



Guidance Material and Best Practices for Aircraft Leases

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4.1 Edition





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Table of Contents

List of Figures	v
List of Tables	vi
Abbreviations.....	vii
Scope.....	xi
Introduction.....	xii
Section 1 – Background.....	1
1.1. Maintaining Asset Value	2
1.2. Common Misunderstandings	2
1.2.1 Back-to-Birth Traceability	3
1.2.2 Repairs	4
1.2.3 Records Presentation.....	5
Section 2 – Pre-Delivery.....	6
2.1. Letter of Intent	6
2.2. Representations and Warranties.....	7
2.3. Conditions Precedent	8
2.4. Insurance	8
2.4.1 Hull Insurance	9
2.4.2 Liability Insurance	9
2.5. Payment and Security	10
2.5.1 Security Deposit.....	10
2.5.2 Commitment Fee.....	10
2.5.3 Rent.....	11
2.5.4 Supplemental Rent or Maintenance Reserves (if applicable)	11
2.5.5 Maintenance Reserve Deposit	14
2.5.6 End of Lease Compensation	14
2.5.7 Letter of Credit.....	14
2.6. Cape Town Convention	14
Section 3 – Delivery	16
3.1. Delivery Conditions	16
3.1.1 Technical Aspects for Delivery	16
3.1.2 Delivery of New Aircraft	17
3.1.3 Delivery of Used Aircraft.....	17
3.1.4 Typical Delivery Conditions for Used Aircraft	18
3.1.5 Legal Aspects for Delivery	19
3.2. Aircraft Acceptance and Audits Process	20
3.2.1 Physical Acceptance	20
3.2.2 Delivery Schedule	21
3.2.3 Delivery Maintenance Check	22

3.2.4 Records Acceptance	22
3.2.5 Demo Flight/Borescope.....	24
3.2.6 Inspection	25
3.2.7 Inspection Report	26
3.2.8 Certificate of Acceptance	28
3.3. Transferability (Regulatory)	28
3.3.1 Registration	29
3.3.2 Design Approval	29
3.3.3 Airworthiness Certification	30
3.3.4 Continuing Airworthiness.....	31
3.3.5 Additional Airworthiness	32
3.3.6 Operational Requirements.....	32
3.3.7 Airspace Requirements	33
3.3.8 Other Requirements.....	34
3.3.9 Cockpit Security	34
3.4. Bilaterals	36
Summary	37
Section 4 – Operations.....	38
4.1. Alterations in Obligations	38
4.1.1 Cost Sharing Options	38
4.1.2 Maintenance Reserves: Payment and Claims	39
4.2. Events of Default	40
4.2.1 Non-payment.....	41
4.2.2 Insurances	41
4.2.3 Cross Default.....	41
4.2.4 Bankruptcy, Insolvency and Similar Proceedings	42
4.2.5 Change of Ownership	42
4.2.6 Adverse Change.....	43
4.2.7 Other Important EoDs	43
4.3. Sale-and-Leaseback.....	43
4.4. Engine Power by the Hour Maintenance Agreements	44
4.4.1 Payment Options.....	45
4.4.2 Entry/Exit Options and Number of Shop Visits	45
4.4.3 Flexibility in Work Scope.....	46
4.4.4 Flexibility in Engine Removal Planning	47
4.5. Engine Substitution	48
4.6. Technical Records	48
Section 5 – Redelivery.....	50
5.1. Redelivery Conditions	50

5.2. Redelivery Process.....	51
5.2.1 Initial Phase	55
5.2.2 Pre-redelivery Phase	55
5.2.3 Redelivery Phase.....	56
5.2.4 Return Acceptance Certificate / Deregistration	56
5.2.5 General Recommendations	56
5.2.6 Example “Redelivery Inspection and Acceptance Protocol”	57
Reference	65
References in Annexes	66
Annex I: Example Physical Inspection	68
Annex II: Typical Redelivery Records	71
Annex III: Typical Index of Delivery Book	78
Annex IV: Engine Documentation Checklist	80
Annex V: Structural Repair File Guidelines	81
1. Introduction	81
2. Regulatory Basis	81
2.1. EASA.....	81
2.2. FAA.....	84
2.3. EU-US Bilateral.....	84
3. Repair File Overview	84
3.1. Setup	85
3.2. Pitfalls.....	86
4. Definitions	86
4.1. Airbus Repair Definitions.....	86
4.2. Boeing Repair Definitions.....	87
4.3. FAA Repair Definitions	88
4.4. EASA Repair Definitions	88
Annex VI: Modifications Guidelines	89
1. Introduction	89
2. Regulatory Basis	89
2.1. EASA Procedures	89
2.2. FAA Procedures	90
3. Modification File.....	91
3.1. Pitfalls.....	92
Annex VII: Aircraft Maintenance Program Guidelines.....	93
1. Introduction	93
2. Regulatory Basis	94
2.1. EASA.....	94
2.2. FAA.....	94

3. Aircraft Redelivery File	95
3.1. Certification Maintenance Requirement / Airworthiness Limitation Tasks	96
3.2. Corrosion Prevention and Control Program	96
3.3. Sampling	97
3.4. Instructions for Continued Airworthiness	97
Annex VIII: Airworthiness Directives Guidelines	98
1. Introduction	98
2. Regulatory Basis	98
2.1. EASA.....	99
2.2. FAA.....	100
3. AD File Overview	101
3.1. Introduction	101
3.2. Pitfalls.....	104
Annex IX: Components Guidelines.....	105
1. Introduction	105
2. Regulatory Basis	105
2.1. EASA Procedures	105
2.2. FAA Procedures	106
3. Component File Overview	107
3.1. On Condition component file.....	107
3.2. Hard Time Component File.....	108
3.3. Pitfalls.....	108
Annex X: LLP Back-to-Birth Guidelines	109
1. Background	109
2. Introduction	109
3. Regulatory Basis	110
4. LLP Back-to-Birth Standard	112
4.1. LLP Birth (Manufacture)	113
4.2. On-off Logs	114
4.3. LLP Maintenance Records.....	114
4.4. Incident/Accident Clearance Statement	115
4.5. Influencing Parts	118
4.6. Ferry Flights	118
Annex XI: Definitions	119
Acknowledgements	120

List of Figures

Figure 1.	Document Structure	xiii
Figure 2.	Share of Worldwide Fleet under an Operating Lease (Ascend, 2017)	1
Figure 3.	Interest of Different Stakeholders	3
Figure 4.	Maintenance Reserves Accumulation over Various Operators	12
Figure 5.	Maintenance Reserves vs Maintenance Events.....	13
Figure 6.	Import processes.....	28
Figure 7.	Proposed Redelivery Plan	51
Figure 8.	Repair approval process for Member States	82
Figure 9.	Repair approval process for non-Member States	83
Figure 10.	EASA Classification process.....	90
Figure 11.	Schematic overview of AMP contents.....	93
Figure 12.	Generic process from unsafe condition to possible AD	99
Figure 13.	Overview and guideline for industry best practice in processing and documenting ADs	102
Figure 14.	Example of LLP BtB	112



List of Tables

Table 1. Different Types of Maintenance Reserves11

Table 2. Acceptance of Airworthiness Codes (example)30



Abbreviations

AC	Advisory Circular
ACMI	Aircraft, Crew, Maintenance and Insurance
AD	Airworthiness Directive
AIR	Aircraft Inspection Report
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
BAA	Bilateral Airworthiness Agreement
BtB	Back-to-Birth traceability
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
DAH	Design Approval Holder
DAR	Designated Airworthiness Representative



DER	Designated Engineering Representative
DOA	Design Organization Approval
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
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
GM	Guidance Material
HIL	Hold Item List
HMV	Heavy Maintenance Visit
HT	Hard Time
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
LDND	Last Done / Next Due
LLP	Life Limited Part
LOC	Letter of Credit



LOI	Letter of Intent
LOPA	Layout of Passenger Accommodation
LRU	Line-Replaceable Unit
MLG	Main Landing Gear
MPD	Maintenance Planning Document
MRBR	Maintenance Review Board Report
MRO	Maintenance, Repair and Overhaul Organization
MSG3	Maintenance Steering Group-3
NAA	National Aviation Authority
NDT	Non-Destructive Testing
NLG	Nose Landing Gear
NPRM	Notice of Proposed Rule Making
NRC	Non-Routine Card
OC/CM	On Condition/Condition Monitoring
ODA	Organization Designation Authorization
OEM	Original Equipment Manufacturer
OMP	Operator's Maintenance Program
OpSpecs	Operations Specifications
PAD	Proposed Airworthiness Directive
PASV	Pay At Shop Visit
PAYG	Pay As You Go
PBH	Power By the Hour
P/N	Part Number
PMA	Parts Manufacturer Approval
PPE	Pay Per Event
RAP	Repair Assessment Program
RII	Required Inspection Item
RNAV	Area Navigation
RVSM	Reduced Vertical Separation Minima
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
TCC	Time Controlled Components
TCDS	Type Certificate Data Sheet
TSN	Time Since New
UNIDROIT	International Institute for the Unification of Private Law
US	United States
VHF	Very High Frequency
VOR	VHF Omnidirectional Range
VSL	Vital Statistics Log
WDM	Wiring Diagram Manual
WFD	Widespread Fatigue Damage
WO	Work Order



Scope

IATA's 'Guidance Material and Best Practices for Aircraft Lease' provides information about many aspects related to aircraft leases with a focus on the technical perspective. This document is written for engineers working at the airline technical / engineering department as well as technical representatives from leasing companies, and offers guidance on lease related issues during the aircraft lease life-cycle. It describes the different subjects from a broad practical perspective, taking into account technical, regulatory (mostly FAA and EASA), legal and commercial considerations.

This document is structured in such a way that it covers the aircraft leasing process and areas of attention at delivery of an aircraft, during operation and at redelivery together with a look at common misunderstandings, legal considerations, insurance and relevant conventions. The annexes can be used as practical guidelines and templates.

IATA's Aircraft Leasing Advisory Group 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: alag@iata.org.

Introduction

Since the 1980s, when aircraft operating leases represented less than 5% of the overall aircraft operating market, the number of aircraft operating leases has grown significantly. Airlines have realized the advantage of aircraft leasing; adding aircraft to the current fleet for a convenient period of time, without the economic risk of aircraft ownership. Prior to the actual lease, a complicated process is enacted to make sure a lease contract satisfies both the Lessor and the airline. Over time this process has become more cumbersome and time-consuming due to the associated delivery and redelivery processes. The complexity and timespan of this process often catches airlines off-guard. It is therefore important for the Lessee to understand what difficulties must be dealt with, and how to avoid any time-consuming and costly pitfalls. Since there is no uniform protocol for engaging aircraft leases, the International Air Transport Association (IATA) has taken the initiative to provide guidelines and best practices for IATA airline members and other interested parties in this document.

This document may be used by airlines to effectively manage and optimize the leasing process. This document is written with an attempt to consider the airline's perspective, and also the perspective of the Lessor and the regulator to provide insight into the different points of view.

This document consists of five different sections which cover the entire aircraft leasing process, starting at the negotiation phase, through to operations and subsequent redelivery. Figure 1 illustrates the structure of this document.

- | | |
|------------------|--|
| Section 1 | describes the background of this document. |
| Section 2 | provides legalities which should be considered at the pre-delivery phase. |
| Section 3 | describes other legal as well as technical considerations, and formal acceptance of the aircraft in the delivery phase. The challenges of importing the aircraft from one state to another are also described in this section. |
| Section 4 | advises on best practices for minimizing costs for maintenance events, and offers some considerations in case the lease is at risk of early termination. |
| Section 5 | sets out guidelines for the redelivery process. In the final phase of the lease period, the Lessee and Lessor have to review the aircraft's compliance with the redelivery conditions, with regard to both the physical conditions of the aircraft and the technical records and documentation status. |

IATA recommends a process of continual review to ensure lease compliance throughout the leasing life cycle.

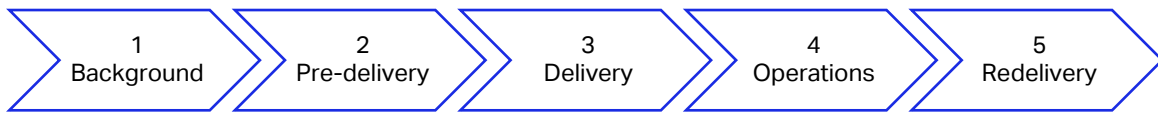


Figure 1. Document Structure

The annexes provide detailed insights into the most important procedures outlined in these guidelines.

Section 1 – Background



It is expected that approximately half of all aircraft worldwide will be under an operating lease in the next decade, as illustrated in Figure 2. While a lease allows airlines to add aircraft to their fleet without any ownership risks, introducing much-needed flexibility, it also introduces a series of unique challenges for the airline. Many of these challenges arise because the Lessor and the Lessee look at the lease from different perspectives.

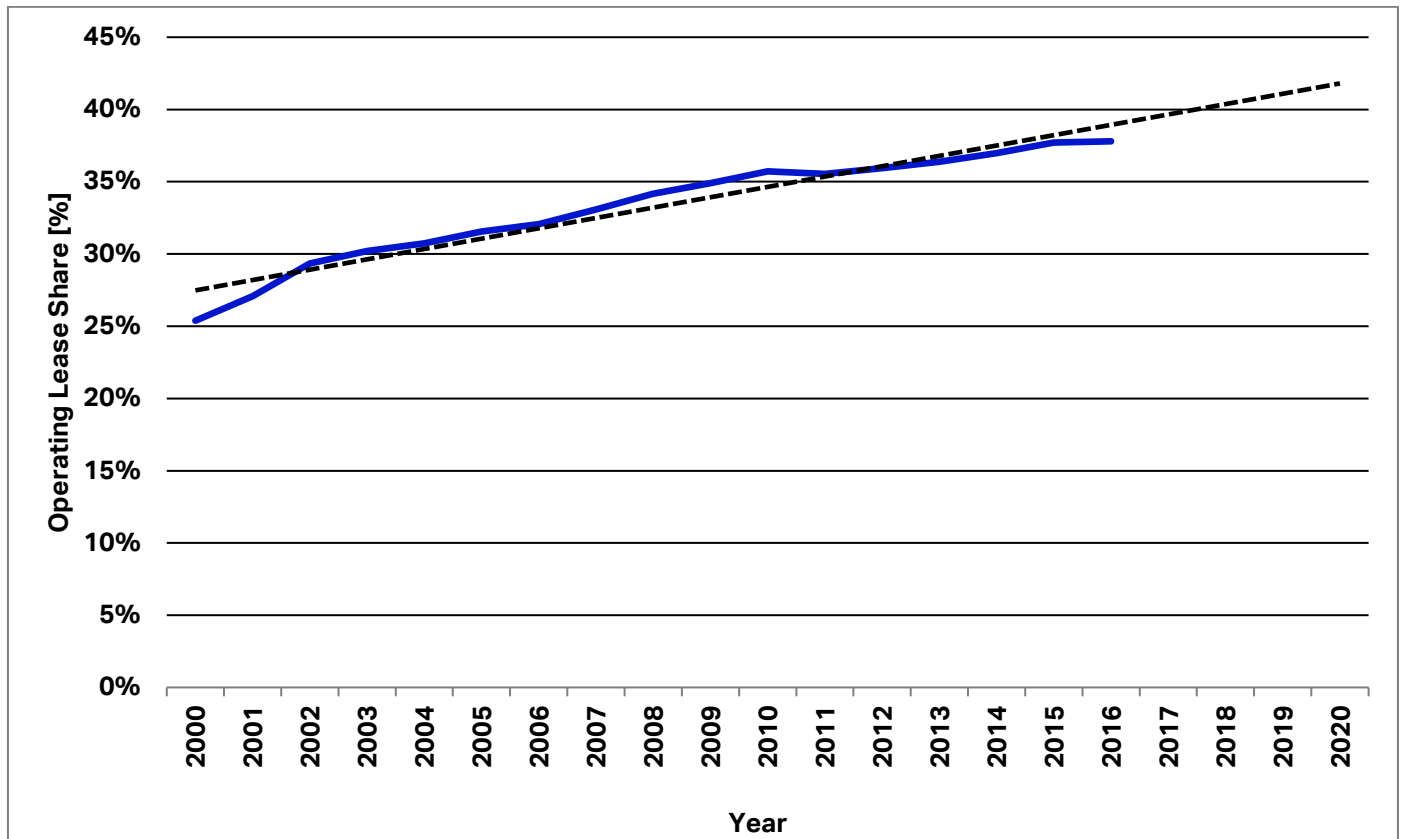


Figure 2. Share of Worldwide Fleet under an Operating Lease (Ascend, 2017)

1.1. Maintaining Asset Value

An aircraft operating lease places full operational and maintenance responsibility for the aircraft on the airline, together with legal liability and insurance responsibility during the lease term. The aircraft however remains the property of the Lessor (or owner) who will be seeking to maximize asset value and income generating potential over the full useful life of the aircraft, which will usually span multiple lease periods and Lessees. In many cases the Lessor will also be seeking to ensure compliance with upstream finance and jurisdictional requirements. The lease will therefore contain provisions which govern maintenance and record keeping standards together with limitations relating to the use and operation of the aircraft during the lease term. In addition, the lease will seek to address relevant aviation regulatory and jurisdictional requirements including creditor protections and mechanisms to facilitate recover of aircraft assets in a default scenario. To maintain the asset value a few basic Lessor objectives are stipulated below.

- The asset value depreciation must be in line with other similar aircraft under similar conditions. This implies that the aircraft must be operated and maintained in a non-discriminatory manner consistent with the Lessee's fleet.
- The asset should be transferable between jurisdictions without significant restrictions during the lease term (in the case of a default) and at lease expiry. Given the variability between jurisdictions, the lease will often require adherence to baseline airworthiness requirements (FAA or EASA) in addition to Lessees' local requirements. Furthermore, elaborate airline-specific changes or branding will need to be removed in order to increase the marketability of the aircraft, the cost bearer for the rebranding and reconfiguration of the aircraft is a commercial item that needs to be negotiated.
- The lease will contain a security, default and remedy framework to protect the Lessor's (and owner's) interests and facilitate both the recovery of the aircraft and damages which may arise in a default scenario. In some cases, depending on the credit-worthiness of the Lessee, the payment of a security deposit and maintenance reserves, security assignments and de-registration authority will provide the Lessor with additional protection mechanism if an event of default should occur. Regular inspection rights for Lessor and reporting by Lessee will enable the Lessor to monitor the condition of its asset throughout the lease period.

1.2. Common Misunderstandings

All of the specific technical, operational, and legal requirements will be included in an all-encompassing lease agreement, which the Lessor may have perfected over the course of numerous transactions. The complexity of such a lease agreement often results in a number of challenges for the airline.

Even though many lease agreements are extensive and detailed, no agreement can be ironclad or completely clear, and certain misunderstandings commonly occur. Such misunderstandings are frequently the result of different mindsets or diverging interests, and may eventually result in difficulties which are costly or time-consuming to resolve. A Lessor will look at the entire aircraft life-cycle, which usually consists of several leases to a number of different airlines. At the very least, the Lessor will look beyond redelivery of the aircraft. In contrast, the Lessee will only look at its own operation and lease term, as it only uses the aircraft for a pre-determined period. As a result, perceptions and interpretations of specific requirements differ quite often. Figure 3 illustrates how the interests of Lessor and Lessee may vary.

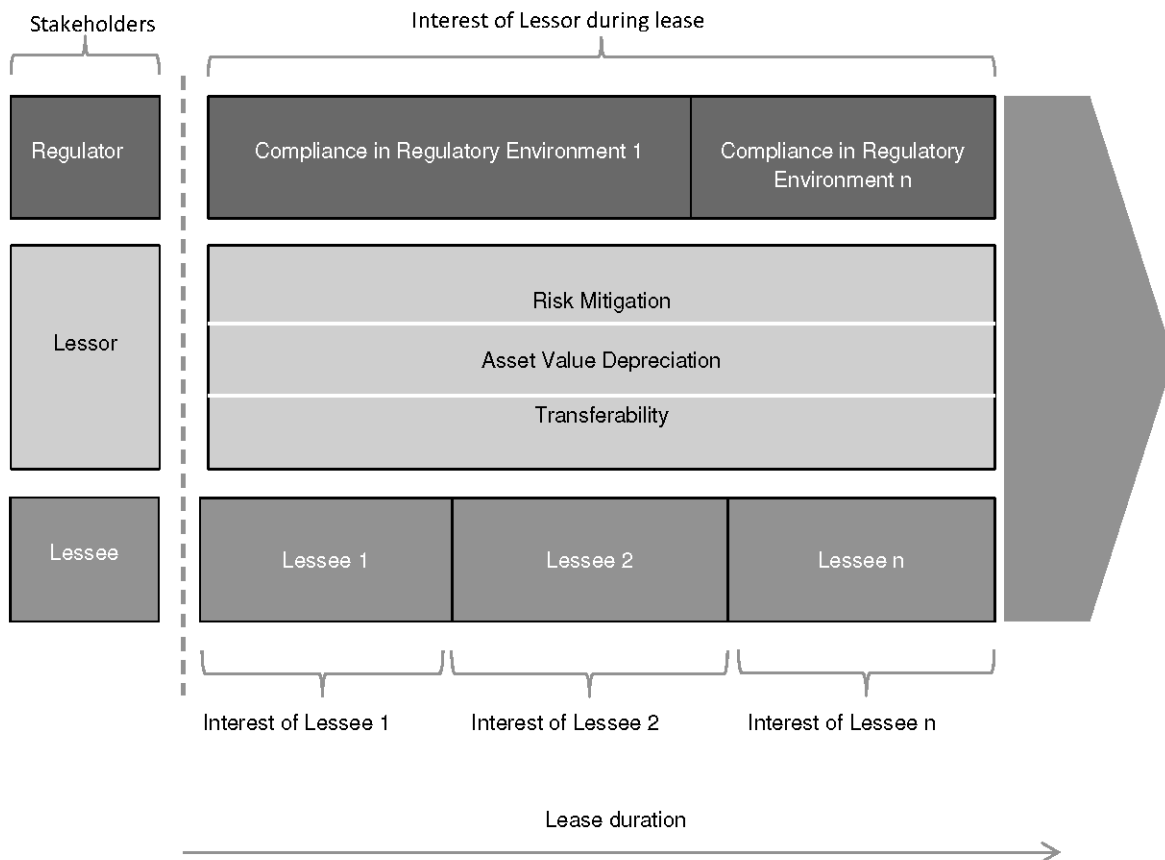


Figure 3. Interest of Different Stakeholders

1.2.1 Back-to-Birth Traceability

One of the items most commonly misunderstood in a lease agreement is how to prove 'Back-to-Birth Traceability' (BtB) for 'Life Limited Parts'¹ (LLP).

LLPs exist in a number of aircraft components, such as engines, APUs, landing gears and airframe parts. Failure of an LLP may result in unsafe conditions or safety hazards and therefore a life limit has been imposed. Major regulatory agencies, such as the Federal Aviation Administration (FAA) and the European Aviation Safety Agency (EASA), simply state that an operator must have an approved system in place that effectively controls and records the total operational life of the part. Although a seemingly simple process, the Lessee and the Lessor will often have different expectations or approach, and Lessor/market expectations have also changed over the years, so this can lead to issues at redelivery. While the Lessee will record the total time of each LLP with the use of their maintenance software, the Lessor often requires a much more detailed documentation process. The Lessor may want proof of

¹ "Life Limited Part is any part for which a mandatory replacement limit (in hours, cycles or calendar time) is specified in the type design, the mandatory continuing airworthiness information or instructions for continuing airworthiness. These parts must be permanently removed from service on or before this limit is reached." ICAO Airworthiness Manual Doc 9760

each and every step in the LLP's life by means of a dirty fingerprint² coupled with the consumed time (flight hours (FH) and flight cycles (FC)). The reason for this is threefold:

- The Lessor wants 100% certainty that there are no errors in the total time consumed by the part and will want documentation to substantiate this.
- The aircraft's documentation must be of a good standard to maintain the asset value; assuming that there are two identical parts available for sale, the part with the highest quality documentation may be more desirable and hence perceived as having a higher value.
- The Lessor wants to protect itself against possible more stringent requirements of future operators, parts sales agents (aircraft teardown) or regulatory agencies.

Lessee providing an airline summary sheet for life used on LLP's will often not be sufficient to meet Lessor expectations for BtB (while this may be sufficient for the regulatory authorities³).

The problem of incomplete BtB is specifically apparent in the case of landing gear LLPs. Landing gears, with their fixed overhaul interval stipulated in FC or years, are quite frequently exchanged (including the individual subassemblies), and new/used LLPs introduced over the years. In addition, landing gear overhaul shops do not always hold and supply documentation that meets Lessor expectations for BtB.

The question remains whether it is needed to prove the full BtB and how this requirement is properly defined. The best way to mitigate this risk is to include in the lease agreement a detailed and very specific description of all documentation required.

For more detailed information about BtB, please refer to Annex X.

1.2.2 Repairs

Repair documentation and certification is another area where misunderstandings can easily happen. When the lease agreement requires a Lessee to deliver 'dirty fingerprints certification of repairs', what exactly needs to be included? Does a Lessor require each rework⁴ on the aircraft to be recorded, no matter how small, or if the repair is within SRM limits? And does this requirement apply to both internal and external repairs? In many cases the Lessor will require that the repair file and the linked damage tolerance analysis for any inspection requirements in the future are comprehensive and detailed enough to satisfy any regulatory agency or future operator. Some Lessors also request any external repair to be a flush repair, which is not always recommended or allowed by the manufacturers Structural Repair Manual (SRM) and subsequently could necessitate replacement of the aircraft skin. Other Lessors may require repairs to be permanent, while the Original Equipment Manufacturer (OEM) only provides a repair solution that requires a repeated inspection afterwards.

² DFP (Dirty Fingerprint) is the work card or record in hard copy or electronic format. It can be (1) physically signed and/or stamped and dated or (2) digitally/electronically signed and dated by approved certifying staff describing the maintenance task or inspection, the supporting data, associated findings and that further endorses the certifying documents.

³ Most regulatory authorities will require the most recent authorized release certificate (i.e. EASA Form 1 or FAA Form 8130-3) for each part. Each certificate must clearly make reference to the work carried out and indicate current TSN/CSN of the part.

⁴ Rework is the terminology used in the SRM. It applies to blendouts, stop-drilling and hole filling.



The Lessee needs to ensure that the requirements in the lease governing the performance of repairs are achievable, consistent both with manufacturer guidelines and industry practice, and match with the capabilities of the Lessee's maintenance organization.

Please refer to Annex V for guidelines regarding structural repair files.

1.2.3 Records Presentation

Records presentation and consolidation is another area of difficulty. An aircraft will complete many "A-", "C-" and "D-checks" in its life, during which many mandatory inspections, modifications and repairs will be performed. If a Lessor requires the Lessee to present documentation of repairs, modifications, ADs, or other inspections task cards in a consolidated manner, it can be an extremely time-consuming and sometimes impossible task to retrieve all documentation and build a complete historical records file. This will especially be the case if the Lessee has not made any provisions from the start of the operation, and has left all the task cards in the individual maintenance check packs. Note that electronic records can offer advantages in that presentation of data can be done in various ways which may suit both the Lessee in operation and the Lessor at transition. For a full list of documents, please refer to Annex II.

One must take into consideration that differing expectations of records standards lead to delays, which can be time-consuming and result in additional unnecessary costs.

Section 2 – Pre-Delivery



In what is an increasingly volatile industry, it has become standard practice for the parties, to agree a documentary framework from letter of intent, in which the parties can relatively quickly secure the placement of the aircraft and reach a high level agreement on the key aspects of the leasing arrangement, usually subject to certain preconditions, through to the definitive lease contract which will address all aspects of the leasing arrangement and provide an agreed framework governing the relationship of the parties and their respective rights and obligations during the lease period. Lease contracts and associated documentation can be very complex. It is therefore important for Lessors, as well as Lessees, to allocate the time, effort and expense to ensure transparency and suitability of the leasing structure.

Since the leasing of aircraft is often the Lessor's core expertise, the Lessee can find itself in a disadvantageous position. This is especially the case when a multinational leasing company is contracting with a relatively small airline – a regular occurrence within the industry.

The legal considerations in this guidance document examine a selection of the most relevant legal issues with regards to an aircraft lease. They provide an overview, which is by no means comprehensive. A comprehensive legal assessment would entail a much more voluminous and in-depth analysis, which is outside of the scope of this guidance document. For this reason, certain legal considerations, such as tax implications, will not be addressed.

2.1. Letter of Intent

A letter of intent (LOI) typically precedes any aircraft lease agreement as a first contractual step, and outlines the broad terms of agreement between the parties. The LOI simply clarifies the key technical and commercial points, and provides safeguards in the event that further negotiations do not succeed. This document is also commonly referred to as "heads of terms", "memorandum of understanding", or "term sheets".

It is important to note that while there is always a significant amount of work to move from an LOI to a definitive lease agreement, the LOI should already set out most of the key technical and commercial terms, and thus forms the basis for further negotiations. The Lessee should therefore treat the LOI with the same attention and care as the definitive lease agreement, if not more.

The LOI will often require the Lessee must pay a deposit and/or commitment fee to the Lessor, as consideration for the Lessor to remove the aircraft from the market. Such a security deposit is refundable only in certain circumstances, typically subject to the conditions precedent (see 2.3) of the finalized lease agreement.

When drafting the LOI, the Lessee should make sure that the Lessor has identified and detailed any key lease restrictions or operational limitations which may result from the particular ownership or finance structure (such as limitations on operation of the aircraft in certain jurisdictions, often associated with leveraged lease financing structures. It is important that both parties identify and assess these restrictions early on, as some of them could be deal-breakers (i.e. where the Lessee wants to operate in a severe environment and there is a financier covenant on the Lessor regarding operational location of the aircraft).

The key terms of an LOI usually deal with at least the following topics:

- Formal description of contracting parties
- Aircraft details and Engine details
- Scheduled delivery date and lease term including early termination or extension options
- Delivery/Redelivery location
- Delivery and redelivery conditions (including minimum life requirements, airworthiness compliance, delivery inspection procedures)
- Insurance requirements (including hull agreed values and liability lower limits)
- Rent, deposit/commitment fee, and other payments
- Maintenance compensation mechanism (monthly reserves, end of lease adjustment, full life, half-life, etc.)
- Pre-approved permitted subleases, wet-leasing and charter rights
- Maintenance, operations, and records
- Airworthiness compliance standards (including any AD cost sharing)
- Pre or post-delivery modification (and any cost sharing)
- Conditions precedent to the effectiveness of the LOI (i.e. board approvals, preliminary inspection)
- Definition of any key terms that will apply in the lease, including the eligible maintenance events for maintenance reserves reimbursement
- Regulatory / registration regime
- Governing law
- Confidentiality

2.2. Representations and Warranties

Representations and warranties are often grouped together in a lease agreement. Representations are statements of fact designed to induce a counterpart to enter into the transaction. Warranties are conditions upon which the contract is to take effect.

Representations are always made concerning the past and present only whilst warranties and covenants relate to the future conduct of a party.

The Lessee should be wary of representations which are repeated over the course of the lease. Repeating representations must be assessed and renegotiated, or if included in a lease, subsequently monitored during the lease term when necessary. This is especially relevant where a repeating representation is partly or wholly out of the Lessee's control, such as where a representation is subject to a change in national law (e.g. tax related). The Lessee must consider the potential for an inadvertent or technical breach which could trigger a termination right for the Lessor.

The representations and warranties in a lease agreement are negotiated between the parties taking into account the particular circumstances of the parties and the transaction structure, including any particular jurisdictional issues. A typical set of representations might include some or all of the following:

- No default has occurred and is continuing
- Corporate status of both parties
- Power and authority to enter into lease
- Valid execution of lease
- Legal validity and enforceability of each parties' obligations
- Non conflict of Lessee obligations with its other obligations (i.e. Lessee creditor agreements permitting a charge over the lease aircraft)

- All necessary Lessee authorizations, consents, and registrations in order to fulfill its obligations under the lease
- No sovereign immunity
- Financial accuracy of statements
- Choice of governing law and submission to jurisdiction is valid and binding

2.3. Conditions Precedent

The conditions precedent (CP) to delivery under any lease agreement are those pre-conditions, whether factual, documentary or otherwise, which must be satisfied before the relevant party is obliged to proceed with delivery and acceptance, and the lease term commences. In most aircraft leases it is necessary for both parties to satisfy certain conditions precedent. In the event of a failure by one party to satisfy any of the conditions precedent, the non-defaulting party is entitled not to proceed with delivery or acceptance of the aircraft, or alternatively may agree to proceed on the basis of the waiver or deferral of the relevant CP as discussed below.

At delivery, certain CPs may be waived or deferred by the non-defaulting party in order to facilitate the transfer process and avoid delay. The party which has failed to satisfy the relevant CP may propose to convert these CPs into Lessee covenants, to be complied with in accordance within a mutually agreed time limit, however it will always be a matter for the other party whether to enforce or waive any CP requirement. Certain CPs are by their nature non-negotiable although this can sometimes even be narrowed down to receipt of payments and insurance certificates only:

- Payments (security deposits, commitment fee, first rent, etc.)
- Provision/creation of letters of guarantee, credit or other credit enhancement instruments in place
- Receipt of the insurance certificate and broker's letter of undertaking
- Receipt of certain key documents (e.g. deregistration, Power of Attorney, proof of legal capacity to enter into the lease with supporting legal opinion, board approval resolutions)

A lease agreement typically also includes at least the following conditions precedent:

- No total loss of aircraft
- Lessee satisfactory inspection of aircraft and documentation within an agreed timeframe
- Aircraft being in agreed delivery condition

2.4. Insurance

The requirement for the Lessee to procure and maintain hull and liability insurance is one of the most important requirements from a Lessor perspective; consistent with the principle that Lessee assumes all risk associated with the operation and use of the aircraft during the lease period. Hull insurances provide coverage for the value of the Lessor's asset in the event of physical damage to or loss of the aircraft (including records and any removed engines or parts). Liability insurances provide coverage for general legal liability, including Third Party, Passenger and baggage legal liability, with the Lessor and any parties.

The two broad types of insurance commonly required by an aircraft lease agreement are hull insurance and liability insurance.

2.4.1 Hull Insurance

Typical hull insurance may be defined as the policy covering damage or loss to the aircraft. In the event of physical damage to the aircraft, in which case the insurance policy will cover restoration of the aircraft to the condition it was in before the damage occurred. Should the damage to the aircraft be irreparable (a total loss has been incurred), then the hull insurance will typically provide a fixed payment in accordance with the agreed hull value.

The insured hull value will typically seek to match the higher of market value or "agreed value", the latter usually reflecting a premium over Lessor's book value during the lease period. Upstream financing requirements may also impact the agreed hull value required to be specified for insurance purposes during the lease term and in some instances may result in an inflated insurance value relative to market.

In this case, it is advisable to the Lessee to negotiate these levels down, until they are as close as possible to the actual market value or to seek a contribution from the Lessor would to a portion of the insurance premium. Many lease agreements will provide for a reduction in the agreed hull value during the lease period, and thus the associated premiums for the Lessee would also decrease. The lease will also specify the highest level of deductible which may be agreed by Lessee (the deductible being value of damage which must be borne by the Lessee before the hull insurance policy will respond).

2.4.2 Liability Insurance

Liability insurance provides coverage for damage to third parties. Specifically, liability insurance provides coverage to protect and indemnify the insured for potential exposure to passenger, cargo or baggage claims, and to third party liability claims including property damage, bodily injury, or death, caused by or arising from the insured's operations.

While hull insurance is determined on a commercial basis only, liability insurance is obligatory in accordance with specific legislation.

Article 50 of the Montreal Convention 1999⁵ requires that state parties "shall require their carriers to maintain adequate insurance covering their liability" and "may be required by the state party into which it operates to furnish evidence". However, the insurance levels required and deemed "adequate" are not specified any further by the Montreal Convention. Therefore, it is up to each Montreal Convention contracting state to determine what levels of insurance are "adequate" under its national law.

Many states have defined their minimum requirements with respect to liability insurance. However, these requirements vary greatly across the globe, with developed countries typically requiring higher levels of insurance.

Furthermore, the insurance levels required under national law are based on a calculation mainly taking into account the maximum take-off weight of the aircraft and the number of passengers carried, and finally a definitive level of Special Drawing Rights⁶. The number of passengers carried is then multiplied by the Special Drawing Rights amount, which results in the minimum level of liability insurance considered mandatory by national law.

⁵ The Montreal Convention 1999, formerly known as the Convention for the Unification of Certain Rules for International Carriage by Air, followed the Warsaw Convention by developing the legal regime for rules relating to international carriage of passengers, baggage and cargo. The Montreal Convention 1999 is applicable to the majority of ICAO member states, including most of the developed aviation countries. See the ICAO website for more details.

⁶ Special Drawing Rights are supplementary foreign exchange reserve assets defined and maintained by the International Monetary Fund. Special Drawing Rights are not a currency, but are instead a claim to a currency.

2.5. Payment and Security

Aircraft lease agreements are typically structured as net leases. The net lease concept means that the Lessee will, in addition to the agreed rental fee, also pay for the all costs associated with ownership of the aircraft including expenses associated with operation and maintenance.

The net lease is often structured with the rental fee provisions as absolute and unconditional, which ensures that the payment of the rental fee is an absolute obligation. Therefore, no matter what, the Lessee will always have to pay the rental fee, regardless of any breach of Lessor obligations.

The main elements to be considered when dealing with payment and security are the deposit, if applicable, the rental payment, and the supplemental/additional rent (e.g. maintenance reserve payments) or end of lease maintenance cost adjustment mechanism. These payment and security elements are considered in further detail as follows:

2.5.1 Security Deposit

The security deposit functions as a protection for any non-payment under the lease agreement. While this is typically targeting non-payment of the rent, the security deposit can also be used by the Lessor to offset other non-payments (e.g. maintenance reserves, failure to meet delivery conditions etc.). Whilst the level of security is a matter to be agreed between the Lessor and Lessee, and will be driven by Lessor's credit assessment of the Lessee, it is common market practice for the security deposit to be priced as a two to three times multiple of the monthly basic rent.

However, the Lessee is advised to consider the level of the security deposit carefully in conjunction with any other payments, such as the commitment fee (discussed in 2.5.2). A balance must be achieved, and it is advisable that the Lessee should start from a basis of a total payment of up to three months of the rental fee, and no commitment fee. However, the level of the security deposit is very much subject to a commercial negotiation, as is who will be the beneficiary of interest accrued on such a security deposit (although this is typically for the benefit of the Lessor).

The security deposit is usually paid by the Lessee in staggered payments. A portion of the security deposit is paid within a few days of execution of the LOI, with the rest becoming due on signature of the execution document or lease agreement.

2.5.2 Commitment Fee

The commitment fee is paid by the Lessee as a consideration for the Lessor to take the aircraft off the market. In certain jurisdictions any security deposit may be characterized as the property of the Lessee and subject to potential claw back in the event of Lessee bankruptcy, undermining the primary purpose of the security deposit. In an effort to address this risk, Lessors will generally seek to characterize the security deposit as the absolute property of Lessor, and in some leases will re-name the deposit as a "commitment fee" or another form of supplemental rent.

It is important for the Lessee to ensure that it is comfortable with the lease provisions relating to the return of the security deposit (or commitment fee) following lease expiry. Some leases will provide for the return of the deposit upon satisfaction of all Lessee obligations, which could include actual and contingent obligations. This can be problematic where continuing indemnity and insurance obligations might mean that release of the security deposit would only occur well after lease expiry. It is preferable that the parties agree a limited timeframe for return of a deposit, between 5 to 30 days following lease expiry, provided all actual payment obligations have been satisfied by Lessee and no event of default has occurred or is continuing.

While most of the “credit” focus will be on the creditworthiness of the Lessee, it is important for Lessee’s to consider the financial capacity of the Lessor, particularly where the Lessor entity is holding significant deposit or maintenance reserve amounts which will need to be repaid to Lessee at lease expiry. The Lessee should look to verify Lessor’s net worth at lease commencement by way of representations and evidence by way of financial accounts, and the lease should outline, amongst other Lessee protections, a minimum net worth requirement, agreed between the parties, which must be satisfied by any new Lessor (or guarantor) in the context of any Lessor transfers, assignment or novation during the lease period.

The lease can also be structured so that the Lessee pays higher rent at the beginning of the lease, e.g. double rent for 3 months, and then zero towards the end of the lease e.g. last 3 months rent free. All these structures will vary between different Lessors and Lessees.

2.5.3 Rent

The rental fee (“Rent”) is the consideration given by the Lessee to the Lessor for use of the Lessor’s aircraft. The rental fee is most commonly paid monthly, in advance, and can be structured in a variety of ways depending on factors including the creditworthiness of the Lessee and the financing arrangements in place for the aircraft. While a fixed Rent paid monthly in advance through the lease period is most common, Rent may also be variable on a monthly, quarterly, annual or other basis, in advance or in arrears, based on agreed reference indices and adjustment factors. Ultimately this is a commercial matter to be agreed between the parties.

2.5.4 Supplemental Rent or Maintenance Reserves (if applicable)

The underlying principle governing the operating leasing approach to aircraft maintenance costs is “user pays”. The Lessee will be responsible for all day to day maintenance costs incurred during the lease period, and will also be required to contribute to future maintenance events on a basis proportionate to the Lessee’s utilization of the aircraft within any applicable maintenance interval leading to a significant maintenance or replacement event. Maintenance reserves constitute security held by the Lessor against the decreasing maintenance value of the aircraft, and the corresponding increasing maintenance cost exposure during the lease period. Maintenance reserve amounts are calculated by reference to flight hours, flight cycles or calendar time consumed (whichever is the relevant factor for the particular item of equipment) and as a proportion of the estimated cost of (future) specified maintenance events. The objective of both parties in agreeing provisions relating to maintenance reserves is to adequately cover the anticipated cost of labor and material used for the specified maintenance event. There are various types of maintenance reserve events:

- Fixed interval
- Flexible interval
- Fixed cost
- Flexible cost

An overview of the different maintenance reserve events, in combination with the different types, is provided below Table 1.

	Fixed Interval	Variable Interval
Fixed Cost	▪ Engine LLPs	
Variable Cost	▪ Airframe Heavy Maintenance Checks ▪ Landing Gear Overhaul	▪ Engine Performance Restoration and Overhaul ▪ APU Overhaul

Table 1. Different Types of Maintenance Reserves

Maintenance reserves accumulate, in relation to a specified future maintenance event for a particular item of equipment, and can usually be accessed to cover the cost of that event when it occurs, whether during the present lease term, in which case the Lessee would seek reimbursement from the relevant reserve account for qualifying maintenance, or during a future lease term with another operator, where maintenance reserves paid by a previous Lessee and held by Lessor might translate to a corresponding Lessor contribution. On this basis, the cost of such an event will be distributed pro rata over the interval to the various users and if the reserve rate has been optimized to match the cost of the maintenance event, the exposure to any shortfall in reserve funds to cover the maintenance event will be minimized.

As detailed in the example below, the heavy maintenance visit (HMV) for an Airbus A320 has an interval of six years. If the first Lessee operates the aircraft for a period of four years, maintenance reserves will have accumulated over the full lease period. The remaining two years of maintenance reserves are accumulated by the second Lessee, who operates the aircraft for an additional four years as explained in Figure 4. When the six year check occurs, Lessee 2 will have access to a Lessor contribution relating to the period of utilization by (and reserves collected from) Lessee 1, as well as access to reimbursement from airframe reserves paid by Lessee 2 during the elapsed lease period. From a Lessor's perspective, the maintenance reserves provide security to reduce Lessor's maintenance cost exposure in an event of default. From Lessee's perspective, maintenance reserves represent an additional cash flow burden during the lease term, but can also be helpful in creating an enforced provisioning of funds to cover maintenance costs during the lease period, and reducing the cash flow impact of infrequent, high cost maintenance events which can stretch the financial capacity of smaller operators in particular.

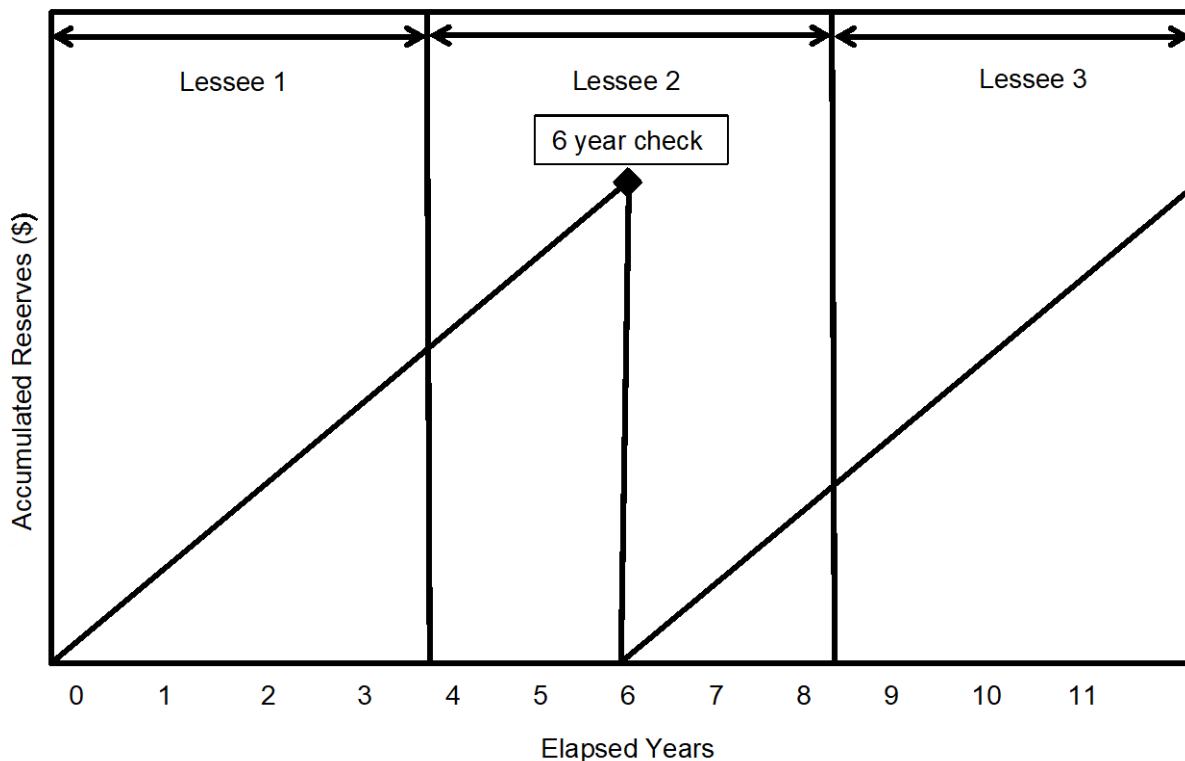


Figure 4. Maintenance Reserves Accumulation over Various Operators

A Lessor will usually only pay a reimbursement or contribution towards the costs of completing a qualifying maintenance event, provided that the costs to be reimbursed satisfy the eligibility requirements which will be detailed in the lease agreement. Payment for any costs incurred outside of the agreed scope and not factored into the underlying event cost assumption, become the responsibility of the Lessee (e.g. accidents, incidents, Lessee modifications, shipping, premium labor rates etc.). Similarly, the lease will typically specify that any excess costs over and above available maintenance reserve or Lessor contribution amounts will be the absolute responsibility of the Lessee.

It is part of the commercial negotiation between the Lessor and Lessee to agree a fair rate for the relevant maintenance events. The Lessor will want to ensure that the cost exposure for each maintenance event is adequately covered (thereby providing protection in case of default), while the Lessee will want to avoid over paying relative to market rates and potentially leaving the Lessor holding a surplus windfall amount following completion of the relevant maintenance event. For certain categories of maintenance such as airframe heavy checks, APU and landing gear overhaul, LLP replacement, the Lessee will sometimes seek a "zero-out" clause which requires the Lessor to reset the relevant reserve account and return or credit any unused surplus balance to the Lessee. The parties may also agree to include a review mechanism which enables the parties to test the underlying maintenance cost assumptions at agreed milestones during the lease period. The maintenance reserve amount may be influenced by the credit worthiness of the operator and the credit risk that the lessor is willing to take. It may also depend on negotiations between the two parties (lessor and lessee) and the softness of the market when the transaction occurred. The estimation of maintenance reserves rates depends on negotiations between the lessor and the lessee; the better the parties are informed and have defined their expectations the faster they will get into an agreement.

Figure 5 indicates a typical saw-tooth pattern of decreasing maintenance utility and increased cost exposure, reflecting relative maintenance intervals and event costs over time. The maintenance cost exposure in respect of any future maintenance event and, therefore the maintenance reserve balance in respect of any item of equipment or qualifying event will peak at the point of lowest maintenance utility (i.e. just prior to shop visit or replacement).

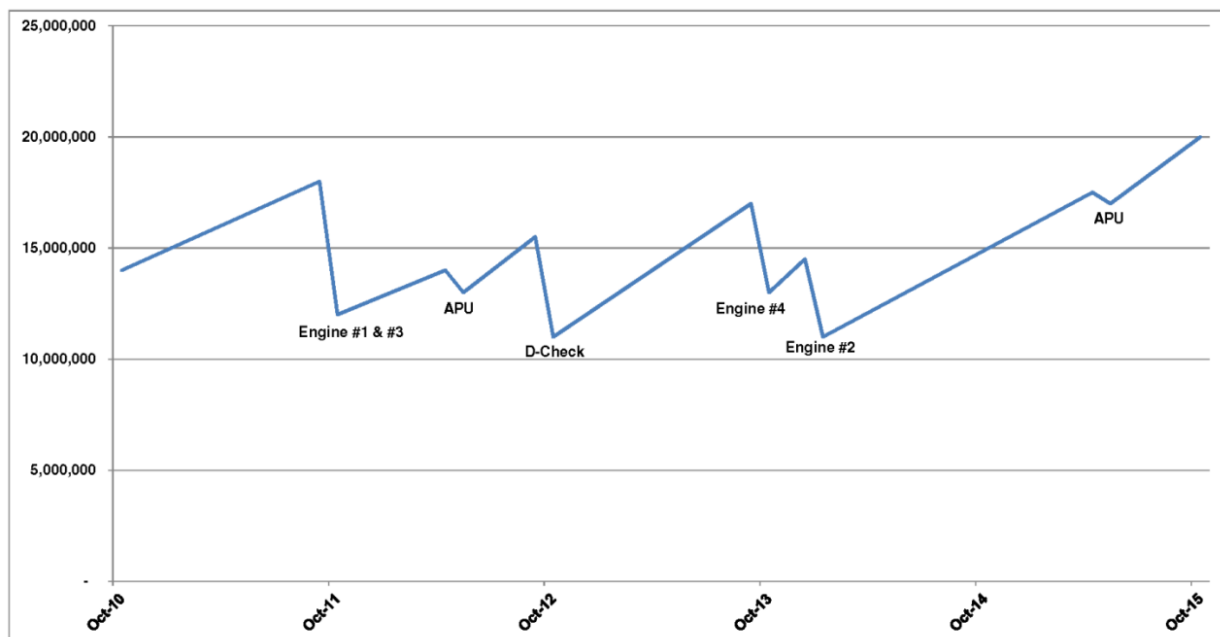


Figure 5. Maintenance Reserves vs Maintenance Events

There are a number of mechanisms commonly used in operating leases to address maintenance cost exposures, and these are largely driven by Lessee credit considerations. Some of the more common maintenance cost mechanisms are described below.

2.5.5 Maintenance Reserve Deposit

A maintenance reserve deposit is an initial maintenance reserve payment into an (escrow) account, to cover the average maintenance exposure over a specific period. This amount is usually based on an average of maintenance cost over a certain period and may not always fully cover the Lessor's exposure. Therefore, the maintenance reserve deposit is very much subject to commercial negotiations. The Lessee may negotiate additional benefits, such as reimbursement of interest.

2.5.6 End of Lease Compensation

Compensation will be calculated based on a dollar amount equivalent to each flight hour, flight cycle or unit of calendar time consumed (as applicable) since the last maintenance event or since new, as well as the agreed cost of such maintenance event. The parties will agree underlying economic assumptions around the maintenance status of the aircraft, (e.g. half-life or full-life) and will calculate the compensation relative to this assumption. For example, under a "half-life" lease, the end of lease maintenance cost will be calculated based on the actual status of the aircraft relative to the notional half-life point based on the relevant maintenance interval, resulting in a payment from Lessee (in the case of less than half of the useful life remaining), or a payment from Lessor (in the case of more than half of the useful life remaining).

2.5.7 Letter of Credit

In some leases, the Lessee may have the option, rather than paying cash reserves, to provide the Lessor with a Standby Letter of Credit (LOC) in an amount equal to the projected aggregate notional value of maintenance reserves over an agreed period, usually based on 12 month intervals during the term and calculated based on the estimated utilization of the aircraft over the agreed period. At the end of this period the parties, will carry out a reconciliation of the estimated utilization against actual utilization, account for any maintenance events which have occurred, and Lessee will provide a new or revised LOC in amount equal to the "actual" reserve amount for the previous period plus the projected aggregate notional value of maintenance reserves over the next reconciliation period. While this approach can reduce the immediate cash flow impact of paying monthly reserves, this benefit to the Lessee needs to be offset against bank fees payable for such a facility, collateralization requirements and the administrative burden associated with annual reconciliation. The corresponding reduction to the Lessor's cash-flow, the "drawdown risk" associated with LOCs generally as well as the increased administrative burden tend to make this approach unattractive to Lessors.

2.6. Cape Town Convention

The Cape Town Convention (The Convention on International Interests in Mobile Equipment, and its Protocol on Matters specific to Aircraft Equipment) (CTC) was created in 2001⁷ in order to establish an international legal regime to govern security interests in aircraft⁸. The CTC was an initiative under the International Civil Aviation Organization (ICAO) and the International Institute for the Unification of Private Law (UNIDROIT). The increased predictability and

⁷ The CTC supersedes, to a certain extent, the Convention on the International Recognition of Rights in Aircraft signed in Geneva on June 19, 1948.

⁸ The CTC actually provides a legal regime for all aircraft equipment, which includes engines and airframes.

confidence in transactions under the CTC ultimately translates into a decrease in cost of financing for aircraft by reducing the risks to creditors, thereby increasing the availability of credit within the aviation industry. This in turn allows for the development of cost effective air transportation systems, using modern aircraft equipment.

As of July 2015, sixty-four states (as well as the European Union) have ratified or acceded to the CTC, and therefore references to the CTC often feature in the provisions of a lease. It is worth noting, however, that the CTC does allow for an "opt-out" or "declaration" system, allowing contracting states to modify the effect of the CTC. Therefore one cannot assume total harmonization of security interests in aircraft across the aforementioned contracting states. Generally the CTC applies if the aircraft is registered, or the debtor is situated, in a contracting state⁹.

In establishing an international legal regime for security interests in aircraft, the CTC lays out priority rules. These priority rules operate in a way that a previously registered international interest will have priority over a subsequently registered one, as well as over unregistered interests. It is worth noting here that the establishment of priorities will be subject to any declared local priorities, as per the "declaration" system referred to above.

The mechanism used by the CTC to establish these priority rules and perfect a security interest is the International Registry of Mobile Assets (<http://www.internationalregistry.aero>). This is an electronic system which, through registration of one's interests, allows for the establishment of priority over those interests. In practice this means that there will often be a provision in a lease agreement, usually contained in the sections relating to protection of title, or registration and filings, or the CTC directly, that obligates the Lessee to register the aircraft on the International Registry. It is a fairly simple process that entails minimal costs totaling in the hundreds of US dollars.

The CTC also offers default remedies for creditors, including termination, possession, or control of the aircraft, relief pending final determination of claims, and safeguards for debtors. One of the main default remedies for creditors is the Irrevocable De-registration and Export Request Authorization ("IDERA"). This tool allows the creditor to designate an authorized party (the Lessor) which would have the right to exercise the IDERA. In practice, this means that once the IDERA is registered with the applicable Civil Aviation Authority, and repossession becomes necessary under the lease as a result of default of the Lessee, a Lessor would be able to submit a deregistration request to the applicable CAA for its aircraft under the previously registered IDERA. This particular remedy is a self-help remedy in that the Lessor does not need an application to the local courts to exercise the IDERA¹⁰, in order to achieve deregistration and export of its aircraft, and the CAA would have to comply with the exercise of the IDERA, subject to local law. A Lessee may find IDERA provisions in its lease, obligating the cooperation and assistance of the Lessee with the IDERA registration where necessary.

One can conclude from the above that the CTC will provide Lessors and financiers with the benefit of a partially harmonized and internationally recognized security position across their portfolios, which will in turn reduce funding costs for borrowers.

⁹ Note that there are further detailed criteria for the scope of application of the CTC, including criteria relating to the size and power of the aircraft.

¹⁰ The Civil Aviation Authority, assuming that it is in a contracting state to the CTC, would have to comply with the IDERA, unless applicable law dictates otherwise.

Section 3 – Delivery



After the Lessee has considered more legal aspects of the lease agreement, it is time to agree on the technical condition in which the aircraft should be delivered. The parties will negotiate and agree areas including minimum remaining life of major components and maintenance clearance periods, airworthiness standards for the aircraft including any clearance period for airworthiness directive compliance, and the general condition of the aircraft including key areas such as paint and any agreed modifications required by the next operator. Agreement will also need to be reached in relation to the inspection rights of the incoming Lessee, including physical access to the aircraft, inspection of records, participation in a demonstration flight and performance of borescope examination of the engines. Agreement in these areas will often be informed by the redelivery conditions to be satisfied by the prior Lessee. It is important for the incoming Lessee to understand that delivery and acceptance of the aircraft is almost always concluded on a strict “as-is, where-is basis”, which means that the Lessee accepts the aircraft with all faults and defects, whether patent or latent, and unless expressly noted as exceptions to the agreed delivery condition prior to acceptance, there is no recourse to the Lessor for discrepancies which are discovered following delivery. For this reason, it is critical for the incoming Lessee to ensure that any inspection rights agreed in the lease are sufficient to enable it to perform a thorough physical inspection and a comprehensive records review to satisfy itself that the aircraft is in compliance with the agreed delivery conditions, or to note any discrepancies, prior to accepting delivery of the aircraft.

Besides legal and technical aspects, the Lessee must take in consideration which procedures and regulations are applicable when an aircraft is transferred between states. Only when the aircraft complies with the requirements of the appropriate authorities of the Lessor, and the Lessee, can the aircraft be accepted. After the certificate of acceptance, with no exceptions of conditions attached, is signed, the aircraft is ready for take-off.

3.1. Delivery Conditions

3.1.1 Technical Aspects for Delivery

There are different objectives for both Lessor and Lessee during the delivery or pre-lease phase of the aircraft. The Lessor and the outgoing Lessee will prefer to keep the costs related to the delivery event as low as possible whilst ensuring that the aircraft is in compliance with both the redelivery conditions of the previous Lessee and the delivery conditions for the next lease. For this reason, the status in which the aircraft is delivered to the new Lessee depends largely on the commercial negotiations, and, except in case of new delivered aircraft, often is highly dependent on the redelivery conditions of the previous operator (i.e. the redelivery conditions of the previous operator are usually mirrored with the delivery conditions of the next Lessee). The main objective for the incoming Lessee is to have the aircraft delivered on time for planned entry into airline operations, whilst seeking to identify and resolve (prior to acceptance) any discrepancies which might otherwise give rise to unplanned future unanticipated maintenance costs which should be borne by Lessor or the prior operator. Additionally, the Lessee may want the aircraft delivered in a configuration which is in line with the standards of the rest of the Lessee’s fleet or will need to consider suitable commercial terms if the aircraft is not delivered in required Lessee configuration. It can be beneficial to determine the configuration differences during the aircraft selection process, and prior to entering into an LOI. The Lessor may agree to incorporate certain configuration or modification changes during the delivery check (often subject to agreement by the prior Lessee), or may consent in advance to certain modifications to be carried out post-delivery. In some cases the Lessor may agree to fund modifications on a “rentalised” basis (i.e. with the modification cost

amortized over the lease period and added to the basic Rent amount) or, if the modification represents a capital improvement to the aircraft a Lessor contribution may be agreed. Commonality across the fleet saves cost on spares provisioning, staff training as well as maintenance and operations processes. Also, Lessees often prefer to fly in a standard configuration as part of their branding. It is common to expect a certain amount of clearance for airframe, engine, and component maintenance.

3.1.2 Delivery of New Aircraft

Before the customer (airline or Lessor) defines the aircraft specification, existing problems with the aircraft type should be reviewed and, if possible, anticipated by ordering the appropriate modifications. After defining the aircraft specification with the manufacturer for the ordered aircraft, the manufacturing process of about 18 months is started, during which time the customer (airline or Lessor) and manufacturer should work closely together in order for the aircraft and documentation to meet both the Lessee's and the Lessor's expectations.

About three weeks before delivery, both parties enter the acceptance phase, in which customer performs walk around inspection, flights are carried out and the aircraft is finally delivered. Accepting the new aircraft, which will be leased (or sold by the airline to the Lessor and subsequently leased as part of a sale and leaseback transaction), requires a different approach than taking delivery of a used aircraft. Although the aircraft is new, the manufacturer will deliver a similar set of records as one can expect to receive with a used aircraft: AD, SB/MOD, Component and LLP status summaries are part of the delivery binder. Similarly, a "repair file" in the form of a concession/commitment letter or Significant Rework Log (as applicable) will be provided with the aircraft. Just as with any delivery, the aircraft status should be checked against what is presented in the summaries. Although manufacturers generally are able to re-issue (parts of) the delivery documentation, errors should be kept to a minimum in order to avoid delays during redelivery to the Lessor. Especially in case of production damages which have not been recorded correctly, confusion can occur during a redelivery repainting exercise as to whether specific damage or a blend was already present at delivery or whether it occurred during operation of the aircraft by Lessee.

Another specific point of attention should be the manufacturer warranties. These should be reviewed and the effect on the lease process evaluated (e.g. limiting AD cost sharing to ADs that have been issued after delivery of the aircraft). Transferability of warranties to the next operator could form another point of interest for the Lessor or the Lessee.

3.1.3 Delivery of Used Aircraft

The decision to select a used aircraft to support the operator's fleet should be made after full commercial evaluation of the various options and based on aircraft specification and a pre-LOI and pre-purchase or pre-lease inspection. The pre-LOI inspection should include a basic physical inspection of the aircraft and a top level review (sampling) of the aircraft records, to verify that the purchase or lease should proceed. The pre-lease inspection is a more detailed inspection and should include physical review of the aircraft and a thorough review of the aircraft records referred to in Annex I to verify that the delivery conditions recorded in the lease are satisfied. This review should preferably be carried out by personnel who has appropriate experience with this type of transaction and can distinguish between the commercial and airworthiness related aspects.

Any aspects resulting from the pre-lease inspection that are not in compliance with the delivery conditions as agreed in the lease should be addressed to either rectify the issue prior to delivery or amend the delivery/redelivery condition in the lease agreement, or agree suitable remedy terms. Once the lease has been agreed, a final pre-delivery review should be carried out to verify that the aircraft still or now complies with the (amended) delivery conditions. It is advisable to attend the delivery check, and where possible to include certain bridging tasks and operator specific modifications in this check. In certain cases this is not possible as the Lessor / previous operator

does not allow the new Lessee to attend the check ahead of the lease. If this is the case, a period should be scheduled prior acceptance by Lessee for aircraft inspection, to verify that it meets the delivery conditions.

3.1.4 Typical Delivery Conditions for Used Aircraft

In agreeing the delivery condition in the Lease, and during the pre-delivery inspection acceptance phase, the objective of the incoming Lessee will be to ensure that the aircraft is delivered as far as possible, to the same standard as the rest of the Lessee's fleet and in compliance with agreed delivery conditions. Although most maintenance programs for modern aircraft types are typically task interval based and do not define C-Checks, the terminology is still widely used. In this case the former C-Check interval is defined by a specific number of FHs, FCs and/or calendar time, and it is advisable to ensure where possible that this specific period matches the requirements of the incoming operator. This can be difficult to reconcile between operators using different maintenance programs, and it is therefore important that any differences are identified early and addressed in the lease. The remaining maintenance items, such as Hard Time (HT) components, emergency equipment and landing gears, are usually cleared for a similar period to the airframe. Engines are generally treated separately.

Other items, such as wheels and brakes, the auxiliary power unit, modifications, repairs, and paint, usually have specific delivery requirements and are negotiated separately:

- Wheels and brakes

Wheels and brakes are subject to wear. With the redelivery of an aircraft in sight, previous Lessees can be less inclined to replace worn wheels or brakes. These replacements can be costly. Establishing a clear delivery condition requirement, e.g. that the part shall have at least 50% life remaining or be in a new condition, would reduce immediate maintenance costs and prevent logistical challenges. The Lessee should clearly record in the lease the meaning of the agreed minimum life remaining condition; it can either specify an average across the wing, or a minimum life remaining for each component.

- Auxiliary Power Unit

Determining the remaining life of the Auxiliary Power Unit (APU) can sometimes be challenging. Performing a borescope and reviewing previous shop visit documentation will help the Lessee in this assessment although APU borescope inspections can introduce additional risks due to a lack of clear manufacturer limits driving (often unnecessary) premature removals. However, these soft requirements are subject to individual interpretation and very often lead to discussions. The Lessee could consider a simple "hard time" whereby the APU may not have more than a certain amount of hours since last shop visit coupled with a general requirement of serviceability based on examination of trend data and operating parameters. While the Lessee will then also have to meet this requirement in the redelivery conditions, it will at the very least provide the Lessee with some form of additional guarantee at delivery.

- Service Bulletins

Free of charge manufacturer's SBs should be embodied on the aircraft. If not, these free of charge kits should be delivered along with the aircraft during delivery as they are usually issued against a tail number and have a limited period in which they are delivered free of charge.

- Repairs

There are a number of items that the Lessee should take into consideration for repairs and the associated repair documentation (as described in 1.2.2). First, the Lessee should clearly define which repairs are acceptable. Some Lessors request requirements such as “flush” or “permanent” repairs to be inserted in the lease. Remembering that what is delivered will also be mirrored at redelivery, the Lessee could reject such proposal or at minimum insert wording that allows alleviation in case “flush” or “permanent” repairs are prohibited or otherwise impractical. The lease should clearly differentiate between obligations that apply during the lease term (maintenance & operation) versus obligations that may specifically apply at redelivery. It should also be noted that flush repairs may impose additional maintenance burden and costs during the Lessee’s operation, based on the required method of inspection for such flush repairs. The Lessee should also consider a clear definition of which repairs should be included (e.g. blends, patches, etc.), as this may lead to discussions either at delivery or redelivery.

- Paint

The paint condition and paint scheme may be separately agreed between Lessor and Lessee. In most cases the aircraft is delivered with a freshly painted white fuselage. However, agreeing to deliver the aircraft in the Lessee’s color scheme (with compensation to the Lessor, or a corresponding commitment at redelivery) can save valuable downtime.

- Airworthiness Authority Standard

Lessors typically define one of the major airworthiness authority standards (i.e. FAA or EASA) in the (re)delivery conditions. This helps to ensure that in the event of a default and early termination or repossession, the Lessor can re-register the aircraft on a major register without facing significant bridging and recertification costs. However, the cost of compliance with an airworthiness standard of the Lessee’s authority, particularly where requiring implementation of modifications or equipment, can often be quite significant. The Lessee should therefore identify the differences between their local airworthiness authority standard versus the standard proposed for delivery in the LOI/lease agreement. Ideally, any differences should be eliminated or otherwise well negotiated and any material modification or compliance costs should be shared by Lessor, but the Lessee must also consider the proposed airworthiness authority standards that will apply for redelivery.

Besides the aforementioned requirements, several additional aspects could be mentioned in the delivery conditions, such as the export certificate of airworthiness requirements, AD compliance, etc. All of these should be carefully considered by the Lessee.

3.1.5 Legal Aspects for Delivery

In addition to agreeing on the condition of the aircraft on delivery, it is also important to understand the delivery timeframe and, given the complexity of the transition process and the numerous factors which can contribute to delay, for the lease agreement to contemplate the possibility of delays beyond the scheduled delivery date. The parties will typically agree to a scheduled delivery date which is capable of movement within a defined where “excusable delays” are permitted subject to an agreed “back stop” date beyond which the parties may have the ability to terminate, or to agree a further extension of the delivery period.

The lease agreement will almost always be drafted in such a way that the Lessor shall not be liable for any damages or losses incurred by the Lessee due to a delay in delivery of the aircraft. This is a common industry standard. The rationale behind it is that the Lessor should not be responsible for delays caused by late redelivery by the previous

Lessee of the aircraft, as this is out of the Lessor's control. However, a delay can also be caused directly by the Lessor and it is therefore advisable to the Lessee to negotiate this carve out of liability, in that the Lessor should at least be responsible for any damage caused by delays which are within the Lessor's reasonable control.

A Lessor will sometimes insist on distinguishing between major and minor discrepancies with regards to delivery of the aircraft, with minor defects consisting of easily resolvable issues which will not impact on the normal operation of the aircraft by the Lessee. The rationale behind this is to avoid any delay with regards to delivery. Therefore, minor defects should not delay the aircraft and should be transferred into delivery exceptions, and potentially post-delivery agreements. In most cases, major discrepancies will need to be resolved by the Lessor before the Lessee accepts delivery of the aircraft.

The lease agreement will almost always specify that the Lessee will accept the aircraft in an "as is, where is" condition. This essentially means that the Lessee must take the aircraft in the condition it presently exists or as found on inspection immediately prior to purchase or lease, even if damaged or defective, without modification and without any express or implied warranties. This term is consistent with the legal principle of Caveat Emptor ("buyer beware") and means that upon acceptance the Lessee assumes all risks relating to the quality and condition of the aircraft. Any defects are which discovered after delivery are at the risk of the Lessee, whether or not those defects were capable of discovery prior to delivery and the Lessee typically has no basis for legal recourse to the Lessor or prior operator unless the defect was identified and formally noted in the acceptance documentation as an exception to Lessee's acceptance of the aircraft.

Therefore, it is important to note that the Lessee's only protection with regards to the "as is, where is" concept is to thoroughly inspect the aircraft and associated records before delivery, and to make sure that the aircraft is not accepted if it does not meet the specified delivery conditions.

3.2. Aircraft Acceptance and Audits Process

Key aspects of both the physical inspection of the Aircraft and the review of technical records are outlined below.

3.2.1 Physical Acceptance

Before the beginning of the delivery process, Lessee's representatives should have a clear understanding of the contractual delivery condition and any inspection rights and protocols which have been agreed in the lease. It is recommended that the team responsible for negotiating and agreeing the lease provides a detailed briefing to the delivery and acceptance inspection team. The Lessee should also ensure that the following practical aspects of the delivery arrangements are known:

- Location of the inspection and how to reach this place.
- Time frame required for visa documents and other travel permissions, if required?
- Which MRO (or airline) will perform the delivery check or another kind of maintenance agreed between Lessor and Lessee, and whether this facility holds the relevant maintenance approvals.
- Can MRO facilitate the whole delivery team for the duration of the check required?
- Are communication means as scanners, printers, telephones, internet available at the facility?
- How the transportation of the Lessee inspectors will be organized between MRO facility and hotel? (Usually Lessee responsibility).
- Is there any limited access to the places where the aircraft and maintenance records are?
- Is permission required for photography at the maintenance facility
- Where is the location of the records and where is the aircraft? Both of them should be at the same place, or at maximum, short walking distance if practical.

- Project plan and timeline for the performance of the check and delivery process, including any key inspection milestones (structural inspection, interior inspection, paint approval, demonstration flight, power assurance runs, borescope)
- How the demonstration flight will be organized, is there any limitation on number of participants due to local regulations; is there any special pass for the demonstration flight? Does insurance also cover those on board the demo flight? These aspects should be dealt with in the lease
- How will the Ferry Flight (if any) be performed from delivery location to the base of future aircraft operation?
- Is there custom clearance for spare parts and components needed?
- What MRO company will perform the post-delivery aircraft maintenance?

3.2.2 Delivery Schedule

The Lessee should get from the Lessor a detailed delivery schedule in order to plan the arrival of the staff to the place of delivery. Having a clearly defined delivery schedule will help all parties plan resource requirements and manage costs associated with the delivery exercise.

Essentially, Lessees and Lessors would like to minimize cost and time for supporting the aircraft transfer, including staying at the delivery location, or cost of accommodation of employed technical consultants/ inspectors. However, it's critical that the Lessee inspects the aircraft, to verify that it meets the delivery conditions, and it's impossible to predict what kind of unexpected problems and findings Lessee and Lessor can be faced with. The example for delivery schedule is given below:

- Schedule start of Delivery Check (C-Check) and End date of such Check
- Schedule of painting works, if available. Sometimes painting can be accomplished together with C-Check, sometimes after delivery check
- Date of final physical inspection of the aircraft, functional checks observed by Lessee
- Physical inspection should preferably be done during C-Check

The sequence of steps for physical inspection should be mutually agreed before the beginning of the inspection and should be stated in the lease agreement. Otherwise Lessee might have a lot of discussions with Lessor regarding the time of the aircraft inspection, whether it should be done during C-Check or just immediately after C-Check. Lessee should insist on physical inspection and observation during the delivery check. The reason is, for example, structural repairs and damages, which is better revealed when the paint is removed. Or, Lessee could inspect desired places which are open for inspection during the check. These findings should be fixed on Lessor's cost. Sometimes Lessor can promise that the defects revealed during the check would be fixed and it's a big risk to rely on promises. Therefore the physical inspection should be done before or during the delivery C-Check and the final physical walk around inspection should be done when the C-Check is completed and CRS is issued.

- End date of painting work
- Date of demonstration flight following C-Check and functional checks completion.

It is recommended, that all significant findings revealed during the demonstration flight should be rectified and terminated and no open items should remain. It plays a significant role during deregistration and registration process in another state, when Lessee should demonstrate airworthiness to the local CAA and the previous operator should contact his local CAA to issue the export airworthiness certificate.

- Date of CRS issue (after the delivery C-Check and the final works are done)
- Date of engines run test

Engines run test can be done before or after the demonstration flight, preferred would be to accomplish before the demonstration flight. It's not as critical as the scheduling of the engines borescope inspection.

- Date of engines and APU(if applicable) borescope inspections
It is very important that borescope inspection is done after the demonstration flight, to guarantee, that no damage has occurred before the first flight of Lessee after delivery.

3.2.3 Delivery Maintenance Check

During the maintenance (delivery) check, the Lessee delivery team should make sure that:

- The documentation of the maintenance status of the aircraft and relevant technical records correspond to delivery conditions stated in the lease agreement.
- The physical technical condition of aircraft corresponds to delivery conditions. It's suggested, to engage very experienced base (heavy) maintenance inspectors, who are familiar with the aircraft type, and can find and determine any deviations at the inspected zones, based on approved data. All findings should be listed in detail and sent to Lessor for rectification.
- It is advised to take photographs of all relevant sections as reference material during the lease, and for aircraft redelivery.
- The content of a physical inspection will be different for each aircraft type, but a generic template is included in Annex I.

If allowed under the lease agreement, the Lessee should witness the functional and operational checks which are completed at the end of the delivery check just before the CRS is signed and issued. When Lessee has verified and confirmed that the technical condition of the aircraft satisfies the delivery conditions, at this stage, Lessor may start preparation for the demonstration flight.

During the physical inspection, the Lessee should ensure that both the physical condition and the actual aircraft state in relation to the records (installed components, aircraft configuration etc.) are acceptable. The physical inspection should ideally cover a full survey of the aircraft.

3.2.4 Records Acceptance

Depending on the age of the aircraft, the review of the aircraft records can be a labor-intensive activity. The records review should ideally be performed by experienced airworthiness staff, to ensure records meet the level that is internally accepted by the Lessee and specified in the lease agreement. This records compliance check is similar to the checklist for redelivery. A generic list can be found in Annex II, while an overview of a typical delivery book can be found in Annex III. During the records review and acceptance there are various items which require additional attention:

- Maintenance program compliance review

Verify the status of each maintenance task to:

- Determine no tasks are overdue and the aircraft falls within the agreed maintenance clearance period.
- Verify the status and/or existence of a sampling program¹¹.
- Confirm that repeat inspections of repairs and additional tasks linked to modifications (Instructions for Continued Airworthiness (ICA)) are included.

¹¹ Annex VII 3.3

In particular, the Lessee should be aware of recently included maintenance tasks and their related “grace” period, which are the result of new Maintenance Planning Document (MPD) or Maintenance Review Board Report (MRBR) revisions. Additionally the Lessee should verify that the status and findings resulting from the Corrosion Protection and Control Program (CPCP) are readily available (e.g. level, follow up, etc.). Please refer to Annex VII for guidelines regarding the AMP.

- Airworthiness Directives

Review of the AD status and AD dirty fingerprints for correct compliance (including review of any Alternate Means of Compliance (AMOC), to verify transferability). AMOCs are not always transferable between operators, and should therefore be avoided. Often, AMOC's are prohibited by the lease agreement redelivery conditions. In this case, transferable means that in order for the AMOC to be valid, there is no company-specific tool or procedure required that is not available to next Lessee.

Some ADs are applicable to a specific part number or serial number (range). Particular attention should be paid to these AD as very often these parts may have been replaced and/or the dirty fingerprint may not accurately reflect the inspected part. Please refer to Annex VIII for guidelines regarding ADs.

- Modifications and alterations

A review of the dirty fingerprints and engineering data is needed for all major and minor modifications. Of particular importance are major modifications such as Supplemental Type Certificates (STC). It is of the utmost importance to ensure that all non-proprietary STC data is available, including the relevant manual supplements. The data package should include a “Right to use” letter, the engineering drawings and certification basis (local, Pre-EASA, EASA, FAA, other), as well as any dirty fingerprints to see if any in-situ changes were applied. Specific attention should be paid to the associated manual supplements (e.g. correct integration into the AMM, Illustrated Parts Catalogue (IPC), Wire Diagram Manual (WDM), etc.) to ensure correct implementation of any additional inspection requirements into the maintenance program. Please refer to Annex VI: Modifications Guidelines for guidelines regarding Modifications.

- Repair file

A review of the dirty fingerprints and certifications of each individual repair should be performed, including a mapping of the aircraft. Compliance data should include a correct reference to the SRM used, Non-Destructive Testing (NDT) task-cards, communication with manufacturer, and engineering data such as drawings, damage overviews, and thickness specifications. The SRM revision is particularly important, as the continuous development and subsequent issue of newer SRM revisions may introduce new and more stringent repair procedures. Please refer to Annex V.

- HT components and On Condition/Condition Monitoring (OC/CM) components

The Lessee should verify availability of the correct release certificate, as well as compliance with the maintenance clearance period for each (HT) component. Items such as emergency slides should be carefully inspected, as these have sub-assemblies (e.g. batteries, squibs etc.) which are required to be listed separately on the release certificate. Please refer to Annex IX for guidelines regarding components.

- Regulatory certificates

The Lessee should perform a review of the different certificates and statements, such as the CoA, CoR, Certificate of Insurance, Noise Certificate, etc.

- Logbooks

The Lessee should verify that all logbooks are available, updated, and closed. It is important to note that not all authorities require the use of hardcopy logbooks. Should such a requirement be applicable to a Lessee, it is of vital importance to verify that logbooks are available for the entire life of the aircraft. If they are not available, dispensation should be arranged with the authorities prior to importation.

- Engines

As engines are high value components and individual maintenance events are extremely costly, special attention should be paid to the documentation associated with engines. During the review of the engine records, the Lessee should ensure that all documentation required to determine the engine's remaining life and expected operational limitations is available (shop visit reports, trend data, borescope reports etc.). Subsequently, the BtB documentation for LLPs should be carefully reviewed.

- Interior burn certification

The Lessee should verify that burn certification is available for cabin, flight attendant, and flight crew; seat covers, cushions, sidewalls, carpets, hat racks, and curtains. This requirement can be satisfied by either confirming that an official test report and approval are available, or that these components are listed in the IPC. Subsequently, the Lessee should perform a physical check to determine whether the correct parts numbers are installed.

3.2.5 Demo Flight/Borescope

The demonstration flight program should be agreed by Lessor and Lessee before the demonstration flight, because the programs used for the demonstration flight can be very different. As example, the previous operator's demonstration flight program can be used, the new Lessee's flight program can be used, or Lessor can use aircraft manufacturer's demonstration flight program. The demonstration flight should be organized by the Lessee. During the demonstration, Lessee's representatives should observe operation of the systems in the cockpit and in the cabin. Aircraft's water tanks should be filled up with water for testing the water system and lavatories during the flight. After the demonstration flight both parties, Lessor and Lessee should organize a de-briefing, which includes the pilots and Lessor's mandated parties, where they can mutually come to a conclusion if the demonstration flight was completed satisfactorily or if any follow up action or retest is required, based on any findings during the demonstration flight.

The final stage of aircraft's physical inspection is a borescope inspection of the engines and APU, where Lessee should check on condition basis and confirm to its satisfaction that there is no internal damage or defect, which would cause the premature removal of the Engine or APU with reference to both the agreed minimum life remaining in respect of the Engine and APU, and with reference to the expected on-wing time remaining based on time since last shop visit and remaining LLP life. Borescope inspection should be recorded on video. This can be useful in case of any disputes with Lessor or insurance companies in case of an engine malfunction or damages during the aircraft operation by Lessee. It may be helpful as a reference upon the aircraft redelivery as well. However such inspection is not required by manufacturer and is driven by Lessee's "on condition" requirement. The Lessee should have the

right under the lease agreement and is advised to attend these inspections with their own specialists to verify that the engines and APU satisfy the delivery conditions, thus avoiding any later issues or discussions.

A full borescope is generally understood to involve a complete video borescope inspection of the compressor, combustion, and turbine sections, in accordance with the procedures, including with respect to applicable limits and tooling, of the relevant manufacturer's manual. It is essential that the applicable manual is referenced, as e.g. the Aircraft Maintenance Manual (AMM) for an on-wing borescope inspection will usually state less stringent limits than the Engine Shop Manual (ESM). In most cases, since the borescope inspection will occur whilst the engine is installed, the AMM "on wing" limits should be applied and should be clearly specified under the lease agreement. The engine should not reveal any condition which would cause the engine to be unserviceable, serviceable with an increased frequency inspection, or otherwise not meet the operational requirements as defined in the lease agreement.

It is also important to ensure that the scope of inspection and the tooling used to conduct the borescope are consistent with the manufacturer's recommendations. In recent years the use of flexible probes coupled with an unlimited scope of inspection undertaken by specialist inspectors for the purposes of lease transition have resulted in many premature and ultimately unnecessary removals with corresponding costs and delivery delays suffered by all parties. The use of flexible probes has also been known to result in internal damage to the engine resulting from tips being broken or caught between blades. AMM guidelines will specify the kind of borescope probe which should be used for routine inspection, and will usually only call out the use of flexible probes for further examination on initial findings.

Because the borescope inspection usually occurs towards the end of the delivery inspection process, the risk of delay due to adverse borescope findings can be significant. This risk tends to increase relative to the maintenance status of the engine (i.e. a "high time" engine with more flight hours and cycles consumed will have an increased risk of adverse findings relative to an engine which is "low time" or fresh from shop visit). It is often in the interests of all parties for the outgoing Lessee to schedule a preliminary borescope inspection prior to, or at commencement of the redelivery check to identify any potential defects and to allow sufficient time for resolution without impacting the transition timeline.

3.2.6 Inspection

During the physical inspection, the Lessee should ensure that both the physical condition and the actual aircraft state in relation to the records (installed components, aircraft configuration etc.) are acceptable and consistent with the delivery condition agreed in the lease. The physical inspection should ideally cover a full survey of the aircraft. It is advised to take photographs (if permitted) of all relevant sections as reference material during the lease, and for lease redelivery.

The contents of a physical inspection will be different for each aircraft type, but a generic template is included in Annex I.

Useful tips:

The Lessee should send highly experienced staff for aircraft's inspection and should not be overly restrictive when considering the travels and on-site support, where necessary. The more Lessee knows about aircraft before the acceptance the lower the risk of unplanned maintenance costs relating to pre-existing defects found following acceptance.

It is recommended to prepare a detailed inspection checklist before inspection based on Lessee's knowledge and maintenance experience of the aircraft type with a focus on known problem areas in both the physical condition and technical records.

Very serious technical problems on the aircraft could be found by Lessee's experienced engineers, and only if the engineers know typical problems for this particular aircraft type.

It is suggested that the specialists sent for inspection have the following background:

- Base maintenance inspectors with significant experience, mechanic and avionics;
- Highly experienced engineering staff, as avionics, mechanic, interior, engine engineers, structure engineers, who can evaluate technical records and aircraft technical condition;
- Technical pilots, or someone who can professionally evaluate manuals like AFM, FCOM, QRH and compatibility of aircraft and its cockpit with the Lessee's fleet.

Before doing the inspection, the Lessee should prepare its own checklist, which should be based on the knowledge and maintenance experience of the particular Aircraft Type.

The knowledge of aircraft condition after inspection can give the Lessee more opportunities to reflect in the Lease agreement the following issues:

- Special conditions, which the Lessee considers as important or sensitive;
- Special requirements on aircraft redelivery;
- Additional requirements in order to bring aircraft in acceptable for the Lessee condition.

After the inspection is completed, the team should work on the detailed inspection report with photos, so that every person involved in the operating lease can read, understand and evaluate the required information.

3.2.7 Inspection Report

The Inspection Report traditionally consists of the following parts:

- Aircraft General Data, such as Date of manufacturing, S/N, L/N, Total FH and FC
- Aircraft Weight and structural data like MTOW, MLW, etc.
- Airframe Maintenance status. When and where the latest major Heavy Maintenance Visits (HMV) have been done
- The dates of the next HMVs in accordance with current operator's Maintenance program.
- Aircraft operational status:
 - Landing category
 - Navigation Performance, as RNP capability
 - ETOPS category (90, 120, 180, 240)
- Engines status:
 - Date of Last Shop visit
 - Lowest LLP life remaining or LLP status
 - Engine TSN / CSN at the last shop visit
 - Completion date of last Performance Restoration shop visit
 - Engine TSN / CSN at the last Performance Restoration shop visit
 - Test Cell EGT margin at Performance Restoration shop visit
 - Current Operating Thrust

- APU status:
 - Manufacturer
 - Part Number
 - Date of manufacture
 - APU TSN / CSN
 - Completion Date of Last Hot Section Inspection (HSI) / Overhaul
 - APU TSN / CSN at Hot Section Inspection (HSI) / Overhaul
 - Cycles remaining to 1st LLP Limiter (if applicable)
 - APU Annual Utilization (FH/FC)
- Landing Gear status:
 - Gear TSN / CSN
 - Date of Last Overhaul
 - Gear TSN / CSN at Overhaul
 - Back-to-Birth traceability (is it available or not)
 - Type of Brakes, P/N and manufacturer
 - Type of Wheels, P/N and manufacturer
- Interior Configuration, LOPA (including check for compatibility with Lessee's fleet):
 - First Class seats P/N, Manufacturer, inseat power, in-seat video, entertainment PCUs
 - Business Class seats P/N, Manufacturer, inseat power, in-seat video, entertainment PCUs
 - Economy Class seats P/N, Manufacturer, inseat power, in-seat video, entertainment PCUs
- Emergency Equipment Layout and compatibility with Lessee's fleet
- IFE system and compatibility with Lessee's fleet
- Airshow system and compatibility with Lessee's fleet
- Galleys: manufacturer, P/N, location, type. Compatibility with Lessee's fleet:
 - Boilers: manufacturer, P/N
 - Coffeemakers: manufacturer, P/N
 - Trolleys: manufacturer, P/N
 - Additional equipment P/N and manufacturer
- Interior major color and photos
- Lavatories and compatibility with Lessee's fleet
- Cargo Compartments condition:
 - Is any Cargo Loading system installed
 - Is any Smoke Detection system installed
 - Is any Fire Suppression system installed
- Fuel system:
 - Fuel Capacity
 - Auxiliary Tank installed or not
 - Fuel Instruments calibration KGs / Lbs.
- Avionics equipment installed and compatibility with Lessee's fleet
- List of Temporary Structural Repairs
- List of Software
- Compliance with Lessee's CAA requirements and equipment that needs to be installed or removed to comply with Lessee's CAA requirements
- Condition of the Maintenance Records
- Evaluation of expenses during the Lease
 - Expenses (investments) evaluation to bring the aircraft to the airline's standard
 - Expenses (investments) evaluation to bring the aircraft in compliance with the local CAA requirements
 - Total estimated amount of expenses during the Lease

- Conclusions
- Useful to attach photos with comments for:
 - Cockpit with electrical power ON in order to collect maximum information regarding instruments arrangement and configuration
 - Passenger Seats
 - Galleys
 - Lavatories
 - Cargo compartments
 - Exterior
- It is critical that the incoming Lessee's inspection of the aircraft identifies any discrepancies from the agreed delivery condition contained in the lease agreement, and that these are raised to the attention of the Lessor and either rectified prior to acceptance, or clearly noted as discrepancies in the delivery/acceptance documentation. In many cases, the discrepancy will be of a commercial nature only and when noted will give rise to a corresponding relaxation against redelivery conditions.

3.2.8 Certificate of Acceptance

The certificate of acceptance is the final step in the delivery process and will usually trigger the formal commencement of the lease. After both Lessor and Lessee have signed this certificate, the Lessee can commence operations with the aircraft. However, the certificate of acceptance is also used to officially record the aircraft's condition at delivery and to formally note any discrepancies from the agreed delivery condition which will then give rise to a corresponding relaxation from redelivery conditions at lease expiry, and Lessees often underestimate its significance. The document should also be used to accurately describe what equipment and records were supplied and which other minor conditions or defects exist on the aircraft or in the records (even though no compensation was awarded). This will help prevent any misunderstanding at redelivery.

3.3. Transferability (Regulatory)

Regulatory differences between states make the import of aircraft or part a difficult and time-consuming process. The major aviation states, FAA and EASA¹², have established extensive regulations beyond the minimum standards set by ICAO. Those regulations are often followed or copied by other states. However, other states can interpret the regulations differently or add other regulations.

Even though the import process of every state differs, the general order of importation processes is shown in Figure 6.

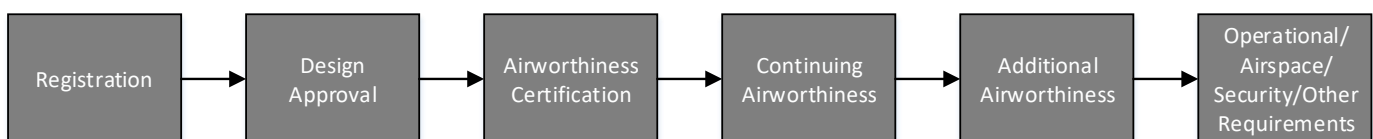


Figure 6. Import processes

¹² In this respect, the European Union is considered as one 'state', since the EU has agreed to transfer this authority to EASA.

Design approvals are given for each design. This means that repeat products do not need to go through that process again. Hence, for aircraft series, the design approval has usually already been obtained well before registration and certification of the aircraft.

3.3.1 Registration

The registration procedure is different for every state. All states use procedures derived from ICAO, modified to fit their own standards.

Article 18 of the Chicago Convention states 'An aircraft cannot be validly registered in more than one State, but its registration may be changed from one state to another'. Therefore, documents which are typically required for a registration procedure are: evidence of deregistration, proof of ownership/holdership, and evidence of incorporation of the applicant.

Identification requirements are generally based on ICAO Annex 7 and include installation of a fireproof identification plate (crash plate), the application of registration marks, and the programming of unique codes for transponders and Emergency Locator Transmitters (ELT).

Some states have requirements in addition to the standard registration markings (e.g. Malaysian registered aircraft are required to paint the Malaysian flag and the word 'MALAYSIA' on the aircraft).

3.3.2 Design Approval

The design approval process pertains to the airworthiness certification of the type design of an aircraft, engine, propeller, part or component. Modifications and repairs are also subject to design approvals. Approving designs (e.g. new aircraft type) is referred to as initial airworthiness certification and consists of the following:

- Acceptance of airworthiness codes

A design approval is applied for by the OEM and issued by a National Aviation Authority (NAA) when they have determined that the design is in compliance with relevant design standards. High-level design standards are issued by ICAO. There are about seven states that have developed more detailed design standards, or airworthiness codes, such as US FAR-25 and EASA CS-25. For aircraft, these codes form the basis for Type Certification and are reflected in the Type Certification Data Sheets (TCDS).

Certifying an aircraft type design is a complex and demanding effort that requires a high level of expertise and resources. States without OEMs typically adopt one or more of the airworthiness codes of other states. These states usually have limited knowledge, or have not yet established airworthiness requirements of their own.

The options that are recognized for acceptance of airworthiness codes are displayed in Table 2. Please note that this is a non-comprehensive list of states, and serves as an example only.

	For any product, use of its own airworthiness code	For any product, use airworthiness code of state of design	For any product, airworthiness code of one or more specified other state(s)	For any product, use any airworthiness code
State example	Major design states: ▪ US ▪ EU ▪ Canada ▪ Brazil ▪ China ▪ Russian Federation ▪ Japan	Pakistan	Saudi Arabia: ▪ US, except where no US TC is issued, then validation Qatar: ▪ State of design or ▪ EU or US	Sri Lanka

Table 2. Acceptance of Airworthiness Codes (example)

- Airworthiness directives

An AD is a regulatory enforceable rule which is issued to correct unsafe conditions in products, and restore the airworthiness of the aircraft. ADs are commonly issued by the state of design. However, each state of registry has the right to issue its own ADs.

States of registry have several options in respect to issuing ADs:

- Blanket adoption of the AD of the state of design
- Re-issuing the AD of the state of design
- Issuing additional ADs of its own

- Modifications and repairs

Traditionally, modifications were designed by the TC holder. Presently, in many cases, modifications to type designs are developed by another organization and certified separately by means of an STC. Most importing states recognize that a TC does not necessarily represent all design aspects, as some may have been introduced by means of an STC. For certifying and accepting both modification and repairs, the difference between whether the modification or repair is minor or major means certification, validation or blind acceptance by the state of import. For some states, the import procedures of modifications and repairs are defined in the binding bilateral agreement between the importing and exporting state (see 3.3).

3.3.3 Airworthiness Certification

Airworthiness certification has two main functions: certifying that a new or used product meets the relevant design standards and certifying that a used product has been properly maintained. For products, particularly aircraft, the formal document attesting airworthiness is the CoA. To assist the international transfer of aircraft, many states use an export CoA. Parts and components not installed in the aircraft are certified by an airworthiness approval tag.

- Certificate of Airworthiness (CoA)

The CoA proves the airworthiness status of the aircraft. As part of applying for a CoA, the owner or holder of the aircraft needs to submit documents and records. In some states, submission of documents and records in electronic form is accepted, while other states require them to be submitted on paper. In addition to the documents and records and their evaluation, states typically also require a physical inspection of the aircraft when the aircraft is imported. This inspection is done by either a state inspector or an approved organization. In some states, a check or demonstration flight is part of this initial physical inspection. Some states require a maintenance check before they issue a CoA, even if a maintenance check was just carried out in the state of export. The European Union Member States issue, in addition to the CoA, an Airworthiness Review Certificate (ARC). This certificate allows the free movement of aircraft because the ARC is accepted by all EASA member states. The ARC needs to be renewed on a regular basis by means of an airworthiness inspection.

- Export CoA

The Export CoA is a document used between states. It is generally used for the delivery of new aircraft to states other than the state of manufacture, and the transfer of used aircraft. The United States, and states that have adopted the US aviation regulatory system, have regulated the issue of export CoA. The European Union has not issued such regulations. Some EU members have local requirements for this process, others do not. The EASA recommends its member states to accept either an export CoA or a recent CoA.

- Airworthiness Approval Tag

For parts and components, the airworthiness certificate is known as an Airworthiness Approval Tag. These tags are more commonly known as Certificates of Conformity (used only for newly built parts and components), or Authorized Release Certificates (for used parts and components). The EASA uses Form 1 and the FAA uses Form 8130-3 as the Authorized Release Certificate.

3.3.4 Continuing Airworthiness

Continuing airworthiness covers all of the processes ensuring that, at any time in their operating life, aircraft comply with the airworthiness requirements in force and are in a condition for safe operation. It includes:

- Instructions for Continuing Airworthiness (ICA)

ICAs are prepared by the organization responsible for the type design. They contain specifications, methods, procedures and tasks necessary to maintain the aircraft or a component and are published in a format that the operator can readily adapt for use. They are published by the Design Approval holder, which may be the Type Certificate, a Supplemental Type Certificate holder or other organizations such as the holder of a TSO authorization. Typically, they are in the form of Airworthiness Limitations, Certification Maintenance Requirements, Aircraft/Engine Maintenance Manuals, Structural Repair Manuals, Wiring Diagrams, repair instructions, etc. There are different interpretations as to whether some documents with technical data that are issued by a Design Approval holder are considered part of the ICA. Examples include Fault Isolation Manuals, Load Analysis Service Bulletin, Illustrated Parts Catalogues, Maintenance Planning Documents and Component Maintenance Manuals. The regulations by EASA and FAA with respect to ICA are fairly harmonized and found in the respective Part 21s (FAA FAR 21, EASA Part 21) and subordinate regulations such as FAR Part 25/EASA CS-25 and associated guidance material such as Advisory Circulars and FAA Orders (e.g. 8110.54A).

- Maintenance Programs

The operator must use ICA information provided by the Design Approval holder to prepare a maintenance program suitable for its operation and based on its service experience; as each operator has a different operating environment, maintenance programs for the same aircraft type differ between operators. The operator will then amend it.

As a result, a different maintenance program may apply when transferring an aircraft. Normally, a bridging program is established to align the maintenance program with that of the new operator. However, some states apply requirements which must be met upon introduction of the aircraft into the fleet of the new operator. This can lead to downtime and significant costs. Please refer to Annex VII for more details on maintenance programs.

- The Safety Feedback Loop

Defect reporting and analysis with a view to consider whether airworthiness is at stake and measures need to be taken. Such measures may include the issue by an authority of an Airworthiness Directive. Subsequently it is the operator's responsibility to accomplish all mandatory requirements concerning the aircraft.

- Continuing Airworthiness Management Organizations

Whereas the continuing airworthiness tasks themselves do not significantly differ between US and European air operators, there is a significant difference with respect to organizational aspects. In the US, operators conducting commercial air transport under FAR 121 or FAR 135 rules are required, as part of their Air Operator Certificate, to have a continuing airworthiness management program that ensures airworthiness of the aircraft.

In Europe, under EASA rules, the air operator needs to have a separate approval in the form of a Continuing Airworthiness Management Organization Approval, which sets organizational standards in addition to the standards for ensuring airworthiness of the aircraft.

3.3.5 Additional Airworthiness

It is possible that amendments to the airworthiness code have been made after type certification. Some safety improvements are not implemented because the certification basis is established at the beginning of the process. In some cases, these amendments are considered so important for safety that they are introduced as additional airworthiness requirements. A majority of the requirements pertains to cabin safety and fire protection, but they also include other parts or systems of the aircraft. The concept of additional airworthiness requirements is not recognized by ICAO. In Europe, these requirements were codified as JAR-26; in the US they are either introduced by means of FAR 25.2, FAR 121, or FAR 26. The EASA is still developing and implementing rule which contains Part 26 and CS-26 with certification specifications. Different states can hold different parties responsible for additional airworthiness certification. For example, EASA Part 26 is addressed to the operator, while FAR 26 is addressed to the TC holder.

3.3.6 Operational Requirements

When the aircraft is type-approved, registered, and has a CoA, the aircraft will be allowed to fly. However, the aircraft is not allowed to fly for commercial air transport operations unless the operator is approved and additional approved equipment is installed.

- Air Operator Certificate

Every operator engaged in commercial air transport, must have a valid Air Operator Certificate (AOC) issued by the State of Operator. According to ICAO, such an approval is obtained by demonstrating to the State of Operator *'the adequate organization, method of control and supervision of flight operations, training program as well as ground handling and maintenance arrangements consistent with the nature and extent of the operations specified'*¹³.

The requirements for an air operator include requirements for instruments and equipment. ICAO Annex 6, Part I lists those as a function of the kind of operation. Most of the countries have copied these requirements, which ensure harmonization between the various countries. However, some countries have added additional requirements, which are unique and therefore may require modification of an aircraft when imported into such a country. The USA is known to have more stringent requirements such as:

- Flight Data Recorder (FDR) parameters
- Windshear equipment
- Automatic External Defibrillators (AED)
- 16g seats
- Fuel tank inerting systems
- Cargo compartment fire protection
- Access to Type III exits
- Facilities for disabled passengers

Europe's additional operational equipment requirements are primarily airspace related (ref 3.3.7 airspace).

- Operational authorizations

Normally, the AOC is accompanied by the Operations Specifications (OpsSpec). The OpsSpec gives details about all operational authorizations, conditions and limitations that are associated with the AOC. They are subject to the conditions in the operations manual. The operational authorizations are also known as specific approvals. Examples of operational authorizations are; ETOPS, RVSM, MNPS, PBN, LVO and steep approach. All these authorizations require additional procedures and equipment onboard.

When importing the aircraft, it should be verified that the aircraft is certified for each operational authorization that is desired. This can be done by checking the limitations section of the Aircraft Flight Manual (AFM). The maintenance program may also need to be adapted to ensure continuing airworthiness for these operational authorizations.

3.3.7 Airspace Requirements

Every aircraft that wants to fly over a particular region has to be in compliance with the applicable airspace regulations. For this purpose ICAO specified global airborne specifications for communication, navigation and surveillance (CNS). However, each state with its own Flight Information Region (FIR) may specify certain airborne equipment to be compatible with its airspace network. ICAO keeps track of these differences in ICAO doc 7030 'Regional Supplementary Procedures' by dividing the entire airspace into eight regions:

¹³ ICAO Annex 6 – Part I

- Africa – Indian Ocean (AFI)
- Caribbean (CAR)
- European (EUR)
- Middle East/Asia (MID/ASIA)
- North America (NAM)
- North Atlantic (NAT)
- Pacific (PAC)
- South American (SAM)

Every region in the Regional Supplementary Procedures is divided into flight rules, flight plans, communications, navigation, surveillance, air traffic services, safety monitoring, air traffic flow management, special procedures, phraseology, search and rescue, meteorology and aeronautical information services. Every diversion from ICAO is listed here. For example, the carriage of capable radio equipment with a channel spacing of 8.33 KHz is only mandatory in EUR region and an SSR mode S transponder is only mandatory in the NAT and EUR regions. In the EUR region ADS-B and Datalink requirements are being introduced earlier than by ICAO and other states. ICAO updates doc 7030 every year to include the latest changes.

3.3.8 Other Requirements

Some states have established additional requirements which do not fit into the standard transfer processes. Three examples:

- Age Limits

OEMs have developed structural integrity programs to ensure the safe life of an aircraft. Such programs include Widespread Fatigue Damage (WFD), Electrical Wiring Interconnection System (EWIS), CPCP and Supplemental Structural Inspection Program (SSIP). Even with these aging-aircraft programs, some states, primarily in Asia, Africa and the Middle-East, have introduced hard age limits for importing aircraft. Some publish these, but in other cases they are only revealed when an aircraft is actually imported into a state. The age limits typically vary between ten to twenty years.

- Local language placards and markings

Many states require placards and markings in the aircraft, which are aimed at passengers, crew, and ground staff, to be in the local language.

- Units of measurement

ICAO has published units of measurement to prevent miscommunications. These units are derived from the International System of Units (SI). However, aviation industry standard shows most states use a system that differs from what has been internationally agreed. Some states do follow the SI system; notably CIS states, China, and Mongolia.

3.3.9 Cockpit Security

- The 'means to monitor' requirement

In 2001, the 'means to monitor' requirement was added to ICAO Annex 6, Part I. The text of the requirement is as follows:

'means shall be provided for monitoring from either pilot's station the entire door area outside the flight crew compartment to identify persons requesting entry and to detect suspicious behavior or potential threat'.

- Interpretation

This requirement has led to many interpretations by different parties. These range from the most sophisticated solution, consisting of a number of ceiling-mounted video cameras in the area behind the cockpit door with a monitor in the cockpit instrument panels to a solution where just a spyhole in the cockpit door is sufficient. Even among the EASA countries there are multiple differences in interpretation.

The reason for this abundance of interpretations is that there are many stakeholders involved. This requirement followed the 9/11 attacks and was agreed at ICAO level later in 2001 in consultation with the stakeholders. The text of the requirement was actually a compromise to meet their various interests. It includes a number of phrases that are not clearly defined and thereby cause different interpretations by the various stakeholders. These phrases are:

- Means – A means is variably interpreted as a system (e.g. hardware, such as a video camera system), and a procedure, such as having an extra person in the cockpit during critical phases of flight;
- Monitoring – this phrase can be interpreted strictly, i.e. the area behind the cockpit door must be seen, or more broadly.
- Either pilot's station – this is interpreted alternatively as requiring a monitor in direct view of both pilots at the same time, when normally seated, or a monitor in view by one pilot within his normal field of vision, or when turning his head and/or body. Broader interpretations have been accepted as well. The FAA accepts as an interpretation for 'either pilot's station' that a pilot stands up and uses a spyhole in the cockpit door. This interpretation has been approved by ICAO (see below under 'USA').
- Entire door area – is this the area immediately behind the door or broader, i.e. also including areas further away and not in a direct line of sight from the door via a spyhole.

- Stakeholders

The stakeholders include the following parties:

- Civil aviation (safety) authority
The safety authority primarily wants the aircraft to have features that are airworthy and allow safe operation.
- Civil aviation (security) authority
The security authority has a different perspective and primarily aims to prevent unlawful intervention. Each state is required to have a National Civil Aviation Security Program (NCASP), the distribution of which is kept to a minimum for obvious reasons. It is known however that some states have a 'means to monitor' interpretation in the NCASP that is more stringent than that of the aviation authority. However, the secret nature of the NCASP makes this information unavailable to potential operators or owners of aircraft operated in that country.
- Pilots, represented by pilot unions
Pilots have an interest in the best means, which currently is a video camera, and in some cases the pilot unions, rather than the national aviation safety or security authority, convinced air operators to install video cameras.

- Cabin crew, represented by cabin crew unions and passengers, protected by privacy regulations
In some countries, simple solutions were found acceptable for privacy reasons of cabin crew and/or passengers. The passenger cabin may be regarded as a private area rather than a public area.
 - Ramp inspectors
EASA leaves the interpretation of the means for monitoring requirement to the national authorities overseeing air operators, except that it has provided guidance to ramp inspectors under the SAFA program, which effectively says that the best option is CCTV and all other options would raise findings.
 - Air operators
The air operators are the obvious stakeholders which have to deal with all the stakeholders mentioned above.
- USA

USA does not interpret the 'means to monitor' as a requirement for video cameras.

When embodying the ICAO requirement into its regulations, the US FAA specifically allowed options other than a video camera. In its preamble to that rule¹⁴ the FAA substantiates its choice by stating that it:

'Has met the intent of the ICAO requirement to monitor from either pilot's station the entire door area outside the flight crew compartment. ICAO guidance permits operators to use different methods to monitor the area outside the flight deck door. The monitoring does not have to take place from "either pilot's station," as a plain reading of the ICAO standard indicates. According to ICAO, use of a spyhole or peephole would satisfy the requirement to monitor the area outside the flight deck door. Since this final rule adopts a performance standard that contemplates the type of system that ICAO states is sufficient to meet the ICAO standard, the FAA determines no difference exists.'

3.4. Bilaterals

The purpose of airworthiness bilaterals (bilateral agreements) is to accommodate transfers of aircraft between states by reducing duplication of certification activities. Bilaterals define in which cases the importing state can fully rely on the exporting state and in which cases additional certification or approval work is needed. Bilaterals may be limited to design approvals only, such as TCs, STCs and repairs, but may also extend to ADs and maintenance organization approvals. An important bilateral is that between the US and the EU.

Importing aircraft into either the EU or US or exporting from either the EU or US will in some cases be difficult. One such difficult case is the import of an aircraft from Japan into the EU. The component certification is not recognized by the EASA, which means every component needs to be re-certified to EASA standards. The same situation would apply to Japanese STCs which are not EASA approved.

¹⁴ Docket No. FAA-2005-22449; Amendment No. 121-334

Summary

Generally, the process of induction of an aircraft into airline's fleet can be summarized in the following steps:

- The Lessee requests and the Lessor provides documents and aircraft technical specifications for potential candidate aircraft.
- Based on received documents the Lessee makes preliminary aircraft evaluation.
- The Lessor receives Letter of Intent (LOI) from the Lessee with major statements and figures for discussion.
- Signing of the LOI.
- Preliminary aircraft physical and records' inspection by the Lessee.
- Drafting and negotiation of the Lease Agreement.
- Signing of the Lease Agreement.
- Aircraft delivery check accomplishment.
- Bringing the aircraft in conformity with delivery conditions.
- Acceptance by the Lessee of the aircraft with signed Acceptance certificate after full Lessee's and Lessor's satisfaction of financial and technical conditions of the deal.

Section 4 – Operations



While the previous chapters have provided guidance on issues to consider before committing to a lease agreement, this chapter will explain what to focus on during the lease period. In this period, most issues will be maintenance-related.

The Lessor will seek collateral for the cost of planned maintenance events by having the Lessee pay additional funds into the maintenance reserves (if applicable). The Lessor must receive the payment for maintenance reserves in time. The Lessee should avoid defaulting on these payments, because in the worst case scenario, default can lead to termination of the lease. However, because the Lessee pays the Lessor in advance, the Lessee has to carefully consider when to claim maintenance reserves, if a certain maintenance event is due to occur.

Costs covering modifications mandated by ADs are difficult to calculate beforehand. Therefore, cost sharing formulas are provided to help the Lessor and Lessee come to an agreement regarding unknown maintenance costs. This will avoid discussion between both parties during operation of the aircraft by the Lessee.

4.1. Alterations in Obligations

4.1.1 Cost Sharing Options

Cost allocation becomes an issue once costs are made by a specific operator and depreciation is required over a certain timeframe, during which multiple operators make use of the aircraft. This would not cause any complications if the time of accomplishment of such an event in the future is known, as for example for landing gear replacements or specific maintenance events. Complications arise for events that are unknown at the start of the lease, such as is the case for ADs.

Whenever there is an unsafe event, the airworthiness authorities may prescribe an AD. This document often requires performance of a mandatory modification or repetitive inspection, in order to maintain continued airworthiness of the aircraft.

Without cost sharing formulas, the cost of this modification is for the Lessee, while it cannot fully enjoy the benefits of such a modification as this safety improvement is applicable to the entire life of the aircraft, while the Lessee may only operate the aircraft for a limited period (this is specifically apparent with short term leases). The Lessor will often argue that Lessee should cover the cost related to local regulatory mandated modifications, in particular if these regulations are not applicable to any other jurisdictions. From a Lessee perspective one can argue that the cost of ADs is fully the Lessor's risk, because if the aircraft were not on lease, the associated cost would have been for the account of the Lessor.

Cost sharing formulas in leases are common and the Lessee should evaluate the benefit of such a formula carefully. Usually, cost sharing mechanisms include a threshold for the sharing formula to be applicable, so that only ADs over this threshold will be reimbursed. Clearly, it is in the Lessee's interest to keep this threshold as low as possible. The Lessee should also carefully review existing ADs which might fall due during the lease term, as there are several known ADs which are applicable to certain older aircraft (or applicable to aircraft over a certain flight-hour or flight-cycle threshold), and the required actions to fulfill these ADs are expensive. This cost sharing is usually limited to

ADs issued by the civil aviation authorities only, and excludes other mandatory changes such as navigation upgrades or noise related modifications, as they are often linked to the operational area of the aircraft and not to the technical status.

4.1.2 Maintenance Reserves: Payment and Claims

The Lessor and Lessee prepare for the cost of planned maintenance events by agreeing which maintenance events qualify for reimbursement of maintenance reserves or Lessor contribution (or end of lease maintenance adjustment where applicable). Where it has been agreed that maintenance reserves are payable during the lease term, these amounts are regarded as a form of supplemental rent and it is therefore critical that these amounts are calculated and paid on a timely basis to avoid payment default. The monthly maintenance reserve amount will vary depending on actual hours and cycles flown each month, and to enable calculation of the monthly reserves amount payable, the Lessor will usually rely upon the receipt from Lessee of a utilization report within the first few days of the calendar month, in respect of the preceding calendar month.

Maintenance reserves will be available for reimbursement against the cost of prescribed events, and reimbursement will be subject to certain exclusions agreed in the lease. The exclusions usually relate to items which are not directly related to the time or materials cost of the eligible maintenance or replacement part (for example shipping, operator modifications, insurable damage, premium labor rates etc.) and which were not factored into the cost assumption for the relevant event. It is always advisable for the Lessee to communicate with the Lessor in advance in relation to any planned maintenance for which reimbursement from maintenance reserves is expected. This can help to ensure that work scopes are agreed ahead of time and minimize the risk of disputes arising.

Costs covering modifications mandated by ADs are difficult to calculate beforehand. In many leases the Lessor will agree (as a commercial point) to contribute to the performance of airworthiness directives, and cost sharing formulas will be set out in the lease to help the Lessor and Lessee come to an agreement regarding unknown maintenance costs.

At the start of the lease, the Lessor will establish an account for each of the maintenance events identified in the lease agreement. Maintenance reserves can be constructed in various ways, however, it is often not possible to transfer amounts between the different accounts during the lease. The maximum claimable amount will always be the amount accumulated in the dedicated account.

For maintenance reserve claims, efficient communication with the maintenance provider and Lessor is essential to speed up the release of maintenance reserves, and to minimize possible delays. More often than not, an event is not considered as a qualifying event if an incorrect work scope has been performed (or only partly been performed). Agreeing on the work scope prior to commencement of the maintenance activities will prevent unwanted delays or claim rejections.

It is advisable to review the maintenance reserve rates after each event, to determine if the rates are still sufficient to cover the cost of such an event in the future. Economic conditions and maintenance best practices often change during the term of a lease agreement and consequently so does the cost of such an event. Depending on the lease agreement, any excess outside of the accumulated reserves will have to be topped up by either the Lessor or the Lessee.

The various maintenance reserve areas are discussed separately.

- Airframe

The claimable amount is usually based on the check including all lower-level tasks (e.g. an Airbus A320, 4C/6YR would also include all 1C, 2C and all other lower interval tasks). The claimable amount also includes all non-routine work, materials used, and components replaced or repaired. ADs, modifications, and painting are often not included in the claimable amount. The final invoice from the maintenance provider should ideally differentiate between the various sections of the check in order to quickly and efficiently complete the claim. It is also advisable (and sometimes mandatory as per the lease agreement) to notify the Lessor before the check starts. Dirty fingerprints of all work performed, together with the final invoice specifying the relevant sections, should be delivered to the Lessor once the check is finished.

- Engines

As with airframe maintenance checks, it is also advisable to agree on the work scope before the engine is sent for a performance restoration or overhaul. Quite often, reserves are accumulated per module and separately for LLPs, and by doing so a drawdown of the separate accounts should be calculated. If a fixed rate is agreed with the maintenance facility, the Lessee should take into account the specific conditions of the lease for invoicing purposes. In addition, there is often a minimum build life mentioned in the lease agreement, and for engine shop visit planning purposes one should take into account the redelivery conditions, to keep any future exposures to a minimum.

During the shop visit, special conditions of the lease should be taken into account, such as the use of Parts Manufacturer Approval (PMA) parts and Designated Engineering Representative (DER) repairs. Example of items that are normally excluded from the maintenance reserves are FOD, overheating, bird strike, engine misuse. This list is not in any way complete and only serves to provide examples.

- Landing gear

The work scope for a landing gear overhaul is less complicated than the work scope of an engine overhaul or heavy maintenance check. However, as indicated earlier in this document, the landing gear and individual sub-assemblies are often exchanged to keep the turnaround time to a minimum. This means that individual parts (and subsequently LLPs) may not always meet the requirements of LLP BtB. Additionally, aircraft leases sometimes include the requirement that installed parts may not be older than the airframe (in terms of FHs and FCs). This means that the Lessee should agree with the overhaul shop about which parts may be installed before the work commences.

4.2. Events of Default

Events of Default (EoD), also known as Termination Events, are defined as events or contractual breaches which would allow the Lessor certain remedies depending on the type of default, but ranging as far as repudiation or termination of the lease agreement, and ultimately repossession of the aircraft.

The EoD provisions are typically negotiated as part of the definitive lease agreement.

There is a sub classification within EoD that distinguishes between actual or immediate default, and an event of default arising. Where an actual default occurs, there has been a breach of the lease, and the remedies (including repudiation or termination of the lease, and subsequent repossession) are often immediately available to the Lessor. In contrast to these immediate remedies, certain EoDs allow for a grace period. If the Lessee remedies its default within the grace period, then the Lessor shall not have access to its remedies triggered by a full EoD.

It is particularly important for the Lessee to consider the aforementioned sub classification of EoDs, as it is key to have grace periods for situations which may be beyond the control of the Lessee, such as a non-payment EoD which is subject to the usual international administrative payment procedures. It is also crucial that the Lessee understands and establishes the subsequent internal monitoring measures to prevent an actual default which would have immediate consequences. Examples of both an actual default and an event of default are discussed further on in this section.

EoDs, especially when linked to default on payments, often put a Lessor on high alert, as such an EoD can quickly lead to bankruptcy. Besides being a time-consuming and costly process for all involved, bankruptcy can delay a repossession exercise for the Lessor. However, it is important to note that a default is not always the end of the world, and does not necessarily mean that the Lessee is physically unable to make the payment. Best practices include that the Lessee should have adequate admin payment procedures. Both parties should be aware of potential impact and risk associated with EoD and its commercial implications.

Lessors will of course try to forecast EoD risks, using various financial tools such as credit scoring and structural and reduced-form models, but the best way to predict a default is to maintain frequent and transparent communications with the Lessee, supported by adequate monitoring methods.

Some of the most common or sensitive EoDs found in an operating lease are examined in greater detail below.

4.2.1 Non-payment

Failure to make scheduled payments is the most common default seen in the operating lease industry. This relates to all scheduled payments including rent and maintenance reserves, and always has a grace period attached of approximately two to three business days, in which to remedy non-payment. A Lessee should not accept non-payment as an EoD with no grace period attached, as there is always potential for a slight delay due to internal and external administrative procedures.

It is advisable to the Lessee to consider aligning all scheduled payments so that they are all due on the same date. This will result in a decrease of cost and administrative burden, the importance of which is often underestimated in international exchanges and payments over a long term lease.

4.2.2 Insurances

The Lessee will be required to maintain the agreed insurance policies during the term of the lease. This is one of the items which, if not in place at any one time during the lease term, would constitute a default with no grace period attached. The reason behind this is the potential financially devastating impact of damage occurring to an aircraft where the insurance policy for such aircraft has not been put in place, as discussed in 2.4. In the event where it is determined that the agreed insurance policy is not valid, then the Lessor would typically immediately require the aircraft to be grounded until a policy is put in place.

Lessors normally have a contingency insurance in place, which would begin to cover the aircraft in the event that the Lessee's policy does not cover the incurred damage. While this contingency policy does provide a safety net, a Lessor will always require that the Lessee maintains the agreed insurance policy in place for the duration of the term.

4.2.3 Cross Default

A cross default provision included as an EoD is one of the most important EoDs to negotiate from a Lessee perspective. Essentially, this provision will allow for a default to arise under the lease, if a default has arisen under another of the Lessee's contracts. The key is to make sure that the conditions, under which a default arising under

another of the Lessee's contracts results in an automatic default under the lease, are appropriately limited and aligned.

For example, a cross default provision which would allow for a default to arise automatically under the lease, where a default occurred in any other of the Lessee's contracts, in any form whatsoever, and without limitation, should not be accepted by the Lessee. In this scenario, it would be advisable for the Lessee to limit a default under any other agreement of the Lessee to only constitute an EoD under the lease if such default is not being contested by the Lessee in good faith and on reasonable grounds, and any declaration of default has not been stayed by a competent court or authority.

The Lessee will have to consider each cross default element in relation to its own particular corporate situation. However, it is generally advisable to the Lessee to implement the following limitations:

- Limitation of any cross default provision to the aircraft leased by the same Lessor only. Therefore default relating to other aircraft leased by a different Lessor, as well as default under the Lessee's other commercial contracts, would be excluded.
- Limitation of any cross default provisions to a default exceeding a minimum monetary threshold.
- Further limitation on financial indebtedness, in that an EoD shall not arise if such financial indebtedness of the Lessee constitutes non-recourse borrowing or financing.

A Lessor will usually take a firm position on the cross default provisions, as these are the provisions relating to its risk mitigation of bankruptcy or similar events of the Lessee. Specifically, the provision for default under any of the Lessee's other commercial contracts is a good indication to start considering the Lessee's potential for impending bankruptcy. If a Lessor considers the risk of an impending bankruptcy to be probable in light of a default under one of the Lessee's commercial contracts, then the Lessor will most likely enforce its right to repossession under the cross default provisions before the bankruptcy occurs, in order to avoid complications and costly delays with a repossession exercise.

4.2.4 Bankruptcy, Insolvency and Similar Proceedings

Bankruptcy, appointment of an administrator, and similar events are always included as an EoD. The governing law of the lease will define exactly whether an EoD has arisen. However, it is the governing law of the jurisdiction of the Lessee that will determine whether or not, and when, the Lessor can enforce its rights in a bankruptcy situation. Therefore, a Lessor will have a priority to avoid a bankruptcy or similar event, and will do its utmost to repossess its aircraft in the event that the Lessor considers a Lessee bankruptcy to be probable. The Lessor will only repossess its asset as a last resort, as repossession is a costly exercise, involving repair, remarketing costs, and the cost of downtime during the delay between enforcement and re-lease or sale. Despite all of these costs, a repossession following a Lessee bankruptcy would always be more expensive.

If a bankruptcy EoD extends to any subsidiaries of the Lessee, it is advisable to the Lessee to implement a limitation in that such extensions shall only apply to material subsidiaries of the Lessee, in order to avoid a default under the lease due to the bankruptcy or equivalent event of what may be only a minor subsidiary.

4.2.5 Change of Ownership

This provision refers to the change of ownership of a Lessee, and limits any change of ownership to prior written consent of the Lessor. It is advisable to the Lessee to ensure that such written consent of the Lessor is not to be

unreasonably withheld in relation to the Lessor's reasonable opinion that such change of ownership would have a materially adverse effect on the Lessee's ability to perform its obligations under the lease.

4.2.6 Adverse Change

An adverse change in EoD centers on any change to the Lessee's financial and operational situation, with the goal of protecting the Lessor. Therefore, any material change to the financial or operational condition of the Lessee would constitute an EoD. Given the subjective nature and potential abuse of such a clause, it is advisable to the Lessee to resist the inclusion of such a provision.

4.2.7 Other Important EoDs

Other EoDs that the Lessee should be specifically aware of include the following:

- A provision detailing that an EoD will occur if at any time during the term, the Lessee's liabilities exceeds its assets, should not be accepted by a Lessee. Due to the substantial fluctuation of aircraft values over time, this would constitute a significant risk of default for the Lessee, especially if the Lessee is a small to mid-sized company.
- Litigation should not be accepted as an EoD, as this can be a common occurrence, and does not necessarily impact on the Lessee's performance of its obligations, at least not until a verdict is rendered.
- Breach of material covenants is a standard EoD in the industry and relates to the express obligations in the lease. This would include valid insurance policies, as discussed above, but also redelivery conditions and transfer of possession to a non-permitted person.
- Finally, referring back to the distinction between EoDs resulting in immediate remedies and EoDs with a grace period attached, the Lessee should be aware that any EoD arising may have specific operational consequences, even if this EoD has a grace period in which the Lessee may provide a remedy. An example of this situation would be where subleasing is only permitted when there is no ongoing EoD. Therefore, if an EoD occurs while the aircraft is on sublease, this would clearly raise some significant complications. The Lessee should carefully consider the indirect consequences of an EoD arising.

4.3. Sale-and-Leaseback

The "sale-and-leaseback" is a common method of financing aircraft for airlines, and represents one of the major channels of aircraft procurement for Lessors. Key factors in selecting a sale-and-leaseback transaction for the airline include:

- Access to off-balance-sheet financing (via operating lease) for new aircraft orders placed by the airline
- Ability to generate additional cash by freeing up equity and/or by profit on sale of new or existing aircraft
- Transfer of asset residual value risk and end of service remarketing to Lessor

As the name suggests, the "Sale-and-Leaseback" essentially involves two distinct transactions. The Sale/Purchase transaction followed by an Operating Lease. Whilst the Sale/Purchase transaction will have a short lifespan, the Operating Lease which follows will provide the ongoing lease framework for the term of the Lease and will have a greater impact on the airline going forward. Whilst the lawyers and finance teams will be focused on the "front end" aspects of the Sale/Purchase transaction, it is important for the airline to pay close attention to the longer term commercial and operational aspects of the Operating Lease for the reasons discussed more broadly in this paper.

The main difference between the sale-and-leaseback and a "normal operating lease", particularly in respect of used aircraft transactions, is the absence of extensive delivery conditions and consequently the delivery inspection of the aircraft. This introduces a number of challenges for the airline:

- Whilst the aircraft under a Sale/leaseback will usually be delivered on a strictly "as-is" basis without detailed delivery conditions, the lease will normally contain a detailed set of redelivery conditions aimed at preserving the asset value and remarketing ability for the Lessor at lease end. The airline will need to ensure that it will be able to comply with these redelivery conditions at lease end.
- The Lease will also impose new compliance obligations and operational limitations during the term of the lease which previously may not have existed, such as restrictions on sub-leasing, replacement of parts, maintenance and certification standards, geographic limitations on operation, financial and technical reporting, etc. It is important for the airline to understand communicate internally the implications of the change of status when an aircraft changes status from "airline owned" to "leased".

It is not uncommon for airlines to make a profit on a sale-and-leaseback transaction. The process can be applied to both new aircraft (yet to be delivered) and aircraft which have operated for the airline for a number of years.

4.4. Engine Power by the Hour Maintenance Agreements

Over the last 15-20 years, engine OEMs have been steadily increasing their presence in the MRO market. Whereas before most engines were being maintained by airline or 3rd party shops, now OEMs cover more than half of the engine MRO business. OEMs have taken over airline shops as more airlines wanted to focus on their core business or reduce overhead, or OEMs have set up joint ventures with airline and 3rd party shops that have now in effect become OEM shops. As airlines try to shift more of the related financial risk towards the MRO and as they focus more on new aircraft to reduce fuel cost and achieve higher on-wing times, it becomes more difficult for independent MROs to compete with OEMs.

There are some advantages and disadvantages related to an increasing OEM influence in the MRO market. It must be noted that most of the listed complexities around all-inclusive agreements are also relevant to non-OEM all-inclusive agreements, and are more relevant to leased aircraft. Nevertheless, most all-inclusive agreements are with OEMs, and similar principles apply to airline-owned assets at the point when they need to be sold and if the airline wants to maintain asset value, as the Lessors want.

Advantages

- Airlines with limited internal resources and technical expertise can outsource the technical management of their engines to the OEM
- Risks associated with new engine designs can be mitigated; lower than expected reliability and high cost design issues can be mitigated as well
- Costs are predictable with scheduled shop visits only as long as the MRO agreement and fleet planning are aligned and no penalties or additional shop visits apply at fleet exit

Disadvantages

- Complexities around double cash out (reserves and OEM payments) and status of funds at fleet exit
- Complexities in entering/exiting engines
- Reduced flexibility for airline to manage its own fleet regarding work scope and removal planning
- High risk of OEM monopoly in the aftermarket and reduced competition
- Pushing PMA / DER out of the aftermarket, maintenance cost becomes 100% under control of the OEM

4.4.1 Payment Options

Historically, most all-inclusive OEM agreements have been power by the hour type agreements. Such agreements allow the airline to spread out engine maintenance cost over the entire operation of the engines instead of having expected or unexpected cash expenditure peaks when shop visits actually occur.

However, such agreements can result in the airline paying both the OEM and the Lessor for engine maintenance, and in discussions at the end of the agreement as to which party retains the available funds.

Options to address these issues with an OEM maintenance contract:

- If the airline insists on having a power by the hour then it is recommended to start discussions with the OEM and the Lessor at an early stage in order to agree on a tripartite before the aircraft is delivered to the airline. The tripartite must allow the airline to contribute towards just one party and it must include a mechanism to correctly distribute the funds remaining at the end of the agreement. It must be noted that not all Lessors are keen on such tripartite agreements and airlines should plan for discussions well in advance so that other options can be looked at in case the tripartite is not an option. Some engine OEMs have started offering a new set of service agreements to accommodate tripartite agreements such as, for example; Rolls-Royce OPERA, CFM PML and IAE V-secure. The airline should carefully review the redelivery conditions of any relevant leases and, if necessary, budget for shop visits that may be required to meet redelivery conditions that are not covered by the agreement.
- It is possible to agree to a more flexible agreement with the OEM which includes different payment options. The airline can elect to keep a power by the hour rate for repair shop visits only (also referred to as PAYG (Pay As You Go), EFH (Engine Flight Hour) or PBH (Power By the Hour) rates) and in addition pay for performance restoration type shop visits when they actually occur, based on FH rates (also referred to as PASV (Pay At Shop Visit), PPE (Pay Per Event) or restored rates) or based on a FP (Fixed Price) or NTE (Not To Exceed). This option largely solves the issues of double payment and funds remaining at end of agreement.

No double payment is required and the airline has better control over payments to the OEM and claiming back reserves from the Lessor for performance restoration shop visits. The reserves only cover performance restoration shop visits and, if managed properly, these can be claimed back before or at the time payment to the OEM is required.

The funds paid monthly to the OEM for unscheduled repair shop visits will stay with the OEM. These funds will be minor compared to the funds required for performance restoration shop visits and are in effect an insurance premium that the airline elects to pay. These are unrelated to Lessor payments/contributions and could even be removed from the agreement if the airline feels comfortable enough with the engine reliability/design.

- In case the airline prefers a pay per event type of agreement but desires increased cost predictability, a process of internal accrual should be adopted, based on the rates and coverage of the maintenance agreement in place.

4.4.2 Entry/Exit Options and Number of Shop Visits

Rates that are offered by the OEM are conditional upon specific operating conditions, maintenance practices and the hardware standard of engines. It is therefore not always possible to just enter additional engines into an all-inclusive agreement with the OEM. For new engines, this is not a problem, but if the airline wants to add used engines

into the agreement, then it becomes a lot more complicated. If the parameters of the engines to be added are significantly different from the assumed parameters, the airline will need to do a qualifying shop visit on the relevant engines before they are included into the OEM agreement. Such qualifying shop visits will usually be charged on time and material basis and are usually significantly more expensive than the airline is accustomed to.

Rates that are offered by the OEM are also conditional upon a certain volume of engines expected to be refurbished and on whether it is the 1st, 2nd, 3rd or subsequent performance restoration shop visit. It is therefore not always possible to remove engines from the agreement at any time. An airline could well end up in a situation whereby they have decided to remove an aircraft from the fleet early but they are still obliged to send the engines for a performance restoration shop visit under the OEM agreement. On the other hand, a lease may have been extended but the OEM agreement for the relevant engines will expire if the maximum number of shop visits is reached.

Options to address these issues with an OEM maintenance contract:

- The issues explained could potentially be addressed by a tripartite or Lessor controlled agreement with the OEM. If the Lessor has an agreement with the OEM in place that is not linked to a specific operator, or allows for a set of different types of operations, adding or removing engines from that same Lessor should be transparent for the airline. Of course this would have to apply to all Lessors the airline is leasing aircraft from, which is very rarely the case.
- Ideally there should be no limitations on the number of shop visits, or they should be well defined by the airline based on their fleet planning, lease agreements and desired flexibility/coverage. In other words, the airline should advise the OEM what coverage they require over the term of the agreement.
- The airline should negotiate flexibility into the agreement to cover for unexpected changes in fleet planning or operational parameters. If no or limited flexibility is achieved, there should be a clear mechanism on how the airline can remove/add engines to the agreement in terms of additional payments or extra shop visits as required.
- If there is a limitation on the number of performance restoration shop visits, the airline needs to review their fleet planning and budget for any additional shop visits that would be required to meet redelivery conditions but are not covered by the OEM agreement.
- OEMs have started providing airlines with tools to minimize the issue of maintenance practices on used engines being added to the agreement. In doing so OEMs are certifying engines to OEM standards and practices; for example through the CFM/GE TRUEngine and IAE Pure-V programs. The airline could consider only adding certified engines to their fleet so that they are more easily accepted into the maintenance agreement by the OEM. Provided that this hurdle has been overcome, the rates for adding used engines to the agreement could be based upon the existing rates offered by the OEM and the time since last qualifying shop visit. This will always be better than a time and material shop visit.
- The listed OEM programs also guarantee that only OEM parts and repairs have been used on the engines. These programs tend to be popular with Lessors as they help the Lessors ensure their assets maintain value.

4.4.3 Flexibility in Work Scope

Rates that are offered by the OEM are based upon certain work scopes being applied to the engines. In particular the performance restoration shop visits require careful work scoping in order to stay below the maximum cost that

is being offered (guaranteed) by the OEM. The lower the rates offered by the OEM, the lower the work scopes are likely to be.

For leased engines covered by maintenance reserves, this could create issues because the Lessor wants to ensure, whenever they release reserves and accept an aircraft back at end of lease, that the engine is refurbished to a high standard. Such a high standard should allow the asset to be marketed to any operator in any region without the need for additional Lessor contributions or commitments. However, this is not what the OEM wants as their priority is to offer the airline the lowest maintenance cost possible by restoring the engines to a minimum standard sufficient for that specific airline.

Options to address these issues with an OEM maintenance contract:

- These items can be addressed by a tripartite or Lessor controlled agreement with the OEM.
- Agree the lowest possible rate for certain work scopes with the OEM. Before doing so, agree with the relevant Lessors that the work scopes will qualify for reimbursement, and assess whether they will satisfy the redelivery conditions.
- If timing does not allow this, for example if the leases are already in place and the OEM agreement is being negotiated at a later stage, the airline should verify what work scope definition the OEM uses and compare it with the qualifying event definitions in the relevant leases. Both should be aligned.

In other words, the airline should advise the OEM what work scope they require for which engines, and when they require them. This can result in quite complex agreements but this is deemed necessary in order to maximize flexibility and minimize cost of ownership for the airline.

4.4.4 Flexibility in Engine Removal Planning

Flexibility in engine removal planning is probably the most complex item related to all-inclusive maintenance agreements. When the OEM pricing is offered as a flight hour rate (PBH, PPE, PASV, PAYG), then such flight hour rates are obviously based on a certain expected time between shop visits. The longer the time between shop visits, the higher the cost of a performance restoration shop visit and the higher the margins for the OEM. Hence, it is in the OEM's interest to have a long time between shop visits so that their margins are maximized.

It is also in the airline's interest to have a long time between shop visits because this reduces the amount of shop visits, operational disruptions and cost of ownership. However, for the airline it is also very important to have some flexibility so that it can optimize its operations and fleet planning. This can get very complicated in the case of large fleets with high frequency deliveries and several different leases attached to them.

The airline needs to take into account an optimum spare engine level and shop visit turnaround time constraints, which will ultimately determine how much stagger is required in the removal program. This stagger has to be communicated to and accepted by the OEM. Assuming stagger is within reason, the OEM is not expected to raise much of an issue on this, but stagger flexibility has to be addressed in the agreement.

The airline needs to take into account lease redelivery conditions. The moment of lease return and the requirements at lease return may require an engine performance restoration shop visit well before the engine is actually due for a shop visit for technical reasons. This issue is specific to certain leases and airline fleet planning and is much harder, if not impossible to accept from an OEM point of view.

The airline needs to take into account possible changes in fleet planning. If a lease is terminated early, performance restoration shop visits may be required early as well. If leases are extended, performance restoration shop visits may need to be added or occur later than planned.

Options to address these issues with an OEM maintenance contract:

- Agreements that have no performance restoration shop visits pricing based on flight hour rates should be fully flexible. When pricing is based on fixed price or not to exceed price, it should not matter when the shop visit actually occurs and therefore the airline should have full flexibility to decide when a performance restoration shop visit is due, assuming slots are available at the shop.
- If pricing is based on flight hour rates then there must be stagger flexibility. In addition the airline should assess its own fleet planning and lease conditions and verify where lease redelivery requirements may conflict with OEM agreement conditions for engine removal. Most of the time the OEM agreement will only accept an engine removal for performance restoration when the engine has actually run out of performance or is unserviceable due to hardware condition/LLP time expired.
- It is possible to request a threshold as to when engines can be removed for a performance restoration shop visit, regardless of actual performance/hardware condition. This will likely increase pricing, so it needs to be reviewed carefully.
- Another consideration is asking the OEM for an optional pricing for lease return shop visits. This could be on fixed price / not to exceed basis or on an escalated flight hour rate.
- The airline may come up with a long term plan or different scenario plans and share them with the OEM as a basis for pricing. However, this can be quite difficult for new engine designs where there is no experience with time on-wing, and for airlines that have very dynamic fleet planning.

4.5. Engine Substitution

If leasing multiple aircraft of the same model & specification from a Lessor, consideration should be given to allow the Lessee to substitute contracted engines at redelivery. Such policy would provide flexibility in engine removal planning. Following is an example of how such clause might be worded:

At lease expiry, Lessee shall have the right to redeliver an engine to Lessor with a different serial number in substitution for the original engine detailed in the Acceptance Certificate ("Substitute Engine") provided that such substitute engine is also a Lessor-owned Engine and the following conditions are satisfied:

Lessee notifies Lessor at least three (3) months prior to the scheduled substitution date, and at the substitution date, each substitute engine (including all modules thereof) will be in serviceable condition and of an equivalent or better utility and modification status as the substituted Engine originally delivered by Lessor to Lessee.

4.6. Technical Records

The operator is responsible for keeping all records of maintenance accomplished on the aircraft, as required, and making them available. The operator is also required to describe the system that is used to maintain the records. The system used needs to be approved by the CAA. Operators can also contract an approved maintenance organization to keep their records if approved by the CAA. It should be very important for the operator that the system used to



maintain the records is well organized. This will help the operator in two ways, first when required by the CAA to represent evidence of maintenance work accomplished on the aircraft and second when redelivering a leased aircraft. A well-organized system will reduce the time required to examine the records and result in lower possibility of late return from lease due to missing records. It also lowers the operators' risk of having to repeat some work that has been accomplished due to records not being found.

If the Lessee is in the position to provide the technical records for the leased aircraft(s) for the preceding year to the Lessor on an annual basis they should consider adopting that work procedure. Lessor then has the option, if he decides to do so, to review the records and potentially minimize the amount of technical records due for review upon redelivery. This procedure may save Lessees time and effort spent in compiling technical records at redelivery.

Section 5 – Redelivery



The redelivery process is the final step in the aircraft leasing life-cycle, and the Lessor will have started its marketing efforts well before the aircraft is redelivered. Consequently, the redelivery date is of great importance to the Lessor and penalties and other protection mechanisms against late redelivery are included in the lease agreement. The Lessee should therefore thoroughly prepare for this redelivery process and prevent any unnecessary delays, which can be extremely costly. Open communication with the Lessor during this final phase will prevent any unwanted surprises just before the redelivery date.

5.1. Redelivery Conditions

The redelivery conditions are by their nature drawn from the delivery conditions - except in cases where it concerns a new aircraft, where the redelivery condition should differ significantly from the delivery condition. It is therefore advisable to the Lessee to match the redelivery conditions as closely as possible to the delivery conditions during contract negotiations. Any uncertainty or mismatch between the delivery and redelivery conditions of the lease agreement could lead to the Lessee, at the end of the lease, investing (heavily) in upgrading the aircraft to a better condition than it was in at delivery.

The Lessee is also advised to pay specific attention to the redelivery conditions and the redelivery timetable, as noncompliance can result in financial liabilities for the Lessee. Redelivery conditions are agreed before the lease term commences, usually as early as the LOI. However, even at such an early stage, Lessees must be wary of even the slightest potential of the Lessor claiming that a specific item would not be in compliance with the redelivery conditions.

At redelivery, if the Lessor successfully argues noncompliance with the redelivery conditions, not only will the Lessee have to remedy the defect at its own cost, the Lessee will also continue to be obligated to pay rent on the aircraft. Often, the rental obligation will be even worse for the Lessee, as the lease agreement may specify that in the event of a late redelivery, the rent shall increase by a certain percentage. Notably, increases upwards of one hundred percent are not uncommon, therefore it is advisable that the Lessee makes sure that any increase in rent after delay of redelivery is as low as possible. It is also advisable to the Lessee to negotiate a grace period for redelivery of the aircraft, in accordance with the similar concept of the “back-stop” date in the delivery conditions (see 3.1.5).

While it is common to have precise redelivery wording with regards to certain elements, such as arrangements for specific hours and cycles with respect to aircraft and engines, some elements are almost always left vague. The Lessee should not overlook these relatively small items as they soon add up, and can ultimately result in adverse financial consequences. The wording *fair wear and tear* is one element that can lead to disputes during lease return. If this term is used it is preferable that the term is formally defined in the lease to ensure that both parties clearly understand what this means. Objective standards should be used when possible e.g. MPD or comparison to other aircrafts in Lessees fleet.

A specific example of one of these smaller items is the redelivery location. Lease agreements typically provide for a redelivery location either as designated by the Lessor, or by mutual agreement of both parties. It is advisable to the Lessee never to accept wording to the effect that the redelivery location shall be determined by the Lessor. At the very least, the redelivery location should be designated by the mutual agreement of both parties. Ideally, a firm

redelivery location will be agreed in the lease, however, sometimes practicalities do not allow for a specific location to be designated (i.e. where there is uncertainty with a long lease term). By leaving the seemingly unimportant choice of redelivery location to the Lessor, the Lessee may be exposed to substantial, and otherwise avoidable, ferry flight costs.

5.2. Redelivery Process

The amount of effort and time required to properly plan and execute the redelivery of an aircraft depends largely on how well the individual requirements from the lease have been implemented by the Lessee at the start of the lease. The redelivery process can be divided into three separate phases; the initial phase, the operating (pre-redelivery) phase and the redelivery phase. An overview of the different phases and their timing can be found in Figure 7 which provides a detailed breakdown of all activities and milestones of a redelivery.

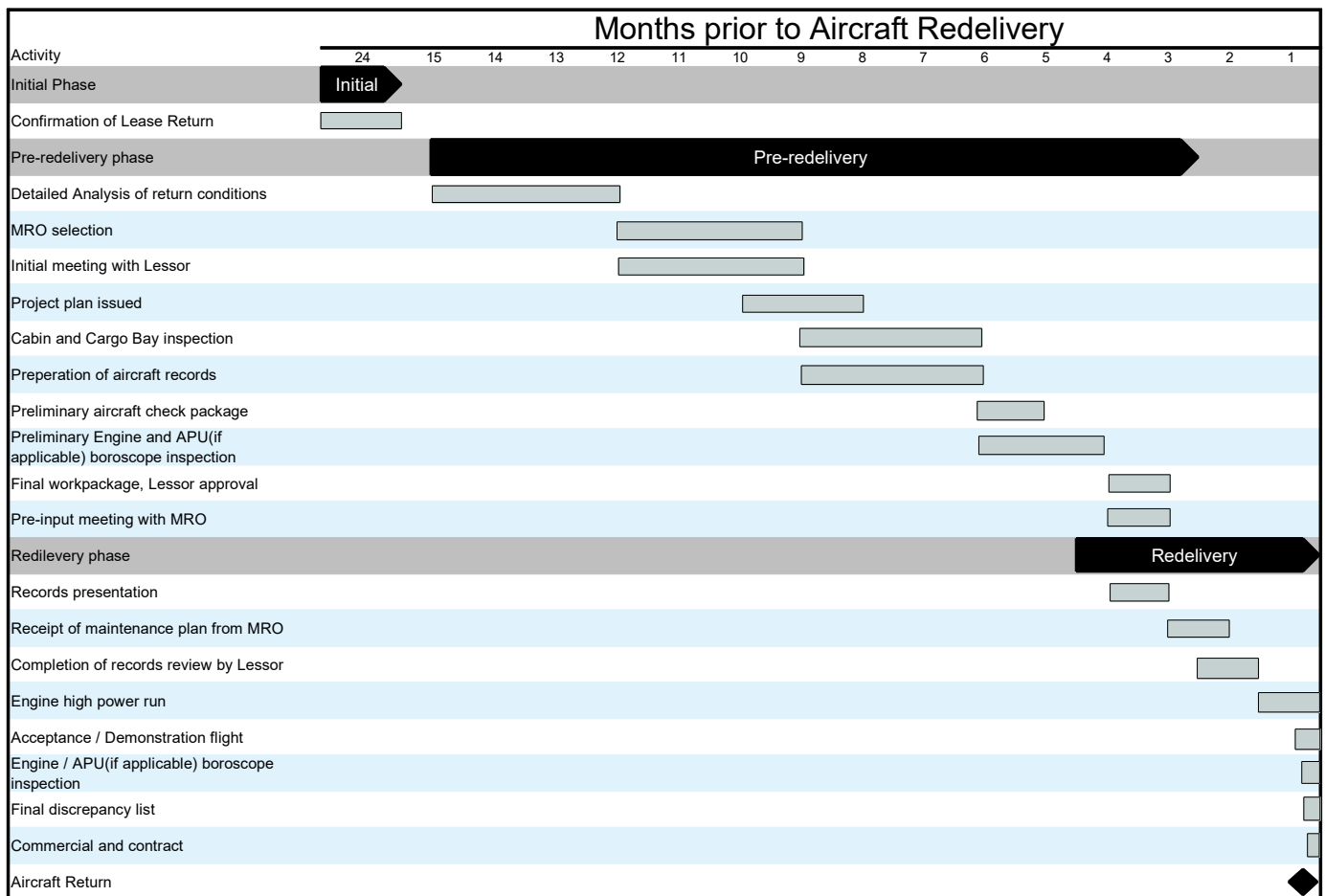


Figure 7. Proposed Redelivery Plan

Details for each step in the delivery process are as follows:

- Confirmation of end of lease, airline internal process – **24 months prior**
 - This timing can vary from airline to airline but a good practice is to prepare more time than less.
 - Review of major component returns condition like engines, APU, landing gears etc. And any upcoming maintenance event on those components should be reviewed as well.
 - The decision of returning or continuing the lease needs to be discussed as well.
- Detailed analysis of Return conditions – **12-15 months prior**
 - Lessee to make an interpretation of each element of the detailed return conditions.
 - Identify any problem areas, potential compliance issues, and perform technical and commercial evaluation of options to resolve these issues.
- MRO selection – **9-12 months prior**
 - This timing is individual for each operator.
 - Lessee to review MRO options with consideration of MRO qualification (EASA, FAA etc., component and accessory overhaul capability). Booking of a maintenance slot for the lease return check.
 - Lessee to consider MRO on dock date for any required parts or equipment changes.
- Initial meeting with Lessor – **9-12 months prior**
 - Set up a face-to-face with the Lessor
 - Appointment of Project Managers from both Lessee and Lessor
 - Agree on schedule for both face-to-face meetings and/or teleconferences.
 - Lessee and Lessor to discuss, clarify and record in detail each element of the return conditions to ensure the terms are clear and that both parties have a common understanding.
 - Record any agreed amended return conditions, elaborated items, buy-outs etc. through formal documentation or at minimum record in the official meeting minutes.
 - Discuss/agree the baseline costs and interval assumptions for any return compensation payments (if applicable).
 - Discuss aircraft configuration requirements (cabin configuration/component age vs airframe age etc.).
 - Lessee and Lessor to discuss general issues related to aircraft return process and conditions. Lessors remarketing inspection protocols in the period leading up to the return (limit to prospective Lessee's with signed LOI and agree attendance limit numbers and duration).
 - All Lessors requests should be discussed, e.g. paint livery of the next operator, modifications etc. Also discuss Lessor's approach to application of delay provisions to ensure that these will be carefully weighed.
 - Discuss with Lessor the engine return conditions
- Project plan issued – **8-10 months prior**
 - Lessee generates a basic Project Plan detailing the primary tasks and key milestones
 - Lessee engages with the Lessor to agree the basic Project Plan
 - Lessee internal project kick-off meetings with all relevant departments to coordinate lease return activities.
- Cabin and Cargo Bays inspection – **6-9 months prior**
 - Lessee must consider the lead time for obtaining replacement parts for the cabin and other areas.
 - Place orders early and include parts which may still be subject to debate with Lessor but which are considered to be "at risk". Parts that are "at risk" parts are those that could delay the re-delivery.
 - The intent of the cabin walk through and cargo bays inspection is to agree the general standard for lease return (fair wear & tear to be accepted).

- Clarify Lessor approach to cabin PMA / non-OEM parts (if required/applicable).
- “Fair wear & tear” – Lessee and Lessor must agree on what is acceptable/not acceptable (wear, fabric tears, dents, cracks, stains, discoloration etc.).
- Lessee, Lessor and MRO Project Managers/representatives should be present for the cabin walk to reach a common understanding on what needs to be done in order for the cabin to be in an acceptable condition for the return.
- **Preparation of aircraft records – 6-9 months prior**
 - Lessee starts preparing aircraft records in hard copy folders or digital format, subject to individual airline process.
 - Priority should be given to identifying any issues with critical records (AD's, Repairs, LLP etc.) so that corrective actions can be planned or commercial remedies agreed.
 - Lessee to review mods and repairs to determine acceptability at return (EASA / FAA compliant, locally approved etc.).
 - Consider giving Lessor access to Electronic records remotely with hard copy (if applicable) delivered at aircraft return.
- **Preliminary aircraft check package – 5-6 months prior**
 - Lessee defines the work scope for the redelivery maintenance input (special care with contractually applicable Lessee maintenance program / MPD/ ALS revisions etc.).
- **Preliminary Engine and APU (if applicable) borescope inspection – 4-6 months prior**
 - Preliminary inspection is to allow time to respond to adverse findings.
 - Lessee should consider sharing the inspection report and video with Lessor to establish a baseline of understanding Engine/APU condition.
 - Report should include all findings and observations (including minor items within AMM limits); including measurements which helped determine that an observation is “within limits” to avoid debates and delayed return.
- **Final Check Package Definitions – 3-4 months prior**
 - Should include actions for any missing / non valid historical aircraft documentation (e.g. repairs).
 - Include a list of components required to replace to meet redelivery conditions.
- **If the aircraft needs export CofA the regulator should be contacted – 3-4 months prior**
- **Pre-input meeting with MRO – 3-4 months prior**
 - Lessee and the MRO discuss the details of the return check (work scope, standards, processes etc.).
 - Review the plan and schedule for access to the aircraft for physical inspections, which will be managed by the Lessee.
 - Make sure that lines of communications are open and very clear for conflict resolution and that MRO is in understanding that it only takes work instructions from the Lessee.
- **Records Presentation – 3-4 months prior**
 - Lessee should aim to make historical aircraft records properly organized and available to Lessor at a mutually agreed location for review in advance of the return check so that any corrective maintenance action can be captured at that time. This might be in the form of electronic records available online or remotely reviewed, the format needs to be negotiated between the parties.

- A mutually agreed time period should be given to the Lessor, e.g. 20 business days, to complete the review of the records. And there should be an agreed cut-off point after which no discrepancies can be made by Lessor.
 - In defining a timeline for the historical aircraft records review the Lessee needs to consider the availability of the records, and the required time to address and close discrepancies raised by the Lessor. A note should be made that review of records for older aircraft often require more time.
 - Discrepancies should be recorded by Lessor and presented to Lessee in agreed format, e.g. via electronic records system.
 - Lessee's Project Manager should manage a master copy of all discrepancies that are recorded.
- Receipt of maintenance plan from MRO – **2-3 months prior**
 - The MRO issues the detailed maintenance check plan to the Lessee.
 - Lessee's Project Manager updates the project plan based on input from the MRO.
 - The Lessee shares the plan and schedule for Lessor's access to complete aircraft zonal inspection.
- Completion of historical records review by Lessor – **2 months prior**
 - Review of historical records that have been provided previously by Lessee should be complete at this time.
 - Lessor review and raising of discrepancies should now be limited to the return maintenance check and associated records including validation of repair mapping etc.
- Engine High Power Run
 - The applicable test reference, AMM, should be recorded in the lease agreement or agreed in advance.
 - Lessor or Lessor representatives usually have the option to witness these inspections.
- Acceptance / Demonstration Flight
 - Profile for the flight should be recorded in the lease agreement or agreed in advance of the flight.
 - The flight is conducted to demonstrate aircraft and system functionality in normal operations and should not exceed 2 hours in duration.
 - Subject to Lessee CAA, Lessor or Lessor representatives, which may be the next Lessee representative, may be on board the aircraft to act as observers only, with one located in the cockpit for the entire flight including take-off and landing.
 - In case any findings are recorded during flight or FDR analysis and the rectification of such findings may be sufficiently demonstrated according to the AMM/TSM requirements a further demo flight shall not be necessary.
 - Lessee should consider what defects/discrepancies might drive the requirement for repeat demo flight, and how this is decided and by whom.
- Engine / APU(if applicable) borescope inspection
 - The Lessor or Lessors' representatives usually have the option to witness these inspections.
 - The Lessee should ensure that the inspection is done I.A.W. the AMM, this should be in the lease agreement.
 - It may be useful to contemplate the return of a temporary engine if the assigned engine does not meet the return conditions.
 - Lessee and Lessor should schedule a meeting prior to the inspection to run through the details of the inspection; video on/off, tooling etc.
 - The Lessee should ensure that the limits of acceptance and the definitions are clear in the lease agreement, i.e. repeat inspection limits, on watch etc.

- Lessee should consider the possibility of the Lessor accepting any manufacturer “one time concessions” in relation to findings which are outside of the published limits, or where no limits exist, and where the engine OEM has assessed the finding to have no reduced interval inspection requirements and no impact on engine performance.
- Final discrepancy list
 - Lessee and Lessor agree on the final discrepancy list and associated remedies.
 - Lessee should consider language in the lease agreement that facilitates return of the aircraft with minor discrepancies.
- Commercial and Contract
 - Processing of end of lease payments.
 - Final preparation of the aircraft return data package.
 - Application for De-registration of aircraft if required.
- Aircraft Return
 - The Lessor signs the Aircraft Acceptance Certificate

5.2.1 Initial Phase

The redelivery process starts many months before the actual redelivery event, and a proper project plan, based on a thorough evaluation of all lease requirements and the actual state of the aircraft and records will prevent unpleasant surprises.

For engines it is advised to implement the redelivery conditions in the engine shop visit plan and monitor the conditions of the engines against the redelivery conditions on a regular basis during the lease. Active planning towards the redelivery conditions helps to reduce cost. With current trend monitoring and EGT deterioration it is possible to make a long term forecast over the fleet. Staggering of engines over the fleet, optimized build life during the shop visit and replacement of LLP's capable make the redelivery conditions, result in an optimized use of the engines with minimal cost.

The start and duration of this planning phase are dependent on the complexity and length of the aircraft lease. Considering that engines may require shop visits to meet the redelivery conditions, and considering the need to obtain additional information from third parties (such as shop reports), it may not be uncommon to start this process six to fifteen months before redelivery.

5.2.2 Pre-redelivery Phase

Following the initial planning phase, the Lessee can start creating the relevant maintenance work-scopes. Ideally this should be done in conjunction with the aircraft Lessor, if not already in the lease agreement, to prevent any discussions so close to redelivery. Many Lessors will already have sent over an inspector to perform a pre-redelivery inspection in order to determine the condition of the aircraft and records, and this may be a good opportunity to discuss the expectations of the Lessor and the redelivery planning. Generally this phase will include the following elements:

- Pre-redelivery audit by Lessor of the aircraft and records.
- Creation of an engine work-scope and approval by Lessor (if applicable).
- Selection of engine shop and allocation of slot to ensure timely return of the engine, if applicable.
- Creation of airframe work-scope and selection of Maintenance, Repair and Overhaul organizations (MRO).

- Initial discussions with the Lessor on planning, records standard, and other requirements.
- If a borescope is required at redelivery a preliminary borescope could possible prevent a surprise finding during the redelivery.
- A walk through of the cabin with Lessor and Lessee to agree on general standard of the cabin.

5.2.3 Redelivery Phase

The final phase will focus on the performance of the aircraft redelivery check and the preparation of the aircraft records. Commonly, the aircraft lease will describe the exact records requirements, and this usually includes a "redelivery book", which contains all relevant and latest summary sheets (an index of a typical redelivery book can be found in Annex II). All summary sheets should be backed up by sufficient supporting documentation, for the Lessor to be able to verify the data provided. Special attention should be paid to compliance files for ADs, modifications, repairs, components, and specific AMP items such as Corrosion Prevention and Control and additional ICA. Building the redelivery book together with the compliance files is the most labor-intensive phase, and Lessee's records staff will work side by side with the Lessor's team of inspectors. It is vital to clearly define the requirements of the delivery book, in order to avoid the lengthy process of correcting and supplementing the documentation to the wishes of the Lessor. Detailed guidance on an industry standard for the contents of each of the compliance files can be found in Annex I to X.

5.2.4 Return Acceptance Certificate / Deregistration

Following a successful fulfillment of the lease agreement redelivery terms and the compliance of the appropriate authorities, can the Lessee prepare and execute a Return Acceptance Certificate. The Lessor will countersign this certificate and return to Lessee. The same caution is required here as in 3.2.8. The regulatory authorities will issue a new CofA or Export CofA depending on whether the aircraft will operate in the same region or not. And after this is complete, the aircraft can be de-registered and re-registered (if required)¹⁵ to either the next Lessee or the Lessor.

5.2.5 General Recommendations

First of all, Lessee should understand that the bigger the aircraft the more difficult the redelivery process will be. For example, for Boeing 767 or Airbus 330 the normal term for redelivery would be a minimum of two months, from the start of the return check until the return acceptance certificate is signed.

Lessee should pay special attention to the condition of the interior. For example, if the condition of the seats is far from what is required, it might be good to remove them and send for overhaul instead of doing the repair on site. It is also good to consider that the older the seats the more difficult it is to obtain spare parts and lead times can sometimes be several months.

Lessee should also evaluate the risk of delay during the redelivery process. If the slot for the return check is tight, it is good to complete the routine tasks and then have the aircraft moved to another location that is possible less costly and has more flexibility in regards to hangar space and manpower. MROs often pressure to have the hangar space cleared once the return check is completed, especially when they have tight slot and another customer waiting for the hangar space. So it is a good practice to explore this option before the redelivery begins and have a plan in place if the scenario comes up. And also be aware that all movements of the aircraft should be agreed between the Lessor and Lessee before the redelivery process has started.

¹⁵ If both the returning Lessee and next Lessee are operating in the USA this process might not be required.

It is also impossible to describe in full detail such a specific process as delivery and redelivery of an aircraft. Each scenario is never 100% the same and the necessary skills for this topic mainly comes from experience. Each aircraft has its own identity, history, and problems and every time there will be different people, mentalities and places.

An important question that often arises at this time is whether the aircraft lease will be extended or not. This can be a major issue for many airlines if they don't prepare and analyze what affects each decision will have financially and operationally. A good practice is to do a thorough analysis of all case scenarios. If the lease is extended at the last minute what cost will have been spent that otherwise would not have been spent? What if preparation for extended lease is taken and the aircraft is returned? What potential cost will be incurred? Late re-delivery penalty due to little preparation, maintenance slot, conditions of major components etc. Each airline should consider doing this analysis if there is any uncertainty on lease extension or not.

5.2.6 Example "Redelivery Inspection and Acceptance Protocol"¹⁶

1. Objective

- a) It is in both the interests of Lessor and Lessee to ensure the redelivery of the Aircraft in compliance with the Redelivery Conditions on the last day of the lease term (the **"Project Objective"**).
- b) Accordingly:
 - i) Lessee and Lessor will cooperate in good faith and in a timely manner to facilitate achieving the Project Objective and;
 - ii) Lessee and Lessor will implement and adhere to its obligations pursuant to the Redelivery Inspection and Acceptance Protocol.

2. Redelivery Process

2.1 Principles

- a) Lessor and Lessee will conduct the redelivery in accordance with the contractual obligations and acceptance protocol and a project plan to be developed and agreed pursuant to Paragraph 2.4 below (the **"Project Plan"**) to achieve the Project Objective.
- b) Lessor's commitment to perform its required actions pursuant to the Redelivery Inspection and Acceptance Protocol to facilitate the Project Objective will not lessen Lessee's obligation to redeliver the Aircraft in the Redelivery Condition, subject to Acceptable Discrepancies.

2.2 Project Managers

No later than (X)17 months before the end of the lease term, Lessor will appoint a Project Manager and Lessee will appoint a Project Manager to oversee on behalf of Lessor and Lessee, respectively, the redelivery of the Aircraft pursuant to the Redelivery Inspection and Acceptance Protocol with the goal of achieving the Project Objective.

¹⁶ This chapter can be inserted into future lease agreements

¹⁷ "X" will depend on various factors e.g. Aircraft type, Operator, MRO etc. This applies to all instances in chapter 5.2.6 where "X" is inserted.

Lessor and Lessee will empower its Project Manager to make technical and commercial decisions on its behalf in connection with the redelivery of the Aircraft to Lessor pursuant to the Redelivery Inspection and Acceptance Protocol, recognising that certain decisions may need to be communicated or escalated to/from the respective commercial management and/or technical teams for resolution.

2.3 Lessor and Lessee Responsibilities

- a)** In order to meet the Project Objective, each of Lessee and Lessor will make commercially reasonable efforts to:
 - i)** ensure that its Project Manager is able to devote sufficient time and effort to the redelivery of the Aircraft so that its principal obligations in respect thereof are satisfied and to address technical and commercial issues as they arise during the redelivery process in a manner consistent with the goal of achieving the Project Objective and;
 - ii)** ensure that, as far as possible, the role of the Project Manager is filled at all times.
- b)** Application to Next Operator
 - i)** Lessee recognises that Lessor may wish the next operator or a prospective purchaser of the Aircraft to participate in the redelivery process to facilitate aircraft transfer. Lessee agrees to such participation of the next operator or such purchaser provided that as between Lessee and Lessor:
 - a.** Lessor will be responsible for the acts and omissions of the next operator or such purchaser and;
 - b.** the participation of the next operator or such purchaser in the redelivery process will not affect the obligations of Lessor to perform its required actions pursuant to the Redelivery Inspection and Acceptance Protocol to facilitate achieving the Project Objective.

2.4 Project Plan

- a)** Lessor and Lessee acknowledge that information and schedule dates are available at different stages in the redelivery process, so the Project Plan will be provided to Lessor by Lessee in three stages:
 - i)** *Stage 1 Project Plan.* No later than (X) months before the end of the lease term, Lessee will provide Lessor with a draft Project Plan detailing the locations, timeline and critical milestones for the Aircraft redelivery process. The draft Project Plan will set forth:
 - a.** a list of the significant redelivery process tasks such as the induction date of the Aircraft for the redelivery check;
 - b.** confirmation of any Engine replacements;
 - c.** proposed schedule for Aircraft Documentation Review and Aircraft inspection by Lessor, and;

- d. a schedule for Lessor and Lessee engagement through meetings in person and/or teleconferences. Each significant task will be assigned a schedule date (major milestone) in the draft Project Plan.

After Lessor has received the draft Project Plan and no later than (X) months prior to the end of the lease term (or if later, one month after Lessor's receipt of the draft Project Plan), Lessor and Lessee Project Managers will schedule a meeting for the purpose of:

- e. reviewing, agreeing and finalizing the Project Plan to the extent possible at such time, including the major milestones, and;
- f. reviewing and clarifying the detailed Redelivery Conditions.

- ii) *Stage 2 Project Plan.* No later than (X) calendar days prior to the end of the lease term, Lessee will provide Lessor with a draft revision of the Project Plan updated to include:

- a. a task list and schedule dates for the Aircraft Documentation Review and acceptance by Lessor, and;
- b. confirmation of the induction date for the Aircraft redelivery check.

- iii) *Stage 3 Project Plan.* No later than (X) calendar days prior to the scheduled induction date for the redelivery check, Lessee will provide Lessor with a draft revision of the Project Plan updated to include a task list and scheduled dates for inspection and acceptance of the Aircraft by Lessor during the redelivery check.

- b) Project Managers will adhere to the initial Project Plan and the latest revision of the Project Plan issued at each stage in accordance with Paragraph 2.4(a).
- c) The Project Plan will provide that Lessee will present the Aircraft and the Aircraft Documentation for inspection/review and acceptance by Lessor in stages as set forth in the Project Plan.
- d) Lessor and Lessee will allocate sufficient resources to support the Project Plan.
- e) The Project Plan will be managed and updated, as detailed above, by Lessee Project Manager during the redelivery process. Any required changes to the Project Plan will be processed pursuant to Paragraph 2.5(d) below.

2.5 Review Meetings

Prior to and/or during the redelivery process for the Aircraft, Lessor and Lessee Project Managers will schedule regular review meetings (each such meeting, a **"Review Meeting"**) to review progress in relation to the Project Plan. Such Review Meetings may be conducted in person or by telephone.

At each Review Meeting, each Project Manager will:

- a) discuss the general progress in relation to the Project Plan;
- b) identify areas of concern that may prevent the Aircraft from being redelivered in accordance with the Redelivery Conditions at the end of the lease term;

- c) consider and consult on recovery plans that may involve the addition of resources from either party to achieve the Project Objective, in each case in a manner consistent with the Project Plan and the Project Objective and;
- d) if Lessor or Lessee is aware of any delays or issues that could reasonably be expected to delay the redelivery schedule, then it will notify in a timely manner the other party of such delays or issues so that a suitable Review Meeting can be convened to consider arrangements that can be put in place in order to mitigate the effects of the delays or issues and/or to implement a recovery plan. Lessee Project Manager will prepare amendments to the Project Plan to reflect any required changes as a result of such Review Meeting.

2.6 Review & Acceptance

- a) Lessor will complete its inspection of the Aircraft and review of the Aircraft Documentation in stages subject to the availability of the Aircraft and Aircraft Documentation.
- b) Lessor (or its authorized representative) will notify Lessee in writing of each discrepancy (the **"Notified Discrepancies"**, each a Notified Discrepancy) between the condition of the Aircraft or the Aircraft Documentation (as applicable) and the Redelivery Condition. Each Notified Discrepancy will be notified to Lessee by Lessor as soon as practicable, but no later than (X) hours after noting that discrepancy, and Lessor will not withhold or delay notification of the discrepancies to Lessee.

2.7 Aircraft Documentation Review

Not later than (X) months prior to the end of the lease term (and in an updated form at redelivery of the Aircraft), Lessee will make the Aircraft Documentation available to Lessor for review, which may be presented in hard copy or electronic copy format, as elected by Lessee.

2.8 Ground Inspection of Aircraft

- a) Not later than (X) calendar days prior to the scheduled induction date for the redelivery check, Lessee will provide Lessor with a copy of the Approved Maintenance Facility check plan.
- b) No less than (X) calendar days before the end of the lease term, Lessee will induct the Aircraft into an Approved Maintenance Facility for the redelivery check. If Lessor fails to attend the redelivery check, then Lessee will proceed with the redelivery check in the absence of Lessor or its representatives. For the avoidance of doubt, the redelivery check still needs to satisfy requirements set forth in the Redelivery Conditions.
- c) Lessor or its representatives (up to a maximum of (X) people in total, unless otherwise agreed by Lessee acting reasonably, including the representatives of the next operator or a prospective purchaser of the Aircraft) will be provided with suitable office space (subject to the agreement of the Approved Maintenance Facility) at the venue for the redelivery check, such office space to include desk, chairs, lighting, internet access and a phone line to facilitate local calls.
- d) During the redelivery check, Lessor will have such reasonable access, to inspect the Aircraft in accordance with the schedule identified in the Project Plan, to confirm that the Aircraft satisfies the Redelivery Conditions.

2.9 Redelivery Check Flight

- a) As contemplated in the Lease or otherwise, after the redelivery check, Lessee will carry out a redelivery check flight in accordance with Lessee's approved flight test procedure (the **"Redelivery Check Flight"**). At Lessor's request, Lessee shall permit representatives of a follow-on lessee or purchaser of the Aircraft to be on board during such Redelivery Check Flight as observers (provided that the total number of observers from Lessor shall not exceed (X) persons, with one such observer to be permitted to occupy the cockpit jump seat during the entire flight. Such procedure will be completed in full, recording all associated findings and observations of the crew and be signed by Lessee's authorised flight crew. The Redelivery Check Flight shall be for a period of no more than (X) hours in total, and the flight costs (except the cost of Lessor's representatives) and fuel will be furnished by and at the expense of Lessee. A draft copy of Lessee's approved flight test procedure will be furnished to Lessor upon written request or otherwise no later than (X) months prior to the end of the lease term.
- b) Lessee will give Lessor at least (X) calendar days' notice of the date on which the Redelivery Check Flight is scheduled to be performed, and Lessor or its representatives may attend the Redelivery Check Flight. For the avoidance of doubt, if Lessor or its representatives fails to attend the Redelivery Check Flight, then Lessee will perform the Redelivery Check Flight in the absence of Lessor or its representatives. However, Lessee will provide Lessor with the findings and observations of the crew recorded during the Redelivery Check Flight and will still be required to correct any discrepancies identified during the performance of the Redelivery Check Flight. A pre-flight briefing will be hosted by Lessee's authorized flight crew.
- c) Provided that the Aircraft is in a condition acceptable to Lessee's authorised flight crew for the performance of the Redelivery Check Flight, it is not necessary for all Notified Discrepancies (of the Aircraft and the Aircraft Documentation) to be rectified prior to operation of the Redelivery Check Flight.
- d) If the Aircraft is parked after a successful Redelivery Check Flight Lessee will procure that the Aircraft is:
- i) maintained in accordance with the AMM and the Maintenance Programme until redelivery or;
 - ii) returned to a maintenance facility for rectification of Notified Discrepancies.
- e) The inspection of the Aircraft airframe and avionics systems (which can only be determined to be serviceable during the Redelivery Check Flight) will be deemed complete upon the completion of a successful Redelivery Check Flight. The Redelivery Check Flight will be successfully completed if there are no discrepancies (other than Acceptable Discrepancies) identified during such flight or if all discrepancies (other than Acceptable Discrepancies) identified during such flight can be corrected and verified on the ground without a further Redelivery Check Flight as provided in Paragraph 2.9(f) below.
- f) If requested by Lessor, a post-flight briefing will be hosted by Lessee's authorised flight crew. Discrepancies from the parameters laid down in Lessee's approved flight test procedures identified during the Redelivery Check Flight will be documented for rectification. If Lessee's authorised flight crew determines that it is possible to demonstrate that a discrepancy recorded during the Redelivery Check Flight can be corrected and verified on the ground without the need for a further Redelivery Check Flight, then Lessee will not be required to perform another Redelivery Check Flight to demonstrate correction of that discrepancy.

2.10 Power Assurance Runs

- a) If required by the Lease, Lessee will accomplish a maximum power assurance run on each Engine in accordance with the AMM (XX-XX).
- b) Lessee will give Lessor at least (X) calendar days' notice of the date on which the maximum power assurance runs are scheduled to be performed, and Lessor or its representatives may attend the maximum power assurance runs. For the avoidance of doubt, if Lessor or its representatives fails to attend the maximum power assurance run, then Lessee will perform the maximum power assurance run in the absence of Lessor or its representatives. Lessee will make an entry in the maintenance log book for the maximum power assurance runs and a copy of the engine run sheets and recorded parameters and aircraft generated reports will be furnished to Lessor.

2.11 Borescope Inspection

- a) If required by the Lease, after the Engine power assurance runs and a successful Redelivery Check Flight as detailed above, Lessee will procure a video borescope inspection on each Engine and the APU performed by the Approved Maintenance Facility.
- b) Lessee will give the Lessor at least (X) calendar days' notice of the date on which the borescope inspections are scheduled to be performed, and Lessor or its representatives may attend the borescope inspections. For the avoidance of doubt, if Lessor or its representatives fails to attend the borescope inspections, then Lessee will perform the borescope inspections in the absence of Lessor or its representatives and will still be required to correct any discrepancies identified during the performance of the borescope inspections. Lessee will provide a copy of the videotape borescope and inspection reports for the Engines and the APU to Lessor.
- c) Subject to Paragraph 2.12(a) below, Lessee will procure that all discrepancies (save for Acceptable Discrepancies) discovered during the borescope inspections are rectified and provide Lessor with documentary evidence to demonstrate compliance with the Redelivery Conditions.

2.12 Managing and Closing Discrepancies

Lessee will review each Notified Discrepancy.

a) Disputed Discrepancies

Where Lessee finds, in its reasonable opinion, that a Notified Discrepancy is not a discrepancy against the Redelivery Conditions, Lessee will so notify Lessor. If Lessor does not agree, Lessee will consult with the relevant manufacturer of the item giving rise to such Notified Discrepancy to obtain such manufacturer's determination as to whether such Notified Discrepancy is a discrepancy from the Redelivery Conditions and manufacturer's determination will be binding on Lessor and Lessee, save for such Discrepancies which deal solely with a cosmetic condition wherein the respective Project Managers shall come to a mutual agreement on the basis that the Aircraft interior shall be permitted to exhibit fair wear and tear consistent with the age of the Aircraft and where such mutual agreement may involve in respect of such Discrepancy:

- i) corrective action by Lessee;
- ii) no further action by Lessee and;
- iii) minimum corrective action and compensation from Lessee to Lessor.

b) Agreed Discrepancies

Subject to Paragraph 2.12(a) above, Lessee will rectify all Notified Discrepancies save for Acceptable Discrepancies. Lessee will notify Lessor when it has rectified a Notified Discrepancy in respect of the Aircraft or Aircraft Documentation and Lessor will inspect the specific rectification area of the Aircraft and the rectification item of the Aircraft Documentation to confirm, whether in its reasonable opinion the rectification causes such Notified Discrepancy to meet the Redelivery Conditions.

When a Notified Discrepancy is rectified by Lessee, Lessor agrees that it will not raise any new discrepancies as part of such verification inspection unless the new discrepancy is related to the specific Notified Discrepancy for which rectification action and re-inspection has been carried out.

c) Acceptable Discrepancies

Lessee will endeavour to effect redelivery of the Aircraft with no Acceptable Discrepancies. At Lessee's request, however, Lessor (acting reasonably) will consider a commercial remedy for each Acceptable Discrepancy. Where Lessor and Lessee cannot agree a commercial remedy for any Acceptable Discrepancy, the relevant manufacturer of the item in dispute may be consulted for its opinion on Lessee's or Lessor's conflicting views. Notwithstanding any other provisions, Lessor is not allowed to refuse Redelivery of the Aircraft due to Minor Discrepancies.

3. As is Where is

- a) Lessee will correct each discrepancy between the condition of the Aircraft and the Redelivery Conditions identified in accordance with the Redelivery Inspection and Acceptance Protocol, save for acceptable discrepancies (the "Acceptable Discrepancy") which means:
 - i) Minor Discrepancies (which means one or more discrepancies that:
 - a. do not exceed a cost to remedy (as agreed between Lessee and Lessor) of USD XXX on an aggregate basis (excluding the cost to remedy the discrepancies described in Paragraph 3(a)(ii) below), and;
 - b. do not affect the airworthiness of the Aircraft, or the ability to gain an export certificate of airworthiness or de-registration notice, but excludes any discrepancies which can be objectively demonstrated to prevent the subsequent registration by the next aviation authority) and/or;
 - ii) Discrepancies with respect to which Lessor and Lessee (each acting reasonably) have agreed to remedy or rectify after Redelivery.
- b) Subject to Paragraph 3(a) above, immediately after the completion of the inspection procedure and the correction of discrepancies which are not Acceptable Discrepancies, Lessor will accept redelivery of the Aircraft by signing an Acceptance Certificate. Upon signing of the Acceptance Certificate, Lessor



agrees that it will not make any further claim against Lessee in respect of the Redelivery Condition or otherwise in respect of the condition of the Aircraft (subject to any obligations which Lessee has expressly agreed to perform after Redelivery such as shipping parts to rectify Acceptable Discrepancies).

4. Remedies

- a)** If Lessee fails to return the Aircraft on the scheduled expiry date of the lease term in accordance with the Redelivery Conditions (but subject to the Acceptable Discrepancies and provided that the failure does not result from Lessor's failure to comply with the Project Plan and/or the Redelivery Inspection and Acceptance Protocol), then¹⁸.....

¹⁸ Remedies to be agreed between Lessor and Lessee

Reference

Ackert, S., 2014, 'Redelivery Consideration in Aircraft Operating Leases'

Ascend, 2017, 'Ascend Online Fleet' Database, Ascend Advisory, London (United Kingdom). Available from: <http://www.ascendworldwide.com/> [Accessed 18 January 2017].

Shpall, J., 2011, 'Tracking Global Airline and Aircraft Leasing Trends', TCW Group Inc, Los Angeles (United States of America), November 2011.

Aviation Working Group, August 2004. *AWG Position on Eurocontrol and Air Navigation Route Charges*.

Bunker D.H., 2002. *Aircraft Wet Leasing: the Perils and the Benefits*, Annals of Air and Space Law, Volume XXVII.

Chrystal P., 1999. *The Aviation and Reinsurance Markets – Defying the Odds, Handbook of Airline Finance*, 1st Edition, Aviation Week: McGraw-Hill.

Crans B., 2004, *How to Make Sure Your Aircraft Lease Agreement Covers (Almost) Everything*. Air and Space Law, Vol. XXIX/1.

European Civil Aviation Conference, July 1997. *Recommendation on Leasing of Aircraft, Recommendation ECAC/21-1*.

French D., July 2008. *Legal considerations for aircraft engine financiers*. Airfinance Journal.

Hanley D. P., 2012. *Aircraft Operating Leasing, A Legal and Practical Analysis in the Context of Public and Private International Air Law*. Alphen aan den Rijn: Kluwer Law International.

Hamilton J.S., 2005. *Practical Aviation Law*. 4th Edition. Blackwell.

Hanley D.P., 2011. *Contractual and Property Rights in Leased Aircraft Engines, Air and Space Law: Contemporary Issues and Future Challenges*, Air and Space books.

Kuiperi H.E., 2008. *Aircraft leasing in the context of the AF-KL merger*. International Institute of Air and Space Law.

Shupe J.D. and Buhler G. W., 2004. *Commercial Aircraft Transactions: Liability of Owners, Lessors and Finance Parties*. Air and Space Law, Vol. XXIX/6.

SGI Aviation, 2012. 'Internal Database and Centre for Knowledge Excellence', SGI Aviation, Amsterdam (The Netherlands).

References in Annexes

Annex V Structural Repair File guidelines

- EASA Part 21, Section A, Subpart M;
- EASA Acceptable Means of Compliance (AMC); 21A.433 and 21A.437
- EASA Guidance Material (GM); 21A.431, 21A.435, 21A.437, 21A.439, 21A.441, 21A.443 and 21A.445
- EASA Part M, Section A: M.A.304, M.A.305, M.A.708 and M.A.710
- FAA 14 CFR Part 43, Appendix B to Part 43
- FAA Advisory Circular 43-18 and 120-77
- FAA 14 CFR Part 26.43 (SFAR-36), 14 CFR Part 43.5 and 14 CFR Part 121.379
- EU-US bilateral: Technical Implementation Procedures
- SGI P-02-03 Reviewing repairs (2010)
- Airbus SRM (A320)
- Boeing SRM (B737NG)
- Boeing Service Letter SL-737-51-027 (latest revision), SL-747-00-022 (latest revision) and SL-747-51-047 (latest revision)
- Boeing Aero magazine Q3-07

Annex V Modifications guidelines

- EASA M.A.301; M.A.304; M.A.305; M.A.708; M.A.714
- EASA AMC and GM to Part 21, Issue 2, October 2012
- FAA part 43 26.41; 26.45; 26.47; Part 43; Appendix A to Part 43; Appendix B to Part 43;
- IAA Aircraft Design Changes – Guidance on the approval of modifications and repairs. Reference No: 09/10, 27-Jan-2010
- SGI Procedure P-02-04

Annex VII Aircraft Maintenance Program guidelines

- EASA Part-M, Subpart C M.A.302
- FAA Advisory Circular 120-16F, 25-19A. CFR 43.16
- MRBR MPD

Annex VIII Airworthiness Directives guidelines

- EASA BR 216/2008, Article 15/20 (1)
- EASA CR 748/2012, Annex I, Part 21, Section A, Subpart A, 21.A.3B
- EASA EC 2042/2003 Annex I, Part-M, Subpart B, M.A. 201 (Accountability, Responsibilities)
- EASA EC 2042/2003 Annex I, Part-M, Subpart C, M.A.301/303/305 (Continuing Airworthiness, CA Tasks/ADs/ac CA record system)
- EASA ED Decision 2003/19/RM AMC M.A.305 (d)



- EASA ED Decision 2003/19/RM AMC M.A.710 (a)
- EASA ED Decision 2004/04/CF Article 4
- EASA ED Decision 02/2003, Article 1
- FAA 14 CFR Part 39
- FAA AD Manual IR0M-8040.1C
- FAA Advisory Circular AC 39-7D
- FAA Order 8110.103A
- SGI Procedure P-02-01

Annex IX Components guidelines

- FAA Order 8130.21H, AC 20-62E, FAR 121.380
- EASA Part M; M.A 305, M.A. 613, M.A. 802, MIP Guidance (MIP-G)

Annex X LLP Back-to-Birth guidelines

- EASA M.A.302; M.A.305; M.A.307; M.A.710
- EASA AMC 305 (d) (4); AMC 305 (h); AMC E 515
- FAA 14 CFR Part 43.10
- FAA AC; 33.4-1, 33.70-1, 33-8, 33-9
- FAA SAIB NE-08-40
- FAA letter dated July 8, 2009 and titled Determining Life Status of Life-Limited Parts

Annex XI Definitions

- <http://www.investopedia.com/terms/l/lease.asp>

Annex I: Example Physical Inspection

Area	No.	Item	Instruction
External	1	General Overview	Complete aircraft, wings, stabilizer, registration
	2	Area below Door #1 LH	To show possible Airstair door installation
	3	Each external repair/dent/scratch (record totals)	
	4	Paint condition	
	5	Refueling panel (if not readable in cockpit)	To confirm Metric or Imperial indications
Engines	1	ID-plate	Show thrust and serial number
	2	Owners plate (if available)	
	3	Thrust reverser (C-duct) ID-plate	
	4	Cowlings	Detailed picture in case of paint cracking/flaking
	5	Intake	To show general condition of fan blades and intake
	6	Exhaust and Sleeve	
	7	overview to show general condition	
APU	1	ID-plate, if possible	
	2	General overview	
LDG	1	Details of one main wheel and nose wheel tire	Showing MPH/Ply/PN
	2	Each LDG data plate showing P/N - S/N	
	3	Details of Brake Part number	
	4	General condition wheel wells	
	5	Wheel axle	To show if brake cooling fans installed
Cargo	1	Details of Cargo Loading placards	
	2	Details of Cargo smoke and/or extinguishers outlets	Determine smoke/fire FAR class qualifications
Avionics	1	Details of each computer data plate installed where possible	At least; FMGC, FAC, VHF, SFCC, ELAC, SEC, FCDC, CFDIU, FWC, QAR, TCAS, ADIRU, EGPWS, RAD ALT, Wx RADAR, ILS, VOR, MMR, ADF AND ATC TxPONDER, or equivalent
Cockpit	1	FMS & Fuel Quantity Indications	To confirm Metric or Imperial indications
	2	ELT switch	
	3	Cargo Fire Extinguisher panel (Dual/Single shot)	

Area	No.	Item	Instruction
Cockpit	4	Captain/FO Tiller areas	To see if second Tiller is installed
	5	Cockpit surveillance monitor	
	6	VHF Communication panels (8.33Khz)	
	7	Details of instrument panels	
	8	Each observer's position	
	9	Overhead eye-brow window area	
	10	Standby instruments	
	11	On board documentation	e.g. AFM weights, LEP, CoA, AOC
		Crash plate	
	12	Owners ID plate	
	13	FMS identification page	Showing software configuration (for example RNP status and thrust settings)
	14	Detailed picture of LCD/CRT	Verification of CRT or LCD screens
Cabin	1	Cockpit door security pad	Outside of cockpit door frame RH side (usually)
	2	Cockpit surveillance cameras	Just aft of cockpit and G1 area
	3	Galley layout (full face)	
	4	Each Galley/coatroom/doghouse/windscreen ident plate	
	5	Details of ovens and coffeemakers	
	6	Seat showing IFE/PDA	
	7	Each seat type, identification plate	Sample check
	8	Each type of seat cushion, cover and seatbelt identification tag	Sample check
	9	Details of PSU (if available: showing video screen)	
	10	Details of IFE/video equipment	
	11	Emergency Exit Instructions at Overwing Exits (seatbacks and doors)	
	12	Each attendant work station	Flight Attendant Panel, pre-announcement recorder, handset, etc.
	13	Each attendant seat position including identification tags of cushion, covers and seatbelt	
	14	Details of ELT (only if accessible)	
	15	DFDR & Voice recorder (only if accessible)	
	16	Emergency floor path lighting	To confirm if floor path or low level lighting
	17	Emergency equipment location	Overhead bins/doghouses
	18	Emergency equipment identification tags	
	19	Lavatories - general condition	

Area	No.	Item	Instruction
Cabin	20	Complete cabin overview	From front to back and from back to front
	21	Curtain including identification tag	
	22	Heavy branding items	Any item which would make transfer to another operator difficult e.g. bright orange sidewalls
	23	Overhead stowage bins/hatracks	This should show if the bins go the full length of the cabin.
	24	Cabin divider overview and ID-plate(s)	

Annex II: Typical Redelivery Records

For delivery and redelivery, a certain number of documents and related substantiation records are required. This annex provides a best practice of the various documents and their description of what is required. Every lease agreement and associated delivery and redelivery will be different, and consequently the list of documentation will be different, as items can be added and/or removed from this list. All the documents listed below should be recognized and accepted, in support of the leasing transaction, in their electronic format whenever the local CAAs of the Lessor and Lessee do not mandate the paper format of the respective documents.

A	Item	Current Certificates
A	001	Certificate of Airworthiness (from Redelivering Airline), and if applicable the Airworthiness Review Certificate (ARC).
A	002	Certificate of Registration (from Redelivering Airline).
A	003	Certificate of Airworthiness for Export (if applicable).
A	004	Noise Certificate (or equivalent) e.g. AFM page.
A	005	Copy of Radio Station License (from Redelivering Airline), including installed list of all radio transmitting equipment.
A	006	Aircraft De-Registration confirmation (if applicable).
A	007	Burn Certification - Compliance with FAR 25.853 (or EASA equivalent) for seats, carpets, curtains, interior surfaces including in-combination burn certification (as applicable) (note - burn certificate may be contained in the AIR/ARL or type design / IPC).

B	Item	Aircraft Maintenance Status Summaries (certified by designated airline representative)
B	001	Certified listing of Airframe Check / Inspection History / Maintenance Checks performed.
B	002	Certified status of Total Time in Service (Hours and Cycles).
B	003	Aircraft Flight Time Report / Aircraft Log Book / or Airline Maintenance Information System (MIS) utilization report (as applicable).
B	004	Certified status of Airframe & Appliance (Component) Airworthiness Directives (including AD revision, applicability status and statement as to method of compliance e.g. modified/repaired/inspected).
B	005	Certified status of Airframe OEM Service Bulletins incorporated (may be included in combined Aircraft Modification Listing).
B	006	Certified status of all Airframe Non-OEM Modifications incorporated, including STC's (may be included in combined Aircraft Modification Listing).
B	007	Certified status of compliance with the Redelivering Airline's Approved Maintenance Program (AMP), including task listing, task source (to include applicable reference like MPD or other), last done and next due information, applicable Instructions for Continued Airworthiness, and any "Out of Phase" inspections.
B	008	Certified status of supplemental structural inspections (SSIs) or ALS items (Airbus) as applicable. Tasks may be incorporated in Last Done/Next Due listing.
B	009	Certified status of CPCP / ISIP Tasks (if applicable) - may be incorporated in Last Done/Next Due listing.

B Aircraft Maintenance Status Summaries (certified by designated airline representative)		
B	010	Certified status of Certification Maintenance Requirements (CMR) - may be incorporated in Last Done/Next Due listing.
B	011	Certified status of Airworthiness Limitation Items (ALIs) - may be incorporated in Last Done/Next Due listing.
B	012	Certified list of deferred maintenance items (if applicable).
B	013	Certified status of installed Time Controlled Components, including detail of applicable airworthiness limitation parameter.
B	014	Certified status of Life Limited Airframe Parts indicating limitations, accumulated FH/FC/Cal (as applicable) consumed since new, and FH/FC/Cal (as applicable) remaining
B	015	Certified listing of Operator's current tracked Components (including applicable Engine Components). Listing is limited to components which do not have a life limit (e.g. LLP) nor subject to periodic maintenance in a shop (i.e. HT/TCC Components), but which do have an S/N and are tracked in the Operator's maintenance information system. The listing should show by P/N and S/N the date of installation of the component, and the Time & Cycles (if available).
B	016	Certified Incident/Accident Clearance Statement (IATA / AWG format or equivalent) to include Aircraft, Engines, (and if applicable Propellor) covering the period of operation with Lessee.
B	017	(i) Certified listing of internal and external structural repairs & allowable damage, including reference to applicable approved data, time limited items and if applicable instructions for continued airworthiness. (ii) Certified map (Dent & Buckle File) of external repairs and allowable damage.
B	018	Certified statement of Oil and Fluid types used in Aircraft, Engines and APU (may be included in Aircraft status statement).
B	019	Certified listing of installed Operator loadable software including part number and revision date (limited to software that affects the operation and control of the aircraft).
B	020	Evidence of aircraft operational capability (ie. RVSM, RNP, ETOPS, Landing Category, MNPS, FANS, FM Immunity, 8.33 Spacing, ADS-B). May include reference to Component Listing (B015), AFM, Modification Listing, Operator's AMP to substantiate requirement.
B	021	Certified Flight Data Recorder report verifying that required parameters are within approved limits (following last commercial flight prior to Redelivery).
B	022	Approved Maintenance Program (AMP) summary of Redelivering Airline, including introduction summary pages, Last Done/Next Due listing, and for MPD derived tasks the MPD to AMP task cross reference table if different.
B	023	Certified Cockpit Voice Recorder report verifying functionality and recording capability where verification is required by the AMP.

C Aircraft Maintenance Records		
C	001	Aircraft Technical Logs - minimum of last 3 years, or less if accepted by the Aircraft's next State of Registry (electronic or analogue format as available).
C	002	A Checks - the last complete cycle of 'A' Checks (or Operator Check equivalent), including Tally Sheet and CRS (minimum of last 3 years required).

C	Item	Aircraft Maintenance Records
C	003	C Checks - the last complete cycle of 'C' Checks (or Operator Check equivalent), including Tally Sheet and CRS.
C	004	All Major Airframe scheduled Structural Check Packages (e.g. 6/12 Yr, 8/10/12 Yr, S4C/S8C etc.), (or Operator Check equivalent), including Tally Sheet and CRS (Structural Check Packages may be included in lesser Check Packages).
C	005	CPCP certified maintenance task cards (including level of corrosion found and rectification) (can be included in C002/003/004).
C	006	File for each applicable Airframe and Appliance (Component) AD (for Appliance/Component ADs accomplished off-wing to include Authorized Release Certificate and ICA) including AD copy, accomplishment instructions (ie. EO / SB) and certified maintenance task cards.
C	007	File for each incorporated OEM Service Bulletin (limited to SBs accomplished on wing) including copy of SB, and certified maintenance task card (may be included in combined Aircraft Modification File).
C	008	File for each incorporated non-OEM modification (including STCs) including embodiment instructions, regulatory approval, copy of accomplishment DFP, Right To Use Letter, Manual supplements, Instructions for Continued Airworthiness and related Last Done/Next Due information (may be included in combined Aircraft Modification File).
C	009	Certified maintenance data for each Structural Repair and Allowable Damage (including dimensional information/remaining thickness if applicable, embodiment instructions, Instructions for Continued Airworthiness, revision of data used, and Regulatory or OEM approval if not within SRM).
C	010	Aircraft weight report reflecting current configuration.
C	011	Flight control balance status – original OEM data, and if applicable the latest certified maintenance task card.
C	012	Last Demonstration Flight report and relevant Technical Log (refers to end of lease Demonstration Flight if applicable).
C	013	Compass Deviation report including certified task card (last performed Operator task card) (if applicable).
C	014	Current Hard Copy records inventory (if applicable).
C	015	In-service history to substantiate total life of controlling parameter of each LLP since manufacture (to include repair/modification data that affects the life limitation or changes the controlling parameter and update of logcard where applicable).

D	Item	Configuration Status
D	001	Layout of Passenger Accommodation (LOPA) drawing including Seat Part Numbers.
D	002	Galley Drawings
D	003	Emergency Equipment Drawing with item description and Part Numbers.
D	004	Inventory of Loose and Galley Equipment.
D	005	Inventory Listing of Avionics Units installed (E and E Bay) (if available or as incorporated in component listing).
D	006	Electrical Load Analysis (either Current ELA or Original ELA plus any applicable supplements).

E	Item	OEM Aircraft Delivery Records
E	001	Certificate of Airworthiness or Certificate of Airworthiness for Export at Manufacture (if applicable).
E	002	OEM report of Airworthiness Directives incorporated at Manufacture.
E	003	OEM's original component fitted listing (e.g. Aircraft Inspection Report (Airbus) / Aircraft Readiness Log (Boeing)).
E	004	OEM's Repair/Alteration Report/Significant Repair Log.
E	005	OEM report of Modifications incorporated at manufacture.
E	006	Service Difficulty Reports (if any) / Delivery Inspection Report (as applicable).
E	007	Production Aircraft Test Completion Record.
E	008	OEM Flight Logs (Hours and Cycles recorded).
E	009	Aircraft Historical / Miscellaneous Log (Boeing).
E	010	OEM Report of Landing Gear Life Limited Parts installed at Manufacture including Part Numbers and Serial Numbers (if not included in other documents).
E	011	Statement of the Aircraft eligible Type Certification.
E	012	Certified Aircraft Weighing Report at Manufacture.
E	013	Certificate of Conformance (if applicable to Aircraft type).
E	014	Production Flight Certificate (if applicable to Aircraft type).
E	015	Final Inspection Report (if applicable to Aircraft type).
E	016	Rigging Brochure (if applicable to Aircraft type).
E	017	Certificate of Sanitary Construction (if applicable).
E	018	Detailed Specification / Technical Description Document (if applicable).
E	019	Interior Finish Specification Document.
E	020	Customer Checklist Document (if applicable).

F	Item	Engine Records (Separate folder for each respective Engine)
F	001	OEM Delivery Documents (EDS, Log book, Test Data/Performance Summary, Configuration Listing and SB Status at Manufacture).
F	002	Certificate of Airworthiness for Export at Manufacture (if applicable).
F	003	Certified statement of Total Time in Service (Hours and Cycles).
F	004	Certified status of Engine Airworthiness Directives (including applicability status and statement as to method of compliance e.g. modified/repared/inspected).
F	005	Certified status of incorporated Engine OEM Service Bulletins.
F	006	Certified status of incorporated Engine Non-OEM modifications including STC's with applicable regulatory approval.
F	007	Certified Life Limited Parts listing indicating cycle limit, cycles consumed since new, and cycles remaining.
F	008	In-service history to substantiate total life of controlling parameter of each LLP since manufacturer (to include repair/modification data that affects the life limitation or changes the controlling parameter, and update of logcard where applicable).
F	009	All historical Engine/Module Shop Visit reports (which may not include engine DFP records and shop task cards).

F	Item	Engine Records (Separate folder for each respective Engine)
F	010	Condition and Trend Monitoring Report (current Data)
F	011	Engine Log Book and/or Master record of Installation & Removals (as applicable).
F	012	Last Borescope report (including video) (if required by lease).
F	013	Last Engine Test Cell report.
F	014	Last On-wing Maximum Power Assurance Ground Run (as performed during end of lease maintenance check if applicable).
F	015	Certified Engine Incident & Accident Clearance Statement for period of operation with Lessee (IATA / AWG format or equivalent, if not covered by Aircraft ICS in B016).
F	016	Certified Power Rating Operation history statement (including (if applicable) cycles of operation at different thrust ratings) - may be included in Disc Sheet or LLP tracking template.
F	017	Certified maintenance task cards for Specialist Engine Field Repairs since last shop visit (if applicable)
F	018	Certified maintenance task cards for Fan Blade Distribution (including P/N, S/N, and Moment Weight information).
F	019	Certified inspection status and maintenance task card for last inspection of installed Engine Mounts (if not already covered by Last Done / Next Due listing).
F	020	Certified High Pressure Turbine Blade listing to include TSN/CSN/TSO/CSO(as applicable to the controlling parameter).
F	021	Copy of current OEM concessions, (e.g. Customer Departure Record (CDR-GE/CFM), One Time Concession (OTC-PW/IAE) or Technical Variance (TV-RR)) as applicable.
F	022	Certified Engine component listing including serialized line replaceable units as tracked by redelivery operator (if not already supplied in B015). Including TSN/CSN/TSO/CSO (if available).
F	023	Certified status of compliance with the Redelivering Airline's Approved Maintenance Program, including task listing, task source (to include MPD reference), Last Done/Next Due information, applicable Instructions for Continued Airworthiness, and any "Out of Phase" inspections for installed engine if not contained in B007.

G	Item	APU
G	001	(i) Certified Total Time in Service of APU (including current Hours and Cycles) (ii) Certified statement of ratio between Aircraft Hours to APU Hours)
G	002	Certified Status of APU Airworthiness Directives (including applicability status and statement as to method of compliance e.g. modified/repaired/inspected).
G	003	Certified status of incorporated APU OEM Service Bulletins.
G	004	APU Log Book and/or Master record of Installation & Removals (as applicable).
G	005	All APU Shop Visit Reports back to last Heavy SV, and if available Shop Visit Reports prior to last Heavy SV (SV Reports may not include engine DFP records and shop task cards).
G	006	Certified Life Limited Parts listing indicating cycle limit, cycles consumed since new, and cycles remaining.
G	007	Operational Performance Test (on-wing) - certified maintenance task card (if applicable)
G	008	Last Borescope report ((including video), if required by lease).

G	Item	APU
G	009	In-service history to substantiate total life of controlling parameter of each LLP since manufacturer (to include repair/modification data that affects the life limitation or changes the controlling parameter, and update of logcard where applicable).
G	010	Certified status of compliance with the Redelivering Airline's Approved Maintenance Program, including task listing, task source(to include MPD reference), Last Done/Next Due information, applicable Instructions for Continued Airworthiness, and any "Out of Phase" inspections for installed APU if not contained in B007.

H	Item	Component Records
H	001	Authorised Release Certificate for each Time Controlled Component per OEM classification (including last overhaul / repair / shop test report as applicable).
H	002	Authorised Release Certificate for each operator tracked component (requirement to produce related component certificate is subject to lease agreement or Redelivering Lessee's regulatory authority oversight).

I	Item	Landing Gears (Separate folder for each respective Landing Gear)
I	001	OEM report of Life Limited Parts installed at Manufacture (for installed Landing Gear), including Part Number and Serial Number.
I	002	Authorised Release Certificate from last Overhaul of each major Landing Gear Assembly plus Authorised Release Certificate for any subsequent repairs
I	003	Certified status of Life Limited Parts of each Landing Gear showing cycle limit, cycles consumed since new, and cycles remaining.
I	004	Last Overhaul Shop Report plus any subsequent Repair Shop Reports.
I	005	In-service history to substantiate total life of controlling parameter of each LLP since manufacturer (to include repair/modification data that affects the life limitation or changes the controlling parameter, and update of logcard where applicable).

J	Item	Manuals (as applicable at EOL in then current format and redacted as appropriate to protect operator proprietary data). Manuals which can be sourced from an OEM directly (eg. AirbusWorld, MyBoeingFleet) are excluded
J	001	Airplane Flight Manual (including all supplements acceptable to the Aircraft state of design)
J	002	Wiring Diagram Manual
J	003	Illustrated Parts Catalogue
J	004	Maintenance Manual
J	005	System Schematics Manual
J	006	Wire List and Hookup charts
J	007	Aircraft Operating Manual
J	008	Quick Reference Handbook
J	009	Weight and Balance Manual
J	010	Power Plant Buildup Manual
J	011	Structural Repair Manual
J	012	Engine Maintenance Manual

J	Item	Manuals (as applicable at EOL in then current format and redacted as appropriate to protect operator proprietary data). Manuals which can be sourced from an OEM directly (eg. AirbusWorld, MyBoeingFleet) are excluded
J	013	Engine Illustrated Parts Manual
J	014	Master Minimum Equipment List
J	015	OEM's Maintenance Planning Document
J	016	Dispatch Deviation Procedures Guide
J	017	OEM's Cabin Crew Operating Manual (if applicable to Aircraft type).
J	018	Passenger Seat Manuals (CMM & IPC), subject to proprietary data restrictions.
J	019	Galley CMM

K	Item	Propellers (Separate folder for each respective Propellor)
K	001	Certified Total Time In Service (Hours and Cycles) of each Propellor.
K	002	Certified status of Propellor Airworthiness Directives (including applicability status and statement as to method of compliance e.g. modified/repaired/inspected).
K	003	Certified status of incorporated Propellor OEM Service Bulletins.
K	004	Certified status of incorporated Propellor Non-OEM modifications including STC's with applicable regulatory approval.
K	005	Log Book and/or Master Record of Installation & Removals for each Propellor (as applicable).
K	006	Certified Time Controlled Component / Life Limited Parts Listing (as applicable) for each Propellor, including detail of applicable airworthiness limitation parameter.
K	007	Last Overhaul Shop Report plus any subsequent Repair Shop Reports.
K	008	In-service history to substantiate total life of controlling parameter of each LLP since manufacturer (to include repair/modification data that affects the life limitation or changes the controlling parameter, and update of logcard where applicable) OR For each Time Controlled Component a copy of the Authorised Release Certificate (including as applicable the last overhaul / repair / shop test report, and update of logcard where applicable).
K	009	Certified Propellor Incident & Accident Clearance Statement for period of operation with Lessee (IATA / AWG format or equivalent, if not covered by Aircraft ICS in B016).

Annex III: Typical Index of Delivery Book

Airframe

- TCDS
- Original Export CoA
- CoA (Export)
- CoR
- Aircraft De-Registration Confirmation
- Noise Certificate
- Radio Station License
- RVSM Letter/ETOPS Statement
- Certified¹⁹ maintenance status of the Aircraft (Check History)
- Certificate Release to Service Last performed Major Check
- Certified list of deferred maintenance items
- Certified Statement of Time in Services (Utilization)
- Certified Statement of Aircraft Accident/Incidents
- Certified Statement of Lubrication and Grease types used
- Certified status of ADs
- Certified Status of all Modifications
- Certified Status of all Structural repairs and damages
- Certified Inventory of LLP and HT Components
- Certified Inventory of OC/CM Components
- Certified Inventory of Landing Gear
- Certified Aircraft Maintenance Program
- Certified Last Performance Aircraft Maintenance Program
- Statement Maintenance Clock setting, if applicable
- Airframe Logbook
- Lay-Out of Passenger Accommodation (LOPA)
- Emergency Equipment Lay-Out / Loose Equipment Inventory
- Last Paint Report
- Last Weighing Report
- Last Standby Compass Adjustment Test
- Last Radio Navigation System Functions Check
- 24 bit ICAO / Selective Calling (SELCAL) / ELT / Flight Data Interface Unit (FDUI) Code
- Historical Records Box Inventory

Engines

- Minipack
 - Certified status of AD's
 - Certified status of SB's
-

¹⁹ Whenever "certified" is mentioned, this refers to a statement certified by appropriately qualified personnel, preferably the quality manager.



- Certified status of all repairs
- Certified status of installed LLP and HT components
- Certified status of installed modules
- Certified status repetitive inspections (non-routine/outside of AMP)
- Engine trend monitoring reports
- Logbooks
- Borescope reports
- Accident/Incident Statement
- Data Submittal

Annex IV: Engine Documentation Checklist

Document required	Lease	Purchase
Latest Engine Certificate available	YES	YES
Current Operator LLP Status	YES	YES
Life Limited Parts Back-to-Birth	YES for the ones replaced during the lease	YES
AD status	YES	YES
SB / Modification Status	YES	YES
Latest Engine Test report or On-Wing Power Assurance	YES	YES
Latest Borescope Report and Video	YES	YES
Last 6 months of Engine Condition Monitoring	YES	YES
QEC/Accessory List	YES	YES
Missing Part List	YES	YES
Engine Installation/Removal History	YES	YES
Shop Visit reports and Mini Packs	YES	YES
Engine Logbook (if applicable)	YES	YES
Incident/Accident Clearance Statement	YES	YES
Previous operators statements (AD/LLP/ICS)	NO	YES
Manufacturer data (EDS/VSL/IIL/Logbook)	NO	YES
On-Wing Maintenance (Review the Maintenance Schedule Engine Tasks – Last done/Next Due, Water Wash, Borescope Inspections, Fan Blades Lubrication)	YES	YES
Shop Maintenance (Check which shop the airline is using for Off Wing maintenance and if they have a customized WPG/MPG)	NO short YES long	YES
Certificates for every component installed	YES for the ones replaced during the lease	YES
Review all technical log entries recorded against the engine in the last six months of operation and the action that was taken to clear them.	YES	YES
Preservation Status	YES	YES
Picture of the Engine Data Plate	YES	YES
“Carry Forward” or “Open Items” sheet	YES	YES
List of open OEM concessions	YES	YES
TRUEngine / Pure-V or other OEM status (if applicable)	NO	YES
Warranties - Identify assignable warranties available from the manufacturer or maintenance provider.	NO	YES

Annex V: Structural Repair File Guidelines

Aircraft Type : All models

Applicability : EASA and FAA environment

1. Introduction

Aircraft documentation is inspected meticulously during the delivery or redelivery process of an aircraft on lease. This also includes documentation associated with the repairs performed on the aircraft. Many different kinds of repairs on the external fuselage will be performed on an aircraft during its life, which often leads to difficulties during the delivery or redelivery process. These difficulties result from different standards or lack thereof, and may be very costly, as removal and/or re-inspection of repairs will lead to delays. Most Lessors will mandate that all repairs are consolidated into a single repair file. This document provides guidelines for the airline to effectively create such a consolidated repair file. This document makes use of the assumptions below.

2. Regulatory Basis

2.1. EASA

EASA regulations applicable to repairs can be found in Part 21A (Subpart M) and Part M (M.A 304, 305, 708, 710). In addition, the EASA has published Guidance Material (GM) and Acceptable Means of Compliance (AMC), which provide additional insights into the regulatory requirements of the repair process.

Repairs performed under EASA regulations require approved data for both minor and major classifications (as opposed to repairs performed under FAA regulations, refer to paragraph 2.2 for details). The determination of minor or major classifications for repairs has to be performed by an organization holding an EASA Design Organization Approval (DOA). Operators without an EASA DOA must rely on the EASA directly or contract with an approved DOA organization to classify and approve the repair. There are many different levels of EASA DOA authorizations, ranging from authorization to design and certify major repairs and alterations (i.e. Type Certificate holders) to authorization for approval of minor changes or repairs only.

The EASA regulations allow for various ways to develop and approve repairs:

- Based on the manuals or ICA (e.g. SRMs, Maintenance Manuals, Engine Manuals, etc.) provided by the TC holder or STC holder
- By an approved DOA organization (for minor repairs only)
- By the STC holder or the EASA for minor and major repairs

An overview of the approval process for repairs can be found in Figure 8 and Figure 9.

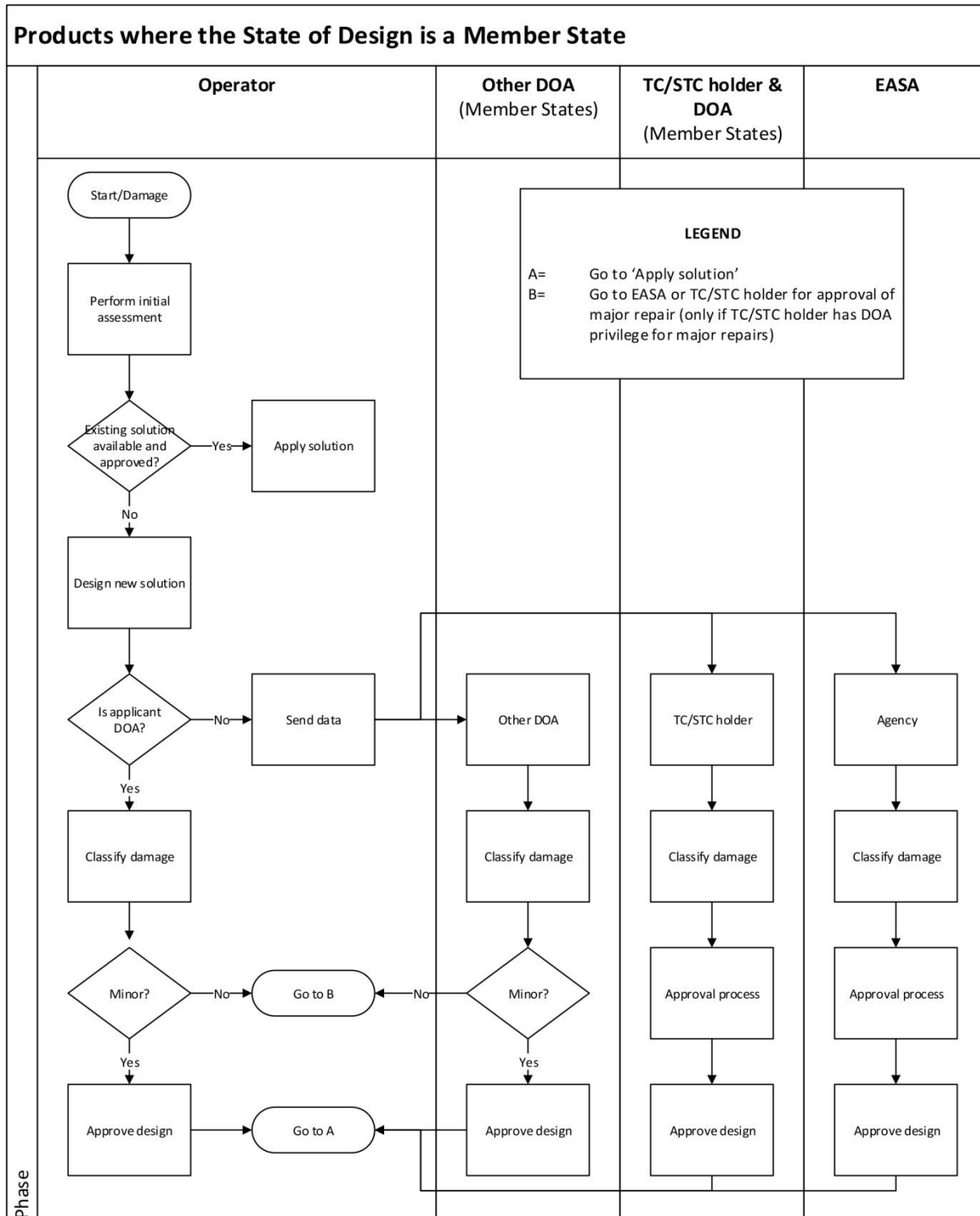


Figure 8. Repair approval process for Member States
(Adapted from EASA AMC and GM to Part 21, Decision No. 2003/1/RM)

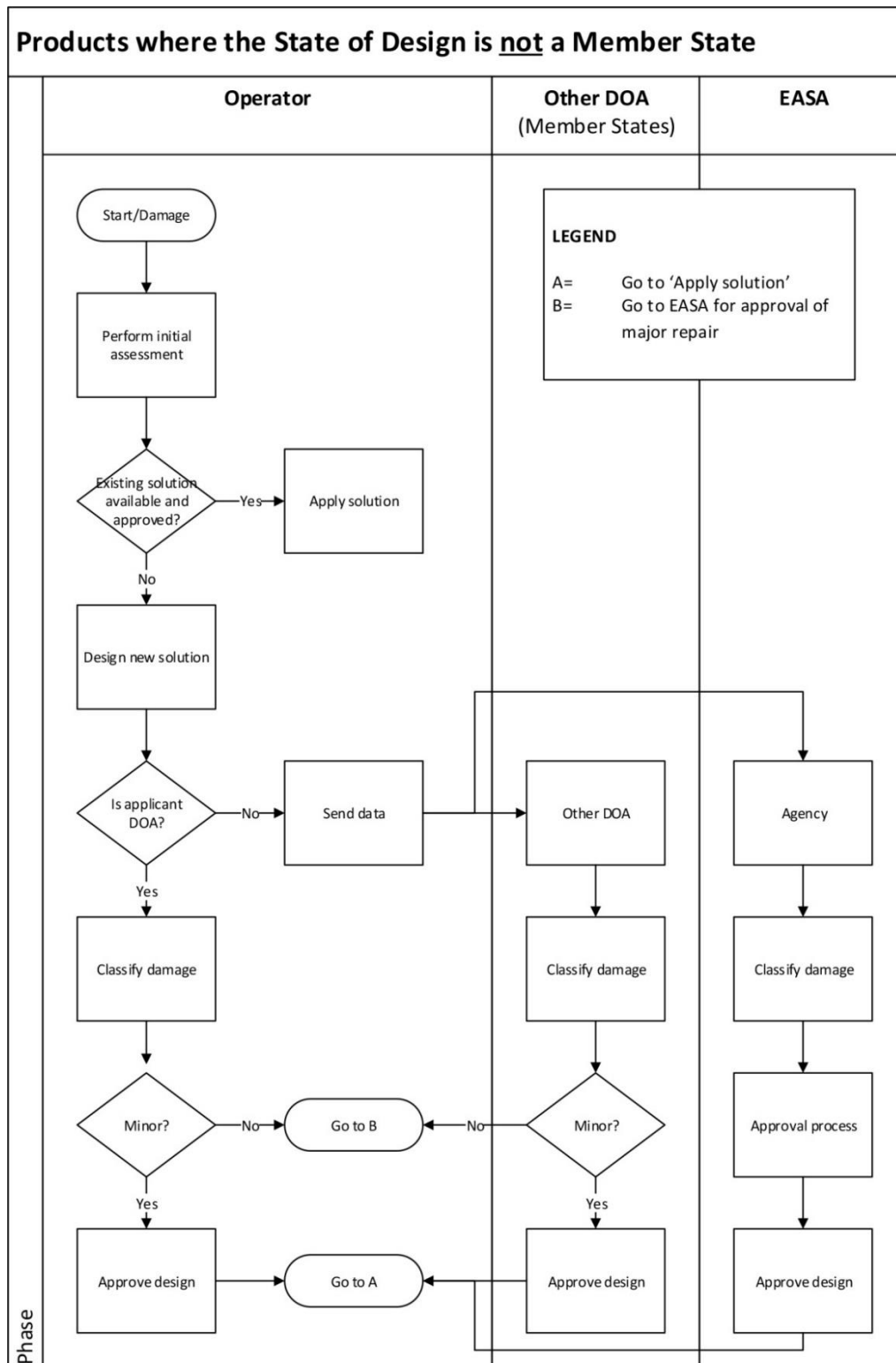


Figure 9. Repair approval process for non-Member States
(Adapted from EASA AMC and GM to Part 21, Decision No. 2003/1/RM)

2.2. FAA

Operators under FAA jurisdiction are responsible to ensure that repairs are accomplished according to the applicable regulations as specified in US Code of Federal Regulations 14 CFR Part 43. As with EASA regulations, repairs of damage can be classified as either 'major' or 'minor'. The classification of 'major' or 'minor' is based on the scope and complexity of the repair and the capability of the maintenance provider which in some instances is also the operator.

Unlike operators in an EASA environment, classification of a major or minor repair can be performed by the operator itself, repair stations, or holders of an inspection or maintenance authorization. Because the classification of a repair as either major or minor is not a 14 CFR Part 21 requirement, this classification is outside the scope of FAA authority delegated to (S)TC holder.

All operators have authority to use acceptable repair data for minor repairs without additional FAA approval. FAA Advisory Circular (AC) 43-18 describes acceptable data as data acceptable to the FAA complying with applicable airworthiness regulations that can be used for maintenance, minor repair, or minor alteration. Acceptable data can be provided by (S)TC holder or third-party operator, or MRO qualified engineer. FAA AC 120-77 defines approved data as: "Technical and/or substantiating data that has been approved by the FAA". This also includes an FAA delegate such as a FAA DER or FAA authorized representative (AR). If the operator's qualified personnel determines that the damage necessitates a major repair, then FAA approval of the repair data is required. Operators have several ways to obtain FAA-approved repair data:

- Accomplish the repair per the SRM, because all repairs in the SRM are FAA approved
- Apply to the FAA directly
- Use a DER who has a "special delegation" from the FAA to approve data for major repairs using an FAA form 8110-3
- Where FAA authorization has been delegated to Boeing under delegation option authorization (14 CFR Part 21.231), a Boeing AR may approve the engineering repair data on an FAA form 8100-9

2.3. EU-US Bilateral

Since 1 May 2011, a bilateral is in force between the US and the EU which consolidates earlier bilaterals between the US and individual EU member states. This bilateral arranges the automatic acceptance of certain repair data (minor/major) regardless of the State of Design of the product from TC/STC holders, or third party, except repair data on critical components. This means that repair designs that have been approved or accepted under the US system no longer need a separate approval by the EASA and vice versa, except for repairs on critical components.

3. Repair File Overview

The obvious goal of the repair summary is to provide the user with clear, accurate, and detailed information of all actions performed to address damages on the aircraft. Aircraft OEMs provide guidelines for record keeping of repairs, such as Airbus, which describes the reason and requirements for proper record keeping in its SRM as follows:

- To ensure adequate follow-up of any additional inspection requirement for allowable damage and repairs
- To ensure adequate follow-up of permanent repair embodiment following temporary allowable damage or repair
- In case of future requirements, to trace back the damage or repair history or background

3.1. Setup

The repair file should contain the following sections:

Section 1

A drawing of the aircraft of sufficient detail, which should include a side view of the fuselage, vertical stabilizer (LH and RH side), a top view of each wing, a top view of each stabilizer and a detailed view of each engine. The user may elect to include a detailed view of additional items such as the cockpit windows, landing gear doors, and cargo door surrounds.

Section 2

A summary listing of all damages, which should include:

- Reference number, which is linked to the aircraft drawing in section 1
- Exact location and dimensions (using OEM station numbering and stringer locations where possible)
- Repair classification (major or minor repair)
- Repair approval basis
- Repair description (permanent, temporary, interim, repetitive status, etc.)
- If repetitive then the threshold/interval should be stated
- If temporary the limits should be stated
- Date, hours, and/or cycles of accomplishment or assessment
- Any relevant remarks

Section 3

Detailed certification documentation (i.e. dirty fingerprints) for each repair listed in the summary listing. This should include:

- Origin
 - Originating documentation of the damage, with date/hours/cycles (i.e. the original logbook entry or defect card indicating the discovery of the damage)
- Damage description
 - Exact location (station number, stringer number, side, etc.) and dimensions (e.g. length, "x"=depth of removed material, "y"=depth of dent, remaining "T" thickness of material and "w"=width). If available, dimensions should be recorded in an engineering drawing and accompanied by pictures. If the airline uses 'fuselage numbering' (i.e. marking of the dent on the fuselage by means of a marker or number) this should also be included
 - In case of repairs to components (e.g. flaps, slats, spoilers, etc.) the manufacturer's S/N or P/N and/or description of component affected
- Repair documentation
 - All correspondence with manufacturer, EASA-Part 21 (DOA) or FAA DER/AR regarding the design of the repair
 - Repair documentation, including document revision (i.e. manual reference). This could be a SRM, Engineering Order (EO), Work Order (WO), etc.

- Category of repair (Boeing) e.g. is the repair final/interim/repeat, or does it have any other limitation / Continued Airworthiness Requirements?
- Any effects on performance and/or aerodynamic smoothness (navigation limitations such as RVSM and/or area navigation (RNAV)), and/or balancing of control surfaces
- NDT or hot bonding or any other inspection report/result and certification
- Data pertaining to fatigue life enhancements incorporated into the repair (zero timed fastener holes or extended doublers or cold-working of fastener holes, etc.)
- Total area (sq.inch) of the external repair (to indicate specific fuel burn penalty)
- All referenced non-routine cards
- Certificate Release to Service (CRS, FAA Form 337, FAA 8130-3, EASA Form 1, or equivalent)

3.2. Pitfalls

Airlines may face many challenges both during the aircraft lease term as well as during the redelivery process. While it would be impossible to list all of them, some examples of common pitfalls are:

- Some lease agreements may require repairs to be performed to a permanent or flush standard. This may either be impossible (i.e. in areas where the SRM does not allow a flush repair) or it may be prohibitively expensive or otherwise impractical (based on required method of inspection for such flush repairs).
- Damage may be located in an area/part which is subject to an STC (such as during a passenger to freighter modification), requiring consultation with the STC Holder to ensure the correct maintenance data and limits are applied.
- Ensuring the repair file is up to date and all documentation is consolidated into one single file may be challenging. Especially when repairs (or temporary repairs) are in aircraft logbooks, or if they were performed by a third party maintenance organization.
- The OEM may issue repair instructions for a 'Permanent Repair', but this repair may also have instructions for a repeat inspection. The Lessor may classify this as a 'Temporary Repair' under the lease agreement.
- Repairs designed by a DER, AR or DOA organization may not always be accepted by a Lessor, and specific mention of acceptance should be included in the lease agreement.

The requirements of the lease should be clearly defined and a strict procedure based on these requirements should be implemented at the start of the aircraft lease. Airlines should also perform regular surveys of the entire aircraft to ensure that all repairs are correctly mapped in the repair file.

4. Definitions

4.1. Airbus Repair Definitions

Dent

A dent is a damaged area which is pushed in, with respect to its usual contour. There is no cross-sectional area change in the material, area edges are smooth.

Scratch

A scratch is a line of damage of any depth and length in the material which causes a cross-sectional area change. A sharp object usually causes it.

Repair category A	This category of allowable damage is established in such a way that damage within this limit does not require a structural repair or additional inspections during the design service goal or the extended service goal, as applicable, of the aircraft.
Repair category B	This category of allowable damage is established in such a way that damage within this limit does not require a structural repair during the design life goal or the extended service goal, as applicable, of the aircraft. However, an additional structural inspections task may be required before the design service goal is reached. An inspection threshold and repeat interval will be provided for this type of allowable damage.
Repair category C	This category of allowable damage is established in such a way that damage within this limit must be permanently repaired within a defined operating limit, e.g.: 'x' FCs or 'x' FHs or 'x' calendar months.

4.2. Boeing Repair Definitions

The definitions of the different categories of damage tolerant repairs are as follows:

Category A repair	A permanent repair for which the inspections given in the MPD are sufficient and no other actions are necessary
Category B repair	A permanent repair for which supplemental inspections are necessary at the specified threshold and repeat intervals.
Category C repair	A time-limited repair which must be replaced and reworked within a specified time limit. Also, supplemental inspections can be necessary at a specified threshold and repeat interval.

The definitions of the different types of repairs that have not been evaluated and analyzed for damage tolerance are as follows:

Permanent repair	A repair where no action is necessary except the operator's normal maintenance.
Interim repair	A repair that has the necessary structural strength and could stay on the aircraft indefinitely. The repair must be inspected at specified intervals, and replaced if deterioration is detected or damage is found.
Time-Limited Repair	A repair that has the necessary structural strength but does not have sufficient durability. This repair must be replaced after a specified time, usually given as a number of FCs, FHs or a calendar time.

Other definitions

Damage Tolerance	The ability of structure to sustain anticipated loads in the presence of damage, such as fatigue cracks, until it is detected through inspection or malfunction and repaired.
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Damage Tolerant Repair

A repair that meets the necessary damage tolerance conditions.

Dent

A dent is a damaged area which is pushed in or out, with respect to its usual contour. There is no cross-sectional area change in the material, area edges are smooth and there is no damage to the underlying structure.

Repair

The rebuild or rework of a damaged assembly to return it to all or part of its initial strength.

4.3. FAA Repair Definitions

Major repairs

Major repairs are those that if improperly done, might appreciably affect weight, balance, structural strength, performance, power plant operation, flight characteristics, or other qualities affecting airworthiness, or that are not done according to accepted practices or elementary operations.

Minor repair

Minor repair is any repair other than a major repair.

4.4. EASA Repair Definitions

Minor repair

A minor repair is one that has no appreciative effect on the mass, balance, structural strength, reliability, operational characteristics, noise, fuel venting, exhaust emissions or other characteristics affecting the airworthiness of the aircraft.

Major repair

All other repairs that are not minor.

Annex VI: Modifications Guidelines

Aircraft Model : All models

Applicability : EASA and FAA environment

1. Introduction

During the lifetime of an aircraft, various modifications are implemented with the intention to change or upgrade specific functions or systems of the aircraft. During a transfer of aircraft the Lessor often requires a consolidated file showing compliance with the applicable regulations and the lease agreement of all modifications performed. However, this does exclude modifications performed at component level. This annex provides guidelines for the airline on how to create a modification compliance file. The term modification file is commonly used to describe two separate files:

- The EOs and SBs file
- STCs

2. Regulatory Basis

2.1. EASA Procedures

EASA regulations applicable to modifications can be found Part M (M.A 304, 305, 708, 710) and Part 21. In addition, EASA has published GM and AMC, which provide additional insights into the regulatory requirements of the modification process.

EASA distinguishes between major and minor for any changes made to the type design of the aircraft. The determination for major or minor modifications needs to be performed by an organization holding the EASA design organization approval (DOA), or directly by EASA.

There are different levels of EASA DOA authorizations. For example, a basic DOA allows the holder to classify major or minor modification, and approve minor modifications only. A TC/STC holder with an EASA DOA can approve both major and minor modifications.

The process to determine if a change is major or minor is illustrated in Figure 10. The first criteria for the selection of a major or minor modification is the appreciable effect on weight, balance, structural strength, reliability, and operational characteristics of the aircraft. If the proposed modification has an impact on one of these factors, the modification should be classified as major. If this is not the case a second step of considerations needs to be taken in order to determine the classification of the modification. During this step, the impact of the modification on the certification basis, Type Certificate, previous performed compliance demonstration, and the need for reassessment of this compliance data is reviewed. Also, if the modification is part of an AD, or introduces or affects a function where failure is catastrophic or hazardous, it will be classified as major. The major classification for modifications linked to an AD may be re-classified as minor due to the involvement of EASA in the airworthiness process, meaning not all modifications linked to an AD are necessarily major modifications. In all other cases, the classification is minor. In case of doubt, EASA should be contacted for clarification.

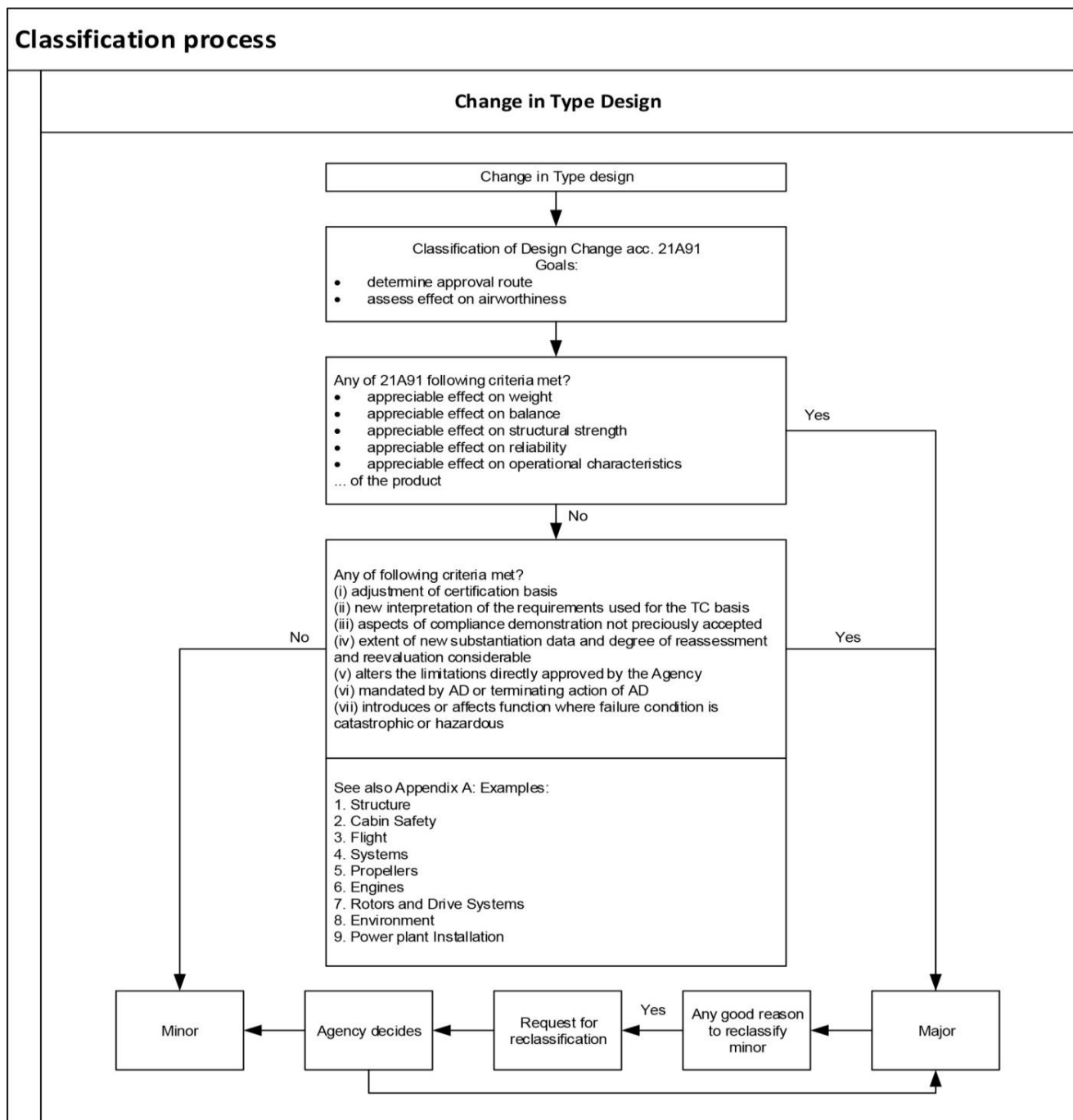


Figure 10. EASA Classification process

2.2. FAA Procedures

Operators under FAA jurisdiction are responsible for ensuring that modifications are accomplished according to all applicable regulations under U.S. Code of Federal Regulations 14 CFR Part 43.

Unlike EASA, the FAA makes use of the wording "alterations" and their regulatory requirements are similar to repairs. Alterations are classified as major or minor. A major alteration is an alteration not listed in the aircraft, aircraft engine, or propeller specifications:



- That might appreciably affect weight, balance, structural strength, performance, power plant operation, flight characteristics, or other qualities affecting airworthiness or
- That is not done according to accepted practices or cannot be done by elementary operations

A minor alteration is an alteration other than a major alteration. The assessment is based on the scope and complexity of the modification, and the experience and capability of the maintenance provider which in some instances is also the operator. The responsibility for determining whether a modification is major or minor rests with operators and holders of an inspection or maintenance authorization.

Major alterations must be accomplished in accordance with technical data approved by the FAA. A DER may approve major alterations, if specifically authorized, however this DER-approved data may not be adequate to cover every aspect of the alteration. Data such as manual supplements are not in the scope of the DER and need additional approval. Providing the approval for the modification, the DER must submit a copy of the FAA Form 8110-3 and the approved data to the owner/operator or repair station that requested the approval.

The FAA issues an STC for a major modification when it provides approval to the applicant to modify an aircraft from its original design. This STC approves not only the modification, but also that modification's effect on the original design.

A third way to approve a major modification is by an Organization Designation Authorization (ODA). The ODA must document these data approvals on FAA Form 8100-9, which is considered approved data for the purpose of returning the altered product to service.

3. Modification File

There are separate requirements for TC-related modifications and modifications approved by means of an STC. Consequently, two separate summary listings and compliance files are needed, one in which SBs and EOs are listed and a second in which STCs are listed. In addition, a summary listing and compliance file should be created for engines and APU. The compliance files are required to provide evidence of the modifications performed, at which revision status these modifications were embodied and compliance data of the components installed, which is the evidence to prove that the modification is performed in accordance with approved data.

Setup

The modification file should contain the following sections:

- Modification status listing containing:
 - Reference number and revision number
 - Modification description
 - Aircraft, Engine, or APU S/N, as applicable
 - Engineering documentation and/or Manufacturer's SB reference where appropriate
 - Terminated, Open, Not Applicable, Repetitive, or Partial Embodiment status
 - If repetitive then the threshold/interval should be stated
 - Date, Hours, and/or Cycles of embodiment or last maintenance accomplishment
 - Details of any deviations applied, including references, intervals, and applicability
 - Details of any de-modification. In which context the removal of a modification does not mean that the aircraft has been completely restored to the original configuration, as some parts / wiring / brackets / structural changes may remain. These remaining modification provisions may require separate evaluation and approval by an appropriately approved design organization

- In addition to the summary sheets, a file should be provided which contains the approved data and the compliance records:
 - Document reference (including document revision number)
 - Effectivity, e.g. manufacturer's S/N or description/P/N/item reference of component affected
 - Approval statement, e.g. EASA.21J.XXX/FAA/STC reference

Note: European modifications approved before September 2003 may not include an approval statement. Modifications approved or validated before the establishment of the EASA are deemed to be 'Grandfathered'. For these modifications a reference document is required

 - Description of the modification
 - Any applicable instructions for Continuing Airworthiness or limitations
 - Any referenced documentation
 - Classification of the modification, i.e. major or minor
 - Mass and balance impact if applicable
 - Electrical load analysis, if applicable
 - Any exemptions or deviations, if applicable
 - For STCs a 'right to use' letter is required
 - Modification reference, paragraph, and revision or reference document number
 - Aircraft details
 - Material used, e.g. batch number (if available) / S/N
 - Date of accomplishment
 - Signature and authorization number of the certifying staff
 - Maintenance organization or repair station number of the facility accomplishing the work
 - Certificate release to service
- In addition, a copy of the applicable manuals should be added. For example:
 - Aircraft Flight Manual – Supplements
 - AMM – Applicable maintenance instructions
 - Illustrated Parts Catalogue – Including applicable P/Ns
 - Aircraft Maintenance Program – ICA
 - Updated mass and balance report
 - Updated electrical load analysis
 - Wiring Diagram Manual

3.1. Pitfalls

When compiling an overview of minor and major modifications, there are a few points of attention to consider, especially when this modification file will be transferred between operators. Completeness of modification files can be argued.

For modifications that involve additional manual supplements and maintenance requirements, follow-up requirements are often not embodied in the modification file. As such the accompanying repetitive maintenance inspections are not part of the maintenance program. Also, supplemental IPC and Maintenance Manuals are lost. It can be difficult for the next operator to obtain this information.

Other issues are modifications performed outside the control of the operator. Vendor SBs performed during an overhaul or component repair are indicated on the data plate of the component or in the shop visit report. Since these modifications are not within the operator's responsibility, these are not recorded in the modification overview. Appliance SBs are performed by the operator itself and are therefore listed in the overview.

Annex VII: Aircraft Maintenance Program Guidelines

Aircraft Model : All models

Applicability : EASA and FAA environment

1. Introduction

The Operator's or Aircraft Maintenance Program (OMP or AMP) is an operator customized program to maintain the operator's fleet of aircraft. The basis of the program should be the MRBR as a minimum, but usually the manufacturer's MPD is used as a basis, which is more detailed. The AMP lists all the maintenance tasks applicable to the operator's fleet of aircraft, together with their interval, task description, manual/task card reference, and applicability on aircraft level. Next to the MRBR/MPD tasks, the AMP contains supplemental tasks introduced by specific aircraft configurations, modifications installed, and repairs performed, if applicable. These additional ICAs are usually listed in a separate section of the AMP, but can also be blended in with the other tasks. In addition, the AMP will usually feature (non-mandatory) tasks introduced by the experience and operating environment of the operator, such as winter servicing, and reliability and passenger comfort improvements.

The AMP should be reviewed and amended periodically, to accommodate new and/or modified maintenance instructions issued by the (supplemental) type certificate holder and other organizations issuing ICAs.

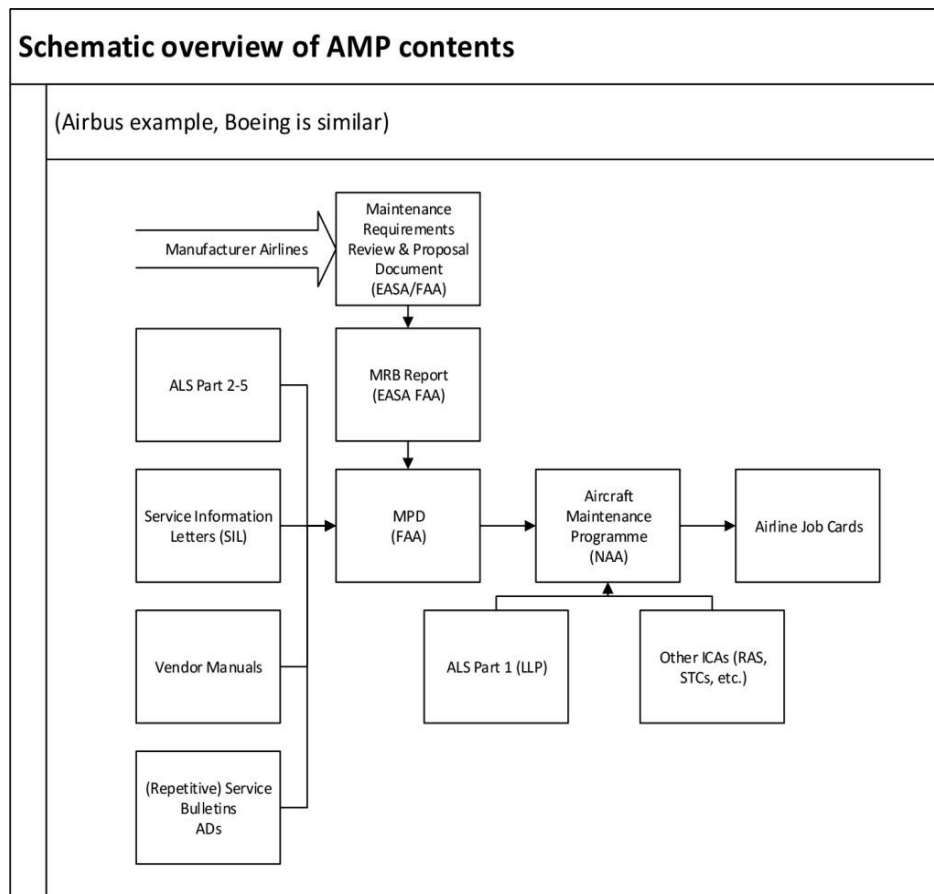


Figure 11. Schematic overview of AMP contents

Following Maintenance Steering Group-3 (MSG3) philosophy, an aircraft reliability program should be established to ensure the AMP tasks are effective and their interval is adequate. As a result of the reliability program, the AMP may contain task escalations or deletions in comparison with the MPD. MSG3 no longer assumes all parts of the aircraft to be on a hard-time interval for overhaul, but rather the philosophy is designed around reliability trending and historical information. With MSG3, the traditional letter A, B, C and D-checks have mostly been replaced by check packages which are specific and tailored to the maintenance status and utilization of the aircraft. As such, operators can get more operational time out of their aircraft than before, and thus operate more economically. More and more operators are taking this one step further by eliminating or reducing (the amount of) larger checks, breaking the larger check packages into smaller pieces which are performed in the line maintenance environment or during night stops. These phase or equalized check programs further reduce the out-of-service time of the aircraft and thus improve utilization and revenue for the operator.

Due to the customizability, operator AMPs differ in content and form, but will always contain several mandatory sub-sections that are specifically of interest during an aircraft transfer or redelivery. The question arises what should be presented during a redelivery with regards to the maintenance program and compliance files; this annex aims to provide guidance on this subject by dealing with each sub-section (paragraph 3).

2. Regulatory Basis

In general, the AMP is a prerequisite for an Air Carrier approval. The following two paragraphs provide a brief overview of EASA and FAA requirements with regards to the AMP.

2.1. EASA

The EASA requirement for an AMP is laid out in EASA Part-M, Subpart C M.A.302. The AMP must establish compliance with:

- Instructions issued by the competent authority (i.e. the local aviation authority)
- Instructions for continuing airworthiness issued by the holders of the type certificate, restricted type certificate, supplemental type certificate, or major repair design approval
- Additional or alternative instructions proposed by the operator or the continuing airworthiness management organization. This specific requirement does not apply to intervals of safety related tasks, which may be escalated subject to sufficient reviews carried out, and only when subject to direct approval by the local aviation authority.

The complete AMP and its subsequent issues are to be approved by the NAA.

2.2. FAA

The FAA considers the AMP to be more than just a document listing maintenance tasks, and therefore differs from EASA's philosophy. The requirements for AMPs are explained in FAA AC 120-16F. The AMP must ensure that three specific objectives are achieved in order to provide the highest possible level of safety in air transportation:

- Each aircraft that is released to service must be airworthy and properly maintained for operations in air transportation
- All of the maintenance and alterations performed on the aircraft must be in accordance with the maintenance manuals
- Competent personnel and adequate facilities and equipment must be used to perform maintenance and alterations on the aircraft

The elements of the AMP are as follows:

- Airworthiness responsibility
- Air carrier maintenance manual
- Air carrier maintenance organization
- Accomplishment and approval of maintenance and alterations
- Maintenance schedule
- Required Inspection Items (RII)
- Maintenance record keeping system
- Contract maintenance
- Personnel training
- Continuing Analysis and Surveillance System (CASS)

The maintenance schedule is comparable to the AMP as defined by EASA. The maintenance schedule as defined by the FAA should fulfill the following few basic requirements: what, how, and when a task should be accomplished. A non-exhaustive list of items that the maintenance schedule may include is:

- ADs
- SBs/Service Letters
- Replacement of life-limited items
- Replacement of components for periodic overhaul or repair
- Special inspections
- Checks or tests
- Lubrication and servicing
- Tasks identified in the MRBR
- Airworthiness Limitations (AWL)
- Certification Maintenance Requirements (CMR)
- SSID
- EWIS

The AMP is not part of an approval process; there is no FAA regulation that requires the AMP to be formally approved (as opposed to EASA regulations). However, air carrier operations specifications (OpSpecs) are issued to the operator to authorize it to use a maintenance program and the air carrier maintenance manual required by FAA regulations.

3. Aircraft Redelivery File

As part of the redelivery process of an aircraft, it is necessary for the current operator to provide a clear overview of the maintenance status of the aircraft, for the new operator to incorporate the aircraft into the new maintenance program. The current operator will provide the maintenance status by means of a "last done-next due" listing of all applicable AMP tasks. Considering the usual size of the AMP, a compliance file for each of the tasks is usually a step too far. Specific areas of the AMP, however, are of vital importance during the aircraft transfer. Ideally, status sheets and/or compliance binders are to be created for the items as described in the following paragraphs.

3.1. Certification Maintenance Requirement / Airworthiness Limitation Tasks

A Certification Maintenance Requirement (CMR) is a scheduled maintenance task established during the design certification of the aircraft and systems as an operating limitation of the TC or STC. A CMR usually results from a formal, numerical analysis, conducted to show compliance with the requirements applicable to catastrophic and hazardous failure conditions and to prevent such conditions. Compliance may also result from a qualitative, engineering judgment-based analysis. An AWL or ALI (Airworthiness Limitation Item) task is a scheduled maintenance task that, if not performed, would directly affect airworthiness of the aircraft. The interval of both the CMR and AWL tasks cannot be escalated by individual operators.

During the transfer of an aircraft, and in particular during a transfer of aircraft between registries, a separately prepared "CMR/AWL compliance file", containing a CMR/AWL task summary and the most recent compliance files showing performance of all CMR/AWL tasks including any findings, will be of added value. A consolidated compliance file will make it easier for (importing) aviation authorities to review compliance to all CMR/AWL tasks applicable to the aircraft at the moment of aircraft transfer, and show that care was taken to establish compliance with the regulatory requirements. These tasks can also be included in the AMP and a separately prepared file may not be needed, this is a negotiation item between Lessor and Lessee.

3.2. Corrosion Prevention and Control Program

A CPCP forms an integral part of the MRBR and MPD and therefore must also be included in the AMP. The aim of the CPCP is to control the development and proliferation of corrosion on aircraft structures. The severity of corrosion damage found is categorized into three levels:

- Level 1 corrosion

Corrosion damage that does not require structural reinforcement or replacement of parts, or corrosion occurring between successive inspections that exceeds allowable limits but is local and can be attributed to an event not typical of operator usage of other aircraft in the same fleet (e.g. mercury spill).

- Level 2 corrosion

Corrosion occurring between successive inspections that requires a single rework/blend-out, which exceeds allowable limits as defined by the manufacturer (SRM, SB, etc.), requiring a repair/reinforcement or complete or partial replacement of applicable structure.

- Level 3 corrosion

Corrosion found during first or subsequent inspection(s), which is determined (normally by the operator) to be an urgent airworthiness concern requiring expeditious action.

A CPCP should include requirements to control corrosion to Level 1 or better. If Level 2 or 3 corrosion is found, the existing program is not effective for the concerned area of the particular fleet, and the program needs adjustment. Consideration could be given to decreasing the interval for the inspection, a higher inspection level, application of protective compounds, or the installation of modifications or improved parts on the aircraft.

During a transfer of aircraft, a prepared "CPCP binder" containing a CPC Task summary and the most recent compliance files showing performance of all CPC tasks including any findings and CPCP reporting sheet will be of

added value to show compliance to the program. Importing authorities will want to know about any (major) corrosion findings and a consolidated compliance file gives the authority a quick overview and proof of compliance to the program. In addition, the subsequent operator will use the information from the CPCP to properly follow up any previous corrosion findings for incorporation into the new AMP. A separately prepared file may not be needed; this is a negotiation item between Lessor and Lessee.

3.3. Sampling

The AMP may include a sampling program, which allows performing certain structural tasks (excluding CPC tasks) only on certain aircraft within the operator's fleet. Depending on the findings of such tasks, the task then has to be performed on the rest of the fleet as well. This methodology will allow time and cost savings for the operator, as fewer maintenance tasks have to be performed. The philosophy of sampling depends on the manufacturer; the sampling tasks must be performed on the oldest 20% of the fleet in case of an Airbus aircraft, or the tasks must be rotated between aircraft and performed on another aircraft during each inspection cycle in case of a Boeing aircraft. Some manufacturers' newer aircraft models, however, no longer offer the option of performing sampling on the fleet.

An operator may elect not to use a sampling program and to perform the sampling tasks on the whole fleet. This is the preferred methodology for the Lessor, as an aircraft on which all tasks have been performed will be easier to transfer to another operator. For a non-sampling aircraft transferred from the fleet of an operator which uses a sampling program, the transfer to another operator will cause the bridging check, already a costly exercise, to be even more costly, complex, and time consuming. Whether or not a sampling program is allowed to be used on the aircraft is usually stipulated in the lease agreement. Typically, sampling is not allowed on leased aircraft, so as to avoid any discussions at lease end.

During an aircraft transfer, the sampling status should be made clear to the Lessor, so it can be communicated to the next operator. If the next operator uses a sampling program, previous non-sampling aircraft should be bridged to become a sampling aircraft and vice versa (Airbus). Aircraft on which tasks were sampled during the previous C-Check may not have to be sampled again during the next C-Check with the new operator, and vice versa (Boeing).

3.4. Instructions for Continued Airworthiness

The term ICA is a very broad term used for maintenance tasks to be performed on the aircraft to ensure its airworthiness. In the scope of this document, ICA means any task which is not prescribed by the aircraft manufacturer's MRBR or MPD and/or is dependent on the individual configuration and modification status of the aircraft. Typical ICAs result from specific modifications (STCs) which require inspections in addition to the standard MRBR/MPD, and repairs performed/installed on the aircraft which require re-evaluation or re-inspection after a certain amount of time, as specified by the aircraft's SRM or by the organization which designed the repair.

The Lessor of the aircraft to be transferred should ideally be made well aware of any such ICAs by means of a separate ICA summary. If the ICAs on the aircraft are limited to tasks pertaining to previous repairs only (i.e. no ICAs due to modifications installed), a clear repair and damage overview listing any repair (external and internal) with follow up inspection requirements would be sufficient. In case this information is not transferred to the new operator, (repeat) inspections may be missed, with potentially serious consequences.

Annex VIII: Airworthiness Directives Guidelines

Aircraft Models : All models

Applicability : EASA and FAA environment

1. Introduction

The goal of this annex is to provide the airline with insights and practical advice for the creation of a comprehensive AD file, which meets requirements found in most aircraft leases. It will also assist in optimizing existing processes. The regulatory framework is derived from EASA and FAA regulations.

2. Regulatory Basis

The process of introducing a safety publication is initiated by an unsafe condition. An unsafe condition exists if there is factual evidence that an event could result in an unsafe situation or fatalities. Factual evidence is accrued during operation (accident or incident), findings during maintenance or inspection (e.g. cracked part, missing part, or corrosion), findings during a review or audit and as a result of testing or an updated analysis (e.g. engine test, flight test, component/rig test, full scale fatigue testing by manufacturer, or analysis).

The generic process from unsafe condition to a possible AD publication is illustrated in Figure 12 and describes how the assessment processes run, from both the authority and the Design Approval Holder (DAH).

Depending on the jurisdiction of the TC and STC holder, the respective ADs are issued by the corresponding state of design (e.g. the FAA issues ADs for Boeing and the EASA for Airbus). Regardless of the operating area or registry of the aircraft, all ADs issued by the authorities for a respective aircraft type should be analyzed and acted on accordingly by the operator.

A division can be made with respect to the urgency of an AD implementation. This influences the actions and the compliance times after the effective date of an AD.

- The normal procedure in AD publication is the issuance of a Proposed AD (PAD, EASA), or Notice of Proposed Rule Making (NPRM, FAA), which is the precursor of a ('final') AD. This notice informs the operator that an AD will be published and allows the operator to submit feedback and enquiries regarding the proposal. The ('final') AD is issued after the full consultation process, and states the required actions, the risk allowance, and compliance time.
- An Emergency AD (EAD) requires immediate publication and notification, as the safety assessment has justified not implementing the full consultation process.

Examples of corrective actions imposed by an AD may consist of inspecting, replacing, or modifying components or parts, updating a manual or maintenance program within the specified time frame, or imposing new operational limitations.

The following subchapters will highlight the regulations defined by both the EASA and the FAA.

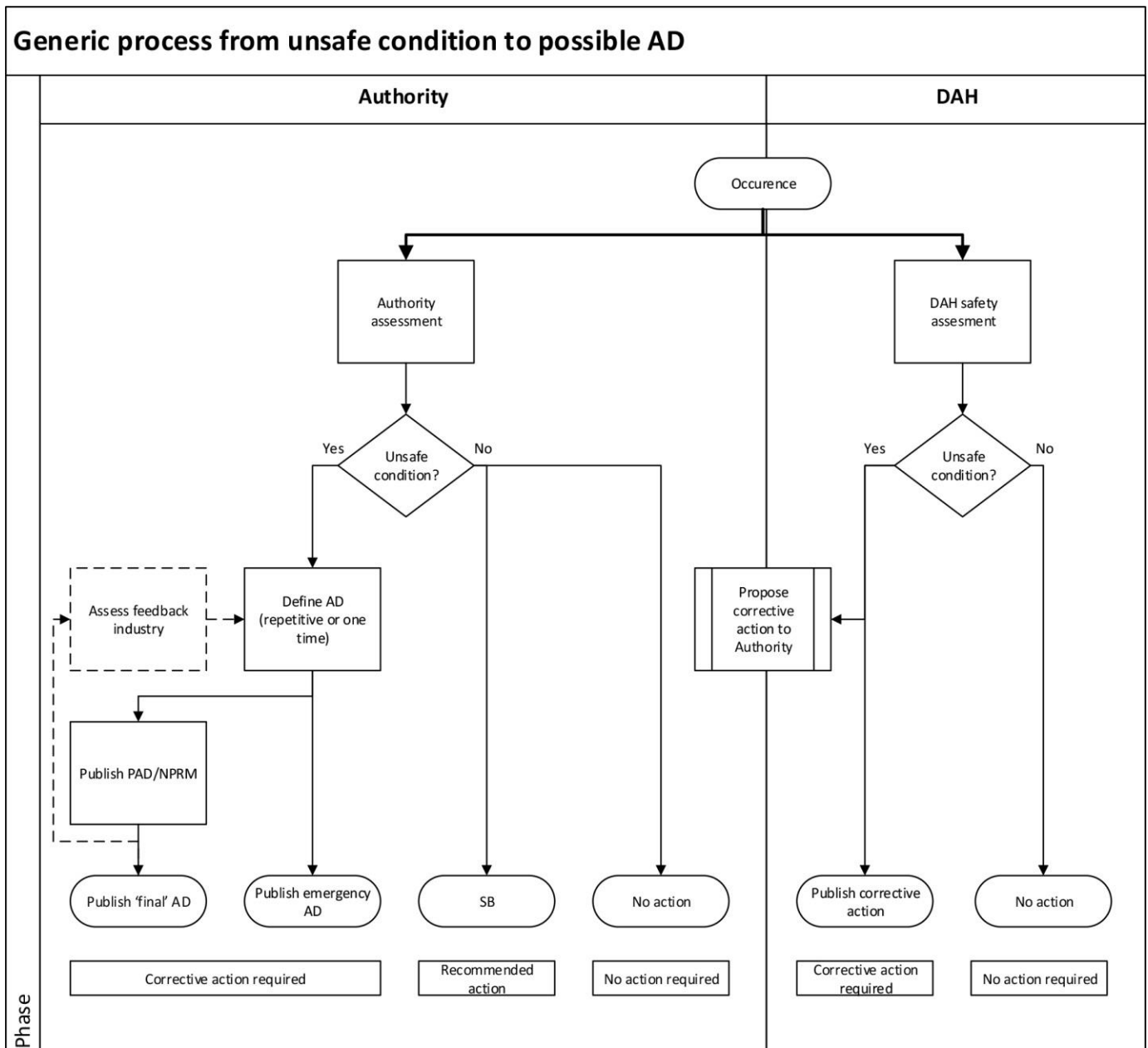


Figure 12. Generic process from unsafe condition to possible AD

2.1. EASA

Operators under EASA jurisdiction are responsible for ensuring that issued ADs are accomplished according to the applicable regulations for initial airworthiness (as depicted in EU 748/2012, Annex I, Part 21, Section A, Subpart A, 21.A.3B) and for continuing airworthiness (as specified in EC 2042/2003 Annex I, Part-M). In addition, the EASA has published GM and AMC, which provide additional insights into the regulatory requirements of the processed compliance (ED Decision 2003/19/RM).

The EASA defines an AD as: “a document issued or adopted by the EASA which mandates actions to be performed on an aircraft to restore an acceptable level of safety, when evidence shows that the safety level of this aircraft may otherwise be compromised”.



The rules for applicability are stated in ED Decision 02/2003 – Article 1, where any AD issued by a state of design for an aircraft imported from a third country, or for an engine, propeller, part, or appliance imported from a third country and installed on an aircraft registered in an EU Member state, shall apply.

Certain circumstances may prevent an operator or MRO from performing the exact instructions detailed in the AD. The EASA allows for deviation from the instructions detailed in the AD by means of an AMOC. An AMOC is an approved deviation from an AD. It is a different way, other than the one specified in an AD, to address an unsafe condition on products, parts and appliances. An AMOC must provide an acceptable level of safety, equivalent to the level of safety intended for compliance with the original AD. AMOCs are usually requested because the utensils (e.g. tools) or specific procedures needed to accomplish an AD are not readily available for all operators, or an alternative method is more cost effective. Circumstances surrounding the approval of an AMOC differ for individual airlines, and are therefore evaluated on a case-by-case basis.

AMOCs may be issued in respect of, but are not necessarily limited to, the following:

- Alternative modifications
- Alternative inspection procedures
- Alternative maintenance intervals and/or procedures
- Specific operating procedures or limitations
- Different tooling available
- AD not applicable, due to configuration differences (STCs), etc.

With respect to EASA AMOCs, the regulations stipulate that EASA cannot accept AMOC applications for aircraft that are not registered in an EU Member State or associated country, as this would be outside of its jurisdiction, unless the applicant is an EU TC Holder.

As stated in Decision 2004/04/CF Article 4, EASA automatically approves FAA AMOCs when the TC has been issued by EASA.

2.2. FAA

Operators under FAA jurisdiction are responsible for ensuring that issued ADs are accomplished according to the applicable regulations as specified in the US Code of Federal Regulations 14 CFR Part 39. Furthermore, the FAA has issued an AD Manual to provide policy and guidance for the drafting, issuance, and distribution of ADs for FAA staff (FAA AD Manual IR0M-8040.1C). An AC provides guidance and information to owners and operators concerning their responsibility for complying with AD and recording AD compliance (FAA AC 39-7D).

The FAA defines an AD as directives which are legally enforceable rules that apply to aircraft, aircraft engines, propellers, and appliances. An AD is applicable to the aircraft indicated in the AD and an AMOC can be requested from the FAA which allows the executor to apply for an alternative without compromising the level of safety initiated by the publication of the AD.

In Order 8110.103A, the FAA states the ruling on AMOCs and the transferability between operators and jurisdictions: Depending on the transferability of the AMOC (A transferable AMOC is an AMOC that will continue to apply to a product after it has been transferred to a new owner/operator, as stated in 3-11 of Order 8110.103A) an AMOC proposal from a foreign entity (owner, operator, or another CAA) can be approved by the FAA. A foreign-registered aircraft today could be US-registered tomorrow. The importing owner/operator must demonstrate FAA AD compliance before the FAA can determine the aircraft to be airworthy.



An owner who has registered his US-manufactured aircraft in another jurisdiction can propose an AMOC to the FAA, and the FAA can approve or deny this AMOC in line with FAA ADs for foreign aircraft. However, the FAA cannot approve AMOCs for another CAA's AD.

3. AD File Overview

3.1. Introduction

The goal of this annex is to provide the Lessee with a clear and accurate description of the steps to take for tracking and documenting the relevant ADs in the most practical manner. This will create a clear view on the handling of ADs and will mitigate problems at end of lease. Regardless of the classification of the AD (e.g. repetitive or one-time; 'Final' AD or Emergency AD), the process of checking applicability, performing the tasks of the AD in the timeframe defined, and documenting the respective documents is the same.

Figure 13 provides an overview and guideline for industry best practice in processing and documenting ADs, defined from the perspective of various stakeholders (Lessee, authorities, and Lessor). As indicated in this figure, the AD consists of two separate parts: the summary sheet and the AD compliance binder.

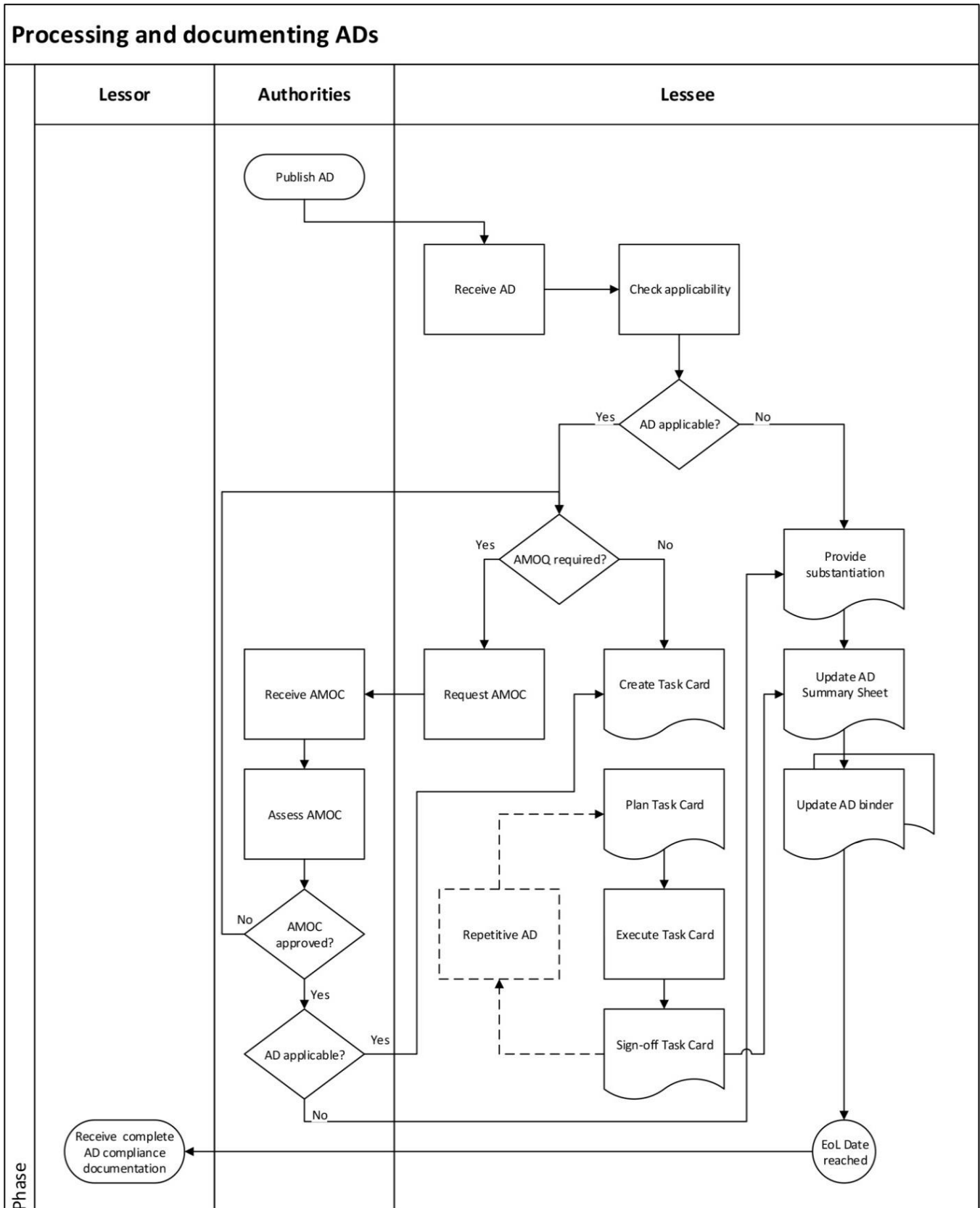


Figure 13. Overview and guideline for industry best practice in processing and documenting ADs

3.1.1 AD Summary Sheet

The AD summary sheet is an overview of all ADs issued for the aircraft type, engines, APU, and installed components, including the effective date of the AD. The AD summary sheet can be complemented with information regarding the compliance of the data. Ideally the AD summary sheet includes the following information:²⁰

- AD number, paragraph and revision number as appropriate
- AD description
- Aircraft, Engine, APU or Appliance S/N, as applicable
- Engineering documentation and/or Manufacturer's SB reference where appropriate
- Terminated, Open, Not Applicable, Repetitive, or Partial Embodiment status
- Date, hours, and/or cycles of last maintenance accomplishment, if accomplished
- Date, hours, and/or cycles when next maintenance action is due, if applicable
- Statement of the means by which compliance was accomplished (e.g. modified, repaired, inspected)
- Details of any AMOC, including references, intervals, and applicability
- AMOC reference number

It is recommended to create separate AD summary sheets for airframe, airframe appliances, engine, and APU. An official certification from quality assurance is required at end of lease. The purpose of this sheet is to provide a general overview and the status of the ADs, so it should be actively updated.

3.1.2 AD Compliance Binder

This binder consists of the collection of ADs which were issued against the particular aircraft type during the lease term, irrespective of the applicability of the AD to the variant. Each AD must be substantiated with proof of the task (i.e. Dirty Fingerprints) considering the applicable AD. Relevant data for substantiating the particular AD must at least contain (but may not be limited to):

- The AD number, paragraph, and revision or reference document number
- A printed version of the AD (FAA and/or EASA as applicable)
- Task card or logbook entry containing the following information
 - Aircraft details
 - Date of accomplishment
 - Signature and authorization number of the certifying staff
 - Maintenance organization or repair station number of the facility accomplishing the work
 - Certificate of release to service

When considering the applicability of an AD two scenarios may exist;

- If the AD is not *applicable*, a so called compliance document must be created highlighting the reasons why the particular AD is not applicable. Supporting documents to back up the non-applicability should be added to the compliance document and to the AD binder.
- If the AD is *applicable*, then the AD must be executed. Depending on the time limitations defined in the AD, the corresponding tasks must be planned and executed accordingly. The aforementioned compliance

²⁰ For further information on format and standard of the data see: <http://www.ataebiz.org/apps/org/workgroup/atrwg/>. And if you're not a member please contact: admin@ataebiz.org

documents can also be created for applicable ADs. However, the main proof which has to be added to the AD binder is the signed task cards, and the AD binder should be updated accordingly. See the data list above.

- The Lessee can also request permission from the authority to execute an AMOC. The documentation and approval of the AMOC are part of the particular AD and should be added to the AD binder.

3.2. Pitfalls

This part will discuss the main misconceptions and pitfalls surrounding the application, processing and documentation of ADs during the lease cycle. Especially at end of lease, failure to meet the AD redelivery conditions of the following issues can lead to delays. This will cause the Lessee to incur a considerable increase in leasing and delay costs.

The first pitfall occurs at delivery of the aircraft. The operator commonly accepts the aircraft without analyzing these files in detail, or at all, as checking the complete AD delivery binder is a time-consuming process. Failure to thoroughly analyze the files can and often will create issues at redelivery of the aircraft, and will cause delays in redelivering the aircraft.

Secondly, it is often unclear for an operator what it should supply at the ending of a lease term. A common misconception is that the AD summary sheet alone is sufficient. The Lessor will request the complete overview and the proof that all ADs during lease have been acted on accordingly. As demonstrated above, the complete AD compliance binder must be supplied as well. Therefore, the Lessee must gain a detailed understanding of the redelivery conditions regarding AD compliance. For AD compliance, the Lessee is generally required to provide the Lessor with a complete AD binder, AD summary sheet, and the processes at end of lease. An active approach to AD compliance and documentation during the lease term will help the Lessee achieve its goal of a smooth redelivery.

The third pitfall is related to operations and transferability in combination with AMOC approval for executing an AD. The operator is responsible for applying for an AMOC and complying with all rules and regulations (if applicable: the rules stated by various jurisdictions). This issue can create delays in redelivering the aircraft as an AMOC in one jurisdiction does not automatically mean that it is applicable in the jurisdiction of the aircraft's origin. A procedure may have to be initiated to adapt the executed AMOC, which can lead to acceptance of the alternative. If the alternative measure is not accepted, the AD must be executed according to the set rules as described in the AD published by the corresponding jurisdiction, or a new AMOC must be requested.

Finally, an issue arises regarding how far back the ADs for a particular type of aircraft should be analyzed. The issue arises when the AD binder at end of lease is not complete and a considerable amount of AD data must be incorporated into this binder. Repetitive ADs issued before the manufacture date of the aircraft should be included as well. As stated in the aircraft lease agreements, the aircraft is delivered with a complete AD binder and AD summary sheet at start of lease. These documents should be updated during the lease by the Lessee from the status and dates of the latest ADs received at delivery.

Annex IX: Components Guidelines

Aircraft Model : All models

Applicability : EASA and FAA environment

1. Introduction

There are various requirements linked to the installation and tracing of parts (both from an airworthiness perspective and as part of the contractual obligations in a lease). It is the goal of this annex to provide a standard for component tracing, by using both FAA and EASA requirements in combination with the requirements commonly seen in the leasing industry.

2. Regulatory Basis

For this section the EASA procedures as well the FAA procedures will be elaborated.

2.1. EASA Procedures

Various sections within EASA Part-M refer to the use of certified parts. M.A. 501 states that no component may be fitted on the aircraft unless it is in a satisfactory condition and has been released to service on an EASA Form 1 or equivalent.

It is the purpose of the EASA Form 1 to release components after manufacture or after maintenance work has been carried out. The release certificate provides approval of the competent authority which assures that the component has been manufactured in accordance with their type design. It also allows the component to be removed from one aircraft or component and installed onto another aircraft/component. This means an EASA form 1 should also be issued if a serviceable component is removed from the aircraft to be installed on another aircraft. Serviceable labels would not be sufficient to cover such an occurrence.

As indicated it is also possible to make use of a document equivalent to an EASA Form 1. Part-M identifies the following documents to be an equivalent replacement:

- A release document issued by an organization under the terms of a bilateral agreement signed by the European Community
- A release document issued by an organization approved under the terms of a JAA maintenance bilateral agreement, until superseded by the corresponding agreement signed by the European Community
- A JAA Form One issued prior to 28 November 2004 by a JAR 145 organization approved by a JAA Full Member State
- In the case of new aircraft components that were released from manufacturing prior to the Part-21 compliance date, the component should be accompanied by a JAA Form One issued by a JAR 21 organization, approved by a JAA Full Member Authority and within the JAA mutual recognition system
- A JAA Form 1 issued prior to 28 September 2005 by a production organization approved by a competent authority in accordance with its national regulations
- A JAA Form One issued prior to 28 September 2008 by a maintenance organization approved by a competent authority in accordance with its national regulations



The EASA makes use of the term 'service life-limited components' which are components subject to a certified life limit after which the components should be retired (LLP, see Annex X), and components subject to a service life limit²¹ after which the components should undergo maintenance to restore their serviceability (HT components). M.A.305(d) describes the record system required for HT components for which the current status should be monitored, indicating the component service limit, hours, cycles, or calendar time since the component has been restored back to its service life, and it should indicate the remaining life (hours, cycles, calendar time) before the components need to undergo maintenance.

Section M.A.305 (paragraph h) lists that the owner/operator should keep all detailed maintenance records for a period of at least 36 months, meaning the EASA Form 1 should be retained for a minimum period of 36 months. For service life limited components, historical records are required to be retained until the information contained in such records is suspended. Aircraft owners very often have different and more stringent requirements.

It is allowed to generate the EASA Form 1 from a computer database, and as such a paper version of the certificate is not a necessity.

Used aircraft components removed from an aircraft involved in an accident or incident require all necessary tests and inspections, which may require input from the TC holder. The relevant WO to get the component in airworthy condition should be mentioned in block 12 of the release certificate. However, aircraft owners usually restrict the installation of components which were involved in accidents or incidents.

2.2. FAA Procedures

The FAA regulations are similar to EASA's, and due to bilateral agreements it is possible to create a dual release, meaning one certificate indicating both FAA and EASA standards in which the EASA approval certificate number is indicated in block 13 of the FAA Form 8130-3. For EASA Form 1, the dual release is indicated in block 13 and 19. Both authorities unconditionally accept each other's certificates if the components are newly manufactured.

To certify that the component has been manufactured and maintained in accordance with its TC, the FAA has two acceptable ways to identify replacement parts once suitable to fit on the aircraft. The first is the Form 8130-3, Airworthiness Approval Tag, suitable as both approval for a part's return to service after maintenance or alteration by an authorized part 145 repair station, and as export approval and conformity destination from production approval holders. Secondly it is possible to use foreign manufactured parts when there is a Bilateral Airworthiness Agreement (BAA) in place with the country of manufacture. The procedures and the countries with which the US has BAAs, and the conditions of these agreements, are contained in AC 21-23.

FAA Order 8130.21H provides procedures for completion and use of Form 8130-3. This document indicates that for a newly built part, the originator of the 8130-3 should retain the certificate for no less than 5 years in case of products and articles, and 10 years for critical parts. If this form is used as an approval for return to service, this period is reduced to a minimum period of two years, unless the work is repeated or superseded.

For the operator itself the retention period for component certificates is provided in FAR 121.380, which indicates that records must be retained until the work is repeated or superseded by other work, or for one year after the work

²¹ EASA NPA 2014-04 changes the terminology to time controlled components



is performed. For components which require an overhaul, the FAA requires monitoring the time since last overhaul, but no additional record keeping requirements are mentioned for these HT components.

In a separate chapter, Order 8130.21H also provides guidance on the acceptance and use of electronic exchange of 8130-3s by the use of ATA Spec-2000.

3. Component File Overview

Regulatory requirements mandate that component records need to be maintained for a period of one (FAA) or three (EASA) years. Only the EASA specifically mentions additional requirements for HT components mandating that the records should be retained until the maintenance event is superseded. Nevertheless, one should be aware that the requirements from the lease are often more stringent, as there is a commercial aspect involved.

The lease regularly mentions a, for example, 110% (or other percentage) rule. If incorporated, this rule prohibits installation of any component which has accumulated over 110% of the operational life of the airframe. As it is not a requirement by the regulators to record the total hours and cycles of the component on the certificate, it should be noted that the operator is required to have a system in place to trace the total hours and cycles of these components. This is not taken into consideration for the standard component file as presented in this annex. Operators should be aware that if they don't have sufficient system in place to properly track these parts, meeting this contract obligation might be challenging. These restrictions are up for negotiation between the Lessor and the Lessee.

Another item to be considered with respect to on condition components is the requirement to have compliance certificates of all installed components, meaning it is a requirement to retain the release certificate of all components for as long as the parts are installed on the aircraft.

The component file should provide a clear overview of all components installed on the aircraft, including the installation date, hours, and cycles. As there are separate regulatory requirements for on condition components and HT components, two separate files will be considered.

3.1. On Condition component file

The On Condition file should ideally consist of two sections, a summary file and the compliance data, all sorted by ATA chapter.

- Basis for the components listed on the summary file is the serialized components list as provided by the manufacturer at delivery. Once one of these components is replaced, it is required to update the summary sheet. The summary list should contain the following information:
 - ATA Chapter
 - P/N and S/N
 - Position of the installed component
 - Installation date, aircraft FHs, and FCs at installation date
 - Reference to installed aircraft
 - Reference to component certificate
- The compliance data should provide the component release certificates in the same order as provided on the summary sheet. Once a component is replaced, the certificate of the previously installed component gets replaced with the certificate of the newly installed component.

Not all lease agreements mandate retention of compliance data, and in those cases the summary file will be sufficient.

3.2. Hard Time Component File

The HT component file should list all components which have a maintenance requirement as listed in the AMP, meaning not only the components with a scheduled overhaul interval but also components which require a different maintenance action, such as weighing or calibration. Similar to the on condition component file, there are two sections, a summary file and the compliance data:

- The summary list should contain the following information:
 - ATA Chapter
 - P/N and S/N
 - Position of the installed component
 - Date of the last maintenance action as mentioned on the release certificate
 - Reference to installed aircraft
 - Reference to component certificate
- The compliance data should provide the component release certificates or the maintenance action in the same order as provided on the summary sheet. Once a component is replaced, the certificate of the previously installed component gets replaced with the certificate of the newly installed component.

3.3. Pitfalls

Components are often replaced during line maintenance in AOG situations on outstations. Consequently it may be difficult to trace the certificates for these components, as the records division may not be updated with these replacements. Similar issues occur when components are swapped between aircraft for trouble shooting purposes and no new certificate is issued, or the previous repair release is not swapped in the file.

Operators often participate in a larger component pool, which makes it extremely difficult, if not impossible, to prove the total hours and cycles of a component as this is normally not traced. By doing so the operator is not able to prove compliance with the 110% ruling in the lease.

Component summaries often do not represent a complete status of the aircraft, i.e. not all installed components are listed. Operators should ensure that when an aircraft is taken into service, all components are introduced into the maintenance tracking system. In case of new aircraft, this can be done by importing the delivery lists from the manufacturer, which today are often provided in digital formats such as Excel. For used aircraft the exercise is usually more difficult, as one has to work with lists from the previous operator, the accuracy of which cannot be confirmed. As such, physical component verification may be necessary.

For the HT components summary file, the date of last maintenance action as indicated on the release certificate should be listed, and not the installation date of the component.

Consideration should be given to negotiate a solution for operators' components (excluding LLPs and TCC components) that are missing their Airworthiness Release Certificates at point of delivery/redelivery.

Annex X: LLP Back-to-Birth Guidelines

Aircraft Model : All models

Applicability : EASA and FAA environment

1. 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.

A 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. The majority of LLPs are in the landing gears and in the engines.

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 annex aims to provide guidelines for LLP BtB documentation which may be applied by airlines. It takes into account the regulatory requirements or guidelines and considerations for the different stakeholders involved in aircraft asset management and maintenance.

Such a common standard will greatly increase the efficiency of asset transfers in general, and will also reduce the risk for airlines, since the LLP BtB requirements are becoming unpredictable and unmanageable.

2. Introduction

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 OEMs to airlines, to Lessors, 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.

3. Regulatory Basis

The regulatory agencies require airlines to have systems and procedures in place to ensure compliance with the ICA or maintenance manual issued by the TC holder or OEM.

Part of the ICA is the Airworthiness Limitation section in which the OEMs list the life limits for critical parts. Depending on the OEM, this information is contained in the Time Limits Manual or in Chapter 5 of the maintenance manual.

Although the agencies do not require airlines to maintain BtB for LLPs, they do require airlines and MROs to have systems in place to track the status of life-limited parts so that no life limits are exceeded and airlines should therefore be able to provide evidence of this.

Below is the wording used by the respective agencies related to life-limited part records. From a regulatory perspective, this is all that is required from the airline.

EASA PART M AMC 305 (d) (4)

The term 'service life-limited components' embraces:

1. components subject to a certified life limit after which the components should be retired, and
2. components subject to a service life limit after which the components should undergo maintenance to restore their serviceability.

The current status of service life-limited aircraft components should indicate:

1. for components subject to a certified life limit: the component life limitation, total number of hours, accumulated cycles or calendar time and the number of hours/cycles/time remaining before the required retirement time of the component is reached;
2. for components subject to a service life limit: the component service life limit, the hours, cycles or calendar time since the component has been restored back to their service life and the remaining service (hours, cycles, calendar time) life before the components need to undergo maintenance.



Any action that alters the components' life limit (certified or service) or changes the parameter of the life limit (certified or service) should be recorded.

When the determination of the remaining life requires knowledge of the different types of aircraft/engine on which the component has previously been installed, the status of all service-life limited aircraft components should additionally include a full installation history indicating the number of hours, cycles or calendar time relevant to each installation on these different types of aircraft/engine. The indication of the type of aircraft/engine should be sufficiently detailed with regard to the required determination of remaining life.

Recommendations from the type certificate holder on the procedures to record the remaining life may be considered.

FAA 14 CFR Part 43.10

"Each person who removes a life-limited part from a type-certificated product must ensure that the part is controlled using one of the methods in this paragraph. The method must deter the installation of the part after it has reached its life limit. Acceptable methods include:

- **Record keeping system.** The part may be controlled using a record keeping system that substantiates the part number, serial number, and current life status of the part. Each time the part is removed from a type certificated product, the record must be updated with the current life status. This system may include electronic, paper, or other means of record keeping.
- **Tag or record attached to part.** A tag or other record may be attached to the part. The tag or record must include the part number, serial number, and current life status of the part. Each time the part is removed from a type certificated product, either a new tag or record must be created, or the existing tag or record must be updated with the current life status.
- **Non-permanent marking.** The part may be legibly marked using a non-permanent method showing its current life status. The life status must be updated each time the part is removed from a type certificated product, or if the mark is removed, another method in this section may be used. The mark must be accomplished in accordance with the instructions under §45.16 of this chapter in order to maintain the integrity of the part.
- **Permanent marking.** The part may be legibly marked using a permanent method showing its current life status. The life status must be updated each time the part is removed from a type certificated product. Unless the part is permanently removed from use on type certificated products, this permanent mark must be accomplished in accordance with the instructions under §45.16 of this chapter in order to maintain the integrity of the part.
- **Segregation.** The part may be segregated using methods that deter its installation on a type-certificated product. These methods must include, at least—
 - Maintaining a record of the part number, serial number, and current life status, and
 - Ensuring the part is physically stored separately from parts that are currently eligible for installation.
- **Mutilation.** The part may be mutilated to deter its installation in a type certificated produce. The mutilation must render the part beyond repair and incapable of being reworked to appear to be airworthy.
- **Other methods.** Any other method approved or accepted by the FAA.

Transfer of life-limited parts. Each person who removes a life-limited part from a type certificated product and later sells or otherwise transfers that part must transfer with the part the mark, tag, or other record used to comply with this section, unless the part is mutilated before it is sold or transferred."

4. LLP Back-to-Birth Standard

Unfortunately the standards as set by the aviation authority are not sufficient to satisfy all stakeholders involved with an aircraft lease. Because of the global market, aircraft owners and traders want to incorporate requirements from other stakeholders as well. This has resulted in an array of unnecessary requirements. The following chapters provide guidelines on how to effectively establish back-to-birth. Furthermore Figure 14 gives an example of different processes during a life cycle of a LLP and which documents are required for a BtB.

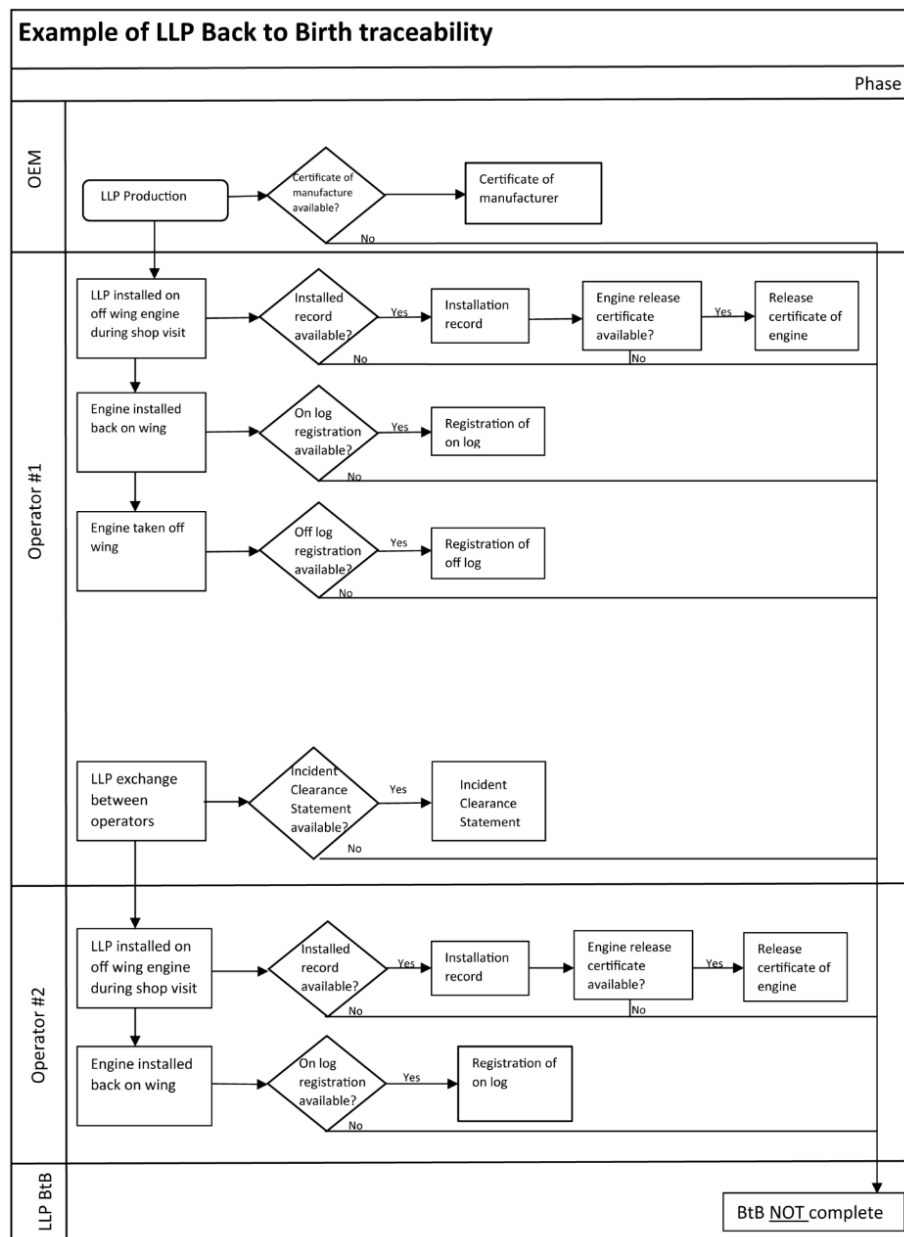


Figure 14. Example of LLP BtB

4.1. LLP Birth (Manufacture)

The OEM produces the first document for the part at production. Although there are no specific regulatory requirements to keep proof of manufacture on file, it is commonly accepted (and reasonable to expect) that a manufacture document is provided, showing birth for each LLP. Such a document should be one of the following items:

- OEM document confirming the LLP was installed in an engine/APU/gear during production. Different OEMs provide different types of documents, and therefore the following list is not exhaustive. Possible OEM documents are:
 - EDS (Engine Data Submittal)
 - VSL (Vital Statistics Log)
 - IIL (Industry Item Listing)
 - OEM logbook with LLP log cards
 - ARL (Aircraft Readiness Log)
 - AIR (Airbus Inspection Report) - Folio 12
 - IOC (Installed Original Components)
 - ASL (Aircraft Serialization Listing)

Such a document should include the following information:

- S/N of new engine/APU/gear on which LLP was installed during production
 - Model Number and thrust rating/TO weight as applicable for new engine/APU/gear on which LLP was installed during production
 - P/N of LLP
 - S/N of LLP
 - Description of LLP
 - If applicable, TSN/CSN/time of LLP accumulated as part of engine/APU/gear testing performed by the OEM
- Certificate of Manufacture or OEM Packing List

If an LLP was installed new into an engine/APU/gear during a shop visit, then there should be a certificate of manufacture for the new LLP. This is usually an EASA Form 1, an FAA 8130-3 or a Transport Canada Form 1, as applicable.

In some cases when OEMs sell new LLPs inside the US, only a Packing List²² is provided without FAA 8130-3. Such a Packing List is acceptable if it comes from the relevant OEM, and indicates the LLP P/N, LLP S/N, and a confirmation that the listed parts are new.

- OEM Statement

If an LLP was installed new into an engine/APU/gear during shop visit and no certificate of manufacture is available, then an OEM statement that confirms manufacture of the relevant LLP can be accepted.

²² Sometimes called Memo of Shipment

In order for such a statement to be accepted, it must contain following information:

- OEM Company Name and Logo
- Signature, stamp, or electronic document approval statement from the OEM
- Description, P/N, and S/N of LLP
- Date of sale and Buyer description

4.2. On-off Logs

Once the part is installed on an engine/APU/gear, it can be removed and installed on another engine/APU/gear. It is therefore important to determine the part's movements. The on-off logs are documents issued during a maintenance event, and show parts removed from one engine/APU/gear ("off") and installed on another engine/APU/gear ("on").

There is no specific format for on-off logs, and MROs or operators may use different terms for them, but the following items should be addressed to satisfy the expectations as listed in paragraph 3:

- Off logs should be certified documents signed or approved by the operator. They can be created by an approved service provider to the operator (MRO, Designated Airworthiness Representative (DAR), and Continuing Airworthiness Management Organization (CAMO)) but the operator should counter-sign, or there should be a separate statement to confirm that the service provider is authorized to create statements on behalf of the operator.
- On logs should always be certified documents. They can be created by the current operator or its authorized service provider, or if applicable after shop visit, by the MRO that released to service the engine/APU/gear in which the LLP was installed.
- Type, S/N, TSN, and CSN of engine/APU/gear the LLP was removed from.
- Type, S/N, TSN, and CSN of engine/APU/gear the LLP was installed on.
- Description, P/N, S/N of the LLP.
- TSN, CSN, or time of the LLP as is relevant to determine compliance with the ICA.
- The relevant ICA limits that apply to the LLP and the life remaining.
- Details on accumulated hours/cycles/time on different models, as required for determining correct life remaining for mixed-model operations as per the ICA.

It has to be noted that more details may be required for engine models using thrust bumps, flight profiles, or pilot training restrictions. For these engines, additional information has to be made available. In case operators track per module, it must at all times be clear on what parent model the LLP accumulated its hours/cycles/time as relevant per the ICA.

4.3. LLP Maintenance Records

Once satisfactory evidence is provided to determine accumulated and remaining life, evidence has to be provided that all maintenance has been correctly performed on the part itself and that the part is in compliance with any applicable AD requirements. A maintenance record is therefore required for each of the following situations:

- Actions that result in a life limit change
- Actions that determine last compliance with ADs applicable to the relevant LLP
- When an LLP is removed from one engine and installed into another engine

Such maintenance record can be one of the following:

- Authorized release certificate for the LLP, in case a removed LLP is sold, then a release certificate must be provided.
- Tag, job card or certified AD/SB status from the MRO who installed the LLP in the engine/APU/gear showing the work performed that caused the change in life limit or that provided last compliance with the applicable AD.

4.4. Incident/Accident Clearance Statement

Although there are no specific regulatory requirements to produce such documents, it is commonly accepted that an Incident/Accident Clearance Statement (ICS) formerly known as Non-Incident/Accident Statement (NIS) is provided by the last operator since the last shop visit. During the last shop visit, the engine/APU/gear is fully dismantled, the parts are inspected and repaired as necessary and their serviceability restored. It is therefore assumed that any part affected by incident, accident, or otherwise, has been replaced or properly repaired.

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 been subjected to, its airworthiness has been re-established in accordance with the regulations and the instructions of the type certificate holder and/or supplemental type certificate holder (aircraft only) and/or OEM of the part and the maintenance deemed necessary has been performed by an approved maintenance organization.

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, with the first review expected to take place in early 2016.

Two document templates have been designed, one to cater for aircraft and 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.

(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: _____

(ON COMPANY LETTERHEAD)

Date

Incident/Accident Clearance Statement

To Whom It May Concern:

Engine serial number [insert ESN], details of which are specified below, has been operated by [insert company name] during the period from [insert delivery date] to [insert redelivery date].

Configuration details as of date of this statement;

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

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

1. Neither the engine, 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 OEM of the part, and supported by an authorised airworthiness release certificate.
2. No part has been installed on the engine 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: _____

4.5. Influencing Parts

Over the past several years most engine OEMs have included disclaimers related to critical parts (LLPs) and lists of influencing parts into their ICAs. Influencing parts are parts that can have a material effect on LLPs and their life capability; often these are parts that are installed onto or adjacent to the LLPs.

These disclaimers state that all the limits listed in the ICA are substantiated by the OEM to the certifying authorities on the assumption that the engines are operated and maintained in accordance with the OEM procedures only. Some of the wording used by OEMs appears to indicate that LLP limits become invalid when PMA or DER is used in their products.

Some OEMs have now gone further and have introduced LLP BtB requirements to prove that an LLP has never been exposed to PMA or DER parts. These requirements are even being introduced into OEM MRO contracts with airlines, and are being communicated to the Lessor community.

However, it should be clear that the regulatory agencies give final approval for the life limitations. Moreover, the PMA and DER manufacturers also need to work to design regulations, and their parts and repairs are also certified by the authorities. Any changes in life limits caused by PMA or DER material would be listed in the relevant PMA/DER certification document.

Hence, as far as the regulatory agencies are concerned, the ICA life limits remain valid unless the PMA/DER material certification document says otherwise.

It is therefore important for the airlines to ensure that, if they use PMA/DER material in products with LLPs, the certifying documents for all such materials are available to substantiate that no change in life limits is required.

Any other LLP BtB requirements related to PMA/DER are deemed unnecessary, unworkable and unreasonable.

4.6. Ferry Flights

In case of ferry flights out of the last airline's responsibility, it is deemed necessary to provide a certified log of the hours/cycles/time accumulated, and at what rating.

Such a log can be signed by the flight crew or responsible organization that performed the ferry flight, or an approved service provider for the owner (MRO, DAR, and CAMO). If needed an allowance for the updated records to be delivered after the ferry flight should be accounted for in the case they cannot be completed in real time.

Annex XI: Definitions

As most of the definitions are being described throughout this document, only a shortlist is provided in this Annex with a special focus on aircraft leases and the various forms of aircraft leases. By doing so the user of this document is able to understand the difference between aircraft leases from a financial perspective and put in a technical perspective.

Lease	A legal document outlining the terms under which one party agrees to rent property from another party. A lease guarantees the Lessee (the renter) use of an asset and guarantees the Lessor (the property owner) regular payments from the Lessee for a specified number of months or years. Both the Lessee and the Lessor must uphold the terms of the contract for the lease to remain valid.
Operating Lease	A contract that allows for the use of an asset, but does not convey rights of ownership of the asset. An operating lease is not capitalized; it is accounted for as a rental expense in what is known as "off balance sheet financing." For the Lessor, the asset being leased is accounted for as an asset and is depreciated as such. Operating leases have tax incentives and do not result in assets or liabilities being recorded on the Lessee's balance sheet, which can improve the Lessee's financial ratios.
Capital or Finance Lease	A lease considered to have the economic characteristics of asset ownership. A capital lease would be considered a purchased asset for accounting purposes. A lease falls into this category if any of the following requirements are met: The life of the lease is 75% or greater of the assets useful life; The lease contains a purchase agreement for less than market value; The Lessee gains ownership at the end of the lease period; The present value of lease payments is greater than 90% of the asset's market value.
Wet Lease	A lease where the Lessor provides an Aircraft with Crew, Maintenance and Insurance also known as ACMI. The aircraft is operated under the AOC of the Lessor
Dry Lease	A lease where the Lessee provides crew, maintenance and insurance. The aircraft is operated on the AOC of the Lessee.

The accounting treatment of an aircraft lease depends on many parameters. We highly recommend that for your own specific case you consult the appropriate accounting experts in your company and jurisdiction. For detailed definitions that can be used in contracts and financial accounting standards please consult the International Financial Reporting Standards²³ (IFRS) and the Financial Accounting Standards Board²⁴ (FASB).

²³ www.ifrs.org

²⁴ www.fasb.org



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