IATA

IATA Aircraft Leasing Technical Group (ALTG)

Guidance Material and Best Practices for Life-Limited Parts (LLPs) Traceability

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Notice

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Abbreviations

A	
AC	Advisory Circular
ACMI	Aircraft, Crew, Maintenance and Insurance
AD	Airworthiness Directive
AIR	Aircraft Inspection Report
ALS	Airworthiness Limitations Section
AMC	Acceptable Means of Compliance
AMM	Aircraft Maintenance Manual
AMOC	Alternate Means of Compliance
AMP	Aircraft Maintenance Program
AOG	Aircraft-On-Ground
APU	Auxiliary Power Unit
AR	Authorized Representative
ARC	Airworthiness Review Certificate
ARL	Aircraft Readiness Log
ASL	Aircraft Serialization Listing
ATC	Air Traffic Control
AWL	Airworthiness Limitation
B	
BAA	Bilateral Airworthiness Agreement
BtB	Back-to-Birth traceability
C	
CAA	Civil Aviation Authority
CAMO	Continuing Airworthiness Management Organization
CASS	Continuing Analysis and Surveillance System
CFR	Code of Federal Regulations
CIC	Corrosion Inhibiting Compound
CMM	Component Maintenance Manual
CMR	Certification Maintenance Requirement
CofA	Certificate of Airworthiness
CoR	Certificate of Registration
CP	Conditions Precedent
CPC(P)	Corrosion Prevention and Control (Program)
CRS	Certificate Release to Service
CSN	Cycles Since New
CTC	Cape Town Convention

D	
DAH	Design Approval Holder
DAR	Designated Airworthiness Representative
DER	Designated Engineering Representative
DOA	Design Organization Approval
DM	Data Matrix
E	
EAD	Emergency Airworthiness Directive
EASA	European Aviation Safety Agency
EDS	Engine Data Submittal
ELT	Emergency Locator Transmitter
EO	Engineering Order
EoD	Events of Default
EOL	End of Lease
ETA	Estimated Time of Arrival
ETOPS	Extended-Range Twin-Engine Operations
EU	European Union
EWIS	Electrical Wiring Interconnection System
EMM	Engine Maintenance Manual
F	
FAA	Federal Aviation Administration
FC	Flight Cycle
FDIU	Flight Data Interface Unit
FDR	Flight Data Recorder
FH	Flight Hour
FMGC	Flight Management Guidance Computer
FOD	Foreign Object Damage
G	
GM	Guidance Material
H	
HIL	Hold Item List
HMV	Heavy Maintenance Visit
HT	Hard Time
I	
IATA	International Air Transport Association
ICA	Instructions for Continued Airworthiness
ICAO	International Civil Aviation Organization
ICS	Incident/Accident Clearance Statement

IDERA	Irrevocable De-registration and Export Request Authorization
IIL	Industry Item List
ILS	Instrument Landing System
IOC	Installed Original Components
IPC	Illustrated Parts Catalogue
L	
LDND	Last Done / Next Due
LLP	Life-Limited Part
LLPBTBT	Life-Limited Part Back-to-Birth Trace
LLPMHS	Life-Limited Part Movement History Sheet (an Excel Template)
LOC	Letter of Credit
LOI	Letter of Intent
LOPA	Layout of Passenger Accommodation
LRU	Line-Replaceable Unit
M	
MIS	Maintenance Information System
MLG	Main Landing Gear
MPD	Maintenance Planning Document
MRBR	Maintenance Review Board Report
MRO	Maintenance, Repair and Overhaul Organization
MSG3	Maintenance Steering Group-3
MOD	Modification
N	
NAA	National Aviation Authority
NDT	Non-Destructive Testing
NLG	Nose Landing Gear
NPRM	Notice of Proposed Rule Making
NRC	Non-Routine Card
O	
OC/CM	On Condition/Condition Monitoring
ODA	Organization Designation Authorization
OEI	One-Engine-Inoperative
OEM	Original Equipment Manufacturer
OMP	Operator's Maintenance Program
OpSpecs	Operations Specifications
P	
P/N	Part Number
PAD	Proposed Airworthiness Directive
PASV	Pay At Shop Visit

PAYG	Pay As You Go
PBH	Power By the Hour
PMA	Parts Manufacturer Approval
PPE	Pay Per Event
R	
RAP	Repair Assessment Program
RII	Required Inspection Item
RNAV	Area Navigation
RVSM	Reduced Vertical Separation Minima
S	
S/N	Serial Number
SB	Service Bulletin
SELCAL	Selective Calling
SI	International System of Units (Système International)
SRM	Structural Repair Manual
SSID	Supplemental Structural Inspection Document
SSIP	Supplemental Structural Inspection Program
STC	Supplemental Type Certificate
T	
TCC	Time Controlled Components
TCDS	Type Certificate Data Sheet
Term	Explanation
TSN	Time Since New
U	
UNIDROIT	International Institute for the Unification of Private Law
US	United States
V	
VHF	Very High Frequency
VOR	VHF Omnidirectional Range
VSL	Vital Statistics Log
W	
WDM	Wiring Diagram Manual
WFD	Widespread Fatigue Damage
WO	Work Order

Table 1: Glossary of Terms

Notes:

- In the document the terms 'Operational History Record' and 'In-service History Record' mean the same and can be read interchangeably.
- As the supporting documentation/paperwork for BtB traceability of LLPs is expected to be captured in an electronic format (in the form of record(s)), as per the guidelines set out in this standard, the terms 'documentation' and 'paperwork' can be read as 'record(s)'.

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Background

In the past few years, the focus on life-limited part (LLP) documentation has increased significantly, due to the fact that more LLPs are exchanged/replaced with used material. Airlines are now facing more and more requirements from the Industry (MROs, Airlines, Lessors/Owners and Part Traders), therefore this is now a topic of discussion between the parties.

Aircraft documentation is inspected meticulously during the delivery and redelivery process of an aircraft. A critical aspect of aircraft records is the documentation associated with LLPs and their trace to birth (manufacture). Airlines are ultimately responsible for the safety of flight and they need to ensure that documentation meets airworthiness standards. Additionally, such documentation is considered very important by the Industry, including lessors and aircraft owners, because it can have a significant impact on the asset value and marketability of the aircraft or, as applicable, on the standalone engines or the LLP itself.

The commercial value of LLPs is related to their remaining life. This value has created a unique market that specializes in trading these parts. Airlines and lessors/owners are the ultimate consumers of these parts, however, for both these parties, trading LLPs is not a core business. Many part traders and brokers have developed with specialization around trading these parts. Due to lack of industry technical standards, each of the various parties involved in the LLP market, has created a set of its own requirements that many times contradict the basic principle of fairness; i.e. having the same requirements when someone is selling a part and when purchasing a part. This guidance attempts to provide a simple standard for trading such parts and their back-to-birth (BtB) traceability.

An LLP is a part with a hard limitation. LLPs can be found on aircraft or on engines. At the time the aircraft or engine was designed, the design approval applicant identified certain parts as having limits, and those limits were approved by the certifying authority. When the LLP has reached its limit, the part may no longer be used (absent a change, such as a life-extension program). The limit is normally given in cycles, hours or calendar days. Whilst landing gear (LG) and auxiliary power unit (APU) have LLPs, the majority of LLPs are in engines, which is why this document mainly focusses on the engine LLPs. LG and APU LLPs will be covered separately.

Aviation regulations typically require an operator to know the current life status of its LLPs. But industry practice has developed in which merely knowing the current life status of an LLP is considered to be commercially inadequate for an LLP transaction. Most LLP transactions will feature back-to-birth traceability for the LLP ("LLP BtB"). Generally, this means documentation that shows the provenance of the accumulated cycles or time, since the first operation of the LLP.

There is a lot of confusion around what exactly constitutes sufficient LLP BtB, and different parties have different commercial requirements regarding LLP BtB. This makes it very difficult for airlines to manage their fleet when it comes to replacement of LLPs and lease redeliveries.

This document, which is developed in close coordination with industry stakeholders, covers in detail the key challenges associated with LLP BtB Trace, as well as provides a methodology/solution to address those challenges in an efficient and effective manner.

Finally, it should be noted for simplification, that the regulatory requirements for operators are to keep records of hours and cycles flown and the remaining life according to the current status of operations. The industry has gone much further, requiring supporting documentation to prove these records. This document provides guidance to the

record keeping and highlights the non-adding value of the ever-increasing documentation requirements – stemming from commercial interests.

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Scope

IATA's *Guidance Material and Best Practices for LLPs Traceability* covers all topics that play a role in back-to-birth traceability of aircraft life-limited parts (LLPs). The document is primarily written for a technical audience (engineers working at the airline technical/engineering departments as well as technical representatives from leasing companies, parts providers & distributors) that are involved in the handling of LLPs in some manner. Whilst the document explores some key challenges facing the industry with regards to capturing data/information and gathering support documentation to enable tracking of LLPs, it provides a methodology for ensuring accurate traceability of LLPs through their lifecycle, including when such parts are transferred between operators. It tackles subjects from a broad practical perspective, taking into account technical, regulatory, legal and commercial considerations. Additionally, the document can be used by data transfer format standards groups (e.g. ATA e-business) and IT professionals, asked to build or link such databases.

For the purposes of this document, LLPs are considered parts that have time limited usage restrictions in terms of flight cycles (and rarely flight hours or calendar times). In addition, such LLPs have significant monetary value and can be traded commercially. In most cases, these LLPs refer to parts being operated on engines, landing gears (LG) and auxiliary power units (APUs). On most occasions, this document refers to engine LLPs. Whilst the wording may apply to other LLPs, such as LG and APU, this document strives to focus on engine LLPs.

The document first captures some key issues and/or challenges with regards to LLPBTBT, followed by a proposed solution, which is a template for capturing data/information and support documents for accurate tracking of LLPs. In addition, to ensure common understanding of various data/information items appearing on the template amongst stakeholders, a clear set of definitions along with guidelines on how to complete the template are provided in this document. Note that the template represents a visual depiction of the fields that need to be reported. In a fully digital (electronic or paperless) world, this information should flow between systems. The use of the ATA e-business standards is recommended for electronic data transmission between any interested parties.

IATA's Aircraft Leasing Technical Group (ALTG [1]) is the owner of this document, which is under continuous review by airlines and IATA Strategic Partners [2] who can provide their input during regular meetings. Other comments are also welcome at: altg@iata.org.

[1] www.iata.org/altg

[2] www.iata.org/sp

Introduction

Given the increased emphasis on capturing and maintaining information for back-to-birth (BtB) traceability of LLPs, and the absence of any standard industry templates and guidelines to support the BtB evidence, IATA's Aircraft Leasing Technical Group (ALTG) have developed this document to provide guidance on what information needs to be captured, the documents where this data can be found, and how it can be recorded on a standard template in a consistent way. This document not only provides a standard template where the information pertaining to LLPs is expected to be recorded but also provides a set of accompanying guidelines on how to fill out the template.

This document may be used by airlines, lessors, parts' providers and any other related entities engaged with the handling and managing of LLPs. The document is laid out in a logical and easy-to-follow manner. It first explores key challenges facing the industry in the realm of BtB traceability of LLPs. It then looks at the type of documentation needed to underpin the BtB traceability of LLPs, which is further elaborated by means of a schematic, outlining the supporting documentation requirements of trace paperwork for LLPs under three distinct scenarios: (1) when a new part is introduced to the market; (2) when a part moves from one operator to the next; and (3) when the host engine of an LLP undergoes a shop visit. This section is followed by another section detailing the background and scope of the template (developed to enable smooth and easy transfer of LLP information between owners/operators); a timeline for its implementation; and guidelines for completing the template.

The document presents the topics in the following methodical order.

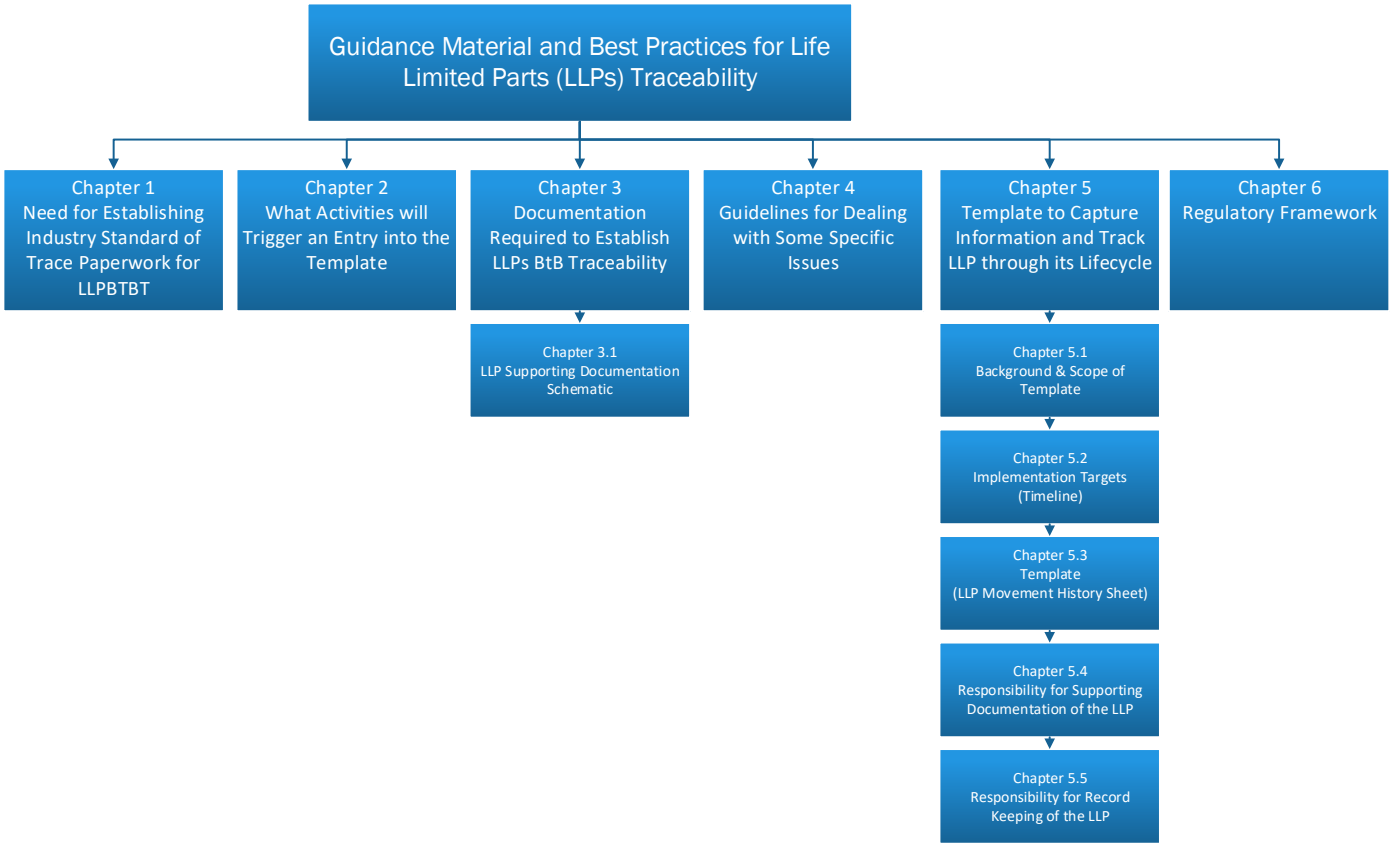

Figure 1: Document Structure

1. Need for Establishing Industry Standard of Trace Paperwork for LLPBTBT

LLP BtB trace has become a sensitive subject in aviation asset management and, as a consequence, within the airline community.

This is because it affects a lot of different parties within the aviation industry whose interests do not always align, from airlines to lessors, to OEMs, to parts' traders, to MROs to CAMOs.

- The **airline's core business** is to fly aircraft in the most cost-effective way. Although an airline's primary focus is to assure passengers a safe flight, the airline's interest is to reduce its costs. There are several ways to achieve savings. One of them is to reduce parts' cost to the minimum while keeping the assets in acceptable condition to the owner. Another one is to meet certain engine built workscope requirements with specific run times lower than the full life of a new LLP. Hence airlines prefer installing used LLPs, provided they are acceptable to the lessor or to the potential buyer. Considering that the number of leased aircraft is constantly increasing, airlines have to maintain an accurate system for BtB.
- The **lessor's core business** is to lease the asset in the most cost-effective way. Leased assets may be complete aircraft and/or engines but lessors may also lease components that include LLPs like landing gear or APUs. The lessor's interest is to spend as little time and money as possible on transferring the asset and to maximize asset value for later sale. Hence the lessor prefers the use of LLPs that do not present any documentation (trace) issue.
- The **OEM's core business** is to manufacture safe products and to sell parts in the aftermarket, which is the market for spare parts. The OEM's interest is to ensure their products are safe and in compliance with the design regulations, and to maximize sales of new OEM parts. Competition between OEMs to sell new aircraft has never been so intense. Consequently, OEM revenues derived from new products have decreased significantly. At the same time, used parts are now commonly used by airlines and part out companies have flooded the secondary market. Because of these market conditions, the OEMs have been critical of the aftermarket as a matter to counteract their loss of revenues.
- The **parts traders' core business** is to buy used assets at the lowest possible price and sell the piece parts at the highest possible price. Hence their interest is to negotiate a low buying price of used assets (normally purchased from airlines or lessors) while keeping the sales price as high as possible.
- The **MROs' business** is acting on behalf of their customers (mainly airlines and lessors) to ensure that LLPs meet their requirements. In certain cases where MROs provide "power by the hour" type agreements, MROs may have their own commercial interest.
- The **CAMOs' (Part M) business (and equivalent or other EASA following regulatory systems)** is to act on behalf of its customers when it comes to managing the airworthiness of the aircraft; LLPs are an integral part of managing this activity.

While respective regulatory authorities have required airworthiness standards for record keeping in relation to life-limited parts, the industry standard has moved way beyond the requirements of the airworthiness regulations. Owners of LLPs have to comply with the changing industry standard in order to ensure the commercial liquidity of such parts that have useful life remaining when removed from a host engine. This industry standard originally focused on measures to verify the stated TSN/CSN of a part with backup documentation and requirements to confirm that such part has not been excluded from continued operation due to incident and/or accident.

These earlier measures adopted by the industry to maintain part liquidity had their basis in events that related to calculation errors or dubious provenance of parts. However, in recent years additional requirements have been adopted with increasing regularity, many of these appear to have no obvious logic or root justification for their introduction, but once adopted they quickly become the new baseline for all market participants who become reluctant to accept anything less than this because it may decrease liquidity or value in a very competitive market. The result has been a decrease in remarketability of parts in the aftermarket, primarily because the paperwork required for the additional technical requirements cannot be obtained retrospectively.

In order to enable the traceability of LLP and to support the back-to-birth evidence, the following documentation/paperwork is required and should be reviewed and assessed for completeness and accuracy: birth documents; operator documents; and shop visit documents. All these are explained in the succeeding chapters, along with the type of information expected to be captured in each of these documents.

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2. What Activities will Trigger an Entry into the Template

We envision that the LLP traceability will be tracked using what we call the "LLP Traceability Template". This template is an electronic file (can be called a digital twin) that follows the part throughout its life. Each operator/owner is responsible to keep up with the various activities occurring on the LLP during its operational life, under the specific timeframe that the part was under their custody. This template can be depicted as an Excel spreadsheet (shown in section 5.3); however, other systems can create a similar file. The first LLP records in the electronic file are inserted by either the part manufacturer or the airframe manufacturer that signs off the delivery of it to the first operator. Then, it becomes the operator's responsibility to continue adding to the file as activities happen to the part. When the part moves to a different operator, it is signed off and the new operator is responsible to continue capturing the activities from the time the part enters its own operation.

The following activities will trigger an entry into the template:

1. Production
2. Installation
3. Removal
4. Change of operator
5. Change in operational parameters

All these represent cases that have to be supported with proper documentation. The definitions of the items, as well as the list of supporting documentation needed for each item are covered in detail in section 5.3.2.

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3. Documentation Required to Establish Life-Limited Part's (LLPs) Back-to-Birth (BtB) Traceability

1. Birth Documents

These documents relate to paperwork or electronic records provided at the manufacturer of the LLP and what is provided depends on how the part is first introduced to the market, for example on a new aircraft, a new engine, a new module or as a new spare part. While it is normal for individual certification to be provided for LLPs delivered as new spare parts, many of these parts have been manufactured for the OEM by subcontractors and have been delivered to the OEM in batches and therefore do not have individual certification tags. Therefore, other delivery documentation from the OEM is considered as acceptable provided it specifically identifies the part (part number and serial number) and includes confirmation that the part has been delivered in new (and therefore TSN/CSN Zero) condition.

In many cases, LLPs or their host engines may not have an identified customer at the time of manufacture, therefore the identification of the owner/operator on the Engine Data Submittal/Vital Statistics Log (or equivalent) is not a mandatory requirement as it will not always be noted on the documents issued.

2. Operator Documents

These documents are required for each operator of the LLP extracted from the records of its host engine(s). These documents should also include LLPs that can be replaced during other maintenance operations. All documents provided by an operator should include all thrust ratings operated by each LLP and the operator's logo or some other means of identifying them as documents produced by that operator.

The key document is the host engine LLP status at the time the LLP is exiting from the operator's fleet. LLP status sheets ("disk sheets") are not typically produced by operators at the time of delivery, post shop visits or at movement from one aircraft to another within that operator's fleet and, therefore, operator-produced LLP status sheets should only be required at the conclusion of operation of the engine (or a particular LLP if traded separately) by each operator.

To provide full operational details of an LLP while within an operator's fleet, an LLP status needs to be supplemented with an operational history record which shows details of all the installations and removals of the LLP onto/from different host engine(s) and different aircraft while with the one operator, including all thrust ratings utilised. An example of the layout of an operational history is shown in Appendix 1 hereto. Please note that while the operational history template in the appendix is given as a reference, the documents generated by operators' Maintenance Information System (MIS) are equally acceptable. The operational history is required to catalogue the full operation of the LLP from when it was inducted into an operator's fleet (at which time an LLP status is provided to the current operator by the previous operator) to the point that it leaves the fleet (at which time an updated LLP status is issued by the latest operator). Providing this operational history in conjunction with an LLP status ensures full disclosure of the LLP's history with that operator and records sufficient information that may be needed in the future.

In building an LLPBTBT history, operational histories need to be provided for each operator of the LLP, which when layered on top of each other provide a complete operational history of the LLP since manufacture.

3. Shop Visit Documents

These documents are required for each shop visit undertaken by the host engine of an LLP regardless of whether that involves the separation of major mating flanges – as there are some LLPs that can be replaced without the separation of major flanges and for which the LLP status still needs to be captured, for example, mounts links.

The shop visit documentation requirement is irrespective of whether or not the LLP was replaced at the time of the shop visit. If it was replaced, then the details of the LLP in the incoming LLP status from the removed engine (host engine) will match with the details of the outgoing LLP status from the installation engine. If it was not replaced, then the incoming and outgoing LLP status confirm that it remained in its host engine at the time of the shop event.

If, during a shop visit, an LLP receives a modification, then the certification tag (e.g. EASA Form 1, FAA 8130-3 or equivalent) and/or task card is required to state that it was modified. Copies of EASA Form 1 and FAA 8130-3 are shown in Appendix 2 for reference.

In certain circumstances, LLPs will undergo repair while not associated with any specific engine, e.g. a spare part undergoing modification or upgrade. In such cases, the paperwork required will be limited to the certification for the work performed as there is no associated engine to include an LLP status for, but the historical operator and shop visit records up to the time of the LLP's last removal provide the trace up until the LLP became a spare part.

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3.1 LLP Supporting Documentation Requirements (Summary)

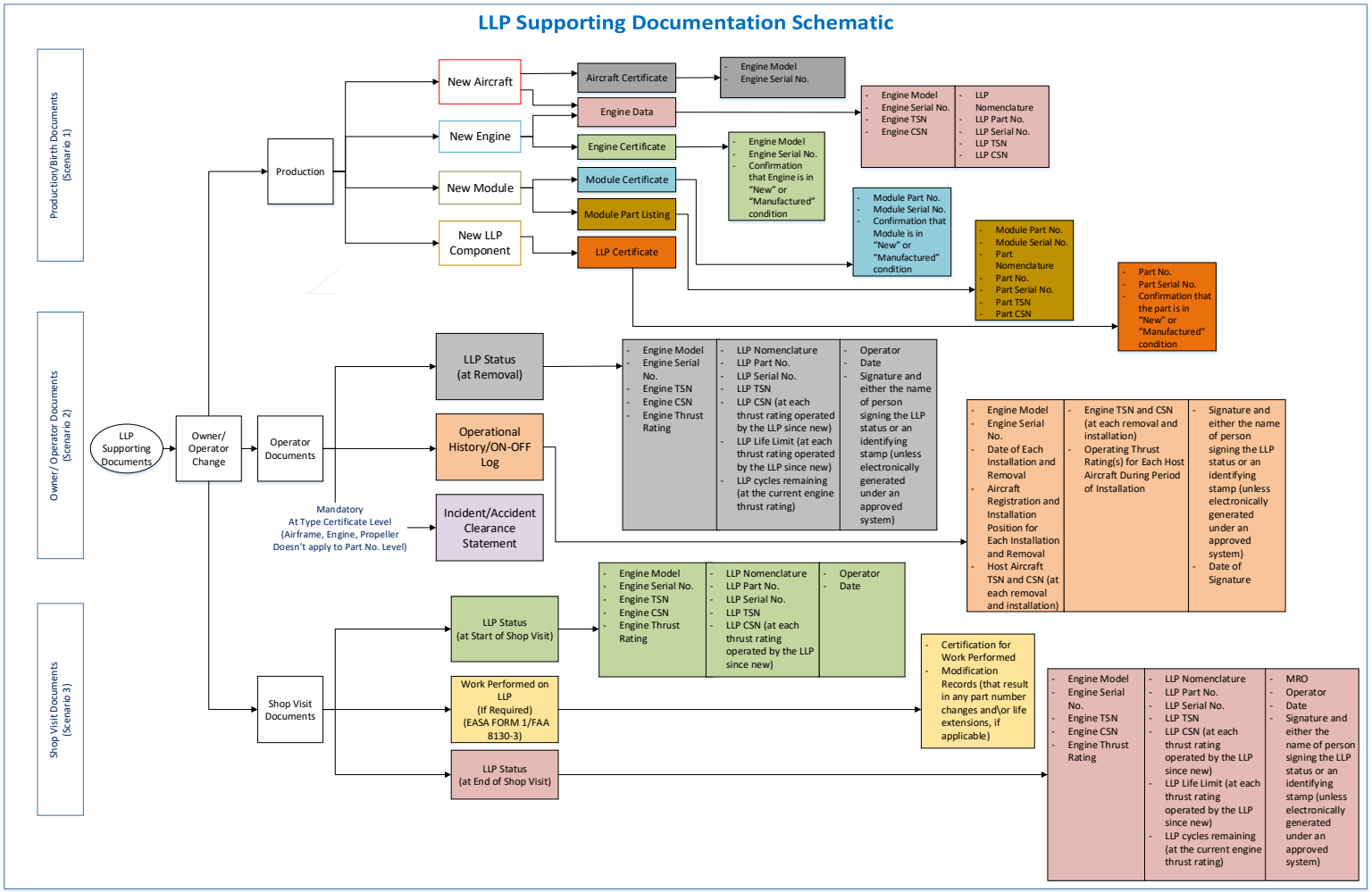
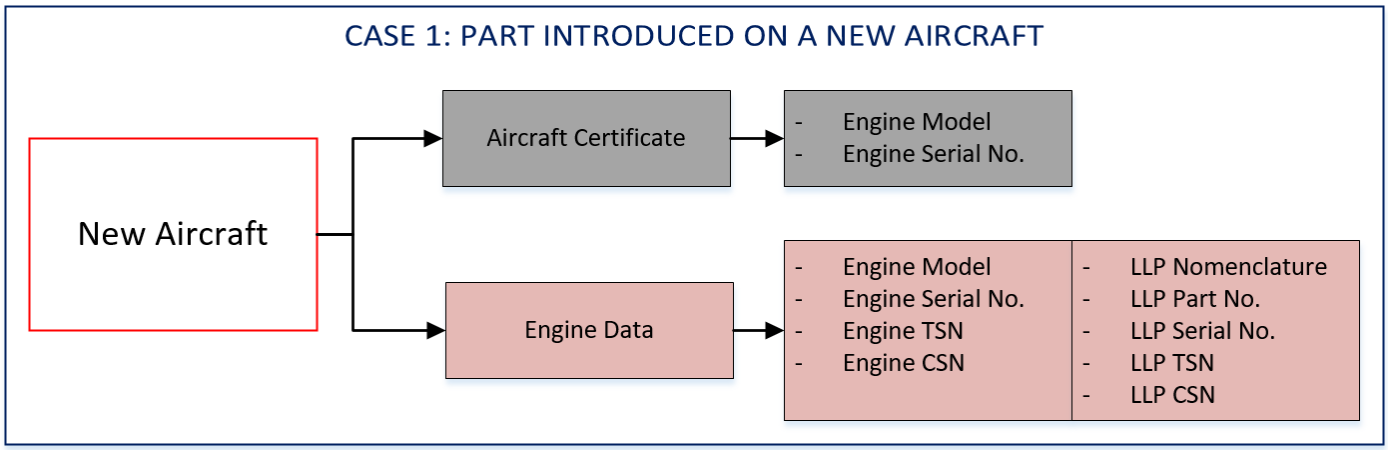


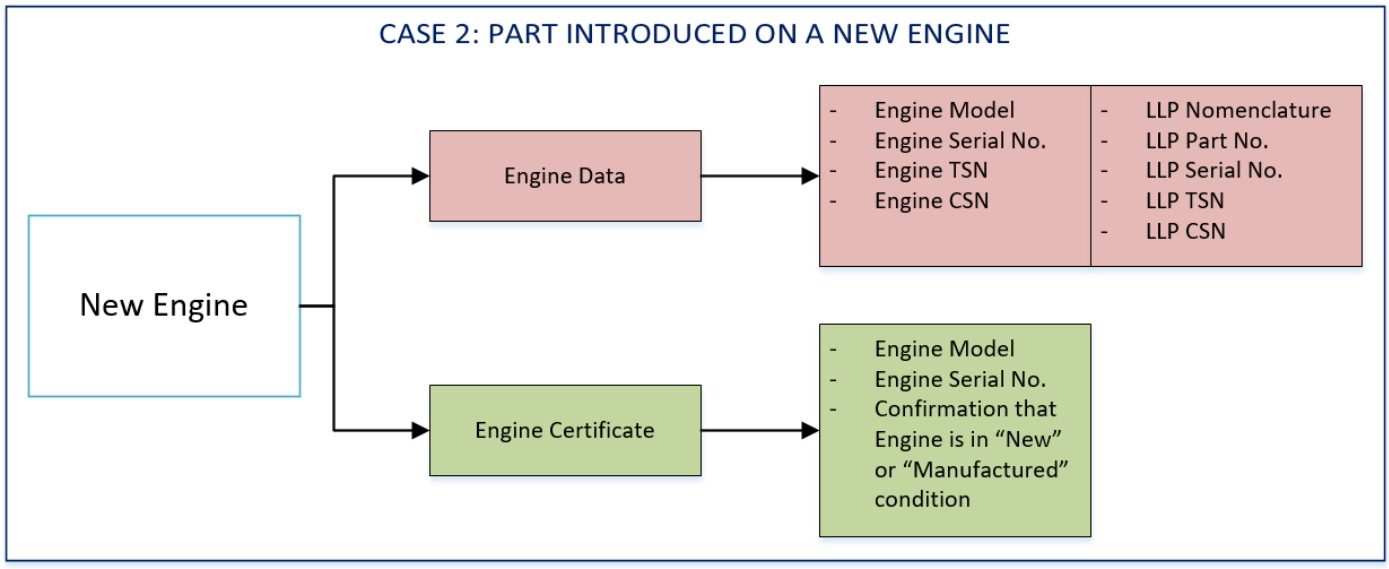
Figure 2: LLP Supporting Documentation Schematic [3]

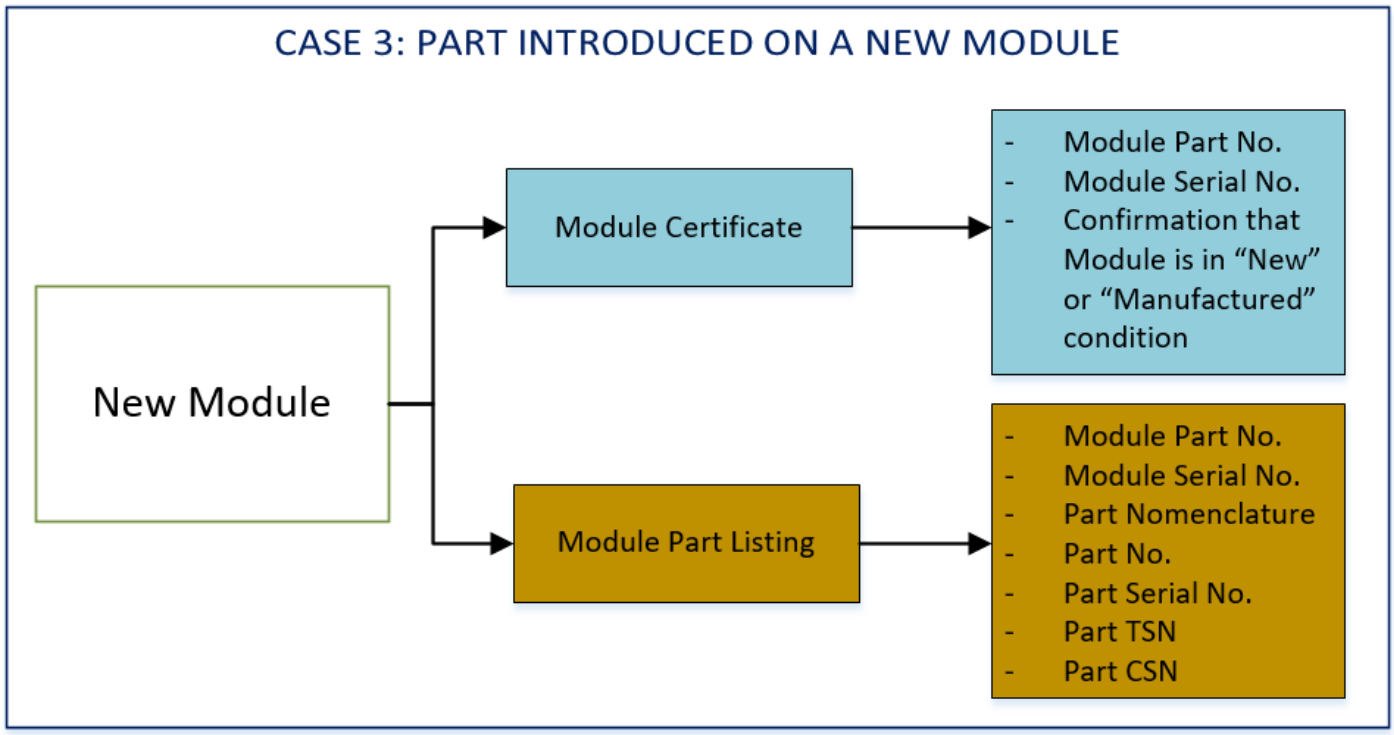
[3] The list of documentation as well as the type of information contained in it is further laid out in Appendix 4. Please note that the schematic reflects the engine LLP's documentation requirements. Landing Gear (LG) and APU LLP's documentation requirements shall be covered in a separate schematic.

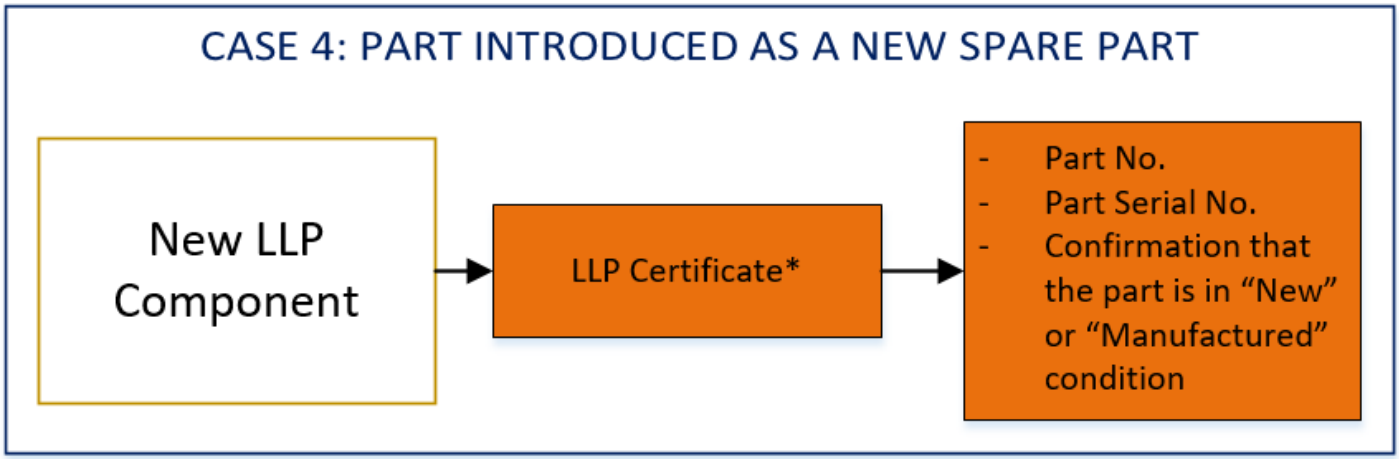
The schematic above summarizes the details laid out in section 2. It outlines the supporting documentation requirements of trace paperwork for life-limited parts under three distinct scenarios.

Scenario 1: **When a new part is introduced to the market.** The trace paperwork requirements for such parts are reflected in the top half of the schematic labelled "Production". As per the schematic above, the trace paperwork requirements depend on how the part is introduced to the market. In other words, whether the part is introduced on a new aircraft, a new engine, a new module, or as a stand-alone new spare part. In each one of these cases, the supporting documentation required are quite different. The diagrams below lay out the list of documents, as well as the type of information contained in them for each of the four cases referenced above.



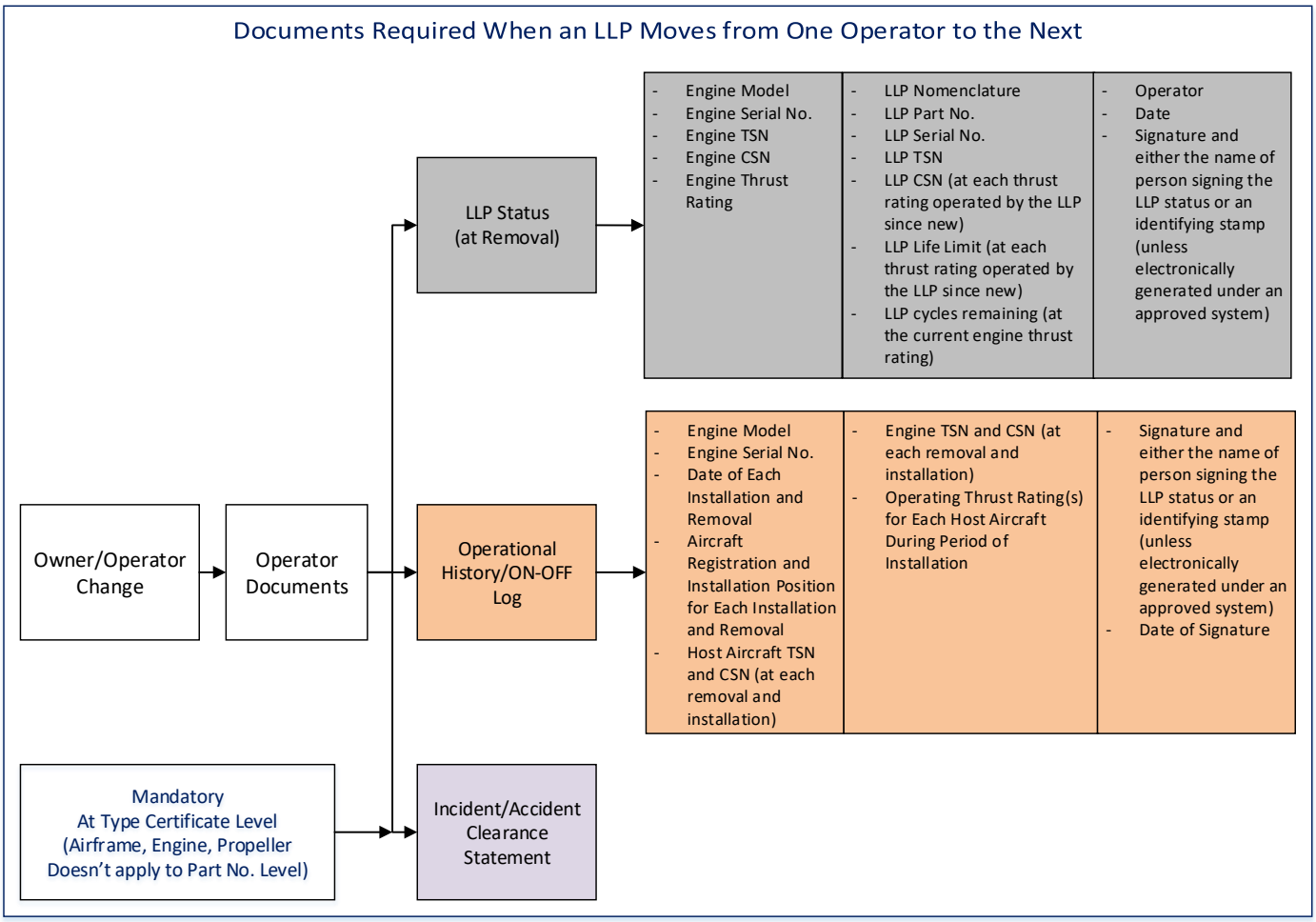






*LLP Certificate will be produced by the manufacturer in the form of a regulatory approved form.

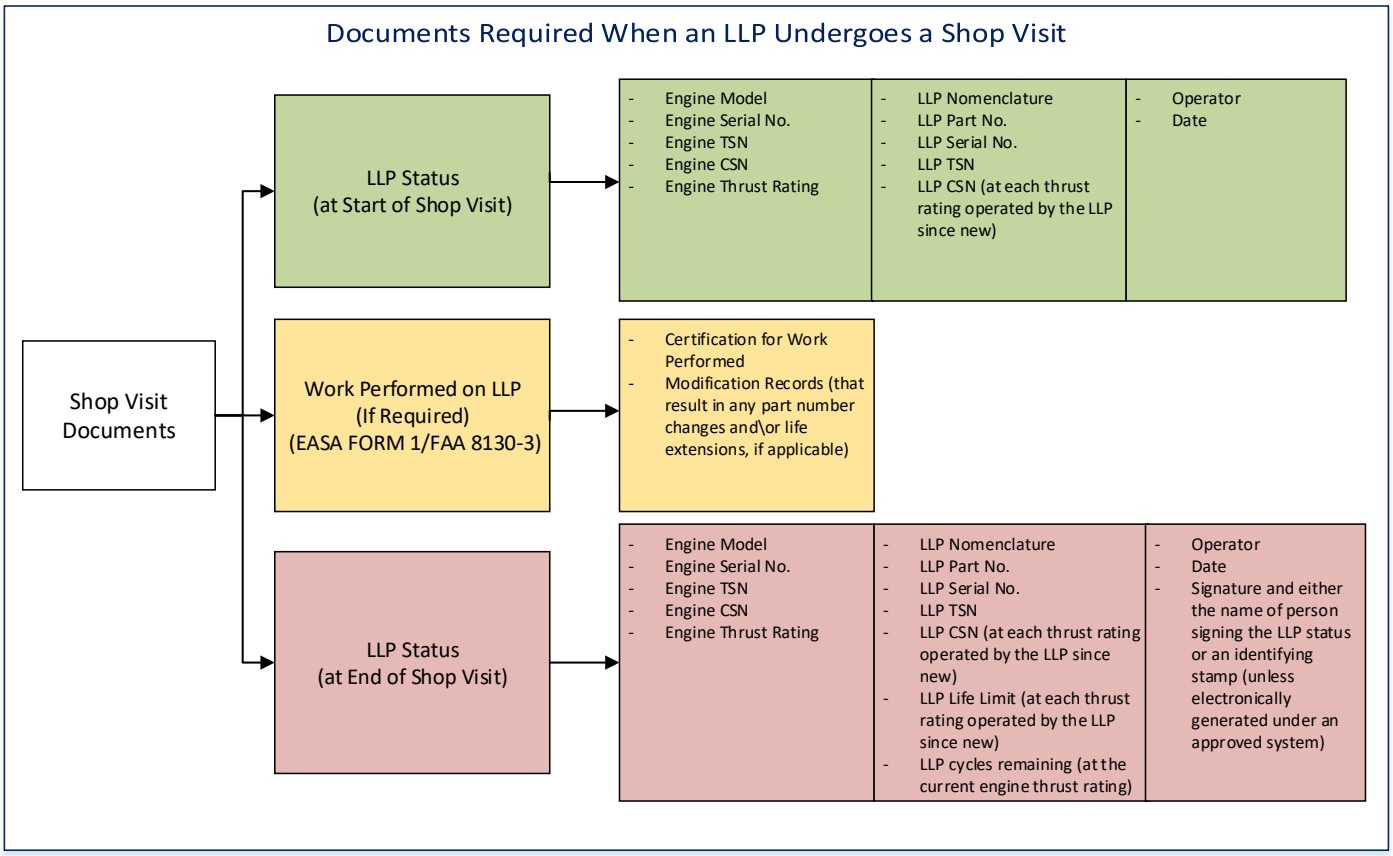
Scenario 2: **<u>When a part moves from one operator to the next</u>**. There are two sets of documents required when an LLP transitions from one operator to another, LLP Status Sheet (if the whole engine transfers) and On-Off Log/Operational History Record, which shows details of all the installations and removals of the LLP onto/from different host engine(s) and different aircraft while with the one operator, including all thrust ratings utilised. Therefore, in order to ensure full disclosure of an LLP's history as it moves from one operator to another, it is imperative to have the LLP Status Sheet, as well as the On-Off Log/Operational History Record. Furthermore, as the part is 'used' and not 'new', the Incident/Accident Clearance Statement is also needed. This statement is provided at a Type Certificate Level (Airframe, Engine) to indicate if the aircraft/engine – from which the part is removed – was involved in any incident/accident. It is pertinent to mention that the ICS is NOT a regulatory requirement; it has been standardized by IATA and the Aviation Working Group (AWG) to replace the previously used Non-Incident Statement (NIS). The use of ICS does not add anything to the safety/airworthiness of the part that can be only determined by the airworthiness tag. The documents are outlined below with descriptions of the information that should be reported on each document.



Scenario 3: **When the host engine of an LLP undergoes a shop visit.** Whenever the host engine of an LLP undergoes a shop visit there are three sets of documentation required to allow back-to-birth traceability of the part. These documents are listed as follows:

- LLP Status Sheet (at start of shop visit - the engine operator should have this part);
- EASA Form 1/FAA 8130-3 (capturing details in case the LLP underwent a modification); and
- LLP Status Sheet (at end of Shop Visit - the engine shop should be able to provide the applicable changes to the LLP stack).

The documents are outlined below with descriptions of the information that should be reported on each document. Please note that the LLP status at shop-visit start is to be issued by the operator.



In summary – to determine if the part underwent a modification following a shop visit, one could compare the details on the LLP Status Sheet at start and end of the shop visit. If the details on the LLP Status Sheet at start and end of the Shop Visit are the same, one might presume that the part underwent no modification. Whilst, if the details on the LLP Status at start and end of the shop visit are not the same, one might presume that the part underwent a modification.

4. Guidelines for Dealing with Some Specific Issues

1. Ferry Flights

On occasion, aircraft are flown on behalf of leasing companies and owners from one storage location to another – as well as from OEMs to lessor/operator/storage – while off lease or not assigned to an airline operator. In these cases, routine air carrier records may not be prepared, but regulations will still require any such operation to be appropriately recorded (including the LLP status). The acceptable practice under or when using this guidance to this issue is to ensure that a log of the ferry flight(s) is included as part of the LLPBTBT, including details of all flight hours, cycles and thrust rating utilized. Ideally, the ferry flight information should be added/appended to the electronic file for each LLP involved and should be signed off by the entity responsible for the airworthiness of the equipment. Such operation should then be included in the updated technical records to be provided by the subsequent operator or MRO facility, along with the Incident/Accident Clearance Statement (ICS).

2. Engine Operation Records - Special Cases

In certain instances, and under certain operational parameters, LLPs will need to be tracked on an appropriate bases in accordance with the relevant OEM recommendations. In one particular case, for LLPs installed on engines with One-Engine-Inoperative (OEI) ratings, the Airworthiness Limitations Section (ALS) should include a method to track the number of cycles of operation at the OEI ratings because these ratings operate at higher speeds and temperatures than non-OEI operating conditions. In other cases, appropriate life adjustments maybe automatically calculated by the OEM depending on the operational conditions; therefore, increasing or reducing fraction of cycles.

3. Operation Records Produced by MRO

For some airlines, technical records management is contracted out to an MRO entity, a CAMO or an engineering company associated with the operator. As all the record keeping for the operator is performed by the contractor entity, all the operator records and statements tend to be issued on the contractor entity letterheads and signed by representatives of the contractor entity instead of the operator. The acceptable practice under or when using this guidance is to accept records certified by such a contractor on behalf of an operator, provided they are accompanied by a letter from the operator stating that the entity is contracted by the operator for the maintenance and provision of its technical records.

4. Operator Records Following a Repossession or Similar Event

In certain circumstances, lessors and owners may find that they have repossessed an aircraft from an operator and there is no longer any capability for that operator to produce current operator documents that are required as part of the LLPBTBT records. In such cases a CAMO, court administrators and/or other similar engineering organisation may be contracted by lessors and/or owners to provide updated technical records at the time the LLP was exited from such operator's fleet. In such circumstances, the acceptable practice under or when using this guidance is to accept records certified by such an engineering organisation in lieu of operator documents, provided they are accompanied by a letter from the lessor or owner of the asset explaining the situation and confirming that the engineering organisation is contracted to do so on behalf of the owner.

5. Dealing with Data Errors

Data errors that are key to substantiating the LLPBTBT of a part need to be corrected once discovered. The primary way to have errors corrected is to have the records re-issued and certified with the corrected data. However, there are times when it is not possible to re-issue some or all of the records. For example, if an incorrect TSN/CSN of an engine is recorded at the time of a shop visit and the error is only discovered some months later after the shop visit has been completed and the project closed at the applicable MRO. It is also possible for errors to arise from entities that are no longer available to perform correction, or that are unwilling to acknowledge and correct the errors. For instances where technical documentation cannot be re-issued, the acceptable practice under or when using this guidance is for the correcting entity (such as an operator, owner (e.g. lessor) or MRO) to provide a letter explaining the error, the correction required, and a manuscript correction of the errors on the technical documentation to minimise the possibility of incorrect data being used thereafter.

In circumstances where the source of the error is no longer in existence, is unwilling to correct the error, or cannot be identified, when the error is discovered, then the current certifying party (operator or owner (e.g. lessor) or MRO should issue a letter explaining the background to the error, how it was discovered and provide supporting backup documentation to verify the error. The letter should also explain the correction required and the certifying party should make a manuscript correction of the errors on the technical documentation.

In the case of electronic record keeping, there should be a provision to append corrections to the electronic record file of the LLP, and the signature of the authorized person that made the correction with the applicable date.

6. Acceptable Certification

Where a signature block and/or a stamp block are provided for in technical documentation, they should be completed along with either a legible print of the name of the person making the certification and/or an identifying stamp. It should not be necessary to verify the identification of the person making the certification, the approval and/or system for certifying technical records is included in the quality manual of the applicable operator or MRO which is approved and audited by the applicable airworthiness authority.

Some operators and MROs may issue electronically generated documentation with a name and the related electronic signature, which has been issued in accordance with their quality manual approved by the regulator and therefore must be accepted. For further explanation on this, please refer to the "*Guidance For Acceptance of Electronic Aircraft Maintenance Records - EAMR,* available on the ICAO website and can be accessed through the link ICAO EAMR. Please note that the content was expected to be incorporated into the ICAO *Airworthiness Manual Doc 9760* in 2018, as per the deadline mentioned on the ICAO website, but has been work-in-progress at the time of publication of this manual. Many authorities worldwide have issued guidance on the use and acceptance of e-records under their jurisdiction.

7. Documentation Dates

Not all technical documentation for a particular event can be issued on the same date, nor does it need to be. For example, if an engine is removed from service on Day 1, an operational history is certified 5 days later and an LLP status is issued 2 further days later, there should be no issue with this sequence of dates on the documents as long as the engine has not operated since its removal date. The specific date of any technical document is not important, what is important is that the dates accurately reflect the sequence of events during the time the specific LLP was in operation.

8. Use of Non-OEM Approved Parts or Repairs

Such parts or repairs are approved by the civil aviation authorities. Non-OEM Approved Parts or Repairs are safe to use as any other approved parts and repairs; not accepting them on safety or technical grounds, means questioning the quality system of regulators that approve them. Therefore, IATA supports the position of many airlines that operate these parts and repairs for many years as alternatives, as these alternate solutions increase competition in the MRO aftermarket and offer choices to airlines. There are no regulators that oppose the use of such parts and repairs. This is a commercial issue and IATA prefers to remain out of any contractual negotiations.

9. Requirements during Storage

At this point, there are no known regulatory requirements for treatment of LLPs during storage (when not in operation but are kept aside for further use; beyond regular treatment for any aircraft parts in storage).

10. Commercial Trace

Commercial trace relates to the ownership of an LLP rather than having anything to do with the verification of its operational history and suitability for continued use. Although the regulatory requirements are limited, Technical requirements have grown and this is what this manual is about: provide a clear understanding of the current technical requirements.

5. Template (Life-Limited Part Movement History Sheet) to Capture Information and Track LLP through its Lifecyle

5.1 Background and Scope of Template

After outlining in the previous section some key challenges posed by ever-changing industry standards and non-prevalence of uniform industry templates associated with tracking LLPs through their lifecycle, this section seeks to set out an approach to overcome those challenges. As mentioned earlier, tracking and transfer of LLPs between owners/operators is a very cumbersome and time-consuming activity. Operators have a regulatory requirement to keep track of these parts, and when it comes to keeping the asset's value, compliance with commercial requirements is necessary. Various formats have been developed for capturing data when it comes to transfer of LLPs. The formats have been similar but not consistently requesting the same information. To address this gap and to ensure smooth and easy transfer of LLP information between owners/operators, an Excel-based template has been developed by the IATA Aircraft Leasing Technical Group (ALTG), in close coordination with industry stakeholders.

The scope of the template is to capture all the information needed for seamless and efficient transfer of LLP between owners/operators. The template is not to replace any regulatory requirements with which operators have to comply in relation to LLPs. The template's main purpose is to ensure that there is industry agreement and standard on what information is needed as well as how it is captured and transferred between owner/operators. This will harmonize and facilitate the data fields/elements required for the transfer of LLP data/history in a standardized format resulting in a more efficient and economical airline industry. Moreover, the template allowing for uniform capture of data enables back-to-birth traceability, i.e. protect the asset value of the LLP throughout its life. The template is to focus on LLPs that are considered to be assets and are transferred between operators throughout their useful life. It is not intended to be used for LLPs that are tracked by calendar date and have low value, e.g. life vests, oxygen generators, etc.

The template as a digital file can be used as the "digital twin" of the LLP in consideration. All relevant information is registered on the template and the template is passed on to the future owner/operator. The file can reside and get transferred from one entity to the other or can reside as a cloud based file that the owner/operator of the LLP has certain "adding" rights, e.g. information can only be added to the file.

5.2 Implementation Targets

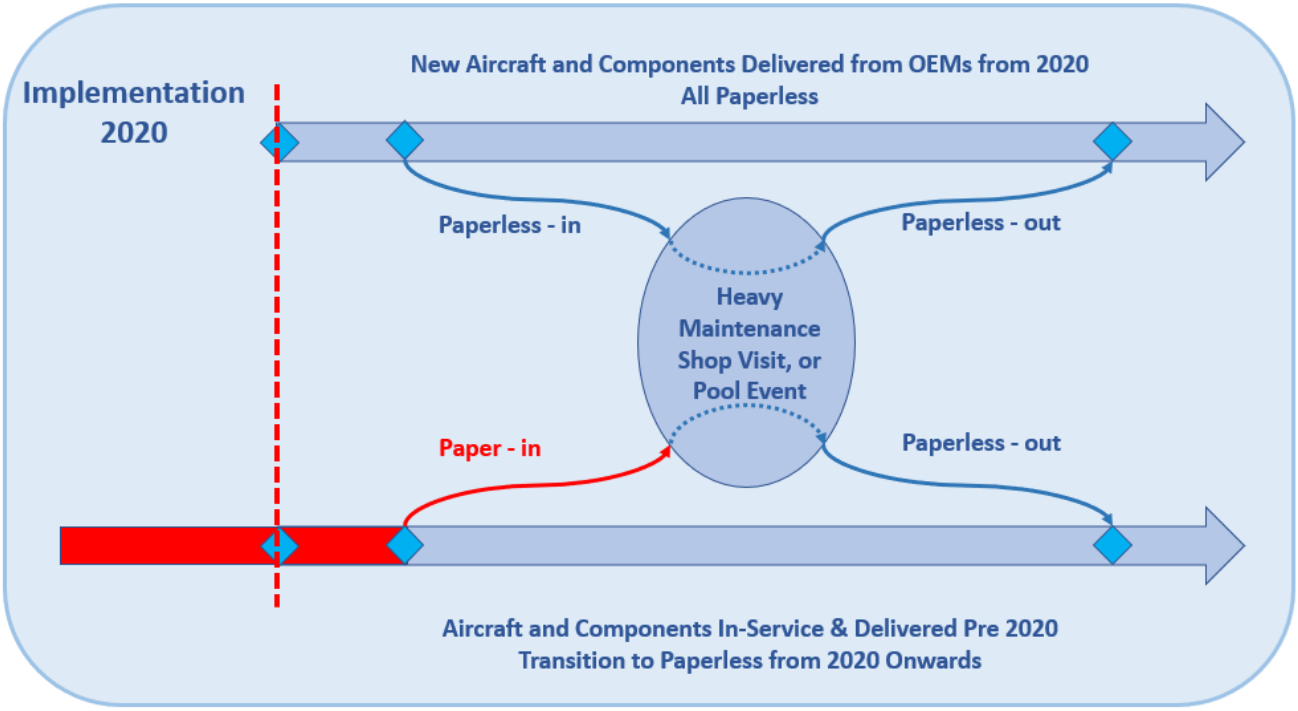


Figure 3: LLP Movement History Template Implementation Targets

IATA's implementation target is to have all information pertaining to the LLPs captured as per the proposed template, and the accompanying guidelines starting as of end of 2020.

For new aircraft, delivered after the effective date, the first operator/owner should receive the Time Zero for all LLPs from the respective OEM/Supplier and from thereon should start building the history of LLPs on the proposed template.

For older LLPs, there is no mandate that the current operator/owner needs to provide all historical information prior to the effective date (end of 2020) in the proposed format/template. However, after the effective date, the related information is expected to be recorded as per the proposed template. For further clarity, "Older/Currently existing Fleet LLP's" - documents required per this template are not required for operations that occur prior to Dec 31, 2020. The documents per the template are required for all maintenance actions, part movements, shop visits and ownership transfers that occur after Dec 31, 2020.

5.3 Template (Life-Limited Part Movement History Sheet)

LIFE LIMITED PART (LLP) MOVEMENT HISTORY SHEET

PART NUMBER : 5A1757 Serial Number RSTDK33910

PART DESCRIPTION : FAN DISK

OPERATOR	INSTALLED AIRCRAFT				INSTALLED ASSEMBLY						PART							SUPPORTING DOCUMENT		HANDOVER
OPERATOR	TYPE AND MODEL	AC REG	MSN	MTOW	DATE	TYPE	THRUST RATING	S/N	TSN	CSN	DATE ON WING	DATE OFF WING	P/N	TSN	CSN	LIFE LIMIT		HOURS & CYCLES REMAINING		REASON FOR RECORD ENTRY	REFERENCE	ID
																HOURS	CYCLES	HOURS	CYCLES			
IAE													5A1757	0.0	0		20,000 C	N/A	20,000 C	Production	8130	John Robinson
US AIRWAYS	A320-231	N637AW	99	250,000	29/06/2005	V2500A1	27,000 lbs	V0086	44,565 H	19,956 C	dd-mm-yyyy	dd-mm-yyyy	5A1757	0.0	0	0 H	20,000 C	N/A	20,000 C	Installation		
US AIRWAYS	A320-231	N637AW	99	250,000	15/09/2008	V2500A1	27,000 lbs	V0086	55,103 H	24,552 C	dd-mm-yyyy	dd-mm-yyyy	5A1757	10,538.0	4,596	0 H	20,000 C	N/A	15,404 C	Removal		
US AIRWAYS	A320-231	N622AW	54	250,000	16/04/2009	V2500A1	27,000 lbs	V0086	55,103 H	24,552 C	dd-mm-yyyy	dd-mm-yyyy	5A1757	10,538.0	4,596	0 H	20,000 C	N/A	15,404 C	Installation		
US AIRWAYS	A320-231	N622AW	54	250,000	24/02/2010	V2500A1	27,000 lbs	V0086	57,413 H	25,594 C	dd-mm-yyyy	dd-mm-yyyy	5A1757	12,848.0	5,638	0 H	20,000 C	N/A	14,362 C	Removal		
US AIRWAYS	A320-231	N622AW	54	250,000	13/03/2011	V2500A1	27,000 lbs	V0086	57,413 H	25,594 C	dd-mm-yyyy	dd-mm-yyyy	5A1757	15,158.0	5,638	0 H	20,000 C	N/A	14,362 C	Installation		
US AIRWAYS	A320-231	N622AW	54	250,000	20/08/2013	V2500A1	27,000 lbs	V0086	64,615 H	28,989 C	dd-mm-yyyy	dd-mm-yyyy	5A1757	22,360.0	9,033	0 H	22,000 C	N/A	12,967 C	Change in operational parameters	8130	
US AIRWAYS	A320-231	N633AW	82	250,000	15/11/2013	V2500A1	27,000 lbs	V0086	64,615 H	28,989 C	dd-mm-yyyy	dd-mm-yyyy	5A1757	29,562.0	12,428	0 H	22,000 C	N/A	9,572 C	Installation		
US AIRWAYS	A320-231	N633AW	82	250,000	15/01/2015	V2500A1	27,000 lbs	V0086	66,103 H	29,887 C	dd-mm-yyyy	dd-mm-yyyy	5A1757	31,050.0	13,326	0 H	22,000 C	N/A	8,674 C	Removal		Jim Bicknell
AERCAP	A320-231	N633AW	82	250,000	15/01/2015	V2500A1	27,000 lbs	V0086	66,102 H	29,887 C	dd-mm-yyyy	dd-mm-yyyy	5A1757	32,537.0	13,326	0 H	22,000 C	N/A	8,674 C	Change of operator		Ed Fanning

Key

Items encircled in light green are referred to as “LLP Movement History Sheet Header Items”.

Items encircled in light blue are referred to as “LLP Movement History Sheet Items”.

Item encircled in brown is referred to as “LLP Movement History Sheet Supporting Documentation Section”.

Item encircled in dark blue is referred to as “LLP Movement History Sheet Handover Section”.

Figure 4: LLP Movement History Sheet Template

5.3.1 Definitions and Instructions on How to Fill out the Template

This section defines all the items on the LLP Movement History Sheet and explains how to fill out the required information.

1. LLP Movement History Sheet Header Items

i. Part Number

The manufacturers, supplier or industry standard identity for the subject part, 2000, 2200, assembly, kit or material item. Part Number, when linked with its Manufacturer Code unambiguously identifies a given item.

ii. Serial Number

A Part Serial Number (SER) or Unique Component Identification Number (UCN), along Data Matrix (DM), with a code identifying the party assigning it, will uniquely identify the part throughout its life, whether or not the Part Number changes.

iii. Part Description

Specifies the full descriptive name of a part or component according to the manufacturers sourcing document. Where manufacturer's sourcing documents use differing nomenclature for the part or component, one should preferentially use the nomenclature published in the production approval holder's illustrated parts catalogue. If such nomenclature is unavailable, then one may rely on the nomenclature published in a production approval holder's instructions for continued airworthiness (such as an Engine Maintenance Manual (EMM)). If neither of these resources exist, then one may rely on a Vendor Component Maintenance Manual (CMM).

2. LLP Movement History Sheet Items

Before going into the definitions of the LLP Movement History Sheet Items, it's worth noting that the items on the first row (Operator, Installed Aircraft, Installed Assembly, Part, Supporting Document and Handover) represent the "birth record" of the part (LLP).

i. Operator

Operator: Name of the airline. Where an owner takes possession of the part – such as a leasing company – and operates the LLP (or the asset on which it is installed) then the owner should be listed and any relevant time (such as for staging flights, functional check flights, or maintenance acceptance flights) should also be recorded.

ii. Installed Aircraft

a. Type and Model: Aircraft type and model on which the LLP is installed
b. AC REG: Aircraft registration
c. MSN (Manufacturer's Serial Number): Number assigned by manufacturer to designate the aircraft
d. MTOW (Maximum Take-Off Weight): Maximum weight for take-off as limited by aircraft strength and airworthiness requirements. This is the maximum weight at start of take-off run, in pounds (lbs.). **This field should only be populated when the LLP being tracked is a landing gear part.**

iii. Installed Assembly

Assembly refers to an engine, an auxiliary power unit (APU), a landing gear and the like.

a. Date On & Date Off refers to Date On Wing & Date Off Wing respectively.
b. Type: Assembly Type, as designated by the manufacturer
c. Thrust Rating in pounds (lbs.): This field should only be populated when the LLP being tracked is an engine part.
d. S/N: Assembly Serial Number
e. TSN (Time Since New) to be reported in flight hours and rounded up as follows: integer rounded up, e.g. 3,422.3 or 3,422.8 will be rounded as 3,423, as appropriate/required in each case.
f. CSN (Cycles Since New) to be reported in flight cycles.

iv. Part

This section collects data on the LLP

a. DATE ON (dd-mm-yyyy): Date On Wing (Installation date)
b. DATE OFF (dd-mm-yyyy): Date Off Wing
c. P/N: Part Number
d. TSN (Time Since New) to be reported in flight hours and rounded up as follows: integer rounded up, e.g. 3,422.3 or 3,422.8 will be rounded as 3,423.
e. CSN (Cycles Since New) to be reported in flight cycles.
f. Life Limit: As specified in the type design, the mandatory continuing airworthiness information or instructions for continuing airworthiness is: hours and cycles.
g. Cumulative Utilization: For hours, only report hours (integer, rounded up), for cycles, only report cycles.
h. Hours and Cycles Remaining: Report hours and cycles.

Please note that Utilization should be shaded for rows showing a Modification (MOD) or Repair.
Calculation: H/C REMAINING = LIFE LIMIT - UTILIZATION or UTILIZATION = LIFE LIMIT - H/C REMAINING

The row for a MOD should be shaded in for the Cumulative Utilization because the part did not operate on-wing. The information about the MOD line would be carried down to the next Installation line and continue to calculate from there.

Utilization reflects how much Life (Cycles or Hours) of the LLP has been consumed. Certain engine OEMs have formulae to calculate life consumed based on the severity of operations, the environment etc. An LLP in the same engine may consume more or less cycles than actual landings based on these conditions.

v. Supporting Document

a. Reason for Record Entry: Select from the dropdown menu available in the template. The dropdown menu has the following items to select from:
   - Production
   - Installation
   - Removal
   - Change of Operator
   - Change in Operational Parameters
   - Commercial & Policy (includes: Stagger, Spare, Leasing, Convenience…)
   - Functional Test
   - Modification
   - Overhaul
   - Repair
   - New Part
   - Internal Shop Check
   - Lease Return

b. Reference: Reference must contain name of approval document authorizing modification to the part.

vi. Handover

The Handover section should be filled out by the engine manufacturer, the aircraft manufacturer then the operator at time of return or change to new airline. The two pieces of information to be filled in are: Name and Signature.

5.3.2 Definitions of Reason-For-Record-Entry Activities

1. Production: It refers to a new engine or component from the OEM that has never been used since manufactured. In terms of supporting documentation needed to prove that a component is new, please refer to the three scenarios below.

   i. Scenario 1: If the engine comes with the aircraft from the OEM, an Engine Logbook, EDS, VSL or equivalent confirming zero cycles, and Export Certificate of Airworthiness are required.

   ii. Scenario 2: If the engine is bought and supplied to OEM for installation, then 8130/Form 1, EDS, VSL or equivalent that shows Component Breakdown and Accessory & LLP List need to be provided by the engine manufacturer.

   iii. Scenario 3: If the component is bought and supplied to an owner or operator for installation, then 8130/Form 1, EDS, VSL or equivalent needs to be provided.

2. Installation: It refers to the work that is carried out and certified by an approved maintenance organization, including a Part 145 (trace from an MRO operation) organization or any other entity permitted to perform installation under the laws of the state of jurisdiction (typically the state of registration for complete aircraft). In terms of supporting documentation needed as a proof for part installation, please refer to the two scenarios below:

i. Scenario 1: If the part is new, 8130/Form 1 is needed.

ii. Scenario 2: If the part is used, then 8130/Form 1, as well as full back-to-birth (BtB) documentation is required. The BtB documentation includes, Engine Data Submittal, Readiness Log, Certificate for the engine where the part was installed, Incident/Accident Clearance Statement (ICS) [4] shown in Appendix 3, History of Migration from previous operators (engines where it was installed). For cases where an MRO offers to install an LLP, the LLP status from each engine from which it was removed is required as a proof for installation.

3. Removal: It refers to Assembly/LLP being removed from the aircraft or assembly. In terms of supporting documentation needed as a proof for part removal, please refer to the two scenarios below:

   i. Scenario 1: If the part is new, 8130/Form 1 is needed.

   ii. Scenario 2: If the part is used, then 8130/Form 1, as well as full back-to-birth (BtB) documentation is required. The BtB documentation includes, Engine Data Submittal, Readiness Log, Certificate for the engine where the part was installed, Incident/Accident Clearance Statement (ICS), History of Migration from previous operators (engines where it was installed). For cases where an MRO offers to install an LLP, the LLP status from each engine from which it was removed is required as a proof for removal.

4. Change of Operator: It refers to Assembly/LLP being moved from one operator to another. This can include a situation where an owner (such as a lessor) takes possession from another operator and then uses the asset in a way that affects the LLPs (such as a staging flight or a maintenance acceptance flight). In terms of supporting documentation needed as a proof for change of operator, please refer to the two scenarios below:

   i. Scenario 1: If the part is new, 8130/Form 1 is needed.

   ii. Scenario 2: If the part is used, then 8130/Form 1, as well as full back-to-birth (BtB) documentation is required. The BtB documentation includes, Engine Data Submittal, Readiness Log, Certificate for the engine where the part was installed, LLP status for every removal and installation from different host engines, Incident/Accident Clearance Statement (ICS) for each host engine the LLP operated in, History Log of Migration from previous operators (engines where it was installed). For cases where an MRO offers to install an LLP, the LLP status from each engine from which it was removed is required as a proof for change-of-operator.

5. Change in Operational Parameters: It refers to any changes in life limits that can be imposed without assembly removal. Such changes could be ascribed to change of thrust or increase in the life limit by the OEM. In terms of supporting documentation, the LLP status sheet along with the specific rating details of the engine the part was used in are required. The LLP usage status at different thrust rates is entered in separate lines in the logbook. It is also pertinent to note that, for some engines, life limit doesn't change regardless of the thrust rate.

[4] Incident Clearance Statement (ICS) should be provided for the aircraft from which the part or full engine is removed. It should highlight if the aircraft was involved in any incident/accident and if, as a result, the part or engine removed was damaged.

5.3.3 Some Additional Guidelines to Complete the Template

1. Effective Date: The effective date will be decided by IATA's Aircraft Leasing Technical Group (ALTG). Currently, we are looking at the 2020 deadline. After this date, any new part (or an old part going to the shop) will have to be traced in this manner and electronically. Data should be recorded as the template suggests only after the effective date. For older LLPs, there is no mandate that the current operator/owner needs to provide all historical information prior to the effective date. For new aircraft, delivered after the effective date, the first operator/owner operator should receive the Time Zero for all LLPs from the respective OEM/Supplier.

2. Template vs Sheet: The template is the list of items that need to be tracked and traced as the LLP is produced, operated, transferred or scrapped. Currently, the template is in the form of an Excel spreadsheet. Once the template is filled with a specific LLPs information, it becomes that LLPs sheet (e.g. its digital twin).

3. Format: The Excel spreadsheet represents one electronic format that can be used to track LLPs. In the future, all the information should be recorded and transmitted using an electronic data standard (e.g. XML or JSON) that will be developed. This will allow seamless electronic transfer of the LLP record across industry stakeholders that need to have access to the information. Transforming the spreadsheet into a standardized electronic form will be led by A4A/ATA e-business group.

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

5.4 Responsibility for Supporting Documentation of the LLP

1. The Type Certificate Holder is responsible to provide the birth certificate of the LLP at the time of the aircraft delivery. Records should be provided to the owner and the operator (airline) as they take delivery of the aircraft. When an assembly with LLPs is being delivered separately from an aircraft (e.g. an engine/landing gear/APU), the birth certificate should be provided to the owner and the operator of the component (e.g. a leasing company, a maintenance provider, a parts' supplier etc.) by the manufacturer; if no record was provided by the manufacturer, though, then an owner of a verified new article. Similarly, a birth certificate should be provided when an LLP is purchased new (as a single part) from the LLP Manufacturer. In IATA's future Digital Aircraft Operations vision, the LLP manufacturer should provide an electronic file that becomes the "digital twin" of the part. The first record on this file registers the date that the part entered service and all other LLP data required at production.

2. The maintenance provider (MRO) should be responsible to provide the Authorized Release Certificate (e.g. 8130-3/Form1) to the operator indicating all the work that was done (this can include providing it to the operator's agent when the agent provides the LLP to the MRO for work). The Authorized Release Certificate should be provided to the owner (lessor) of the LLP if the LLP is not directly associated with an operator; this would include providing the Certificate to the lessor if the part is in transfer between leases.

3. In certain cases, the CAMO representative may act on behalf of the airline and keep LLP records. However, the operator is ultimately responsible for keeping an accurate and complete record for the LLP utilization and transitions.

5.5 Responsibility for Record Keeping of the LLP

1. The operator will record cycles flown along with dates and related information as per the template. The operator will record movement(s) of the LLP from an assembly or aircraft to another similar as per template. The operator will be responsible for attaching the proper documentation as provided by an approved repair organization to repair the part. If the Operator #1 is the owner of the asset (LLP), and the part is on lease to another Operator #2, the current operator (i.e. #2) will be responsible to keep up the records and return them along when the part (or whole component) is returned.

2. The operator should be responsible for recording the usage (and activities) on the LLP Movement History Sheet for as long as they operate the part (or the part is under their operations). The operator should update any LLP movements from one major component to another (e.g. between engines, APUs, landing gears). If the part gets exchanged or sold, the LLP Movement History Sheet should be provided along with the part. The operator (and its designated responsible person; i.e. a quality manager) should be responsible for keeping, signing off and transferring the records when the part changes hands (operator or owner).

3. The electronic file can be updated continuously, at certain intervals, when a transaction occurs or when the part changes hands.

4. The owner and/or operator should be responsible for up keeping the record when the part is not under operation (i.e. not assigned to an operator). However, MROs (and CAMOs) can also act on behalf of the owner and/or operator in maintaining the record. This can happen in cases of module exchanges etc. Similarly, any parts' supplier or distributor should be responsible for either up keeping the record (if they own the part) or providing the proper information to the owner/operator as required (if they serve as a bailee or consignee,

or otherwise hold the LLP, without owning it). Typically, there is commercial back-to-birth documentation identifying the owner – while this is not included as part of the paper template (to avoid redundancy), it should be considered as a part of the electronic record if the information is recorded and transmitted using an electronic data standard (to consolidate the data in the electronic record).

5. Any maintenance activity and appropriate records should be provided by the approved repair organization and attached to the template by the operator (or by the owner of the part if the part is in transition and not under the control of any operator).

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

6. Regulatory Framework

Establishing the life limitation/limits of a part (LLP) is integral to the certification requirements for the respective part, is included in the Type Design of the product (e.g. aircraft or engine) and must be specified in the Airworthiness Limitation Section (ALS) of the Instructions for Continued Airworthiness (ICA) of the product incorporating the respective part (e.g. aircraft or engine maintenance manual).

The terminology "back-to-birth" is not generally used in aviation regulations. There are, nevertheless, clear regulatory requirements regarding records and traceability which must be complied with by the OEM, operator and MRO involved with the design & manufacturing, operation or repair of the respective LLP.

While a common denominator of such requirements expected from regulators regarding LLP use is set by ICAO SARPS (see Annex 6, Annex 8 and Doc. 9760), we will briefly review in this section two of the most referred to regulatory frameworks and some of their applicable provisions: EASA and FAA.

Given the large variety of topics and possible scenarios concerning LLPs, the regulators would also provide additional regulatory materials in the form of interpretation documents and FAQ answers.

EASA Regulations

The design approval holder (DAH) applicant is required to prepare an airworthiness limitations section of the ICAs detailing the limits for each life-limited part and make the information available to all known owners and operators of the product. [5]

The aircraft continuing airworthiness records which the Continuing Airworthiness Management Organization (CAMO) [6] is tasked with shall include, for the respective product (e.g. aircraft or engine), the current status of all [7]:

- Life-limited parts – defined as parts for which the maintenance schedule of the aircraft maintenance programme requires the permanent removal from service when, or before, the specified mandatory life limitation defined/expressed in any of the applicable parameters is reached. [8]
- Time-controlled components – defined as any component for which the maintenance schedule of the aircraft maintenance programme requires periodically the removal for maintenance to be performed in an appropriately approved organization for maintenance of components (workshop) to return the component to a specified standard, or the replacement of sub-components of the assembly by new ones, or the inspection or test of component's performance, after a service period controlled at component level in accordance with the specified airworthiness limitation defined/expressed in any of the applicable parameters. [9]

[5] EASA 21.A.31; 21.A.61; 21.A.107; 21.A.120A; 21.A.449

[6] Organization Certificated per Part M Subpart G or Part CAMO

[7] EASA M.A.305 (d)

[8] EASA GM M.A.305 (c)

[9] EASA GM M.A.305 (e)

The "current status" of life-limited parts should indicate, for each affected part, the life limitation, the total life accumulated in any applicable parameter (as appropriate) and the remaining life in any applicable parameter before the life limitation is reached. [10]

The "current status" of time-controlled components refers to their compliance status with the required periodic maintenance task(s) from the maintenance schedule of the aircraft maintenance programme specific to the time-controlled components. It should include the life accumulated by the affected components in the applicable parameter, as appropriate, since the last accomplishment of scheduled maintenance specified in the maintenance schedule of the aircraft maintenance programme. Any action that alters the periodicity of the maintenance task(s) or changes the parameter of this periodicity should be recorded. [11]

Controlling life-limited parts and time-controlled components is the job of the Continuing Airworthiness Management Organization (CAMO). [12] The CAMO should be granted unrestricted and timely access to records and current status of AD compliance and life-limited parts and time-controlled components as needed. [13]

The CAMO will need to ensure that the life-limited parts and time-controlled components do not exceed the approved limitation specified in the aircraft maintenance programme (AMP) and ADs. [14]

The owner or operator has an obligation to establish a system to keep, in a form acceptable to the competent authority, the in-service history record for each life-limited part. [15] The in-service record is the basis on which the part's current status of compliance with airworthiness limitations is determined.

In order to clearly define the expected informational content of the 'in-service history record' further guidance material [16] was developed to state that:

"The term 'in-service history record' embraces records from which the current status of life-limited parts can be determined. The 'in-service history record' template could be adjusted to the relevant characteristics of the life-limited part, e.g. an engine disk being different from a fire extinguisher squib or landing gear sliding tube. Such records document each time a life-limited part is placed in service or removed from service. They should clearly:

i. Identify the part by its part number and serial number;
ii. Show the date of installation and removal (i.e. date on/date off);
iii. Show the details of the installation and removal (i.e. type, serial number, weight variant, thrust rating, as appropriate, of the aircraft, engine, engine module, or propeller) at installation and removal of the part when this is necessary to appropriately control the life limitation; and
iv. Show the total in-service life accumulated in any applicable parameter, as appropriate, corresponding to the dates of installation and removal of the part. Any other events that would affect the life limitation, such as an embodied modification (in accordance with airworthiness directives, service bulletins or any product improvements) that affects the life limitation or changes the limitation parameter, should also be included in the in-service history record. Not all modifications would necessarily be pertinent to the life limitation of the

[10] EASA GM M.A.305 (d)
[11] EASA GM M.A.305 (f)
[12] Appendix XI to EASA AMC1 M.A.708(c) ¶ 2.11
[13] Appendix II to EASA AMC M.A.711(a)(3) ¶ 2.15
[14] EASA M.A.503 (a)
[15] EASA M.A.305 (e) (3) (i)
[16] EASA GM M.A.305 (j)

component. Additionally, if a parameter is not relevant to the life of the part, then that parameter does not need to be recorded.

A summary of the records' requirements related to life-limited parts and time-controlled components would be the following [17]:

Maintenance task from the maintenance schedule of the AMP		Type of component	Continuing airworthiness records
Mandatory instructions (and associated airworthiness limitations) in accordance with Part 21 affecting a component	Permanent removal (replacement)	Life-limited part e.g.: • engine HPT disc, landing gear sliding tube	• Current status (M.A.305(d)(1)); • In-service history record (M.A.305(e)(3)(i)); • EASA Form 1 and detailed maintenance records for last scheduled maintenance and subsequent unscheduled maintenance (M.A.305(e)(3)(ii)); and • EASA Form 1 and detailed maintenance records for modifications and repairs (M.A.305(e)(2)(ii))
	Periodic removal for maintenance in an appropriate approved workshop, e.g.: • Overhaul of horizontal stabiliser actuator or of a landing gear • Replacement of a U-joint (of a gearbox)	Time-controlled component e.g.: • horizontal stabiliser actuator, landing gear gearbox	• Current status (M.A.305(d)(2)); • EASA Form 1 and detailed maintenance records for last scheduled maintenance and subsequent unscheduled maintenance (M.A.305(e)(3)(ii)); and • EASA Form 1 and detailed maintenance records for modifications and repairs (M.A.305(e)(2)(ii)).

Table 2: Records' Requirements Summary Related to Life-Limited Parts (LLPs)

The existence of specifics of the in-service life of engines, propellers and APUs is addressed by the guidance [18] stating that:

i. Some gas turbine engines and propellers are assembled from modules and the total life accumulated in service for the complete engine or propeller may not be kept. When owners and operators wish to take advantage of the modular design, then the total life accumulated in service for each module, as well as in-service history if applicable, and detailed maintenance records for each module, should be maintained. The continuing airworthiness records as specified should be kept with the module and should show compliance with any mandatory requirements pertaining to that module.

[17] EASA GM M.A. 305 (d)

[18] EASA AMC M.A. 305 (b)1

ii. The recording of in-service life accumulation may be necessary also in other measurement units to ensure the continuing airworthiness of the aircraft. For example, a mandatory life limitation measured in cycles of auxiliary power unit (APU) usage may apply to some rotating parts. In such a case, APU cycles need to be recorded.

The owner or operator has also an obligation to establish a system to keep, in a form acceptable to the competent authority, the Certificates of Release to Service (CRS) and detailed maintenance records for the last accomplishment of any scheduled maintenance and any subsequent unscheduled maintenance of all life-limited parts and time-controlled components until the scheduled maintenance has been superseded by another scheduled maintenance of equivalent scope and detail but covering a period not shorter than 36 months. [19]

There has been also a certain confusion about the understanding of "detailed maintenance records" required to fulfil the aircraft continuing airworthiness responsibilities under Part M and the "detailed maintenance records" required to be kept by the approved maintenance organization (AMO) executing the aircraft maintenance under Part-145.

The needed clarification states that [20]:

'Detailed maintenance records' called upon in Part M refers to those records required to be kept by the person or organization responsible for the aircraft continuing airworthiness in accordance with M.A.201 in order that they may be able to fulfil their obligations under Part M. These are only a part of the detailed maintenance records required to be kept by a maintenance organization under M.A.614, CAO.A.090(a) or 145.A.55(c). Maintenance organizations are required to retain all detailed records to demonstrate that they worked in compliance with their respective requirements and quality procedures.

Not all records need to be transferred from the maintenance organization to the person or organization responsible for the aircraft continuing airworthiness in accordance with M.A.201 unless they specifically contain information relevant to aircraft configuration and future maintenance. Thus, incoming certificates of conformity, batch number references and individual task card sign-off verified and/or generated by the maintenance organization are not required to be retained by the person or organization responsible in accordance with M.A.201. However, dimensional information contained in the task card sign-off or work pack may be requested by the owner/CAO/CAMO in order to verify and demonstrate the effectiveness of the aircraft maintenance programme. Information relevant to future maintenance may be contained in specific documents related to: modifications; airworthiness directives; repaired and non-repaired damage; components referred in M.A.305(d); and measurements relating to defects.

Remark: It is considered a best practice as part of the AMO record-keeping system (and it is also required by certain competent authorities) to record information (e.g. batch number or other tracking reference) relevant to the identification of all standard parts and material used during any maintenance. This practice may limit safety and industrial risks in the case where a batch is recalled by the manufacturer. Such record does not need to be transmitted to the owner/operator/CAMO.

[19] EASA M.A.305 (e) (3) (ii)

[20] EASA GM M.A. 305 (g)

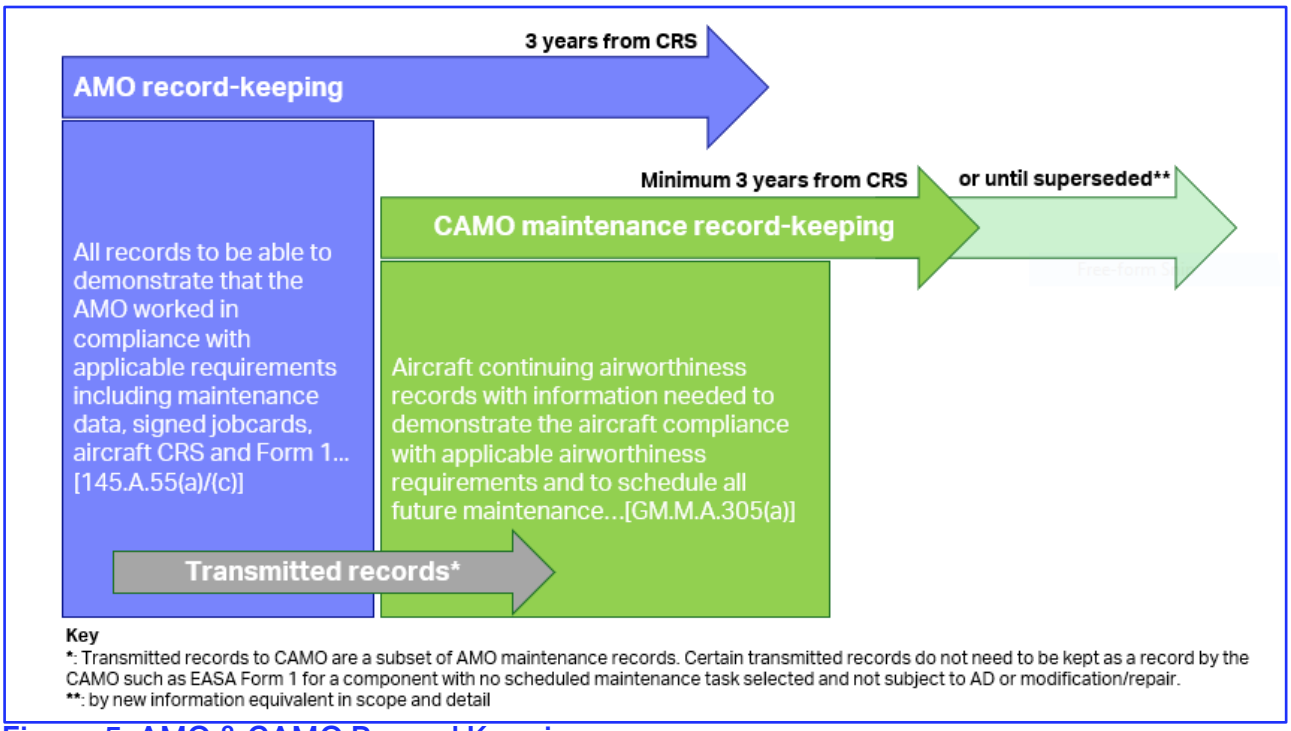


Figure 5: AMO & CAMO Record Keeping

It is to be noted that the record-retention period requirements are slightly different for the AMO and the CAMO. The AMO shall retain the records for 3 years, whereas the CAMO has to retain their records until they are superseded by new information (equivalent in scope and detail), but not less than 3 years. The starting point in both cases is when the aircraft or component maintenance has been released.

Additionally, the record-keeping obligation periods when the aircraft is permanently withdrawn from service is for at least 12 months. [21]

The ICAO requirement for record-retention period values is generally less demanding than the EASA requirement (e.g. Annex 8 Part II Chapter 6 requires AMO to keep detailed maintenance records for minimum 12 months and not 36 months).

The life-limited part or time-controlled part that reaches (or exceeds) its specified limit is considered to be unsalvageable [22] or unserviceable and shall be segregated from serviceable components, standards parts and materials. Additionally, the unsalvageable parts shall be permanently removed from the component supply system. [23]

While EASA rules do not require back-to-birth records, engine LLP records will require a full set of prior installation records in those cases where the life varies depending on the characteristics of the engine(s) the LLP was installed on. A similar approach would be eligible for any life-limited parts or time-controlled parts having the set limit

[21] EASA M.A.305 (e) 4

[22] EASA 145.A.42(a)(iii); AMC1 M.A.501(a)(3) ¶ (d); EASA AMC 145.A.42(a)(iii) ¶ (d)

[23] EASA 145.A.42(c)

dependent on the product they are installed on. Under such a scenario, back-to-birth records may reflect a mechanism for meeting this obligation.

Life status for life-limited parts is the sort of information that may be included in an EASA Form 1 maintenance release. [24] When a life-limited part is removed from an aircraft and the remover intends to attach an EASA Form 1 to the part, then the remover should first establish the appropriate life status of the part. [25]

If an aircraft is missing satisfactory evidence of current used life status, then such parts must be replaced. [26] Thus, life-limited parts that are missing satisfactory evidence of current used life status will be precluded from installation.

FAA Regulations

Product designers are required to establish airworthiness limitations for life-limited parts on their products. [27] Those who hold FAA design approval (such as a type certificate) are typically required to produce instructions for continued airworthiness (ICAs), [28] and the airworthiness limitations are published in these ICAs. [29] Life limits on aircraft parts are airworthiness limits that are listed in the ICAs. [30]

Operating limitations can arise in many different places on the aircraft. Engine life-limited parts typically include rotor and major static structural parts whose primary failure is likely to result in a hazardous engine effect. [31] APU limitations are considered to be operating limits on the aircraft in which the APU is installed. [32] Mandatory replacement times for fuel tank components [33] and electrical wiring interconnection system components [34] are also found in the airworthiness limitations section of the ICAs.

The theory behind mandatory replacement times is that these are parts whose failure could be hazardous and it is not reasonable to include a duplicate (back-up) system. The strategy for ensuring safety on such parts is that mandatory replacement times are established in order to make sure that these parts are removed before their failure can pose a hazard.

Manufacturers who make life-limited parts are required to mark them with serial numbers so they can be uniquely tracked. [35] This allows their life status to be tracked for individual life-limited parts.

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[24] GM to Appendix II to EASA Part M (Use of the EASA Form 1 for maintenance: EASA FORM 1 BLOCK 12 'REMARKS')

[25] EASA AMC M.A.613(a) ¶ 2.6.1(g).; EASA AMC2 145.A.50(d) ¶ 2.6.1(g)

[26] E.g. EASA AMC M.A.613(a) ¶ 2.8 (describing rules for oversight of component maintenance performed by an entity that is not approved under Part M or Part 145)

[27] E.g. 14 C.F.R. § 33.70 (requiring establishment of life-limits for certain engine parts)

[28] E.g. 14 C.F.R. § 25.1529 (requiring creation of ICAs for aircraft)

[29] 14 C.F.R. App'x H25.4 (requiring the airworthiness limitations section to include all mandatory times)

[30] E.g. id. (requiring replacement times to be listed in the airworthiness limitations section)

[31] 14 C.F.R. § 33.70

[32] 14 C.F.R. § 25.1522 (requiring that limitations established for the auxiliary power unit be specified as operating limitations for the airplane)

[33] 14 C.F.R. § 25.981(d)

[34] 14 C.F.R. § 25.1729

[35] 14 C.F.R. § 45.15(c)

Design approval holders must furnish the ICAs containing the airworthiness limitations to operators and others who are required to comply with them. [36] This typically includes repair stations. [37] Other parties may have limited access to such resources.

Three types of parties have primary regulatory responsibilities related to ongoing management of the airworthiness limitations on life-limited part (the mandatory replacement times):

- First, operators are required to maintain records showing the current status of each life-limited part. [38] Current status means the total time on the life-limited part. [39] Air carriers are required to manage airworthiness and maintenance on their products, [40] so they must actively manage the comparison of the current status to the life limits found in the airworthiness limitations in the ICAs. Nowhere in the FAA's regulations is specified that operators need back-to-birth traceability. The FAA' Chief Counsel has opined that back-to-birth traceability is not required for life-limited parts. [41]
- Second, those who perform maintenance are required to do so in accordance with the published airworthiness limitations, which means that they must respect the life limits associated with life-limited parts. [42] Because they are among the parties who must respect life limits, they are required to have access to the airworthiness limitations section of the ICAs. [43]
- Third, anyone who removes a life-limited part from a type-certificated product must "safely disposition" the life-limited part. [44] "Safe disposition" means a method that deters the installation of the part after it has reached its life limit by preserving current life-status data, and/or by preventing the part from being reinstalled. This rule applies to anyone who removes the part from an aircraft, ranging from repair stations who remove an article to overhaul it, to non-certificated entities who are disassembling the product. These "safe disposition" parties are also required to transfer the life limit status information when they transfer the life-limited part. [45] If a person subject to this "safe disposition" rule asks the design approval holder for marking instructions to preserve life status, then the design approval holder must either provide those instructions or state that the article cannot reasonably be marked. [46] Those who are subject to this "safe disposition" rule help preserve information about current life status, even though they might not have access to airworthiness limitation information.

Back-to-birth traceability represents one mechanism – but not the only permissible mechanism – to help these three types of parties meet their obligations with respect to life-limited parts.

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[36] 14 C.F.R. § 21.50(b)

[37] Instructions for Continued Airworthiness Responsibilities, Requirements and Contents, FAA Order 8110.54A Chap. 6 ¶ 4(a)(3) (Oct. 23, 2010)

[38] 14 C.F.R. §§ 91.417(a)(2)(ii), 121.380(a)(2)(iii), 135.439(a)(2)(ii)

[39] FAA Interpretation 1992-36 (June 1, 1992) ("the current status of a life-limited part always has been interpreted as the total time on the life-limited part")

[40] 14 C.F.R. § 121.363(a)

[41] E.g. FAA Interpretation 1992-36 (June 1, 1992) (explaining that back-to-birth traceability would only be necessary "in those situations where the operator's records are so incomplete that an accurate determination of the time elapsed on the life-limited part could not be made")

[42] 14 C.F.R. § 43.16

[43] 14 C.F.R. § 21.50(b)

[44] 14 C.F.R. § 43.10(c)

[45] 14 C.F.R. § 43.10(d)

[46] 14 C.F.R. § 45.16

For all regulatory authorities, it is important to highlight the necessity of an appropriate tracking of life-limited parts compliance with applicable Airworthiness Directives (AD). LLPs that require special inspections, repairs, modifications or handling per FAA ADs shall have proper documentation showing AD compliance prior to return to service. Documentation may include, from a regulated source, the Return to Service (RTS) certificate or the AD Status showing compliance. This documentation shall remain with the part's back-to-birth history.

Other Regulatory Authorities

While the above mentioned (EASA and FAA) regulatory frameworks are the ones with the largest global recognition and applicability, there are many states that developed their own bodies of regulation which, although well aligned in most cases with the previously mentioned requirements, may contain elements specific to the respective jurisdiction.

A sample of such regulatory provisions would include:

- **TCCA** (**Canada**) with
  - provisions in Part V – Standard 571 – Maintenance the section 571.09 Installation and Disposal of Life-Limited Parts
  - AC No.571-024 Documentation Required for the Installation of Parts onto Canadian Registered Aircraft
- **CASA** (**Australia**) with AC 20-03 v1.0 Identification and management of aeronautical products
- **CAA** (**New Zealand**) with AC00-1 Acceptability of Parts
- **SACAA** (**South Africa**) with Technical Guidance Material for Authenticity and Serviceability of Aircraft Parts

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7. References

1. www.componentcontrol.com/system/comfy/cms/files/files/000/000/676/original/1010_EASA.pdf
2. www.faa.gov/documentLibrary/media/Form/FAA_Form_8130-3.pdf

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8. Appendices

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8.1 Appendix 1 – Operational History Record

To be issued on Operator Headed Paper

ENGINE MODEL **XXXXXXXXXXX**
SERIAL NO. **XXXXXX**

Date	Action	Aircraft Reg.	Position	TSN	CSN	Thrust Rating	Operator/Shop	Comments
01-Jan-14	Installed	N12345	1	0	0	XXX	ABC Airlines	
30-Jun-15	Removed			5,000	2,500			Convenience removal.
14-Jul-15	Installed	N23456	2	5,000	2,500	YYY	ABC Airlines	Converted to YYY thrust prior to installation.
31-Dec-15	Removed			7,500	3,000			Convenience removal.
03-Jan-16	Installed	N12456	1	7,500	3,000	XXX	ABC Airlines	Converted to XXX thrust prior to installation.
30-Jun-16	Removed			12,500	3,750			HPT blade cracking
31-Aug-16	Shop Visit	-	-	12,500	3,750	XXX	Engine MRO #1	
02-Sep-16	Installed	N12345	2	12,500	3,000	XXX	ABC Airlines	
31-Oct-16	Removed			13,000	3,200			Lease Return

Signed _____ Date _____
Name
Position

8.2 Appendix 2 – EASA Form 1 & FAA Form 8130-3

1. Approving Competent Authority / Country		***AUTHORISED RELEASE CERTIFICATE*** EASA FORM 1			3. Form Tracking Number
4. Organisation Name and Address:					5. Work Order/Contract/Invoice
6. Item	7. Description	8. Part No.	9. Qty.	10. Serial No.	11. Status/Work
12. Remarks					
13a Certifies that the items identified above were manufactured in conformity to: ☐ approved design data and are in a condition for safe operation ☐ non-approved design data specified in block 12			14a. ☐ Part-145.A.50 Release to Service ☐ Other regulation specified in block 12 Certifies that unless otherwise specified in block 12, the work identified in block 11 and described in block 12, was accomplished in accordance with Part-145 and in respect to that work the items are considered ready for release to service.		
13b. Authorised Signature		13c. Approval/ Authorisation Number	14b. Authorised Signature		14c. Certificate/Approval Ref. No.
13d. Name		13e. Date (dd/mmm/yyyy)	14d. Name		14e. Date (dd/mmm/yyyy)

EASA Form 1-Issue 2

1. Approving Civil Aviation Authority/Country: FAA/United States	2. **AUTHORIZED RELEASE CERTIFICATE** FAA Form 8130–3, AIRWORTHINESS APPROVAL TAG				3. Form Tracking Number:
4. Organization Name and Address:					5. Work Order/Contract/Invoice Number:
6. Item:	7. Description:	8. Part Number:	9. Quantity:	10. Serial Number:	11. Status/Work:
12. Remarks:					
13a. Certifies the items identified above were manufactured in conformity to: ☐ Approved design data and are in a condition for safe operation. ☐ Non-approved design data specified in Block 12.			14a. ☐ 14 CFR 43.9 Return to Service ☐ Other regulation specified in Block 12 Certifies that unless otherwise specified in Block 12, the work identified in Block 11 and described in Block 12 was accomplished in accordance with Title 14, Code of Federal Regulations, part 43 and in respect to that work, the items are approved for return to service.		
13b. Authorized Signature:	13c. Approval/Authorization No.:		14b. Authorized Signature:		14c. Approval/Certificate No.:
13d. Name (Typed or Printed):	13e. Date (dd/mmm/yyyy):		14d. Name (Typed or Printed):		14e. Date (dd/mmm/yyyy):

User/Installer Responsibilities

It is important to understand that the existence of this document alone does not automatically constitute authority to install the aircraft engine/propeller/article.

Where the user/installer performs work in accordance with the national regulations of an airworthiness authority different than the airworthiness authority of the country specified in Block 1, it is essential that the user/installer ensures that his/her airworthiness authority accepts aircraft engine(s)/propeller(s)/article(s) from the airworthiness authority of the country specified in Block 1.

Statements in Blocks 13a and 14a do not constitute installation certification. In all cases, aircraft maintenance records must contain an installation certification issued in accordance with the national regulations by the user/installer before the aircraft may be flown.

FAA Form 8130–3 (02–14) NSN: 0052-00-012-9005

8.3 Appendix 3 – Incident/Accident Clearance Statement

(ON COMPANY LETTERHEAD)

Date

Incident/Accident Clearance Statement

To Whom It May Concern:

Aircraft [enter registration], details of which are specified below, has been operated by [insert company name] during the period from [enter delivery date] to [enter redelivery date]. The aircraft has a valid Certificate of Airworthiness from [insert country of registration] as of the date of this statement.

Configuration details as of date of this statement;

Description	Type/Part No.	Serial No.	TSN	CSN
Aircraft				
Engine				
Engine				
Propeller				
Propeller				

I hereby certify that, to the best of my knowledge, during the period stated above:

1. Neither the aircraft, nor any part installed have been;

    a. damaged during, or identified as the root cause of, a reportable incident or accident as defined by Annex 13 to the Chicago Convention, or

    b. subjected to severe stress or heat (such as in a major engine failure, accident, or fire) or has been submersed in salt water,

    unless its airworthiness status was re-established by an approved maintenance organisation in accordance with the applicable airworthiness regulations and instructions of the type certificate holder and/or supplemental type certificate holder and/or OEM of the part, and supported by an authorised airworthiness release certificate.

2. No part has been installed on the aircraft which was obtained from a military source or was previously fitted to a state aircraft as deemed by Article 3 of the Chicago Convention.

Authorised Airline Representative

Signature: _____

Name: _____

Position: _____

Note: For the Guidelines for understanding the Incident/Accident Clearance Statement (ICS) associated with this form, please refer to the next page.

Guidelines for understanding the Incident/Accident Clearance Statement (ICS)

The purpose of this incident/accident clearance statement is to remove the focus from whether or not an aircraft/engine/part has been subjected to an accident or incident and instead declare that the aircraft/engine/part has been deemed acceptable for continued use.

The statement in paragraph 1 of the ICS provides confirmation that irrespective of the event the aircraft/engine/part has had been subjected to, its airworthiness has been re-established by an approved maintenance organization in accordance with the applicable airworthiness regulations and instructions of the type certificate holder and/or supplemental type certificate holder (aircraft only) and/or OEM of the part.

The reason for changing focus is that the ICAO definitions of accident and incident (reference Chapter 1 'Definitions' of Annex 13 – 'Aircraft Accident and Incident Investigation' to the Chicago Convention) do not take into account the relative nature of the event and its direct impact on the aircraft/engine/part. Specifically, with regard to the definition of incident, it is highly subjective and subject to various interpretations by different regulatory authorities as to what affects or could affect the safety of operation.

The statement in paragraph 2 provides additional confirmation, now customary in the industry that no parts have been obtained from a military source.

Paragraph 2 also provides a statement regarding parts on state aircraft, considered appropriate because of industry requests for clarification regarding government use. Article 3 'Civil and state aircraft' of the Chicago Convention states that military, customs and police aircraft are deemed to be "state" aircraft. These aircraft are not placed on the civil register, therefore are not regulated by the associated national civil aviation authority in accordance with ICAO Standards and Recommended Practices (SARPs). For the purposes of this declaration parts fitted to an aircraft that has transferred from a state to a civil register, may require special evaluation prior to regaining their status of being civil aircraft parts, the rationale being that the provenance of these parts, while on a state register may not be verifiable. While aircraft on the civil register are regularly contracted by governments for state business, because the operation occurs under civil rules and the aircraft remains on the civil register during the period of operation, parts from such an aircraft are considered to be civil aircraft parts, therefore reference is made to state rather than government use.

This document is intended to act as an industry acceptable common standard having relevance for the requirements of the commercial aviation industry. Application and use of this document commenced in late 2014 and is not intended to apply retrospectively, therefore previously issued incident/accident statements should retain their acceptability for historical reference. This document will be subject to periodic review and update.

Two document templates have been designed, one to cater for aircraft, the other for engines. The engine template could also be used for individual parts in circumstances where incident / accident clearance statements are required, alternatively the certification provided in paragraphs 1 & 2 could be included in the remarks section of the ATA106 Spec for commercial trace.

8.4 Appendix 4 – LLP Back-to-Birth (BtB) Records Trace Template

Birth Documents			
(a) If delivered as a part installed on a new aircraft	**(b) If delivered as a part installed on a new engine**	**(c) If delivered as a part installed on a new module**	**(d) If delivered as a spare part**
(i) Certification tag for the aircraft showing: •Engine Model •Engine Serial Number	(i) Certification tag for the engine showing: •Engine Model •Engine Serial Number •Confirmation that the Engine is in "New" or "Manufactured" condition	(i) Certification tag for the module showing: •Module Part Number •Module Serial Number •Confirmation that the Module is in "New" or "Manufactured" condition	(i) Certification tag showing: •Part Number •Part Serial Number •Confirmation that the part is in "New" or "Manufactured" condition
(ii) Engine Data Submittal\Vital Statistics Log (or equivalent) showing: • LLP Nomenclature •LLP Part Number •LLP Serial Number •LLP TSN •LLP CSN •Engine Model •Engine Serial Number •Engine TSN •Engine CSN •Customer\Operator (optional)	(ii) Engine Data Submittal\Vital Statistics Log (or equivalent) showing: •LLP Nomenclature •LLP Part Number •LLP Serial Number •LLP TSN •LLP CSN •Engine Model •Engine Serial Number •Engine TSN •Engine CSN •Customer\Operator (optional)	(ii) Module Parts Listing showing: •Module Part Number •Module Serial Number •Part Nomenclature •Part Number •Part Serial Number •Part TSN •Part CSN	

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Operator Documents (required for each operator of the host engine for the LLP)
(i) LLP status at last removal of the engine from a host aircraft showing: •Engine Model •Engine Serial Number •Engine TSN •Engine CSN •Engine Thrust Rating •Operator •Date •LLP Nomenclature •LLP Part Number •LLP Serial Number •LLP TSN •LLP CSN at each thrust rating operated by the LLP since new •LLP Life Limit at each thrust rating operated by the LLP since new •LLP cycles remaining at the current engine thrust rating •Signature and either the name of person signing the LLP status or an identifying stamp (unless electronically generated under an approved system)
(ii) Operational history (On-Off Log) for host engine showing: •Engine Model •Engine Serial Number •Date of each installation and removal •Aircraft registration and installation position for each installation and removal •Host Aircraft TSN and CSN at each removal and installation •Engine TSN and CSN at each removal and installation •Operating thrust rating(s) for each Host Aircraft during period of installation •Host Engine Removal Reason (optional) •Signature and either the name of person signing the LLP status or an identifying stamp (unless electronically generated under an approved system). •Date of signature
(iii) Incident\Accident Clearance Statement for total period of operation by Operator

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Shop Visit Documents
(i) LLP status at input to the shop visit showing: •Engine Model •Engine Serial Number •Engine TSN •Engine CSN •Engine Thrust Rating •Operator •Date •LLP Nomenclature •LLP Part Number •LLP Serial Number •LLP TSN •LLP CSN at each thrust rating operated by the LLP since new •LLP Life Limit at each thrust rating operated by the LLP since new (optional) •LLP cycles remaining at the current engine thrust rating (optional)
(ii) Paperwork relating to work performed on the LLP (only required if maintenance work e.g. repair, modification, AD inspection, is performed): •Certification for work performed •Modifcation records that result in any part number changes and\or life extensions (if applicable) •Dirty finger print records\routing card for work performed on the LLP (optional)
(iii) LLP status at completion of a shop visit showing: •Engine Model •Engine Serial Number •Engine TSN •Engine CSN •Engine Thrust Rating •Operator •Date •LLP Nomenclature •LLP Part Number •LLP Serial Number •LLP TSN •LLP CSN at each thrust rating operated by the LLP since new •LLP Life Limit at each thrust rating operated by the LLP since new •LLP cycles remaining at the current engine thrust rating •Signature and either the name of person signing the LLP status or an identifying stamp (unless electronically generated under an approved system)

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