



EUROPEAN AVIATION SAFETY AGENCY
AGENCE EUROPÉENNE DE LA SÉCURITÉ AÉRIENNE
EUROPÄISCHE AGENTUR FÜR FLUGSICHERHEIT

10TH
ANNIVERSARY

Part 21
Design Organisation Approval
(DOA)
Implementation Workshop
Industry

27-28 November 2012
HALL 01/MARITIM Conference Room
MARITIM HOTEL KÖLN
Köln, Germany

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Part 21 DOA Implementation Workshop (Industry)

Best Practices DO-145 implementation

One example

Francesco Maria CARIDEI – EASA DOATL

Alberto GIORDA – Meridiana Maint. HoOoA

28/11/2012

27-28 November 2012
HALL 01/MARITIM Conference Room
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Purpose

- To show some of implemented procedures.
- To show how a small-medium sized design organisation could take advantage from the published Good Practices.



Company Presentation



Sized about 350 people mostly dedicated to maintenance activities of the airlines Meridiana and Eurofly.



Following approval held:

- ▶ Part 145 (MOA) Approval ref. **"IT.145.0339"**,
- ▶ Part M Subpart G (CAMO) Approval ref. **"IT.MG.1063"**,
- ▶ Part 21 Subpart J (DOA) Approval ref. **"EASA.21J.470"** since October 2011.



Company Presentation (cont.)

Maintenance Approval IT.145.0339

Airframe

Aircraft Type Ratings	STATIONS					
	CAG	FLR	MX	OLB	VCE	VRN
Airbus A318/A319/A320/A321 (CFM56)	•	•	•	▲		•
Airbus A319/A320/A321 (IAE V2500)	•	•	•	▲	•	•
Airbus A330 (PW 4100)			•			•
BAe 146/RJ (Honeywell ALF500 Series)		•				
Boeing 737-300/400/500 (CFM56)	◊					
MD-80 Series (PW JT8D)	•			▲	•	•
Boeing 717-200 (RRD BR715)				▲	•	

- ◊ Up to W-Check (excluded)
- Up to A-Check (excluded)
- ▲ Base Maintenance



Workshop

Component Type Rating	Description
C1	Conditioning & Pressurization
C2	Autoflight
C3	Communication & Navigation
C4	Doors & Hatches
C5	Electrical Power
C6	Equipment
C7	Engine - APU
C8	Flight Controls
C9	Fuel - Airframe
C12	Hydraulic
C13	Instruments
C14	Landing Gear
C15	Oxygen
C17	Pneumatic
C18	Prot. Ice / Rain / Fire
C20	Structural

Specialized Services	
Non Destructive Testing	Eddy Current Magnetic Particles Penetrant Liquid Ultrasonic Radiografic



Company Presentation (cont.)

Design Organisation Approval **EASA.21J.470**

- ▶ Categories: **Large Aircraft**
- ▶ Scope:



Cabin Interiors and related structures and systems



Structures



Company Presentation (cont.)

Design Organisation Approval **EASA.21J.470**

➤ Scope (cont.):



Installation of avionics equipment and associated systems

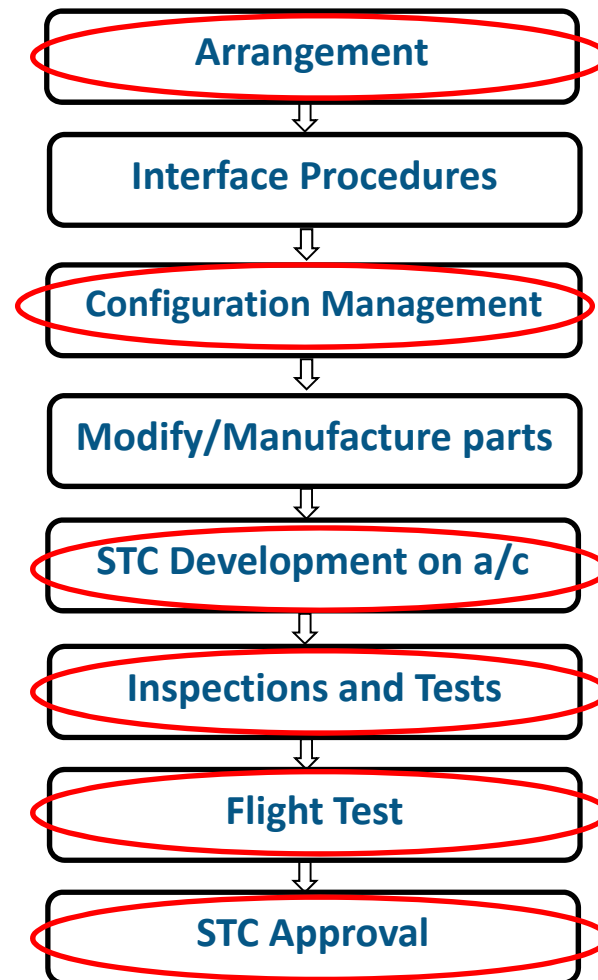


Electrical, Hydro-mechanical and Environmental systems



Good Practices vs. Handbook

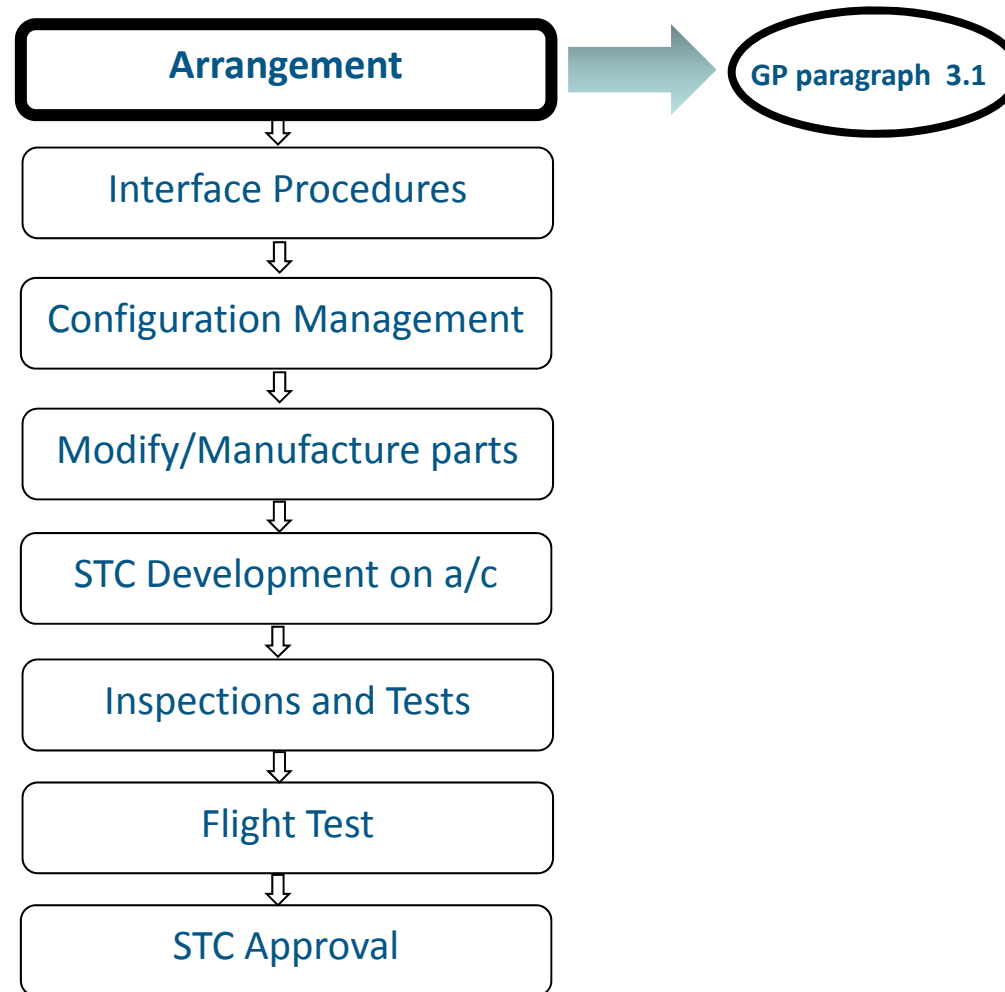
Typical First installation of an STC:
(Ref. EASA_S21_GP001 paragraph 2)





Good Practices vs. Handbook

Typical First installation of an STC:
(Ref. EASA_S21_GP001 paragraph 2)





Meridiana Maintenance Good Practice Endorsement

Arrangement



Meridiana

STATEMENT OF UNDERTAKING BY MAINTENANCE MANAGER

I, the undersigned, as Maintenance Manager of Meridiana Maintenance Part 146 Organization, accept my roles and responsibilities as defined in the Design Organization Handbook sections 12.3 and Chap 14 for flight testing, including related Processes, Form sheets and Work-instructions and as applicable.

I agree to comply with contents identified in above mentioned paragraph and I will also ensure compliance with conditions of Part 21.245 (a) here after:

The staff in all technical departments are of sufficient numbers and experience and have been given appropriate authority to be able to discharge their allocated responsibilities and that these, together with the accommodation, facilities and equipment are adequate to enable the staff to achieve the airworthiness and environmental protection objectives for the product.

Furthermore I acknowledge the authority and responsibility of the Head of Design Organization to ensure all activities relevant to the Design Organization are performed by Meridiana Maintenance MRO in accordance with provision of Part 21 Subpart J and in case of conflict I will accept his arbitration as binding.

For and on behalf of
Meridiana Maintenance Part 146 Approved Organization

Signed
Paolo Petreschi
Maintenance Manager

Dated 28/06/2012

Internal MRO

External MRO

Statement of Undertaking

Meridiana		DO-SC Arrangement	
1 Statement of Undertaking by Head of Design Organization (HDO) and Subcontractor Responsible Manager			
[MH DO EASA 2114/R0] Address 1: Meridiana Maintenance S.p.A. Centro Direzionale "Costa Smeralda" Airport 07030 Olbia (OT) Italy Telephone: (+39) 0789 529300 Fax: (+39) 0789 529337		[SC] Address 1: Address 2:	
MH DO holds EASA Design Organisation Approval for EASA 2114/R0 Design Organisation Handbook, Issue 4 or later, details its processes and procedures.			
For the avoidance of doubt, MH DO shall hold the full responsibility for the type investigation and all supporting documents under its EASA approval.			
The scope of work of [SC] complements the scope of work of MH DO, within the framework of their Organization, [SC] staff is qualified, trained and capable for the scope of work.			
The DO/SC Arrangement documents the collaboration between MH DO and [SC] when signature rights and obligations (regarding Design and Quality Assurance) have been accepted.			
When a deficiency in compliance with the provisions laid down in this DO/SC Arrangement is identified, MH DO will request the relevant signature authorizations pending the implementation of effective corrective actions by [SC].			
By signing this statement, I confirm that I have verified that the [SC] holds the required competences, means, resources and authority necessary to handle its obligations. The procedures, methods and tools specified and/or referred to in this document, are binding instructions for all MH DO Design Organisation personnel involved in the Design, Certification and Continued Airworthiness of the data provided by [SC] for MH DO projects covered by this document.		By signing this statement, I acknowledge that the [SC] holds and will continue to hold the required competences, means, resources and authority necessary to handle its obligations. The procedures, methods and tools specified and/or referred to in this document, are binding instructions for all [SC] personnel involved in the Design, Certification and Continued Airworthiness of the data provided for the DO projects covered by this document.	
Sign: _____ Date: _____	Roberto Manzi Head of Design Organisation [MH DO EASA 2114/R0]		Sign: _____ Date: _____ SC Rep [SC]
Doc. Ref.: DSA-IGM/____ Issue: Draft Date: 29.05.2011			Page 2 of 4

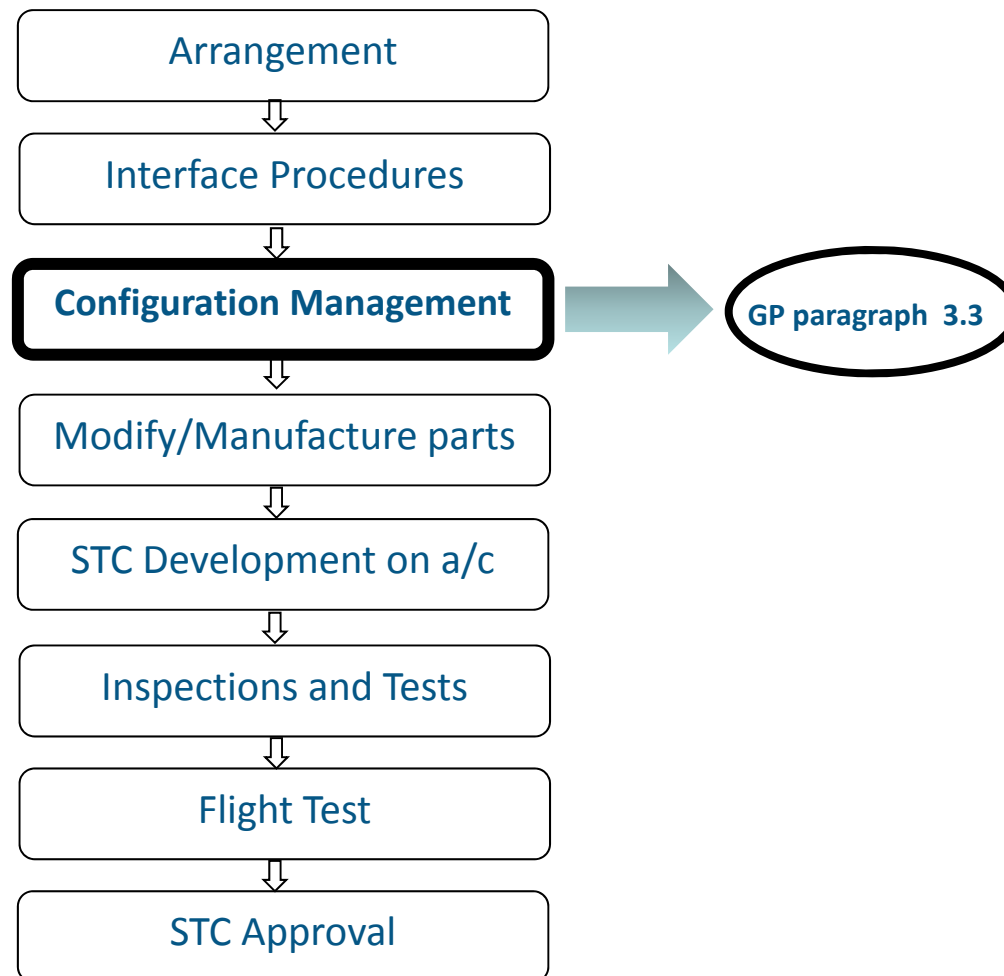
DO-MO Arrangement

In both cases the Handbook procedure describing share of responsibilities as per GP001 Para. 3.1.1



Good Practices vs. Handbook

Typical First installation of an STC:
(Ref. EASA_S21_GP001 para. 2)





Meridiana Maintenance Good Practice Endorsement

Configuration Management



Pre mod. configuration

- MOE incoming conditions Procedure
- Interface with CAMO for a/c Status



Modification development

- DO-MO interface procedures
- Test configuration status accomplishment



Ground/Flight Test

- Ground Test Procedure Accomplishment by MO
- CVE (EASA) witnessing
- Feedback to MO and DO after test for discrepancies
- Test again until final configuration accomplishment



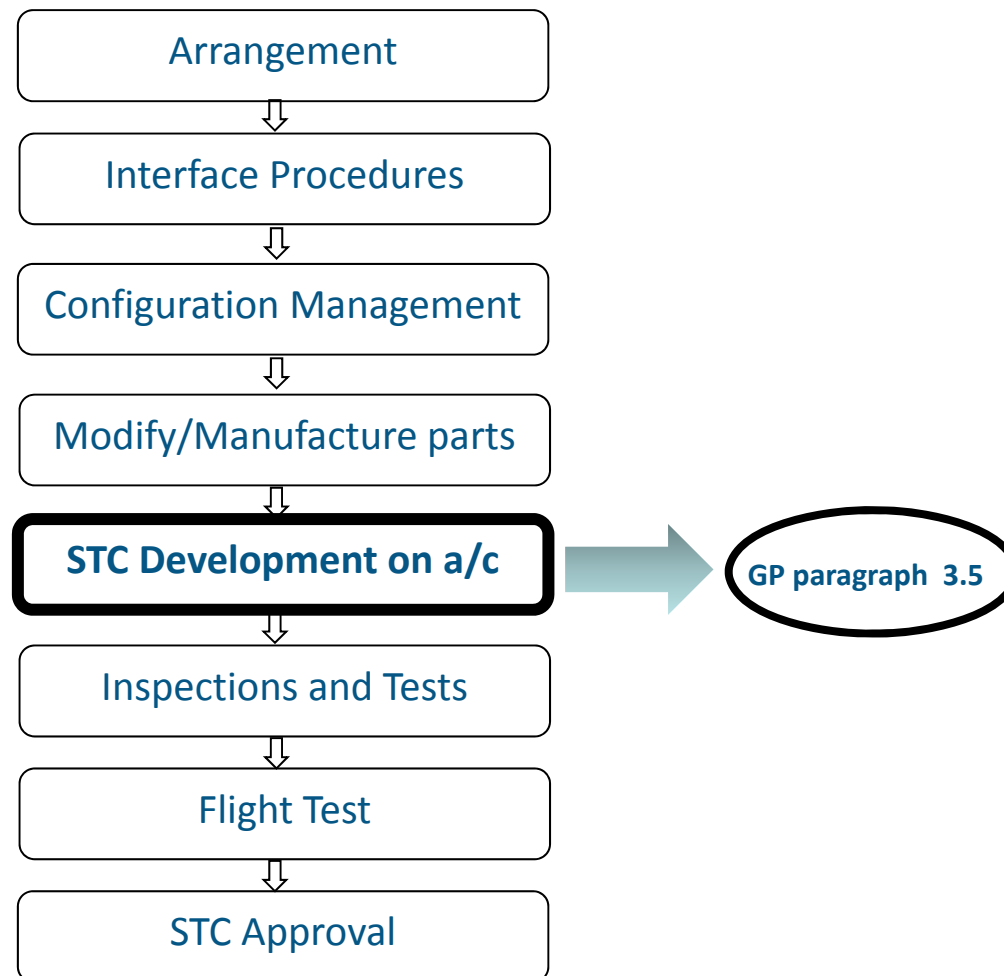
A/C Return to Service

- Modification Approval by DO (or EASA)
- Handover to CAMO of approved data
- A/C Certificate of Release to Service by MO



Good Practices vs. Handbook

Typical First installation of an STC: (Ref. EASA_S21_GP001 para. 2)





Meridiana Maintenance Good Practice Endorsement

Modification Development

Example of Discrepancy Report managed as per HB Procedure

Maintenance
Meridiana
Design Organization 21J.470

DISCREPANCY REPORT R01

A/C MSN: 49808 document N° MM_MB11M26A-0001

Discrepancy Description / Analysis:

MM_MB11M26A-0001 R00 par. H.2 requires to perform AAE Ltd. Cargo Fire Detection and Suppression System test I.A.W. AAE Ltd. AMM Temporary Revision DC-9-AMM-TR-3-1 (14 NOV 2011).

During the accomplishment of above tests the following discrepancies have raised.

ATA 26-16-00 PB 500 (code 17)
Cargo Compartment Smoke Detection – Adjustment/Test

- A "CARGO SMOKE legend on the top portion of the EOAP" is not present in our airplanes. Only two switchlight are present on left side of main Instrument Panel. In the steps where CARGO SMOKE legend is necessary to correct.
- In some steps is erroneously reported that CARGO FIRE switchlight stay ON instead go OFF. In these steps is necessary to correct it.
- In some steps are erroneously reported that "All other LEDs and lamp go off" without reporting that the "PIT A/B LOOPS LEDs stay ON". In these steps is necessary to ADD the note.

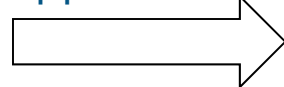
Under reported the details with the correct test result. PLS verify as reported.

- Step 2.B.9.b. – Correct is: The SMK DET LOOP and CARGO FIRE switchlight on Left Main Instrument Panel will come ON.
- Step 2.E.4.b. – Correct is: The SMK DET LOOP and CARGO FIRE switchlight on Left Main Instrument Panel will come ON.
- Step 2.F.2.b. – Correct is: On Left Main Instrument Panel the SMK DET LOOP switchlight stay ON and CARGO FIRE switchlight go OFF.
- Step 2.K.4.b – Correct is: The SMK DET LOOP and CARGO FIRE switchlight on Left Main Instrument Panel will come ON.
- Step 2.L.2.(b) – Correct is: On Left Main Instrument Panel the SMK DET LOOP switchlight stay ON and CARGO FIRE switchlight go OFF.
- After step 2.L.3. – Add: Press and release either MASTER CAUTION lamp. Observe both MASTER CAUTION lamps goes OFF.

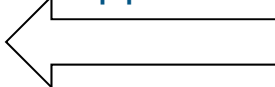
ATA 26-16-00 PB 500 (code 17)
Smoke Test

- Step 3.B.2.(i),(2) – Correct is: The SMK DET LOOP and CARGO FIRE switchlight on Left Main Instrument Panel will come ON.

Deviation application



Deviation approval



Maintenance
Meridiana
Approved Design Organization
EASA 21J.470

UNINTENTIONAL DEVIATION ACCEPTANCE CERTIFICATE

Certificate no.
MM_UDC-XXXXXX-XXXXRXX

1.1 Reporting Organisation Name:	1.2 Date (YYYY)	1.3 Internal Ref. no.
Approval Ref:		
1.4 Name of submitter	1.5 Telephone no.	1.6 E-mail address

2.1 Subject

2.2 Reasons for Revision

2.3 Aircraft Information

MD-80 Model: _____ FN: _____ SN: _____
A320 Family Model: _____ FN: _____ SN: _____
A330 Model: _____ FN: _____ SN: _____

2.4 Part Information

Part Description: _____
Part Number affected: _____
Serial Number affected: _____

2.5 Engineering Order Reference

2.6 Description of Deviation

2.7 Type of Deviation

Material Type Details: _____

Finish Specification Details: _____

Dimensions Details: _____

Fit & Function Details: _____

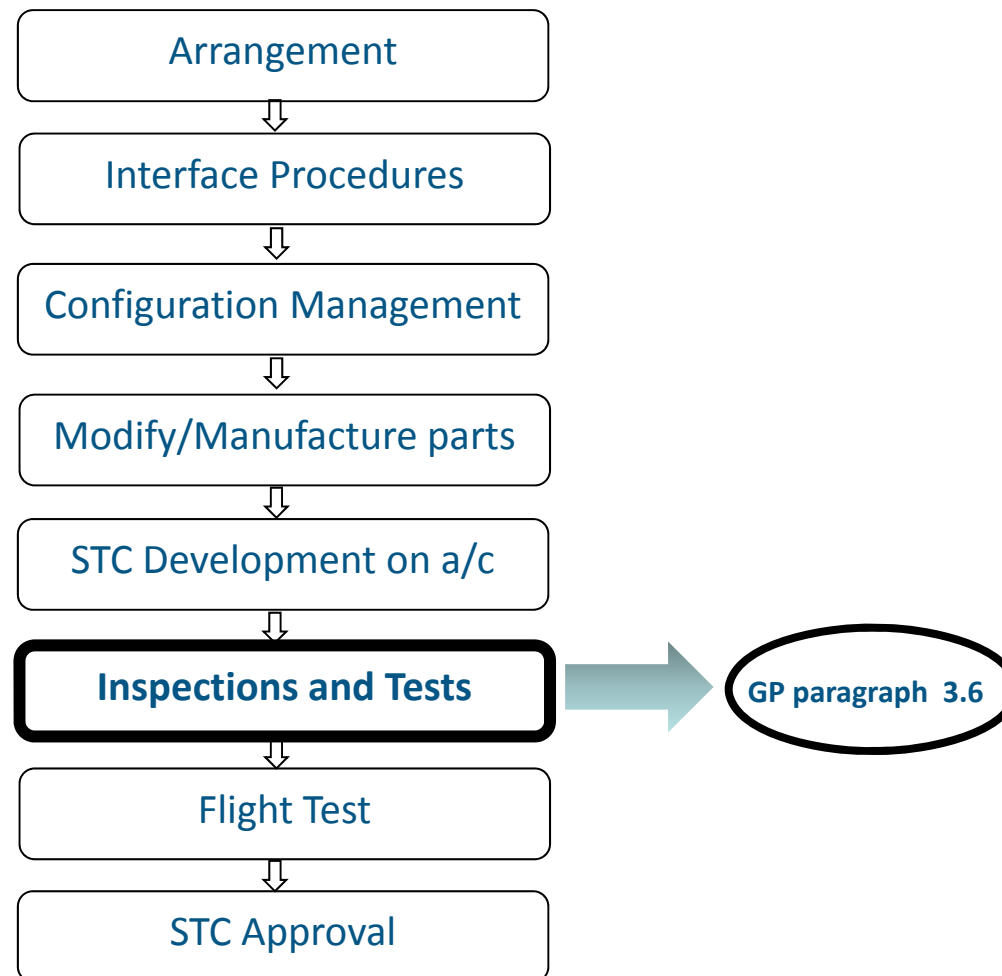
Other Details: _____

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Good Practices vs. Handbook

Typical First installation of an STC: (Ref. EASA_S21_GP001 para. 2)





Meridiana Maintenance Good Practice Endorsement

Ground Test

	GROUND TEST PROCEDURE Compliance Inspection	Project no. 009-12
Aircraft type : MD-80-83 Effectivity: 53464 Subject: LOPA MD-83 20 B/C + 120 Y/C on FSN 53464	Doc. no.:MM_GTP12M25S-0001R00 Date: 04/06/2012 Page 4 of 10	

4.4 Check width at rear double trolley rack (refer to picture below):

Check requested width between seats on row 33 and double trolley rack.

Measurement	
Seat to Trolley Rack	inches
A33:	20
B33:	18

The measurement shows the minimum distance and aisle width between last RH triple passenger seat and forward inboard corner of double trolley housing.

A = measured > 25" inches (635 mm) from cabin floor minimum 20"
B = measured < 25" inches (635 mm) from cabin floor minimum 15"

INSPECTOR SIGNATURE <i>M. Fucito</i>	INSPECTOR STAMP 	REMARKS
---	---------------------	---------

Ground Test Procedure **prepared** as per DO HB

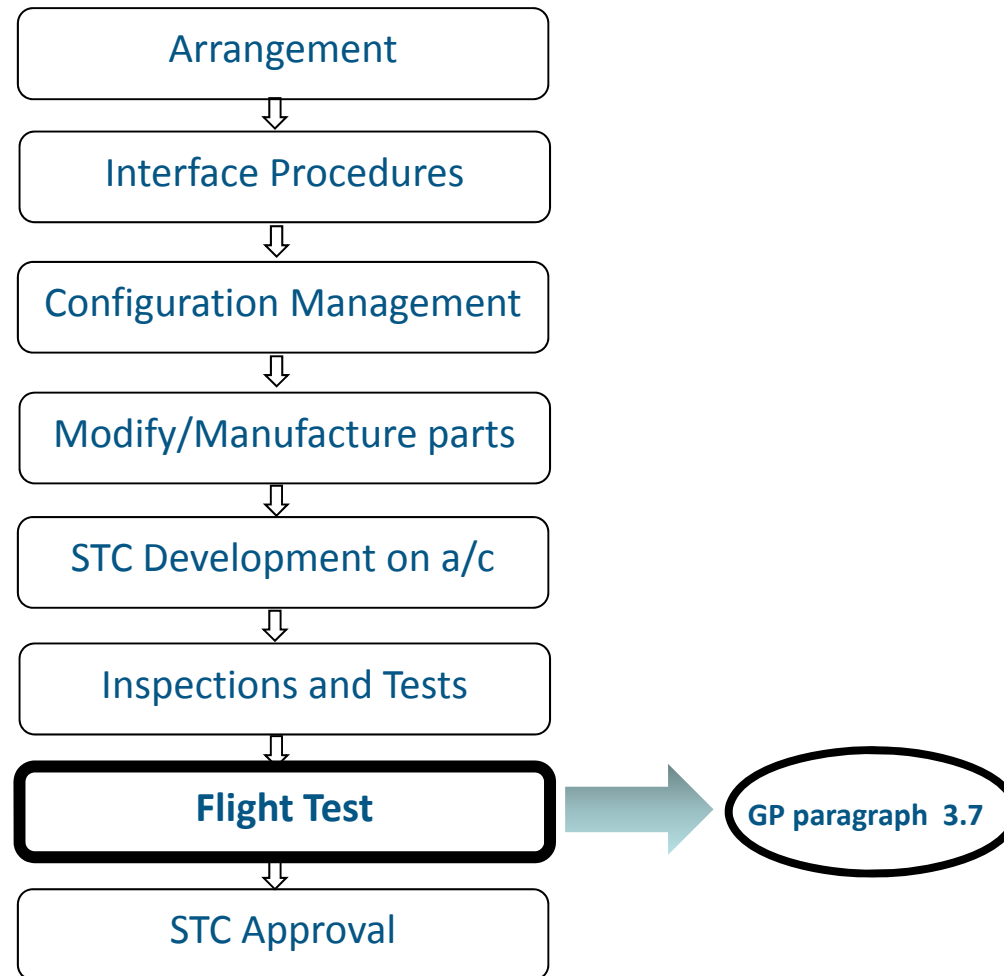
LISTA DELLE ABILITAZIONI			
Numero: IGM337	Edizione: 2	Data: 18/05/2011	
Sostituisce: Edizione: 1 (Data: 28/02/2010)			
SI AUTORIZZA			
Cognome: MARROS Nome: FAJETO Matricola N°: N.A.	Competenze N°: LIMITES LMA N°: N.A. Speciale: CABINA		
1 - Ad eseguire le operazioni elencate nella presente "Lista delle Abilitazioni" in qualità di:			
CONSOLETE MECCANICO MECCANICO ISPIETTORE	SUPPORT STAFF CONTROLORE ITEM CRITICO CERTIFYING STAFF CAT "A"	CERTIFYING STAFF CAT "B" CERTIFYING STAFF CAT "C" CERTIFYING STAFF CAT "D"	
2 - Limitatamente agli aeromobili:			
Tipo: MORO codice: X B717	BAI405UJ B737	A319X20221 A320X20221 Note:	
3 - A firmare il "Release to Service" o il "Maintenance Release" nel QTB, per i soprannomati aeromobili, apponendo il proprio numero di LMA. Limitatamente ai check:			
N/A			
4 - A ripristinare la funzionalità dei seguenti impianti:			
ATA	ITEM CRITICO	REPERENZE AVANZA	SOSTITUILOGHIE DI COMPONENTI
		Invenzioni con banci	Istruisci Meccanici Pneumatici Elettrici Misci Black Box
21			
22			
23			
24			
25			X
26			X (N4)
27			
28			
29			
30			
31			
32			X (N1)
33			
34			
35			X
36			
38			X
49			
52			X (N4)
56			X (N2)
60			
da 72 a 80			
5 - Con le seguenti ulteriori abilitazioni:			
CAT II - CAT III	AVVAMENTO	Nome ATU	Tip: Type
PROVE MOTORE	Fino ad L25	Completate	
Tip: IRE0			
ISPEZIONI C.P.C.P.	Ispezioni "Passaggio del Tralic" di cabina		
ISPEZIONI SPECIALI	MORO codice: A319X20221	Ispezione "A" Fase 1	Ispezione "B" Fase 2
6 - Note			
N1: Limitatamente alla sostituzione di lampadine e neon cabina passeggeri ed elicotto	N2: Limitatamente alle attività manutentive relative ai soli fuochi cabina passeggeri	N3: Limitatamente agli items di integrità e di cosmetica	N4: Limitatamente agli items di integrità e di cosmetica
Firma del Tecnico <i>M. Fucito</i>		Qualità Assurance Manager <i>[Signature]</i>	

Accomplished by Maintenance Personnel Qualified as per MOE Procedure



Good Practices vs. Handbook

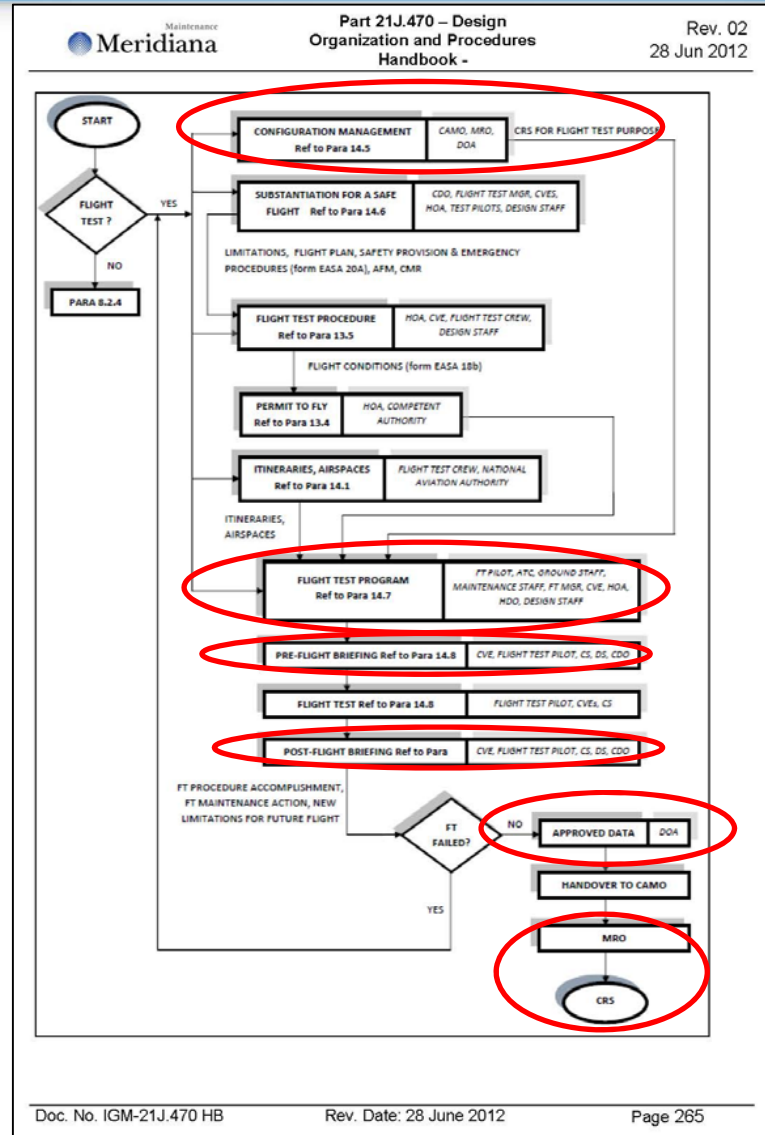
Typical First installation of an STC: (Ref. EASA_S21_GP001 para. 2)





Meridiana Maintenance Good Practice Endorsement

Flight Test



Configuration Management and «CRS limited to Flight Test purpose»

Flight Test Program
Pre-flight briefing

Post-flight briefing

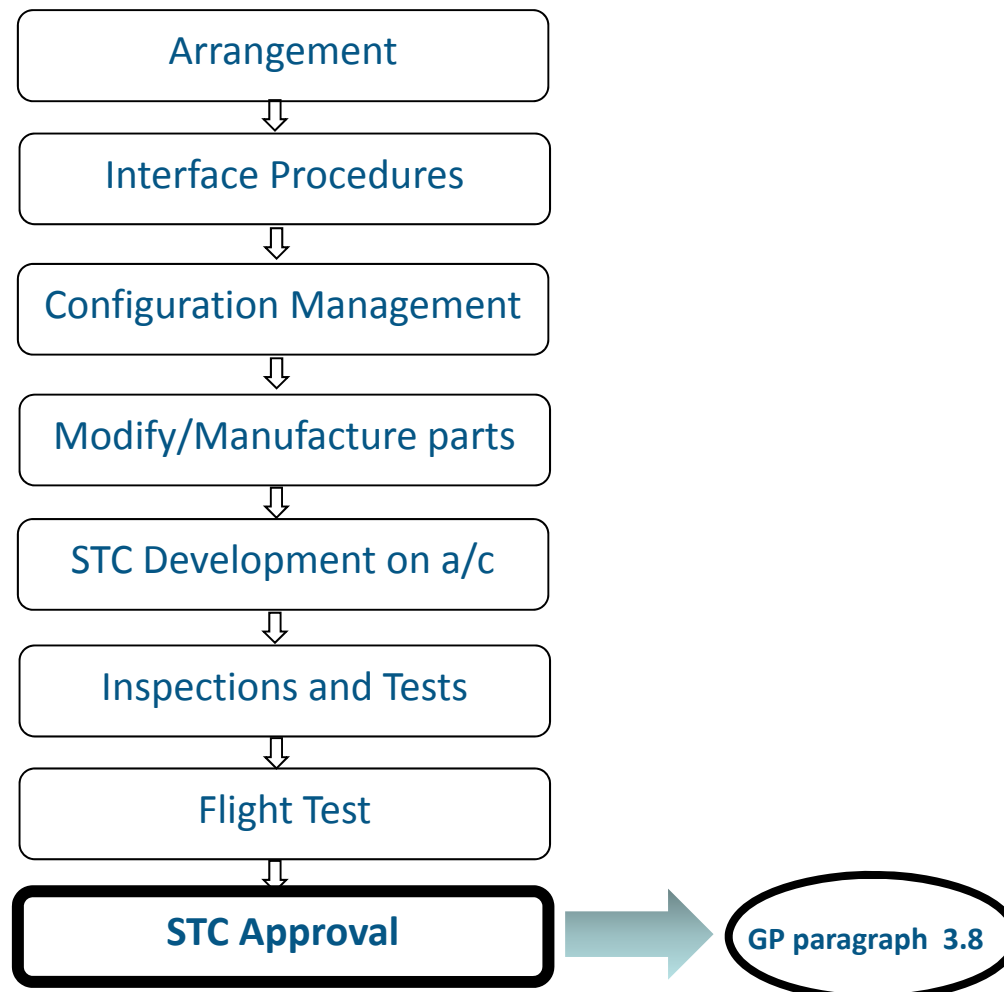
Approved Data

Final a/c CRS



Good Practices vs. Handbook

Typical First installation of an STC: (Ref. EASA_S21_GP001 para. 2)





Meridiana Maintenance Good Practice Endorsement

Modification Approval

Meridiana Approved Design Organization EASA 21J.470

MASTER DATA LIST
MML_NDLXXXXXX-XXXX RXX

PROJECT no: _____ ATA Chapter: _____

SUBJECT: _____

DATE: _____

Commissioned by: _____

Document Type	Document Number	Subject	Rev	Date	Provided

NOTE: _____

18.1 STATEMENT OF APPLICABLE DATA

As per Part 21A.4 and POA/DOA arrangement n° PDA-IGM/_____, MMDO authorizes Form One emission reporting "Prototype" in block 11, ticking box 13a "non approved design data specified in block 12" and selecting in block 12 "prototype parts for test only conform to design data pending approval under project n° _____".

18.2 STATEMENT OF APPROVED DATA

As per Part 21A.4 and POA/DOA arrangement n° PDA-IGM/_____, MMDO authorizes Form One emission reporting "manufactured/new" in block 11, ticking box 13a "approved design data" and giving reference to Approved project n° _____ in block 12.

Page 1 / X

18.1 STATEMENT OF APPLICABLE DATA

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18.2 STATEMENT OF APPROVED DATA

As per Part 21A.4 and POA/DOA arrangement n° PDA-IGM/_____, MMDO authorizes Form One emission reporting "manufactured/new" in block 11, ticking box 13a "approved design data" and giving reference to Approved project n° _____ in block 12.

Part production by a PO within the Approved configuration

Meridiana ENGINEERING ORDER No: MML_EOXXXXXX-XXXX RXX

SUBJECT: _____ ATA Chap: XX Page 1 of X

DATE: XX-Abc-XXXX

TYPE AND CLASSIFICATION: _____

EFFECTIVITY: _____

REFERENCE DOCUMENTS: _____

ATTACHMENTS: _____

PROJECT NUMBER: _____

REASON FOR REVISION: _____

LIST OF EFFECTIVE PAGES: _____

REQUIRED ACTION: _____

REQUIRED MATERIAL: _____

NEW PROCEDURES REQUIRED: _____

E.O. INFLUENCE ON: _____

The technical content of this document is approved under the authority of DOA ref. EASA.21J.470. This approval is limited to demonstration of compliance purposes only, pending the approval of EASA -STC (or minor change) Project Nr. XXX.

COMPLETED BY: _____ APPROVED BY: _____

The technical content of this document is approved under the authority of DOA ref. EASA.21J.470. This approval is limited to demonstration of compliance purposes only, pending the approval of EASA -STC (or minor change) Project Nr. XXX.

DO Privilege as per 21.A.263(c)3



Benefits by using Good Practices?

HoOoA Conclusions

- ▶ Complete traceability of all activities between both parties (+).
- ▶ Robust share of responsibilities (+).
- ▶ *Process sometimes congested (-).*
- ▶ *Deep qualification process required for external MRO (-).*



Benefits by using Good Practices?

DOATL Conclusions

- ▶ Reached proper coordination and synergy of the tasks associated to the various processes for which the organisation have been approved (i.e.: CAMO/MO/DO);
- ▶ Added value of building a team spirit, including the airline in the frame of Flight Testing and Permit to Fly related activities.



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Questions?



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