification basis.
Prepositioned	Prototype spare part to support ground and flight tests, then support initial operations or to implement a faster pace of STC installation after it has been approved

1.3.4 Design data status

Draft	Incomplete or unverified data for DOAH design office internal use only, (including design partners and subcontractors).
Pending approval:	Complete and verified type design data which may be released in a controlled manner for production of a prototype.
Approved	Complete and approved type design data which may be released for production of airworthy parts, appliances or modification tasks.

1.4 BACKGROUND

1.4.1 Major change

Only the (S)TC Holder may apply for approval of a major change to type design under part 21, subpart D; all other capable and appropriately approved organisations, (AP)DOA, shall apply for STC under Part 21; ref. 21.A.92 (a).

1.4.2 Minor change

Any natural or legal person may apply for approval of a minor change; ref. 21.A.92 (b).

1.4.3 STC first installation

The first installation of an STC is often required before it is approved, e.g. for development or to demonstrate compliance with the certification basis.
Design Organisation Approval holders (DOAH) may not have access to an aircraft Production Organisation Approval holder (POAH) facility, or may elect not to use such a resource to develop a change.

Thus the first installation may be conducted on an in-service aircraft, with the assistance of an aircraft Maintenance Organisation Approval holder (aMOAH).

1.4.4 Replacement components

An STC may not only install new design components, but also integrate existing or off-the-shelf components, new or used, modified or unmodified, to be installed within a different aircraft configuration or type.

1.4.5 Current issues

As the interface between design and maintenance organisations involves three Parts (Part 21, part M and part 145), and is not so comprehensively addressed in Part 21 and associated AMC and GM as it is between design and production, this leads to some recurring questions:

- How a (AP)DOAH may partner with a MOAH, like with a POAH, to develop a STC (or a minor change) with a first installation on an in-service aircraft?
- To what extent a DOAH may take credit of a MOA to accept a statement of conformity to design data issued by a MOAH?
- Can a component MOAH release a “prototype” modified component with an EASA form 1 for conformity (the word “prototype” exists in part 21, it is absent from part 145)?
- How to ensure that first installation components and aircraft are conforming to the design data and are in condition for safe operation at the time of STC approval, so they may be declared airworthy?
- Are specific procedures required for the MOAH to implement a first STC installation and assist the DOAH in development and certification activities ?
  Will they be ultimately part of the MOA (like for the POA),
  or will they remain under control of the Design Assurance System of the DOAH?

- How the tasks to define the flight conditions required to apply for a Permit to Fly, then to determine whether a test aircraft is safe for flight, will be distributed between design and maintenance?

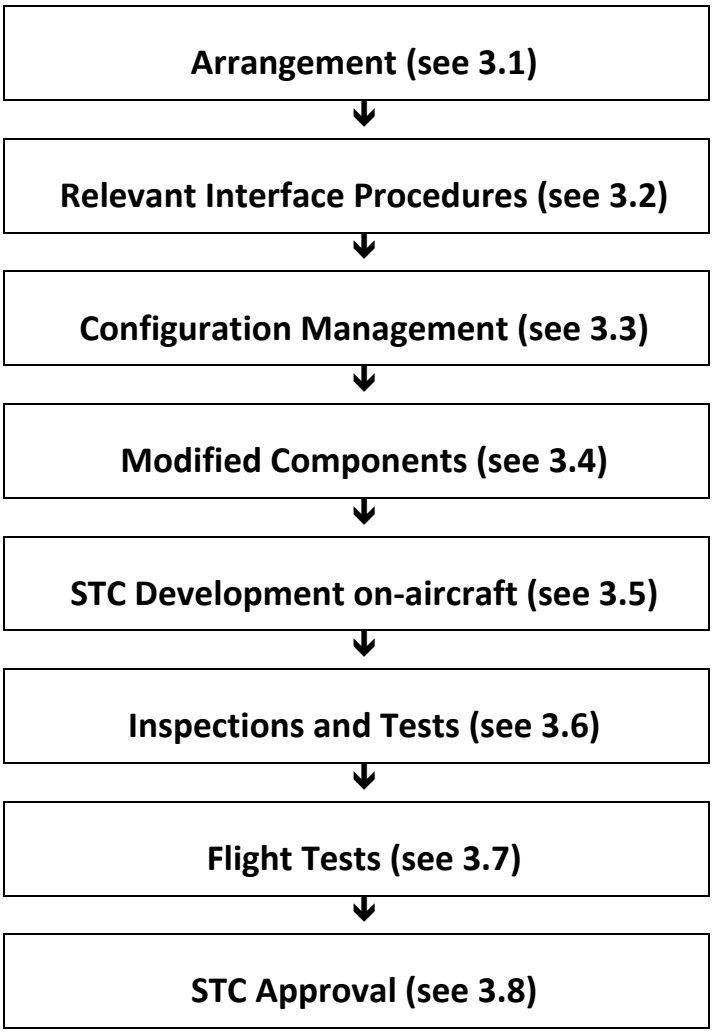
1.4.6 Good practices

Based on current EC 748/2012 and EC 2042/2003, good practices are proposed to help organisations. They are based on the following principles:

- Promote a standard approach as close as possible to the way cooperation between design and production is organised.
- Promote documents and procedures which are trusted, universally known and accepted (Service Bulletin, Form 1, Aircraft Technical Log Book…).
- The first STC installation by a MOAH requires the same MO expertise and resources than for other maintenance tasks, including modification. A DOA is granted to a DOAH for design, not to carry out maintenance tasks.
  A non-approved installer cannot release the prototype to service after STC approval.
  Thus it is a good practise for a DOAH to collaborate with a MOAH for STC development, taking advantage of its competences and approved procedures.
- A new component is no longer under control of the production organisation once it leaves the facility, it is under control of the maintenance organisation as soon as it has been received and accepted.
  The same applies to a serviceable component after it leaves the component maintenance organisation.
- A MOAH may release prototype (modified) components, or tasks on aircraft, for conformity ONLY, in a similar way as a POAH does.
  Tasks and components under MOAH approved control system may be released for service after the STC approval, subject to airworthiness data exchanges with the design organisation and with the aircraft owner or operator or its CAMO.
- An arrangement, or interface document, between the DOAH and the MOAH and specific procedures are required.
  The maintenance procedures to implement a first STC installation and assist the DOAH in development and certification activities are owned by the MOAH and accepted by the DOAH under control of its Design Assurance System.
- An STC may be developed with a third country maintenance organisation for a third country registered aircraft subject to an appropriate working arrangement.

2 TYPICAL FIRST INSTALLATION OF A STC – FLOW CHART

This chart shows the chronological sequence of subjects to be considered for development of an STC and refers to paragraphs in the chapter 3, Good Practices.



3 GOOD PRACTICES

3.1 ARRANGEMENT

3.1.1 Coordination between Design Organisation and other organisations

Reference	*Good Practices*
• 21.A.133; 21.A.165 (c) DOAH collaboration with the POAH to ensure: (a) coordination of design and production, (b) continued airworthiness of the product, part or appliance. • 21.A.239 (c) Acceptability of parts or appliances designed or tasks performed by partners or subcontractors. • 21.A.245 Resources, competences, organisation, DOA access to workshops, production, accommodations and test facilities. • 145.A.47 (a) (c) Production (maintenance) planning management.	a) Stakeholders Provisions defined for the collaboration between DOAH and POAH can be used in different contexts and when there are many more stakeholders, e.g: ▪ cMOAH, ▪ aMOAH, ▪ aircraft owner/operator (or their contracted CAMO), ▪ FTO/Permit to Fly holder, ▪ European National Aviation Authority (NAA) or third country competent authority. b) Complex STC project The coordination of complex projects should be organised around the lead STC applicant (integrator) and the lead aMOAH, to which the aircraft is handed over during its ground time and which controls the main production planning according to Part 145.A.47. Potentially conflicting information and duplicated instructions from different sources must be avoided. c) Tips to address international cooperation ▪ Apply for EASA "Contract for Certification Support for Validation of EASA Certificates and other Third Country Approval Activities" (CSV EASA form 41) or, ▪ Comply with dispositions of: - EU and third country aviation bilateral agreement, or - EASA and competent authority working arrangement, or - ICAO framework, as a minimum requirement. ▪ As a rule for an EASA STC approval, no interference from a third country authority on the certification basis is accepted.

3.1.2 Scope and Responsibilities

Reference	*Good Practices*
• 21.A.133 (c) and AMC No 2 to 21.A.133 (b) & (c) **Model of arrangement** between DOAH and POAH.	The published model of arrangement between DOAH and POAH may be adjusted to component modification and to first installation of an STC on aircraft. Subjects to be considered to draft the arrangement: a) Bilateral or multilateral arrangement. b) Scope: - STC summarised description and Scope of Work, - Breakdown of responsibilities and tasks. c) List of DOAH responsibilities: 1. STC application and demonstrations of compliance, 2. Controlled and timely release of design data, initial, amendments, deviations and concessions, 3. Authorisation (or not), for local manufacturing, minor variation to design data, equivalent parts, their associated conditions and limitations, 4. Authorisation (or not) for direct delivery, and associated conditions, 5. Acceptance criteria for documents and tasks accomplished by the MOAH, 6. Test flight conditions pertaining to design, 7. Visible statements of design data approval status. d) List of MOAH responsibilities: 1. Assist the design organisation prior to type certification in demonstrating compliance with certification basis, 2. Coordinate modification and other maintenance tasks, 3. Report any discrepancy between design data and prototype, including unintentional deviation to design data, implement design data amendments, record concessions, 4. Give free access to and assist EASA and DOAH inspectors to test articles and records, to witness tests, 5. Receive, accept and control prototype components, 6. Assist DOAH/CAMO to define PtF flight conditions, 7. State conformity to design data for test articles, test equipment/tools, test reports, 8. State conformity of aircraft to design data and applicable part of approved flight conditions before test or flight under PtF (aMOAH), 9. Assist DOAH in dealing with continuing airworthiness matters and for required actions.

Reference	*Good Practices*
	e) List of DOAH and MOAH joint responsibilities: 1. List of agreed relevant interface procedures, 2. Data flow and form, record keeping provisions, 3. Deliverables, planning and steps, reviews, 4. DO Independent System Monitoring (ISM) and MO Quality Assurance (QA) provisions; Quality Plan if necessary. f) Additional responsibilities and communication schemes with other stakeholders or for international cooperation, as required.

3.2 RELEVANT INTERFACE PROCEDURES

3.2.1 Design Assurance System

Reference	*Good Practices*
• 21.A.239 (a) Design assurance system (DAS). • 21.A.239 (b) and AMC The DOAH handbook states how **compliance verification** required by 21.A.239 b (CVE) is accomplished and defines the scope of design activities involved. • 21.A.239 (c) and GM **Acceptability** of the parts or appliances designed or the tasks performed by partners or subcontractors according to methods which are the subject of **written procedures.** • 21.A.243 (b) DOA handbook or procedures data on part or appliance or any change designed by partner or subcontractor.s • 21.A.247 and GM Changes in DAS.	<u>a) Scope</u> ▪ integration of any new, approved or modified component design data supplied by an OEM; ▪ any DO related task not performed by DOAH staff. <u>b) Stakeholders</u> The MOAH, its first level of "subcontractors" and sub-tiers MO must be identified in detail (in the DOAH Handbook, or in a cross referenced data base). Identification consists in name and contact, reference to legal liaison, even if indirect, applicable arrangement (SFE or BFE status clearly identified). <u>c) Subcontracted work</u> The DOAH technical specification, including certification specification and processes, and the Scope of Work (SoW) must be identified. <u>d) Assessment and surveillance of the MOAH</u> The DOAH checks that the MO fits with specific requirements for the STC development by any appropriate combination of the following: ▪ checking the MOA Terms of Approval, (the Human resources and competences, facilities, tools and test equipment, procedures as necessary), ▪ conducting in-depth audit and controlling directly the implementation of all tasks (or those identified as critical), ▪ assessing the third country approval or authorisation of a third country MO, when applicable.

Reference	*Good Practices*
• 21.A.265 Use of DOA Handbook and its procedures as a basic working document throughout the organisation.	e) Procedures to be identified 1. **DOAH transfer of data to MOAH** See § 3.2.3; § 3.4.1.c); § 3.5.3. 2. **MOAH work coordination** See § 3.5.1. 3. **MOAH management of non-approved components** See § 3.4.1 g); § 3.5.2; § 3.8 c); § 3.8 d). 4. **MOAH discrepancies reporting to DOAH**. See § 3.4.1 e); § 3.5.3. 5. **MOAH statements of conformity to design data** See § 3.4.2; § 3.5.4; § 3.5.5; § 3.6.1. 6. **DOAH acceptance of components and tasks** See § 3.6.1. 7. **aMOAH management of aircraft under permit to fly** See § 3.5.5 d); § 3.5.5. e); § 3.7 b); § 3.7 e). **8. DOAH control of MOAH** See § 3.2.1 d). 9. **DO Independent System Monitoring and MO Quality Assurance interface** See § 3.1.2 e) 4. 10. **Management of significant organisation changes** affecting the STC project. 11. **MOAH control of sub-tiers** See § 3.2.1 b).

3.2.2 Maintenance Procedures

Reference	*Good Practices*
• 145.A.65 b 4 MOAH procedures to ensure good maintenance practices such that aircraft and components may be released to service in accordance with 145.A.50 after STC has been approved.	MOAH: ▪ identifies those existing MOA approved procedures that will support the STC development; ▪ creates the specific procedures that may be necessary, as a complement, to support the STC development, see § 3.2.1. (e). DOAH: ▪ may take into account existing MOA approved procedures; ▪ must accept new specific procedures, see § 3.2.1. (e). National Aviation Authority (NAA): ▪ involved only in the MOA components/aircraft release processes and in the surveillance of the implementation of applicable Maintenance Organisation Exposition (MOE) approved normal procedures; ▪ the other MO procedures dedicated to the STC development are under the control of the DOAH, ultimately overseen by the Agency.

3.2.3 Applicable Type Design data for first installation

Reference	*Good Practices*
• 21.A.4 and AMC Transfer of design data, eligibility and approval status from the DOAH to production organisations. • 21.A.263 (c) 3 DOAH Privilege to issue information or instructions. • 145.A.45 (a) Maintenance data management. • 145.A.45 (b) 3 Applicable maintenance data. Instructions from the DOAH or airworthiness data mandated by the competent authority. • 145.A.45 (b) 4 Applicable standard(s). • 145.A.45 (c) MOAH discrepancy reporting. • 145.A.45 (d) Modification of instructions exclusively by the DOAH, or under its control.	DOAH The DOAH drafts, verifies the design data (CVE), controls and releases each instruction or information document: ▪ for the cMOAH to modify and test a component, ▪ to the aMOAH for installation and test tasks on aircraft. The Service Bulletin (ATA 100/2200 standard template baseline) is recommended. Any instruction must contain the following statement: "*The technical content of this document is approved under the authority of DOA ref. EASA.21J.[XXX].* ***This approval is limited to demonstration of compliance purposes only, pending the approval of EASA STC (or minor change) Project Nr. XXX".*** Note: "Project Nr XXX" for a minor change is the unique identification number given by the DOAH, that will remain after approval. No change to the applicable data is accepted without DOAH consent and control, since the component or aircraft configuration must conform to design data for inspection or test to demonstrate compliance with the certification basis. The DOAH reviews the discrepancies, issues amended design data or justifies and records rejection. Amended design data is classified (21.A.91), verified (CVE), and released in a controlled manner. MOAH The MOAH holds, manages, segregates, keeps up-to date and records all data related to the STC first component modification (cMOAH) and to the STC first installation (aMOAH).

3.3 CONFIGURATION MANAGEMENT

Reference	*Good Practices*
• 21.A.93 and 21.A.113 (b) STC description and identification. • 21.A.31 Type design identification and control. • 21.A.33 Test instructions control; Test specimen and equipment conformity. • 21.A.35 Flight test instructions control; Flight test specimen and equipment conformity. • 21.A.708 Flight conditions control; Test aircraft configuration control. • 21.A.165 c; GM Nr 1 to 21.A.165 c; GM Nr 2 to 21.A.165 c; Conformity and condition for safe operation requirements prior to submitting modified aircraft Statements of Conformity, or parts and appliances EASA Form 1. • 21.A.727 Obligations of the holder of a permit to fly.	a) Configuration input The DOAH needs the pre-modification configuration status prior to design and type investigation. The aircraft owner/operator (or its CAMO) is responsible to provide the DOAH with the pre-modification configuration data of the components and aircraft. The MOAH assists the DOAH to carry-out physical assurance checks of the configuration, as necessary. *Reminder:* Approval of an EASA STC requires that the type, and any previous interfering change, have been approved or validated by EASA. Pre-modification configurations resulting from concurrent STC development must be coordinated for precise identification. b) Initial STC design data see § 3.2.3. c) Amendments to initial design data See § 3.2.3; § 3.4.1 e); § 3.5.3. Deviations and concessions applicable to an individual component or aircraft are identified and managed separately from perfecting and variation amendments to the type. Design data amendments are recorded in the configuration control data base. The MOAH records any amendment to design data embodied in a component or in the aircraft. d) Test article configuration The MOAH states conformity to design data and preserves the test configuration until testing has been completed. See § 3.6.1 b). e) Flight Test The DOAH is accountable for the STC design configuration and for the flight conditions associated to design. See § 3.7. a) for distribution of other responsibilities. f) STC approved configuration Following issue of an STC, the aircraft and all components must conform to the STC approved design data final configuration.

3.4 COMPONENTS

3.4.1 Coordination with Production, EPA markings, acceptance of components

Reference	*Good Practices*
• 21.A.4 Coordination between design and production. • 21.A.109 (b); 21.A.118A (b; 21.A.804 (a) 3; European Part Approval (EPA) markings. • 145.A.25 (d) Secure storage and conditions to segregate components. • 145.A.42 (a) Acceptance, classification, segregation of components. • 145.A.42 (b) Airworthiness, eligibility conditions. • 145.A.42 (c) Conditions for local fabrication. • EU-US BASA, Annex I, § 3.5.7 PMA exemption conditions for EPA markings.	<u>a) New components</u> They are manufactured and released by PO according to part 21 subpart G or F requirements. <u>b) Local fabrication</u> The MOAH may fabricate only a restricted range of parts in conformity with DOAH design data and under strict DOAH configuration control, subject to its Terms of Approval and in accordance with Part 145 rules. <u>c) Modified components</u> The cMOAH may modify components in conformity with DOAH design data and under strict DOAH configuration control, subject to its Terms of Approval and in accordance with Part 145 rules. <u>d) cMOAH Task sign-off</u> see § 3.5.4, which is applicable also for components. <u>e) Discrepancy and improvements</u> see § 3.5.3, which is applicable also for components. <u>f) European Part Approval markings</u> Any new or modified component (except PMA) produced in conformity to design data not belonging to the type-certificate holder of the changed aircraft shall be marked with letters EPA. (Note: TCH components to be re-used with new or different limitations require a new P/N and EPA markings) <u>g) Storage:</u> Non-approved components must be quarantined and stored to preserve their condition for safe operation. <u>h) Airworthiness, eligibility</u> The POAH and cMOAH control the components status. see § 3.8.1. (b).

3.4.2 Release of prototype components for test

Reference	*Good Practices*
• 21.A.163 (c); AMC No 2 to A.163 (c;) Authorised Release Certificate (ARC) issued by POA. • 21.A.165 (c); GM No 3 to 21.A.165 (c); GM No 4 to 21.A.165 (c); Conformity and condition for safe operation. • 145.A.50 (a) Form 1 issued at the completion of any maintenance on a component whilst off the aircraft, ref. Appendix II to Annex I (Part-M). • 145.A.50 (d) When the MOAH maintains a component for its own use, an EASA Form 1 may not be necessary depending upon the release procedures defined in the exposition.	a) Release of new components The POAH releases them "in conformity with non-approved design data" according to part 21 published requirements. b) Modified components (new or used) The cMOAH records modification on a work order and leaves a blank space for further recording of the data approval. In common with the POAH release for a new component , the modified component may be released with an EASA Form 1, "in conformity with non-approved design data" Should an Airworthiness Directive be applicable to the pre-modified part or appliance, the component must be compliant or its airworthiness status must be reconsidered and approved in the frame of the STC. See § 3.4.3, how to complete the EASA Form 1. c) Local fabrication Parts fabricated, or modified, in the MOAH facility may be released with a Statement of Conformity for immediate installation. As parts fabricated locally cannot be stored, an EASA Form 1 may not be necessary.

3.4.3 How to complete the Form 1 of a modified component, before STC Approval

Authorised Release Certificate EASA Form 1 - Appendix II to part M (for reference, Appendix I to Part 21).

Good Practices:

Complete the EASA Form 1 as follows after modifying a component prior to STC approval:

- for test,
- to support flight test, as a spare part,
- to support operations as soon as the STC has been approved, as a spare part,
- to be pre-positioned to start series modification immediately after STC approval.

Status/Work, block 11:

"Modified"

Block 14a:

Tick the box Part 145.A. 50 release to service block;

Remarks, block 12:

Subject to a DOAH and MOAH agreed procedure (see § 3.2.1.e - Procedure Nr 3) to control the configuration, condition for safe operation and airworthiness,
write the reference to the original P/N and previous release under this P/N and
add the following sentence:

"Not eligible for installation on in-service type-certificated aircraft, conforms to design data pending approval under EASA STC (or minor change) project Nr {xxx}.

3.5 STC DEVELOPMENT ON-AIRCRAFT

3.5.1 Planning of Maintenance Tasks

Reference	*Good Practices*
• 145A.47 - Production planning system, - Human limitations, - Handover of tasks.	a) Maintenance coordination The (lead) aMOAH coordinates the STC installation tasks with the other maintenance and repair tasks, to control test configuration. b) Development and certification coordination The DOAH and aMOAH coordinate STC demonstration of compliance and installation plans.

3.5.2 Management of Prototype Components

Reference	*Good Practices*
• 145.A.42 (a), (b), (c) - Acceptance, classification, quarantine, - Eligibility, - Local fabrication.	The aMOAH receives, accepts, classifies, tracks and quarantines all prototype components. It ensures that they are kept in condition for safe operation and can be declared airworthy upon approval of the STC.

3.5.3 Discrepancies/amendments to Initial Design Data

Reference	*Good Practices*
• 145.A.45 (c) Report discrepancies and inaccurate, incomplete or ambiguous instruction. • 145.A.45 (d) Engineering design of modification may not be modified by the aMOAH. • 145.A.45 (g) Control of maintenance data to keep it up to date.	a) Report and answer The **aMOAH** reports in writing all discrepancies with the design data to the DOAH. No variation to the design data is authorised without DOAH consent. The **DOAH** assesses the discrepancies and responds. see § 3.3. (c). b) Implementation The **aMOAH** installs the amendments to initial STC type design data with tasks sign-offs and updates the aircraft configuration (STC) record list. d) Local fabrication see § 3.4.1 (b) and § 3.4.2. (c).

3.5.4 Tasks Sign-off

Reference	*Good Practices*
• 21.A.33 (b) Conformity of test specimen and test equipment to test plan. • 21.A.708 (b) (a) Flight conditions include the configuration(s) for which the permit to fly is requested. • 145.A.65 (b), AMC 145.A.65 b (3) 3 & 4 Tasks sign-off and Design Configuration Control.	Every task shall be signed off by "authorised personnel" to: ▪ Prevent omissions, ▪ Track every STC development elementary task, ▪ **Support DOA quality and conformity requirements** (for demonstration of compliance with the certification basis), ▪ Support Permit to Fly application which requires control of aircraft conformity with flight conditions. **Note:** "Authorised personnel" are not necessarily "certifying staff".

3.5.5 Certification of Maintenance

Reference	*Good Practices*
• 145.A.50 (a) Certificate of release to service (CRS), requirement, conditions. • 145.A.50 (b) and AMC CRS issued before flight at the completion of any maintenance (including modification). • 145.A.50 (c) Non-compliance with release to service requirements, operator information. • 145.A.50 (e) Derogation to paragraph (a), when the aMOAH is unable to complete all maintenance ordered (including modification not yet approved). • 145.A.50 (f) principle and limitations to temporarily fit a component without a valid ARC, (which may be a reference in the comparable context of STC development).	a) Aircraft status The aircraft is **handed over** to the (lead) aMOAH and its Certificate of Airworthiness **(CoA)** is **invalid** as soon as the installation of the prototype STC has started. b) Conformity statements The **aMoAH** states **conformity** of the aircraft to the design data configuration required by the DOAH for tests. c) Permit to Fly Holder Should flight testing be required, the **holder of the PtF** is **responsible** for ensuring that all required maintenance has been carried out before flight and that the approved flight conditions have been satisfied and are maintained. d) Information to the operator The **operator** (or FTO), which will fly the aircraft for test must be **informed** that the aircraft can fly only under a permit to fly and associated flight conditions, as the modification is not yet approved. e) aMOAH declaration before flight The **aMoAH** states **conformity** of the aircraft with the configuration and maintenance part of approved the flight conditions on the Technical Log Book (or equivalent), including the associated **limitations**: ***"Flight in-service not allowed as STC project Nr xxx is not yet approved.*** ***Refer to approved flight conditions reference Nr yyy to fly only under Permit to Fly" Nr zzz.*** f) Aircraft airworthiness data The aircraft **owner**/operator or its CAMO **input** is required for airworthiness data not relevant to the STC and to ensure compliance with all the approved flight conditions.

3.6 INSPECTIONS AND TESTS

3.6.1 Conformity Requirements

Reference	*Good Practices*
• 21.A.33 Conformity statements for STC installation, test equipment, test procedure and results, including flight testing.	a) Test Plan The **DOAH** issues inspection and test plans, (which are part of the design data). b) Test and report The **MOAH** ▪ prepares the component or aircraft and the test equipment for test configuration, ▪ states conformity to design data of the component or aircraft installation tasks and test equipment to support 21.A.33 requirements for calibration and conformity; insures that the test configuration is not altered between the issuance of the statement of conformity and the inspection or test, ▪ performs the ordered certification tests, ▪ provides test results and states the conformity of the test tasks to the test plan. c) Compliance demonstration The **DOAH is responsible** to determine the final conformity to 21.A.33 requirements and to demonstrate compliance with the certification basis, based on "First Article Inspections", test witnessing, CVE verification of reports...

3.6.2 Inspections and Witnessing

Reference	*Good Practices*
• 21.A.257 Access and witnessing provisions, including partners and subcontractors facilities, even in third countries.	The Agency and DOAH must have unrestricted access for inspection and witnessing: ▪ off-aircraft, (cMOAH), ▪ on-aircraft, on ground (aMOAH), ▪ on-aircraft in flight, subject to approved flight conditions, see § 3.7.1. (a).

3.7 FLIGHT TESTS

Reference	*Good Practices*
• M.A.902 (b) 5 Validity of a CoA. • Part 21, subpart P Permit to fly. • 21.A.33 Conformity statements for STC installation and tests. • 21.A.708, Flight conditions include: (a) the configuration(s) for which the permit to fly is requested; (b) any condition or restriction necessary for safe operation of the aircraft, including: 4. (…) technical conditions to be met; 6. the specific continuing airworthiness arrangements including maintenance instructions and regime under which they will be performed; (c) the substantiation that the aircraft is capable of safe flight under the conditions or restrictions of subparagraph (b); (d) the method used for the control of the aircraft configuration, in order to remain within the established conditions.	a) General ▪ The MOAH is accountable for both the embodiment of the STC configuration and the tasks ordered by the owner/operator (or its CAMO), ▪ The DOAH is accountable for the STC design configuration and for the flight conditions associated to design, ▪ The Aircraft owner/operator (or its CAMO) is accountable for the flight conditions not relevant to design and for the overall configuration to ensure safe flight, ▪ The PtF holder is responsible for ensuring, according to 21.A.727, that all the conditions and restrictions associated with the PtF are satisfied and that the aircraft will conform to the flight conditions. b) Test Plan The **DOAH** issues the test plan/programme, maintenance data to maintain the prototype and operations instructions to operate and fly it. c) Preparation The **aMOAH** prepares the aircraft and test equipment for test configuration, as defined by the test plan and approved flight conditions. The aircraft CoA is not valid until the STC has been approved. The flight conditions and PtF are managed according to part 21, subpart P. d) Inspections and witnessing See § 3.6.2. e) Flight The aircraft is handed over to the FTO and the test flight is carried out according to a flight order under the responsibility of the holder of the Permit to Fly. The test crew debriefs, including written records: ▪ DOAH about test conformity and results, ▪ aMOAH about required post flight maintenance. ☞

Reference	*Good Practices*
	f) Post flight maintenance The aircraft is handed back to the **aMOAH** which removes measurement and safety equipment to return the aircraft either to the STC design data configuration or to an in-service airworthy configuration. Should the aMOAH have to return the aircraft to the pre-modification status (in case of experiment, aircraft leased for STC partial development…) DOAH design data is required, which will have to be approved prior to release to service.

3.8 STC APPROVAL

Reference	*Good Practices*
• 21.A.131 and GM - Definition of applicable design data. - Status of design data, before and after the STC has been issued. • Part 21 appendix I § 5 block 11 iii and block 12	a) Statement of Approved Design Data The **DOAH**: ▪ checks and states that the sum of the initial STC design data and all design data amendments embodied into the prototype is identical to the approved STC design data configuration, (which may be reproduced later on other eligible aircraft), ▪ issues a statement to POAH, cMOAH and aMOAH to certify that the design data has been approved. It is recommended to revise the modification instructions so that all amendments to the initial type design data are compiled and limitations are removed: *"The technical content of this document is approved under the authority of DOA ref. EASA.21J.[XXX].* ~~***This approval is limited to demonstration of compliance purposes only, pending the approval of EASA STC (or minor change) Project Nr. XXX".***~~ b) Recertification of new prototype components The **POAH** recertifies new components for design data approval as instructed in part 21, appendix I. c) Recertification of modified prototype components The **cMOAH** recertifies modified components for design data approval. The following statement must be entered in Block 12 ***"This document certifies the approval of the modification {insert initial release EASA Form 1 No and date} in conformity with design data, approved under EASA STC (or minor change) project Nr {xxx}".*** Components do not have to be returned to the cMOAH facility for inspection as the aMOAH is responsible for their condition for safe operation. The cMOAH completes the work order to record design data approval.

Reference	*Good Practices*
	d) Components and aircraft release to service The **aMOAH** verifies conformity of the prototype components and aircraft final configuration to the approved design data prior to release to service. They must be in a condition for safe operation and airworthy (for instance, time limited components must not have reached an AD or other limit…). It completes the work order to record design data approval. Following airworthiness verification and inspection, prepositioned components shall be declared airworthy and transferred from quarantine storage to spare parts storage. Statement of design data approval and all issues of Form 1 and aircraft technical log book shall be kept, copies provided to the aircraft owner/operator. After STC installation, the aircraft including installed STC components, is declared airworthy. The aircraft at this stage **may recover** its **CoA.** ***