



Aircraft Certification

Standard Aircraft Certification

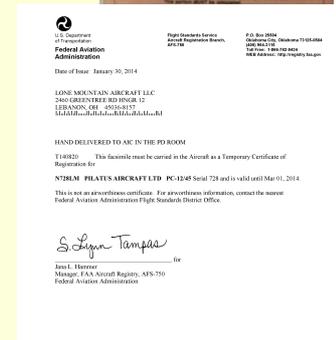
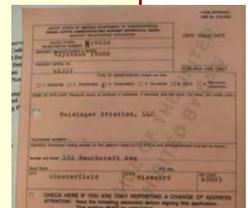


So many times I am asked the same questions regarding aircraft certification, and so many times I answer the same way. In order to make this process as simple as possible I have decided to open the door on the secrets of certification and ensuring that the minimum requirements of the Federal Aviation are met,

quite simply the function of an FAA Designee is to require from an applicant a showing of the aircraft and documents for inspection and determination that the aircraft meets the FAA standards. I will try to explain in layman terms with references to data you may or may not know however this is a standard.

Aircraft registration

Prior to issuing the requested airworthiness certificate, the aircraft has to be US registered. Registration is done by the owner of the aircraft either through his US. entity / Company or through the use of a Trust. Evidence of US registration is either the issued "Fly Wire" or the FAA form 8050-3 as shown. operation on the "Pink slip are not allowed



LET'S START

The beginning of all aircraft certifications is to find the standard to be met regarding the aircraft. This can be found in the published Type certificate data sheet. this is free and open information which can be found in the link.

http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgMakeModel.nsf/MainFrame?OpenFrameset



Required Inspection

The FAA may accept a recent 100-hour inspection, whether performed in the U.S. or in any other country where the aircraft previously was located while the aircraft was on the U.S. registry: a) When the inspection was performed **within 30 days before the date of application** for a standard A/W certificate. **FAA Order 8130.2G Para 321 (a)**

b) When the inspection was accomplished by an AMO appropriately certificated by the CAA of a country with which the U.S. has a bilateral maintenance agreement (Canada) and that meets the requirements as defined in §21.183 (d) (2)

8130.2G, Para 321 c (2)

in some cases you do not need an A&P /IA anymore.

Each person performing an inspection shall perform the inspection so as to determine whether the aircraft, or portions thereof under inspection, meets all applicable airworthiness requirements.

Each person performing an annual or 100-hour inspection

shall use a checklist. The checklist must include the scope and detail of the items contained in Appendix D of this part. 14 CFR 43 Appendix D



LET'S START

Is a "100 hour" inspection appropriate for transport category aircraft as well as small aircraft?

ANSWER: YES! per Amendment 21-20 (Preamble) "The detailed performance requirements set forth in Part 43 for the 100-hour inspection are sufficiently

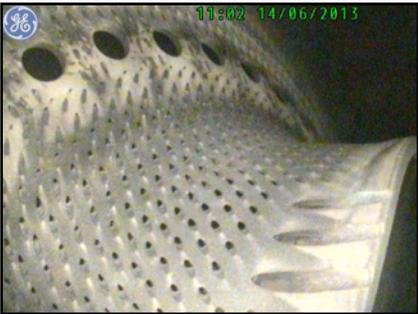


broad to provide a basis for determining that any aircraft inspected IAW those requirements is in an airworthy condition." (quoted by the FAA in a designee seminar Dec 2012)

It is recommended you reference manufacturers tasks to build a checklist



DETERMINATION OF AIRWORTHINESS



It is difficult to determine what inspection is required and to which scope to perform the inspection. We have just discussed the requirement for the use of a checklist. However applicants with turbojet multiengine airplanes, turbo propeller - powered multiengine airplanes, and turbine-powered rotorcraft. can choose to maintain their aircraft to the requirements of 14 CFR 91.409(f) (3) A current inspection program recommended by the manufacturer.

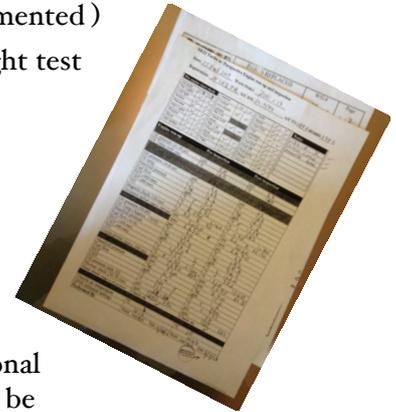
In some cases I see that the Manufacturers recommended maintenance program is to date, It is not my intention to request (for example) another PH I-V.

I recommend that during a pre purchase inspection that the applicant make a checklist in

enough detail to meet the airworthiness determination requirements of 14 CFR 43 appendix D. Items such as borescope reports high performance runs (documented)

flight test results system

functional checks be recorded.



Borescope inspections: May be part of a Prepurchase in turn used to be a part of the Airworthiness inspection required

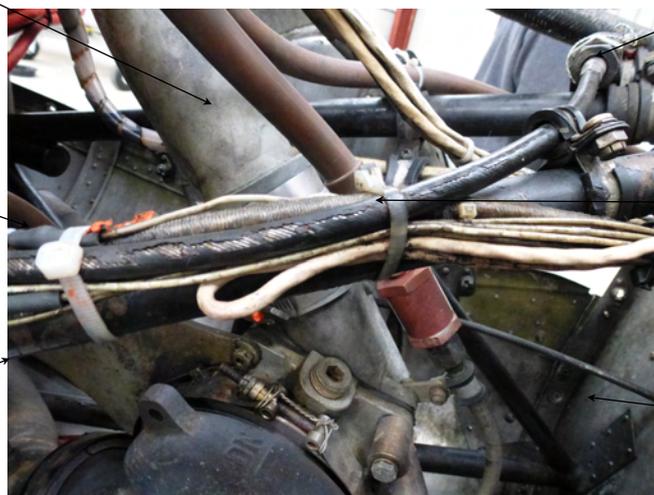
Some aircraft have been out of operation for extended length of time , in some cases major inspections may be required !!

14 CFR 43 APPENDIX D .. THINGS NOT TO SEE .. BAD DAY FOR THE INSPECTOR

Corroded

Chaffing protective sleeve rotted away

Cables incorrectly bundle tied to structure



cable clamps not secure rubber rotten away

Electrical cables brittle broken unservicable

filthy engine cowl area lack of safety wire



TIPS FOR A SUCCESSFUL CERTIFICATION

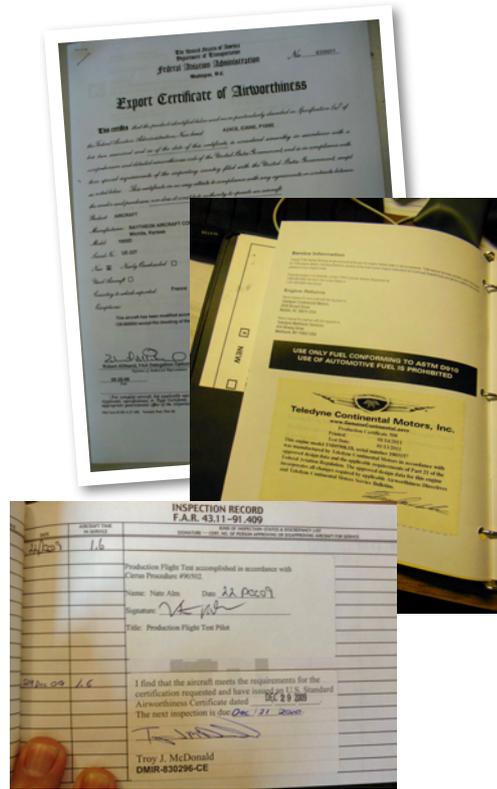
A clean aircraft with all systems functional professional presentation will ensure that the aircraft will be certificated. lack of preparation and unprofessional standards will lead to an unhappy designee and a more unhappy applicant!! Attention to detail is the key word here!!

PAPERWORK REVIEW

During the course of your paperwork review we must determine the aircraft was issued a US Standard Airworthiness certificate/ An Export certificate/ or at least a logbook entry from the ODAR/ DAR issuing the original certificate of airworthiness.

Export certificates are a good choice because they list the installed engines / propellers at the time of certification. this gives a basis of the origin of the currently installed equipment.

Furthermore there may have been exemptions during the export to a foreign country which may need attention prior to the issuance of the requested certificate.



In the current example we have a page from a CESSCOM / CAMP. this list is only as good as the operator maintaining it. I highly suggest that this review be made part of a pre purchase inspection ! you will notice that

the CESSCOM / CAMP is printed out, items listed as original match the manufacture date of the aircraft. Items reflecting a later date need to be VERIFIED ! a copy of the EASA form one / FAA Form 8130-3 / a picking tag from the mfg and finally a reference to S/ N on S/N off.

components with no traceability are to be considered as suspect and need either an overhaul or replacement.

This job (depending on the record keeping of the last owner) may or may not be an easy task. 100% traceability review takes time and effort in which the

repair facility may or may not have the manpower to perform. If in doubt or need Please contact me for a list of professional consultants to perform this preparation it is that important ! Notice in this case original components in Blue, Changed components in Green.

below a copy of the certificate.



DATA PLATES

The aircraft / engine and propellers must be identified as per 14 CFR 45. all relevant data comes from these data plates! if a data plate is missing then the applicant has some expensive issues. to solve





DOCUMENTATION



The english language requirements are specified in **FAA Order 8130.2G, Para 323, d (1)**

THE APPLICANT FOR AN AIRWORTHINESS CER-

TIFICATE WHOSE AIRCRAFT HAS BEEN MAINTAINED, MODIFIED, OR REPAIRED WHILE UNDER FOREIGN REGISTRY MUST ENSURE THAT ALL RECORDS REQUIRED BY §91.417 (B) ARE TRANSLATED INTO THE ENGLISH LANGUAGE.

See also **8130.2G, Para 306 (f) (1), & Para 613** for additional English translation guidance.

Modifications

EASA modifications are listed as Major or Minor .

As per the TIP between the FAA and EASA Rev 3 Para 3.2.3 Procedures for Minor Changes to a Type Design by Persons Other Than the TC/STC Holder. (b) For EASA, all minor changes to the type design must be approved in accordance with EASA Part 21. Minor changes can be approved by a DOA or EASA in the EU system. **These minor changes are considered approved by FAA**, except when retained by FAA per paragraph 3.2.6.1(a), following the approval under EASA's system on behalf of the State of Design for the design change.

NOTE: the Designee is not responsible to determine the classification of a modification, Minor changes are documented by a DOA, EASA 21 facility with a coversheet.

MAJOR CHANGES

For major changes to a type design by persons other than the TC/STC holder, the FAA and EASA agree to follow the design approval procedures in paragraph 2.2 for STCs.

Procedures in place

With reference to the TIP between EASA and the FAA Para 2.2 specifies the procedure.

The reality

Currently it has proven difficult to use the implementation procedures for an FAA approval on EASA STC in some cases the assistance of an FAA Designated Engineering representative may be required (FAA DER). The use of a DER is also limited in the case of an EASA STC just due to the scope and complexity of the modification. Sometimes it is better to purchase an FAA STC and use a DER to approve deviations to an FAA STC. I have ideas so please let's speak !!

Approval No: EASA 21.028

MODIFICATION SUMMARY SHEET & DECLARATION OF COMPLIANCE

Mod No: 10-014 Issue: 1 Page 1 of 6

Title: Change of UK Registration

A/C Type and Variant:	Learjet 45	Serial (C/N):	45-294
Engine Type:	Allied Signal TFE731-20AR-1B	A/C Registration:	G-ZIP
C of A Category:	EASA	Performance Group:	N/A
Applicability:	Specific / Series *	Embodiment by:	N/A
EASA / Non-EASA *	CLASSIFICATION	MAJOR / MINOR *	(* delete as necessary)

DOCUMENTS AFFECTED (Delete those not applicable)

Electrical-Lead-Analysis	Illustrated-Parts-Catalogue	Flight-Manual
Weight-and-C-of-G-Schedule	Wiring-Diagram-Manual	Flight-Manual-Supplement
Maintenance-Schedule	Repair-Manual	Crew-Operations-Manual
Maintenance-Manual	Overhaul-Manual	MMEL

Exceptions / Derogations
None

Issue:	Compiled	Checked	Verified - Avionic	Verified - Mechanical
1	Signature: [Signature] Date: 23.7.10	Signature: [Signature] Date: 23 July 2010	Signature: [Signature] Date: 23 July 2010	Signature: [Signature] Date: 23 July 2010
2	Signature: [Signature] Date: []	Signature: [Signature] Date: []	Signature: [Signature] Date: []	Signature: [Signature] Date: []
3	Signature: [Signature] Date: []	Signature: [Signature] Date: []	Signature: [Signature] Date: []	Signature: [Signature] Date: []
4	Signature: [Signature] Date: []	Signature: [Signature] Date: []	Signature: [Signature] Date: []	Signature: [Signature] Date: []
5	Signature: [Signature] Date: []	Signature: [Signature] Date: []	Signature: [Signature] Date: []	Signature: [Signature] Date: []

Approved by EASA under STC number: N/A Date: N/A

Declaration of Compliance -
It is hereby declared that, with the exceptions / derogations listed above, this modification / repair complies with all applicable requirements specified in this modification document.
Once installed the modification is fit for service subject to any post installation test specified in the modification.

Authorised signatory

Name: [Signature]	Signature: [Signature]	Date: 23 July 2010
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PAE 21.04 Issue 2 November 2005



REGISTRATION MARKINGS THE GOOD THE BAD AND THE UGLY



NATIONALITY & REGISTRATION MARKS

Part 45.21 –General Except as provided in §45.22*, no person may operate a U.S. registered aircraft unless that aircraft displays nationality and registration marks in accordance with the requirements of this section.

Sec 45.29 for dummies

Fixed-wing aircraft, must be at least 12 inches high

Width. Characters must be two-thirds as wide as they are high, except the number "1", which must be one-sixth as wide as it is high, and the letters "M" and "W" which may be as wide as they are high.

Thickness. Characters must be formed by solid lines one-sixth as thick as the character is high

Spacing. The space between each character may not be less than one-fourth of the character width.



Example of acceptable markings

Aircraft and helicopter

There are some exceptions to the rule however 99% of all aircraft fall under this rule. I have done the home work for you ,, now comply very simple

COURSE GUIDE FOR MARKINGS



§ 45.21 c, 3, 4

UNIFORMITY AND SPACING

This is just a recent example of how not to do it ! spacing is not right between characters. it just does not look right and it does not meet the requirements of 14 CFR 45





OTHER ITEMS OF IMPORTANCE



Transponder Altimeter checks 14 CFR 91.411 and 413

If these checks were performed while under the foreign register prior to FAA certification.. Then these checks may be acceptable as long as the standard is clearly the equivalent of the FAA Standards of 14 CFR 43 app E/F. Please make clear reference on the release to service

Placards a log entry conforming the placard conformity check to the acceptable standard (FAA TCDS, Airplane Flight Manual or the Maintenance Manual Chapter 11)

Equipment list

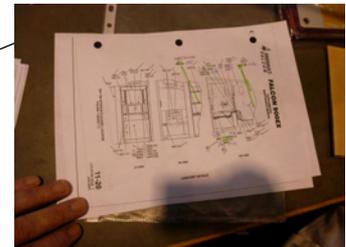
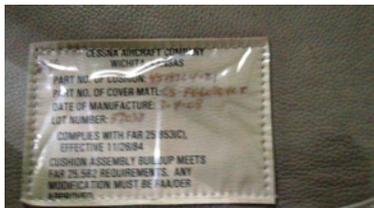
Please ensure that the equipment list is reviewed and compared to the aircraft's current configuration. the equipment list needs to be checked and dated to reflect the airworthiness inspection. Modifications and method of approval need to be determined. Equipment list must have Weight Arm and moment, KG can be used if the FAA Flight manual has KG/cm listed otherwise this needs to be in IN/Lb units .

in some cases an Equipment list has not been modified, however the aircraft has been modified. now is the time to make a full review determination of the current status of the aircraft to get it right.

Interior refurbishments need to be reviewed on Transport FAR 25 aircraft. changes to the aircraft may raise to the level of an STC

Transponder recoding and ELT recoding. Please ensure this is logged on the release to service

BURN CERTIFICATES



BOMBARDIER AIRCRAFT

FLAMMABILITY REPORT

FR NO: FR45-2034 ICT REVISION: A

TITLE: INTERIOR MATERIALS AND FLAMMABILITY TEST REPORT

WORK AUTHORIZATION ISSUE NUMBER: 14-2034 (FLOORPLAN #45)

EFFECTIVE: 11/20/14

PURPOSE: DOCUMENTATION OF MATERIALS USED AND BURN TEST REQUIREMENTS

PREPARED BY: [Signature] DATE: 11/20/14

CHECKED BY: [Signature] DATE: 11/20/14

CDR: [Signature] DATE: 11/20/14

APPROVED BY: [Signature] DATE: 11/20/14

Drawings: 1) Floorplan 2) Material Data 3) Photos



A logical burn certification package must be provided for certification, in the examples above you see seat bottoms marked and placarded to meet burn certificate reports. Attention to detail is again key to a successful certification.

ABOUT US

Lloyd G. Nelson III



More to come

In order to explain some frequently asked questions, I am trying to make this process smoother and give clients a better understanding of what is required for aircraft preparation for certification.

In Europe there are many factors which come in to play which are very different to what you may be used to in the USA.

I am impartial to the pressures between buyer and seller; for me the most important thing is to ensure the aircraft is in an airworthy state, and to find the best way to ensure that all requirements are met.

Each certification brings along a different set of challenges which only experience can solve.

This is the speciality that I possess.



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