IATA Aircraft Leasing Technical Group (ALTG)

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

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Abbreviations

LLP	Life Limited Part
LLPBTBT	Life Limited Part Back to Birth Trace
TSN	Time Since New
CSN	Cycles Since New
OEM	Original Equipment Manufacturer
MRO	Maintenance, Repair and Overhaul Organization
CAMO	Continuing Airworthiness Management Organisation
LLPMHS	Life Limited Part Movement History Sheet (an Excel Template)
EASA	European Aviation Safety Agency
FAA	Federal Aviation Administration
BtB	Back-to-Birth Traceability
EDS	Engine Data Submittal
VSL	Vital Statistics Log

Background

In the past few years, the focus on LLP documentation has increased significantly, due to the fact that more LLPs are exchanged. Airlines are now facing more and more requirements from Lessors, so 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 documentation is the documentation associated with LLPs and their trace to birth (manufacture). Such documentation is considered critical by Lessors, since it can have a large impact on the asset value and marketability of the aircraft or, as applicable, on the standalone engines.

An LLP is a part with a hard limitation. At the time the aircraft was designed, the certifying authority has requested such part to have a certain limit, after which the part has to be destroyed. The limit is normally given in cycles, hours or calendar days. Whilst Landing Gear (LG) and Auxiliary Power Unit (APU) have LLPs, majority of them are in engines, which is why this document mainly focusses on the Engine LLPs. LG and APU LLPs shall be covered separately.

There is a lot of confusion around what exactly constitutes LLP BtB, and different parties have different 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.

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 ATA e-business standard is recommended for electronic data transmission between any interested parties.

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

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.

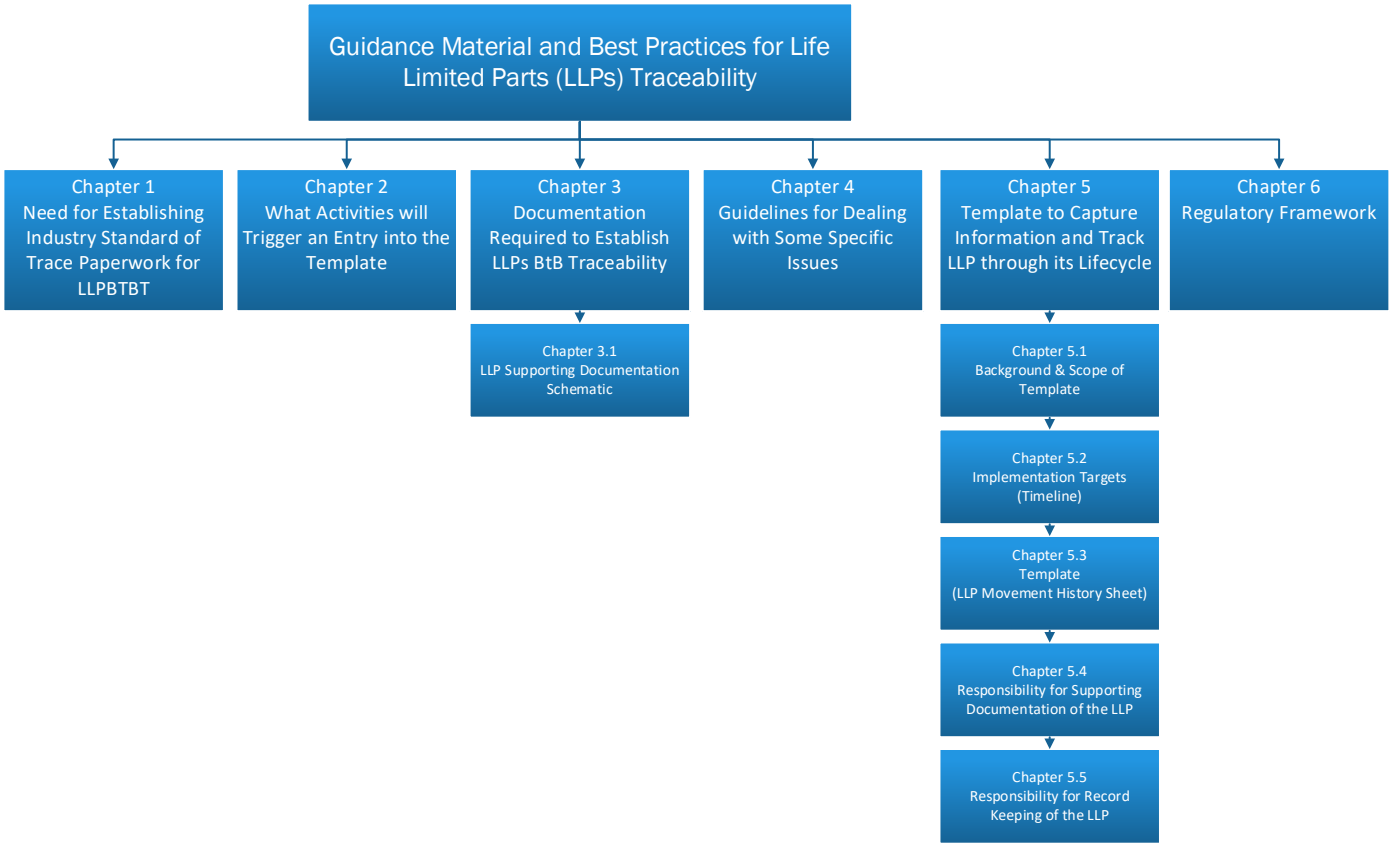

Figure 1: Document Structure

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.

- 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. 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, since Lessors are getting stricter on LLP BtB requirements.
- The **Lessor's core business** is to lease the aircraft in the most cost-effective way. The Lessor's interest is to spend as little time and money as possible on transferring aircraft and to maximize asset value for later sale. Hence the Lessor prefers the use of new LLPs, which 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. As a consequence, 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 aggressively attacked 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.

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. It's pertinent to note that the document doesn't include any commercial trace, i.e. it contains information about the LLP being installed on an engine assembly.

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 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 Traceability

1. Birth Documents

These documents relate to paperwork 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). 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 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. As LLP status documents are typically not generated by operators each time an LLP is installed on or removed from an engine, or each time an engine is installed or removed from an aircraft. 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 an LLPs history with that operator and records sufficient information that may be needed in the future.

In building an LLP BTBT 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 that involves the separation of major mating flanges. This 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 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 is 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)

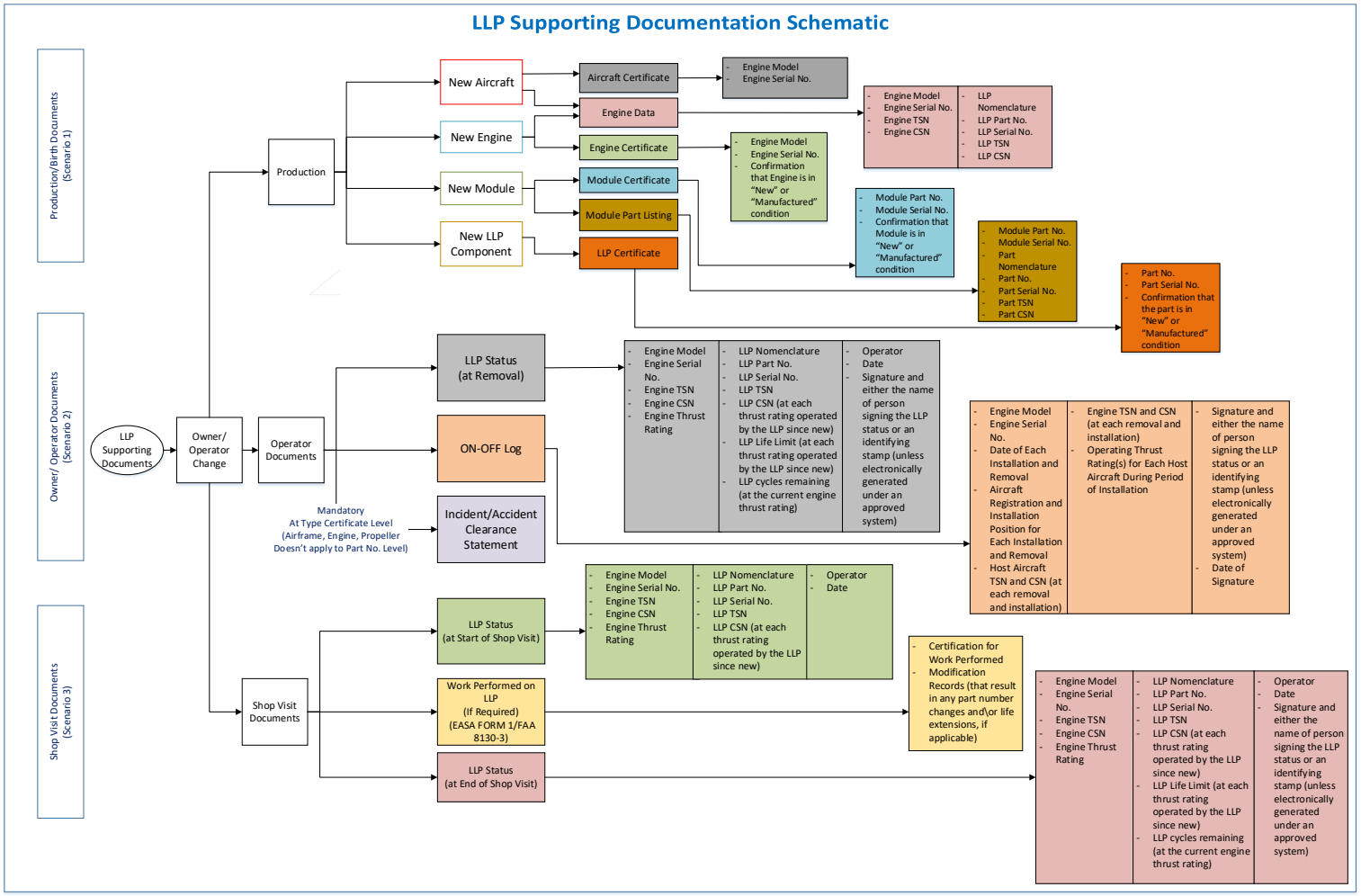
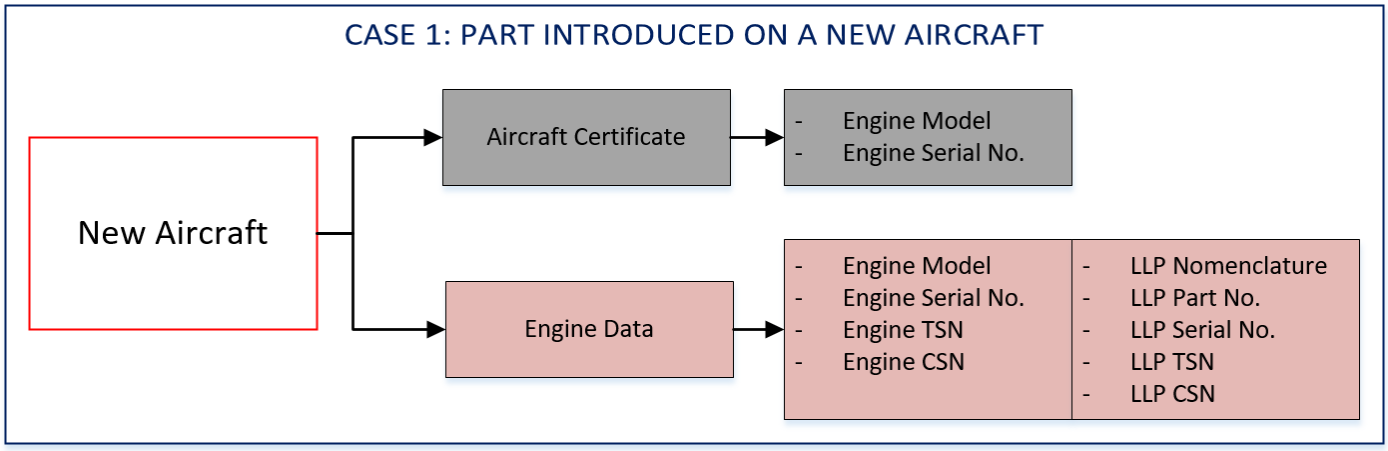


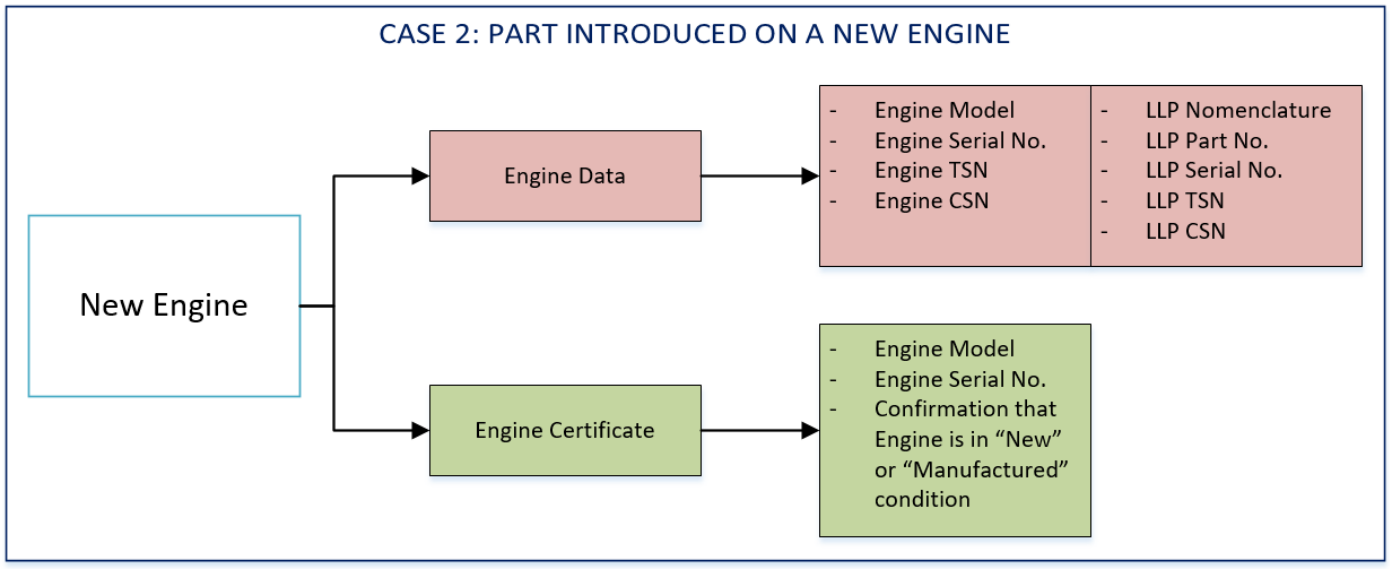
Figure 2: LLP Supporting Documentation Schematic [1]

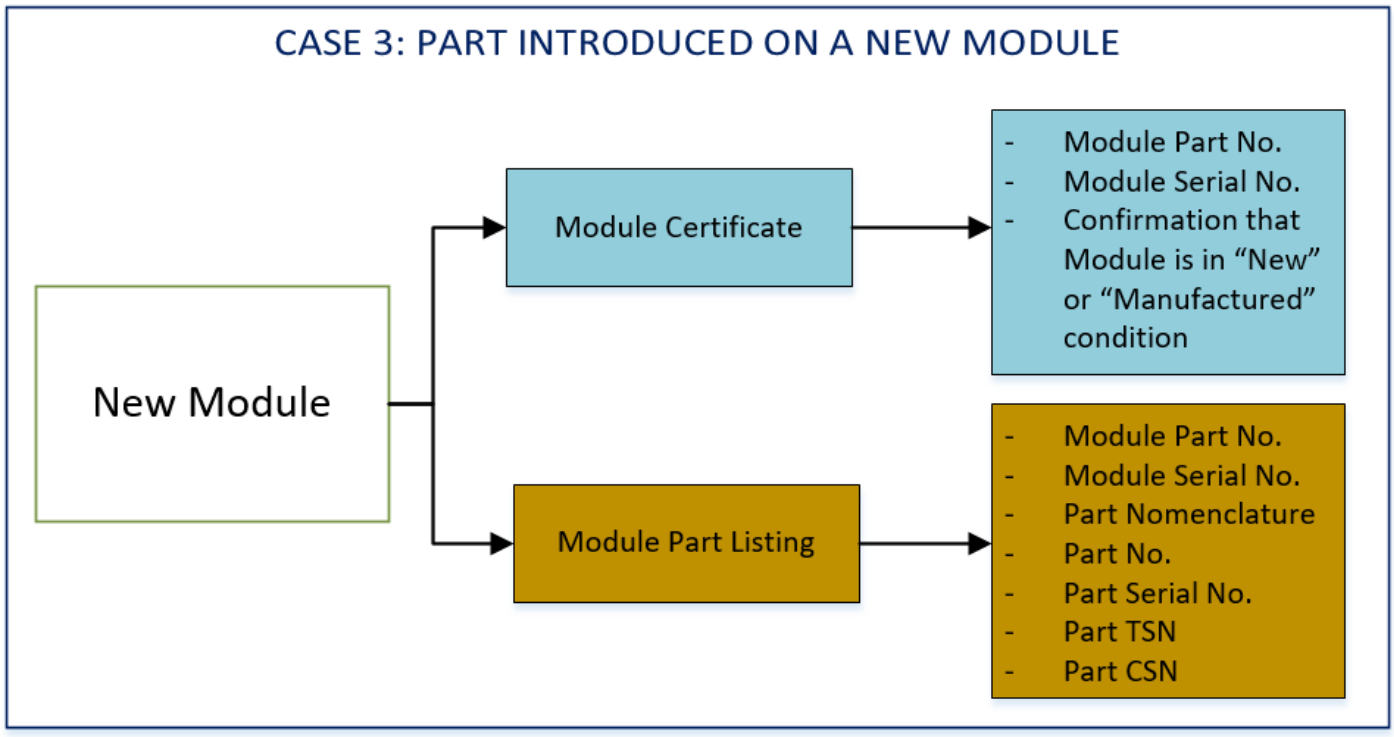
[1] The list of documentation as well as the type of information contained in it is further laid out in Appendix 4. Please note that the schematic reflects the engine LLP's documentation requirements. Landing Gear (LG) and APU LLP's documentation requirements shall be covered in a separate schematic.

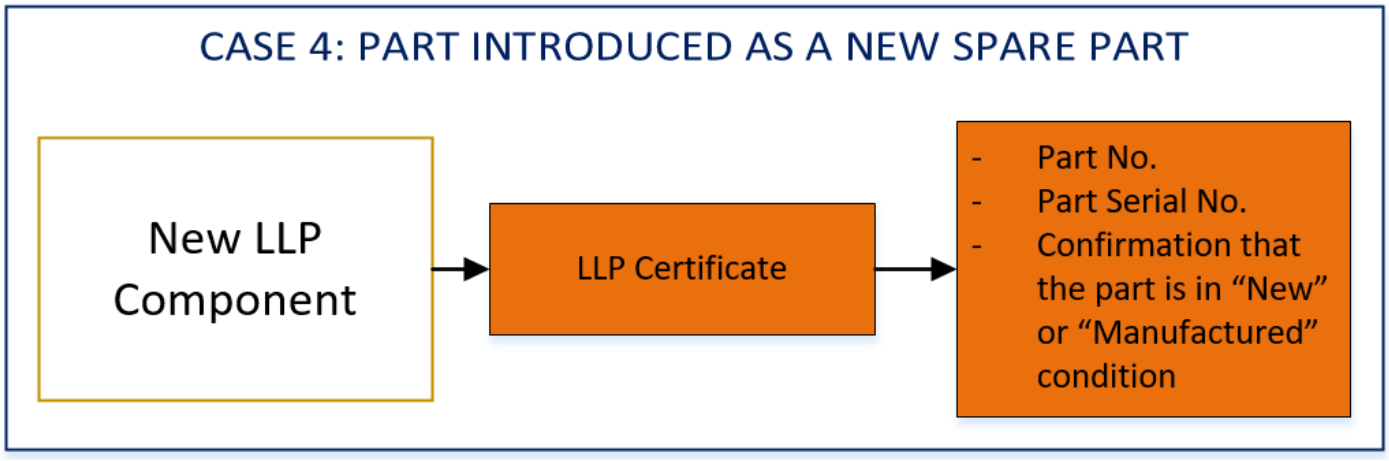
The schematic above summarizes the details laid out in section 2. It outlines the supporting documentation requirements of trace paperwork for Life Limited Parts under three distinct scenarios. Please note, in order to view the schematic full-scale, click on the schematic itself or this link Full-Scale Schematic.

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.

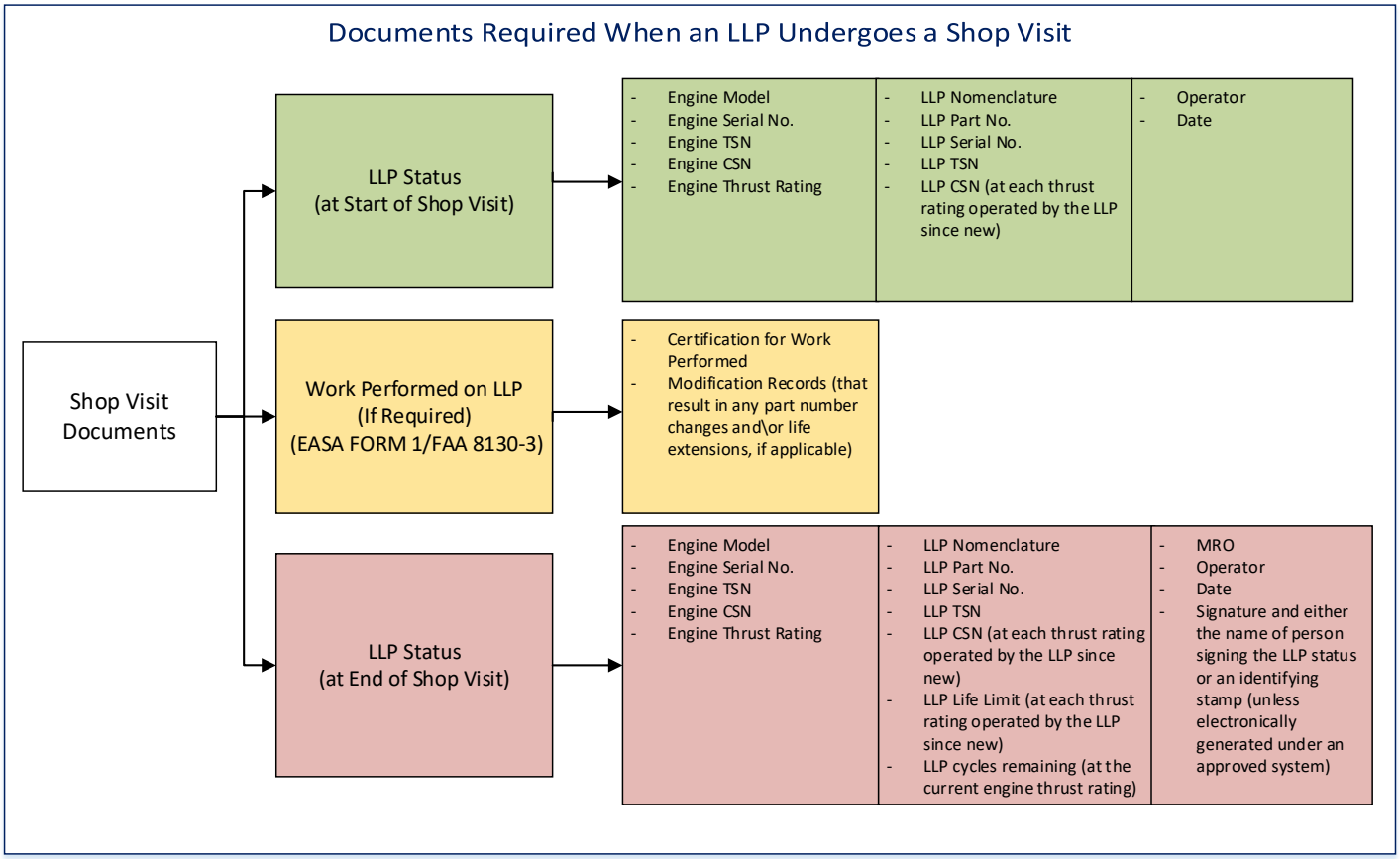





CASE 3: PART INTRODUCED ON A NEW MODULE
New Module
Module Certificate
- Module Part No.
- Module Serial No.
- Confirmation that Module is in "New" or "Manufactured" condition
Module Part Listing
- Module Part No.
- Module Serial No.
- Part Nomenclature
- Part No.
- Part Serial No.
- Part TSN
- Part CSN


CASE 4: PART INTRODUCED AS A NEW SPARE PART
New LLP Component
LLP Certificate
- Part No.
- Part Serial No.
- Confirmation that the part is in "New" or "Manufactured" condition

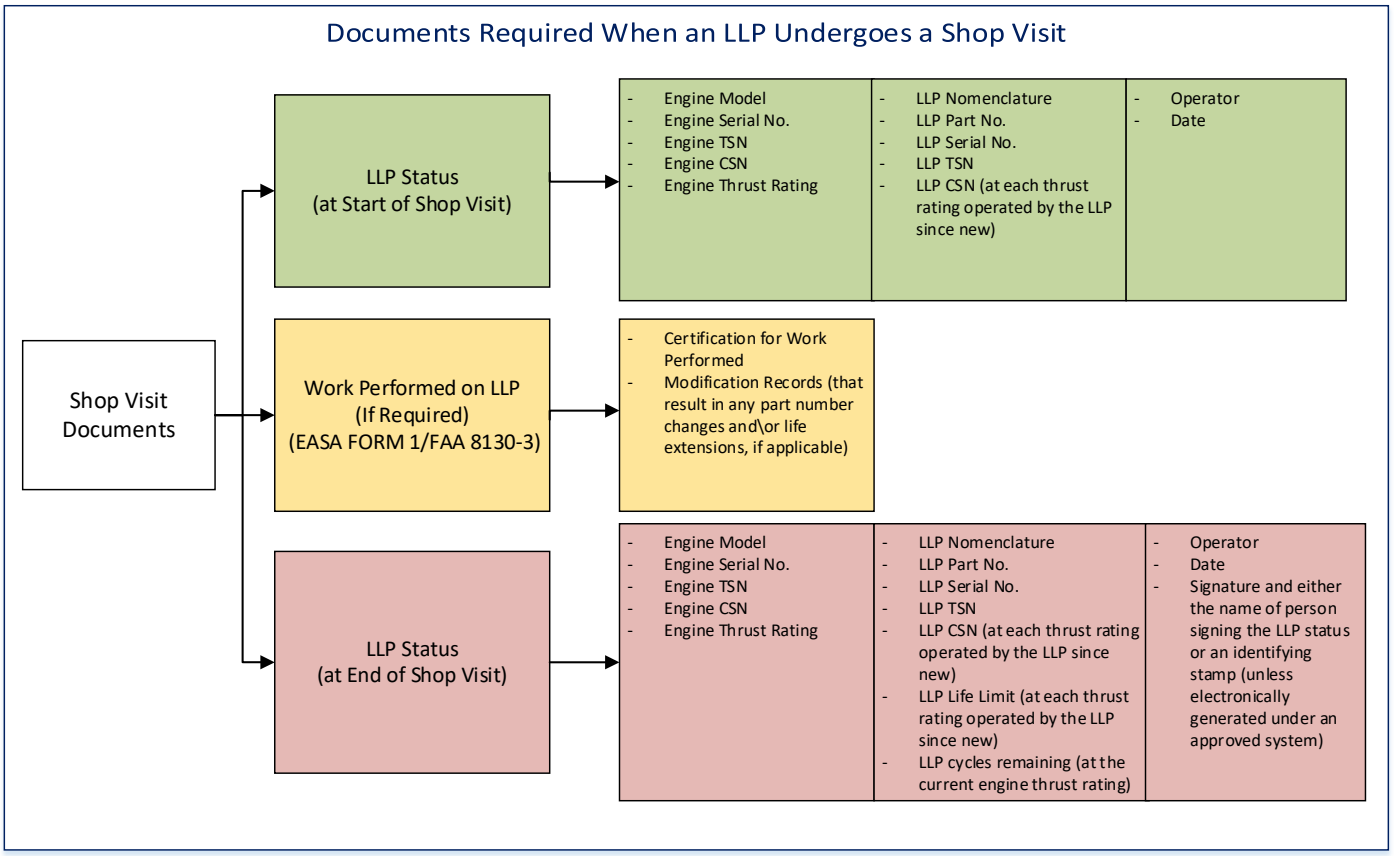
Scenario 2 : **When a part moves from one operator to the Next** . There are two sets of documents required when an LLP transitions from one operator to another , LLP Status Sheet and On -Off Log/Operational History Record , which shows details of all the installations and removals of the LLP onto /from different host engine(s) and different aircraft while with the one operator, including all thrust ratings ut ilised . 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 . Furthermore, as the part is 'used' and not 'new', there is another piece of documentation that is needed , the Incident/Accident Clearance Statement. 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 and if, as a result, the part removed wasin those documents is set out in the middle part of the schematic , and further elaborated in the diagram below.



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);
- 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 type of information (pertaining to the LLP and host engine) contained in those documents is set out in the lower half of the schematic labelled "Shop Visit Documents", and further elaborated in the diagram below.



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 LPP 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 while off lease or not assigned to an airline operator. In these cases, routine operator records are not prepared but it is important that any such operation is appropriately recorded as part of the LLP trace. A common-sense approach to this issue is to ensure that a log of the ferry flight(s) is included as part of the LLP BTBT, including details of all flight hours, cycles and thrust rating utilised. Such operation should then be included in the updated technical records to be provided by the next subsequent operator or MRO facility.

2. Engine Operation Records Special Cases

For LLPs installed on engines with One-Engine-Inoperative (OEI) ratings, the 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. Applicants may accomplish this by adding a finite number of cycles to the expended life of the affected engine life-limited parts or by using appropriate life reduction factors for each of the OEI power excursions.

3. Operation Records Produced by MRO

For some airlines, technical records management is contracted out to an MRO entity, often an engineering company associated with the operator. As all of the record keeping for the operator is performed by the MRO entity, all of the operator records and statements tend to be issued on the MRO entity letterheads and signed by representatives of the MRO instead of the operator. The common-sense approach is to accept records certified by such an MRO on behalf of an operator, provided they are accompanied by a letter from the operator stating that the MRO is contracted by the operator for the maintenance and provision of its technical records.

4. Operator Records Produced by CAMO

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 LLP BTBT 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 common-sense approach 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 LLP BTBT 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. For instances where technical documentation cannot be re-issued, the common-sense approach is for the operator or lessor and/or MRO to provide a letter explaining the error, the correction required along with an acknowledgement from the MRO that such error occurred 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 error was made by the operator or lessor and it is not possible to re-issue some or all of the records, the same approach should apply whereby the operator issues a letter explaining the error, the correction applied and a manuscript correction of the errors on the technical documentation.

In circumstances where the MRO and/or the operator is no longer in existence when the error is discovered, then the current certifying party (operator or lessor or another 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.

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 so far has been work-in-progress.

7. Documentation Dates

Not all technical documentation for a particular event can be issued on the same date, nor does it need to be. Common sense needs to apply to the requirements of the industry here al so. 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.

8. Use of Non-OEM Approved Parts or Repairs

Such parts or repairs are approved by the civil aviation authorities. Therefore, it doesn't make sense to make any reference to them.

9. 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 "Best Practices" is about: provide a clear understanding of the current technical requirements.

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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 some key challenges in the previous section 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 is not to become the industry requirement.

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 that the owner/operator has certain "adding" rights, e.g. information can only be added to the file.

5.2 Implementation Targets

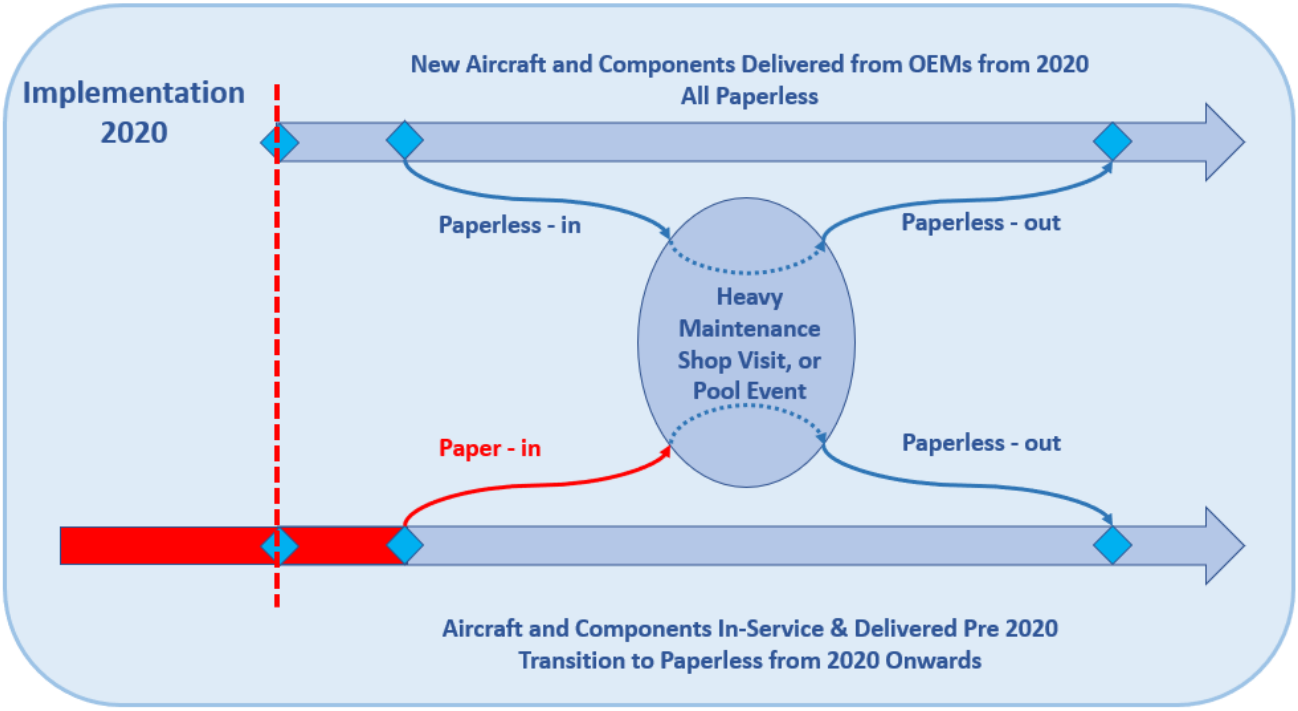

Figure 3: LLP Movement History Template Implementation Targets

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's 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 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 i.e. Airframe IPC, Engine Manual, or Vendor 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

ii. Installed Aircraft

a. Type and Model: Aircraft type and model on which the LLP is installed
b. AC REG: Aircraft registration
c. MSN (Manufacture 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 G ear 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: Utilization should be shaded for rows showing a MOD or MRO.
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.

The H/C remaining line would be the difference between the new limits and the TSN/CSN. For example: MOD Line 18 Hours (V18-T18 = Z18) & Cycles (W18-U18 = AA18).

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
   - Inspection
   - Modification
   - Overhaul
   - Repair
   - Visual Inspection
   - NEW
   - 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 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 two scenarios below.

   i. Scenario 1: If the engine comes with the aircraft from the OEM, an Engine Log book, 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 with shows Component Breakdown and Accessory & LLP List need to be provided by the engine manufacturer.

2. Installation: It refers to the work that is carried out and certified by an approved 145 (MRO) and 121 (Airline) license holder. 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)[2] shown in Appendix 3, History of Migration from previous operators (engines where it was installed), Bill of Sale, Shipping Document confirming that it (LLP) was shipped to the operator. 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), Bill of Sale, Shipping Document confirming that it (LLP) was shipped to the operator. 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. 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), Bill of Sale, Shipping Document confirming that it (LLP) was shipped to the operator. 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 log book. It is also pertinent to note that for some engines life limit doesn't change regardless of the thrust rate.

[2] 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) 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.

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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. Record 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. Similarly, a Birth Certificate should be provided when an LLP is purchased new (as a single part) from the LLP Manufacturer.

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. The Authorized Release Certificate should be provided to the Owner (Lessor) if the part is in transfer between leases.

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 should be responsible for up keeping the Record when the part is not under Operation (i.e. not assigned to an Operator). 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 provide the proper information to the Owner/Operator as required.

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 any Operator).

6. Regulatory Framework

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

The term "back to birth" is not generally used in aviation regulations. Nevertheless, there are clear regulatory requirements which must be respected by the OEM, Operator and MRO involved with the design & manufacturing, operation or repair of the respective LLP.

An example of such regulatory requirements are the provisions of:

- EASA Part M – M.A. 305 and associated Acceptable Means of Compliance (AMC) and Guidance Material (GM)
- FAA 14 CFR Part 43.10

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 emphasizes that:

"The requirements that apply to a service life-limited component (see definition in AMC M.A.305) are basically stated in M.A.305 (e) and (h). All detailed maintenance records of a maintenance action (e.g. a restoration) must be kept until another maintenance action equivalent in scope (another restoration) is done, but never less than 36 months. Keep in mind that:

- a service life limited component log card must be kept with all the relevant information, so the action should be recorded there, and
- the records showing compliance with other requirements stated in M.A.305, e.g. an airworthiness directive, or any other information that could be affecting the configuration of the aircraft, must be retained too.

There has been also a certain confusion about the understanding of "detailed maintenance records", because this term is used in a different context for continuing airworthiness management and approved maintenance organisation (AMO).

"Detailed maintenance records" as defined in M.A.614 or 145.A.55(c) are required to be **kept by an AMO** (respectively Part -M/F organisation or Part -145 organisation). Maintenance organisations are required to retain all detailed records in order to be able to demonstrate that they maintained aircraft a nd components in compliance with applicable requirements (see also remark below).

"Detailed maintenance records" as defined in M.A.305(h)(1) are those records, coming from the AMO having performed maintenance, required to be **kept by the owner/operator** (or the **CAMO** when required by M.A.201) allowing to determine the aircraft configuration, the airworthiness status of the aircraft and all components installed, as well as to plan future maintenance as required by the AMP, based on the last accomplishment.

Consequently, the AMO should transmit to the owner/operator/CAMO a certain subset of the AMO maintenance records, including the certificates of release to service and repair/modification data related to the performed

maintenance, so that the owner/operator/CAMO can demonstrate compliance with M.A.305. Not all AMO maintenance records need to be transferred from the AMO to the owner/operator unless they specifically contain information relevant to aircraft configuration/status and future maintenance. Thus, incoming certificates of conformity, batch number references and individual task card sign-offs verified by and/or generated by the maintenance organisation are not required to be transferred to the owner/operator/CAMO. However, dimensional information contained in the task card sign-offs or work packages may need to be transferred and kept by the owner/ operator.

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.

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 al l 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.

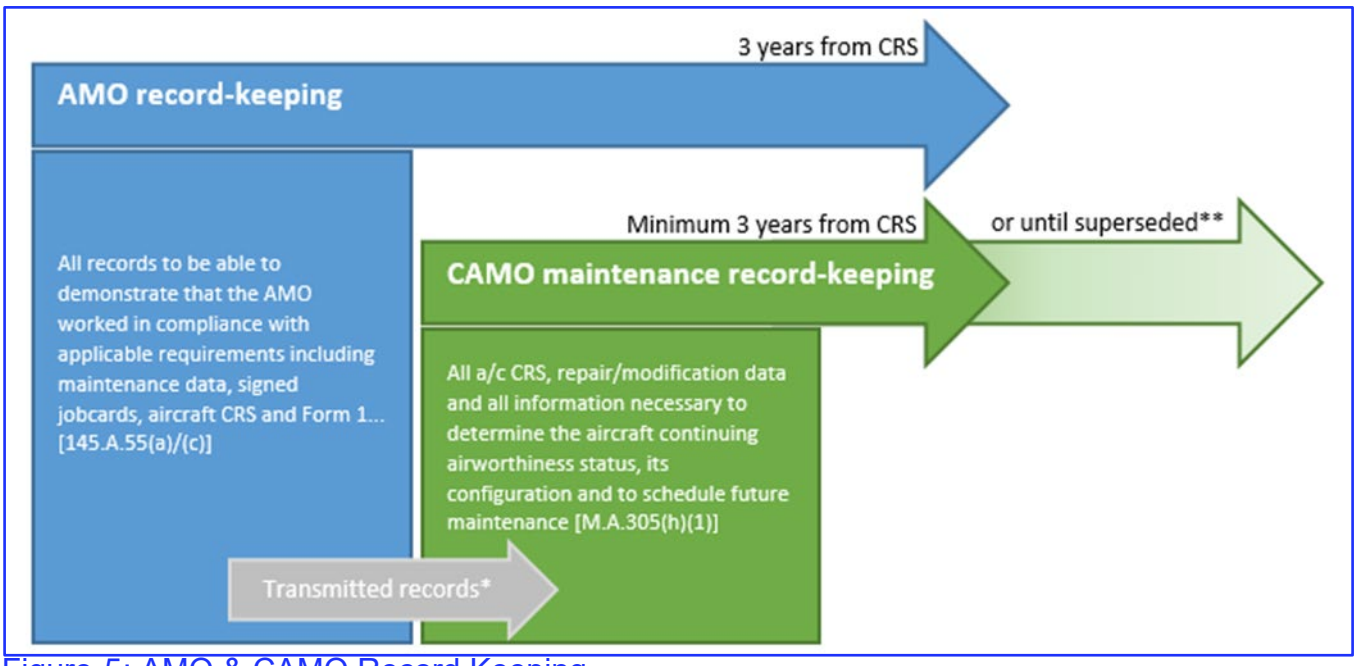

Figure 5: AMO & CAMO Record Keeping

*: Transmitted records is a subset of AMO maintenance records provided to the CAMO. Certain transmitted records do not need to be kept as a record by the CAMO such as EASA Form 1 for a component with no scheduled maintenance task selected and not subject to AD or modification/repa ir.
**: by new information equivalent in scope and detail"

7. References

1. https://www.componentcontrol.com/system/comfy/cms/files/files/000/000/676/original/1010_EASA.pdf

2. https://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 HistoryRecord

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 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: _____

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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