ENGINE MAINTENANCE FOR MATURE AIRCRAFT

September 12, 2013
Content

• ENGINE MAINTENANCE COST
• ENGINE PART OUT MARKET
• OUR SERVICES
• OUR LOCATIONS
• CUSTOMER VALUE
• COMPANY OVERVIEW
ENGINE LIFE CYCLE

INTRODUCTION
Genx, GP7000, TR900/1000

GROWTH
CFM56-7B, GE90 TR700, CFM56-7B
CF6-80C2, TR800, PW2000/4000 RB211, V2500A1

MATURITY

DECLINE
JT8/9, CFM56-3 CF6-6/50, V2500A1
ENGINE COST FACTORS

- Financing / Leasing Costs
- Fuel Consumption
- Maintenance Costs
- Shop Visit Cost vs. OWT
- MRO Competition
- DER/PMA Availability
- Surplus / used parts

Wide Body
- JT9D / CF6-80C2 / CF6-50
- JD8D / CFM56-3/5A / V2500A1

Narrow Body
- CFM56-5C, PW4000-94/112, T800
- GE90, GE90Nx, Leap, T1000

Major Issue / Lever
- Acquisition costs
MANAGING SHOP VISITS

ENGINE MAINTENANCE EXECUTION PHASES

• MAINTENANCE PLANNING
• CONTRACT (TYPE) SELECTION
• SUPPLIER SELECTION
• WORKSCOPE MANAGEMENT
• MATERIALS MANAGEMENT
MANAGING SHOP VISITS

CONSIDERATIONS

• FEASIBILITY OF SHOP VISIT – PART-OUT?
• EXCHANGE VS REPAIR
• LEASE ENGINE MARKET
• A/C LEASE RETURN CONDITIONS
• GREEN TIME
MANAGING SHOP VISITS

CONTRACT TYPE SELECTION

• PBH
• T&M
• NTE
• FIXED PRICE

SUPPLIER SELECTION

• OEM
• INDEPENDENT MRO
• AIRLINE MRO
• CONSULTANTS
MANAGING SHOP VISIT COST

CONTRACT TERMS

• LABOR FLAT RATES
• REPAIR CATALOG
• HANDLING FEES / MARKUPS
• TEST CELL FEES
• LEASE ENGINE IF PROVIDED WITH SHOP VISIT
MANAGING SHOP VISIT COST

DIRECT SHOP VISIT COST FACTORS

• REMOVAL REASON
• ENGINE CONDITION
• LLPs
• MOD STATUS OF THE ENGINE
• DESIRED BUILD – TIME TO NEXT SHOP VISIT

INDIRECT SHOP VISIT COST FACTORS

• ENGINE CHANGE
• TRANSPORTATION
• LEASE ENGINE
• DOWN TIME OF AC
Intelligently Defining Aviation

VOLUME VARIANCE MANAGEMENT

EFFECTIVENESS
Reduce number of removals
- Maintenance Planning
- Reliability
- On wing troubleshooting

Operator specific factors significant
- Operation Type Short/Long Haul
- Fleet Size
- Lease structure
- Engineering

COST VARIANCE MANAGEMENT

EFFICIENCY
Reduce shop visit cost
- Supplier Selection
- Contract Type / Execution
- Workscope Optimization
- Material Selection
- Logistics

Market conditions significant

SUPPORT EACH ACTIVITY BY ESTABLISHING KPIS
MANAGE BY FACTS
SHOP VISIT COST COMPONENTS

A LOOK AT COST BY MODULE

<table>
<thead>
<tr>
<th>MODULE</th>
<th>% OF COST</th>
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<tbody>
<tr>
<td>LPC</td>
<td>5%</td>
</tr>
<tr>
<td>HPC</td>
<td>22%</td>
</tr>
<tr>
<td>COMB</td>
<td>10%</td>
</tr>
<tr>
<td>HPT</td>
<td>45%</td>
</tr>
<tr>
<td>LPT</td>
<td>13%</td>
</tr>
<tr>
<td>OTHER</td>
<td>5%</td>
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* ROM estimate for typical workscope on mature engine
* Excluding LRUs and LLPs
MAJOR SHOP VISIT COST COMPONENTS

MAJOR COST COMPONENTS OF AN ENGINE SHOP VISIT

- MATERIAL
  - NEW
  - USED
  - CONSUMABLE
- REPAIRS
- LABOR

<table>
<thead>
<tr>
<th>ESV COST BREAKDOWN</th>
<th>New</th>
<th>Used</th>
<th>Consumable</th>
<th>Repairs</th>
<th>Labor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Mature Engine</td>
<td>30%</td>
<td>25%</td>
<td>5%</td>
<td>30%</td>
<td>10%</td>
</tr>
</tbody>
</table>
Surplus material utilization has a significant impact on total shop visit cost from 10%-20%
MAXIMIZE SURPLUS USAGE

SUPPLIER SELECTION

✓ IN TUNE WITH MARKET CONDITIONS
✓ SURPLUS MINDSET / PHILOSOPHY
  - CUSTOMER ORIENTED
  - RESPONSIVE
  - TEARDOWN CAPABILITIES
  - QUALITY SYSTEM
  - NETWORK
The GA Telesis Strategy allows for the Maximum Flexibility as it Relates to Asset Disposition and Value Creation/Protection

The Engine MRO Acquisition, GATES, enables GA Telesis to further penetrate the Airline Value Chain.
There is Significant Demand for Used-Serviceable Parts

2010 Air Transport MRO Market ($B)

2010 Air Transport Service Parts Demand

- Engine: 60%
- Component: 30%
- Airframe: 10%

$15B

Source: AeroStrategy
Engine Components Represent the Largest Part of the Market

2010 Air Transport Surplus Parts Market*
~ $2.3 Billion

- Engine parts account for approximately 65% of air transport surplus parts demand – up significantly from 55% estimated in 2008
- Spending on surplus components comprises 30% of the market
- Airframe parts are a small percentage of the surplus parts market representing only 5% of surplus parts sales

* Source: AeroStrategy

January 2013
Most Used-Serviceable Material Comes from Part-Outs

2007 & 2010 Supplier Channels for Acquisition of Surplus Materials

- Increases in the rate of aircraft retirements and the associated harvesting of spare parts has resulted in up to 80% of surplus parts originating from part-out aircraft.
- Leaner airline and MRO inventories have resulted in less surplus parts coming from excess inventories.
- Companies that scrap aircraft have a direct advantage in access and control of surplus parts.

Source: AeroStrategy
Scrap Parts Leads to the Primary Source of Demand

Drivers of Surplus Material Demand

- Items Beyond Economical Repair: 52%
- Changes in fleet or route structures: 17%
- Initial provisioning: 15%
- Other/AOG: 12%
- Retrofit programs: 4%

Drivers of Surplus Material Demand - Components

1. Initial provisioning to support purchases of new aircraft
2. Changes in fleet, utilization and route structure
3. LRUs that are beyond economical repair (BER) as a result of ongoing maintenance activity
4. Aircraft retrofit programs
5. Aircraft On Ground

Source: AeroStrategy
GA Telesis (GAT) founded

2002

Bank of America Merril Lynch makes strategic investment in GAT

2007

Acquires Curtiss Wright Accessory Services in Miami, FL

2009

Century Tokyo Leasing (CTL) makes strategic investment in GAT

2011

GAT & Air China form landmark JV

2012

GAT purchases Finnair Engine Services

2012
The only independent aftermarket provider to have **full scale part-out and distribution capabilities** on three continents.
Our Services

Parts Sales & Acquisitions
Supply Chain Management
Fleet Solutions
Leasing
MRO
Financial Services
Govt & Defense

Comprehensive Support Capabilities
Intelligently Defining Aviation

Managing $500m+ in assets

Over 450 engines disassembled

Over 175 airframes disassembled

One-stop-shop for all material needs
Your job is in the sky
Our job is to keep you there