Minimizing maintenance cost at redelivery

IATA Maintenance Cost Conference

Dublin, Ireland
11 September, 2013
Agenda

SGI Aviation

Introduction

Basic principles of aircraft leasing

Different perspectives
  - Regulator
  - Owner
  - Operator

Common misconceptions

Summary

Questions
A seamless approach
An introduction into SGI Aviation

- SGI Aviation is one of the largest independent technical advisors to the aviation industry and handles all aspects of technical consulting services, asset management and also provides aviation-focused advisory and regulatory training.

- Headquartered in Amsterdam with regional offices in New York and Singapore, SGI currently employs more than 45 professionals worldwide.

- As part of the Seabury Group, SGI is uniquely positioned in the industry and has the capability to help you setup, manage or grow your airline operations as your needs develop.

- SGI provides a seamless approach towards its individual services, for both aircraft operators and financiers, covering the entire aircraft life-cycle from pre-acquisition and delivery phase through to commercial operation and asset redelivery, sale or part-out.

- Services are tailored to the client's specific requirements, advising on all aspects of commercial and management exposure to maximize asset value while minimizing transactional risk and techno-commercial exposures.

- Services are performed by a team of experienced professionals from all areas of the aviation and aerospace industry.
  - Many have held senior roles with airlines, aircraft manufacturers, aviation authorities, banks, lessors and maintenance organizations.

- SGI Aviation focuses on providing reliable and timely services to customers around the globe.
SGI Aviation

Overview of services

Technical Services
- Aircraft physical and records audits
- Delivery and redelivery management
- Project management for major maintenance and complex modification programs
- Lease and asset management
- Consulting services;
  - Efficiency evaluations
  - Process improvements
  - Maintenance & cash flow forecasting
  - Aircraft valuations
- Contract negotiations

Engine Services
- Engine physical and records audits
- Engine fleet management services
- Shop visit management;
  - On-site support and table inspections
  - Warranty management
  - Scrap part review
- Engine storage and transfer support (Engine Lease Return Centre)
- Contract negotiations (PBH, leasing, maintenance etc)
- Maintenance reserve claim calculations
- Claim management

Regulatory Services
- Training services
- Aviation safety regulations (e.g. EU/EASA, ICAO, etc)
- SAFA¹ & Safety Listing
- Company and quality audits
- Consulting services
  - Setup and introduction of Safety Management System (SMS)
  - Development and set up of quality systems
  - Regulatory approval (e.g. AOC, AMO)

IT Services
- Regulatory software
  - SOFIA
  - EFOS
  - License and certificate management for authorities
- Docularity suite (Airchive, Centerline, E-camp & Automatos)
  - Technical publications and manuals
  - Regulatory compliance tracking
  - Task card and manual distribution

Note 1: SAFA = Safety Assessment Foreign Aircraft, an EU mandated ramp inspection program on non European aircraft landing in Europe
Agenda

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Introduction

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Summary

Questions
Introduction

- Aircraft operating leases represented less than 5% of the overall aircraft ownership situation in the 1980’s.
- This number has grown steadily and it is expected that approximately 50%\(^1\) of the world fleet will either be under an operating or financial lease in the next decade.
- An aircraft lease allows an airline to add aircraft to its fleet without the ownership risk, but it also introduces a series of unique challenges.
- Many of these challenges result from different viewpoints between the lessor and lessee.
- Challenges may range from:
  - Documentation issues
  - Aircraft physical issues
  - Financial issues
- Whatever the challenge may be, these issues lead to delays at redelivery and additional work.
- Delays and additional work are costly!

Note 1: Source Shpall, 2011
The average profit per departing passenger

A single redelivery expense could wipe out the entire profit

- Last year’s average worldwide profit per departing passenger was US$2,56.
- This net profit is equal to a pint of Guinness!
- With fuel being the largest single (and unchangeable) component, all focus is on minimizing “non-fuel cost”.
- But a single redelivery event could significantly diminish all the efforts and completely ‘wipe out’ the profits generated during the lease.

Source: IATA Industry outlook June 2013 (www.iata.org/economics)
Agenda

SGI Aviation

Introduction

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Common misconceptions

Summary

Questions
Basic principles

The two fundamental principles of an aircraft lease

- A standard operating lease is based on two essential principles;

  1. Aircraft are always delivered on an “AS-IS-WHERE-IS” basis
     - This means that the aircraft is delivered to the lessee in the condition it is in
     - Once accepted by the lessee, the lessor is deemed to have complied with all requirements in respect of the delivery, and
     - The lessee is deemed to have irrevocably accepted to lease the aircraft and all delivery conditions have been complied with (no matter whether or not this is the case!)

  2. The lease is a “NET LEASE”
     - Once accepted, the lessee will always have to pay rent regardless of any hidden defects or other issues
     - The lessee can therefore never withhold any rent as the result of any claims

- It is now more common for lessors to specifically exclude any hidden defects
  - *The Aircraft shall be delivered in an "as-is, where is with all faults" condition, and all risk of loss, damage and defect (latent or otherwise) shall pass to Lessee*

- The only way for an airline to minimize this risk is to inspect the aircraft and identify all issues prior to acceptance
Agenda

SGI Aviation

Introduction

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Summary

Questions
There are several stakeholders
Requirements and interests differ

- The aircraft operation and documentation process are influenced by different stakeholders.
- Each has a specific role and responsibility.
- The operator is only required to look at its own operation.
- The interest of the lessor is not limited to a single operational cycle, but for the entire aircraft life cycle.
- So many of the requirements in the lease agreement are designed to protect the lessor’s interest beyond one operational cycle.
- The process could be further complicated if various regulators are involved.
Aircraft transfers between jurisdictions

Dissimilar regulatory requirements are costly

- There were more than 1400 aircraft transfers between regulatory jurisdictions in 2012
- Dissimilar regulatory requirements between aviation regulations present a series of unique challenges
- Differences in these regulatory requirements result in US$369 million annually for the aviation industry

Source: Ascend Database 2013 & AWG study on 'Dissimilar Technical Regulatory Requirements', January 2011
Aircraft retirement age

Aircraft are getting older

- In 1990 only 5% of retirements were 25 years or older
- By 2000 this number had risen to 37%
- And has reached 48% in 2012
- Aircraft remain in service longer
- This puts additional ‘pressure’ on all parties involved to:
  - Satisfy future regulatory requirements
  - Maintain a consistent quality of the records
  - Protect the asset value
  - Ensure operational integrity
- The aircraft’s life doesn't end at retirement...

Source: Ascend database 2013 and Avolon report "aircraft retirement trends outlook"
Redeliveries in the lifetime of an aircraft

Number of A320 deliveries in 2012

- Highest amount of transfers is for aircraft between the age of 7 and 13 years
- And again towards the end of the aircraft’s life
- When compared to the entire world fleet, it’s the older aircraft that move

- On average there were 4,25 operators per aircraft
- Each aircraft had 2,9 owners (lessors) during the 20 years of operation
- There was one aircraft with 8 operators, operating on more than 2 continents
- Only one aircraft switched between operator for the first time in 2012

Source: Ascend Database 2013
Agenda

SGI Aviation

Introduction

Basic principles of aircraft leasing

Different perspectives
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Summary

Questions
Common misconceptions

Repairs

- Lease agreements almost always mandate that lessees provide ‘certification paperwork of all repairs’
- This raises a number of interesting challenges;
  1. What is a repair?
     - A patch repair
     - Blend outs
     - Reinforcements as part of SBs and ADs (such as door corners etc)
     - External and internal repairs
  2. What paperwork should be supplied?
     - Non routine task cards (i.e. Dirty finger prints)
     - Material specifications
     - OEM communication (if outside of approved limits)
     - Drawings, pictures, EO’s etc
  3. Which key elements need to be recorded?
     - SRM revision, dimensions, location, station number etc
     - Approval basis
Common misconceptions

Repairs

4. Typical pitfalls;
   - The requirement for a flush repair in an area that does not allow flush repairs (or where this is prohibitively expensive)
   - Repairs which are undergoing OEM evaluation (Damage Tolerance Analysis)
   - Temp / Permanent vs. Lease definition
   - In house approval of repairs versus OEM Approval
Common misconceptions
Back to Birth

- No industry standard regarding Back to Birth

1. What is back to birth?
   - FAA and EASA state that an operator must have an approved system in place that effectively controls and records the total operational life of the part
   - EASA rulemaking group MDM.076 / FAA AC33.70-1 (engines)
   - Establishment of total cycles, by means of substantiation of each individual event in the part's life

2. What paperwork should be supplied?
   Typical requirements for engines and landing gears contain;
   - Serviceable Tag
   - Operator Statement
   - Non-incident/accident statement
   - Service Bulletins
   - EASA Form 1/FAA 8130
   - Off Log/On Log Report
   - Last Check Performed
   - AD compliance

3. Which key elements to be recorded?
   - Life limits (Chapter 5, ALS)
   - Thrust Rating, MTOW
Common misconceptions

Back to Birth

4. Typical pitfalls
   - Module swap
   - Pool agreements and related transfer of records
   - Limited provision of records after shop visit (e.g. Only release certificate for landing gears)
   - Installation of used Life Limited Parts with only limited back to birth records
   - Previous operators who ceased operations
Common misconceptions
Records presentation at redelivery

- The airlines is often mandated to provide records in an organized and consolidated manner

1. What is required?
   - A full inventory of the records
   - A delivery bible
   - Consolidated files for AD notes, repairs, modifications and components etc
   - This includes dirty fingerprints and certificates

2. Common pitfalls
   - The airline’s operational process does not match with this lease requirement
   - Records for maintenance performed by subcontractors or third parties do not match these requirements
   - Many documents are stored in the individual check packages
   - Previous operators have not been as organized
Common misconceptions

But..... there are many more issues

- Modifications
  - Engineering Orders, Modification orders, STCs or equivalent
  - What is their certification basis?
  - Can they remain installed or do they need to be removed?

- Components
  - Hard-time components, on-conditions components or conditions monitored components
  - Requiring recording of total time since new or cycles since new
  - Shop-visit reports and release certificates
  - Regulatory release basis (FAA, EASA, local)

- Maintenance program
  - Delivery or redelivery in accordance with the manufacturer’s ‘Maintenance Planning Document’ (MPD)
  - With out any sampling
  - Usually results in an expensive “bridging check”
Summary

Best practices

**Negotiations**
- Tailor the lease agreement to your operation and remaining life of the aircraft
- Pay specific attention to items such as:
  - The definition of back to birth traceability
  - Engine delivery and redelivery conditions
  - Maintenance reserve shortfalls

**Operations**
- Ensure that relevant terms and conditions of the lease are widely known within the organization
- Make sure that relevant records are consolidated into one single location
- Review documentation for significant maintenance events and don’t rely solely on the Part-145 organization
- Be critical towards your own organization, perform regular audits of the process

**Redelivery**
- Start preparations for the redelivery on time (as early as 1 year before return)
- Discuss the setup and approach prior to the start of the program with the lessor
- Ensure that adequate resources are allocated to the final redelivery event
Agenda

SGI Aviation

Introduction

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Summary

Questions
Summary

- The aircraft is accepted in an ‘as-is-where-is’ condition
- The airline accepts the aircraft irrevocably
- There are many misconceptions in the industry, amongst others;
  - Repairs and modifications
  - Back to birth traceability
  - Records requirements at redelivery (redelivery bible)
- This means that airlines need to;
  - Ensure the delivery and redelivery conditions, as well as the records requirements match the operational capabilities
  - Perform a proper due diligence on the aircraft and records prior to acceptance
  - Start preparing for the redelivery when the aircraft is introduced
- Keep an open dialogue with the lessor
Agenda

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Summary

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