Agenda

1. RIG overview and responsibilities
2. Spec 2000 Reliability Chapters
3. What will be new for Reliability in next Spec 2000 release?
4. Spec 2000 in use
Overview and Purpose

Industry forum composed of Operators, Airframe manufacturers and Suppliers

Developing electronic data exchange standards, based on XML

Related to Aircraft Reliability, Maintenance and Repair data
Scope and responsibilities

Chapter 11
Chapter 13.2
Chapter 15

ATA Spec 2000
Chapter 11
Reporting records

Airline database

ATA Spec 2000
Chapter 13
Reliability metrics

MRO database

ATA Spec 2000
Chapter 15 Delivery record

Reliability definitions

OEM/Supplier database

Aircraft events
Scheduled Maintenance
Service Bulletin reporting
LRU Removals

1 RIG overview and responsibilities
RIG overview and responsibilities

**Chair**

Ed Sweezey, American Airlines

**Vice-chairs**

Daniel Tarr, Southwest Airlines
Sebastien Touzot, Airbus

**RIG Sub-teams**

**Reliability Metrics Development**
John Nazareth, Bombardier

**Delivery Configuration Record**
Audrey Fauconnier, Airbus

**Data Definitions**
Sebastien Touzot, Airbus

**IT Implementation**
Audrey Fauconnier, Airbus
- Airbus, Boeing, Bombardier, Dassault and Embraer began working together on Spec2000 Chapter 11
- Changes data exchange paradigm from data protection to data sharing
- Spec2000 Chapter 11 published in May 2004
- Spec2000 Chapter 11 received IATA endorsement in January 2005

2005 Refined the Standard
- Developed much tighter industry cooperation toward refining the reliability and maintenance data standard
- Held our first Maintenance Information Software provider meeting
- Learned we need more information to convince the industry to follow our lead to use ATA Spec2000 Chapters 11 as the industry standard data exchange protocol

2006 ~ 2014 Industry Application
- Airbus, Boeing, Bombardier, Dassault and Embraer are able to accept Spec2000 Chapter 11 formatted data
- Many companies are able to send or receive Spec2000 Chapter 11 formatted data
- Continuous improvement of the standard

2004

2006

Industry Adoption

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<th>2014 Status</th>
<th>Compliant</th>
<th>In work</th>
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<td>Software providers</td>
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Reporting and information sharing

2 Spec 2000 - Reliability chapters

- Huge volume
- High added-value
- Industry need to collect, share and analyze the data
- General reliability improvement
- Cost savings
Data exchange standard

Optimize the interfaces
Decrease errors
Simplify the analysis
Open a market for tools
"Coffee, tea and lemonade from a pure water source"

John Yakubowsky
Spec2000 Chapter 11 records

Component reliability
- Details on removed LRU: part number, removal reason...
- Details on findings and actions for a shop received LRU
- Details on SRU or piece parts

Aircraft technical incidents: delays, cancellations etc.

Aircraft reliability
- Technical, Maintenance and Cabin logbook data (pilot reports…)
- Summarized counts of delays, cancellations, pilot reports, etc.

Aircraft utilization
- Detailed aircraft hours, cycles and utilization data.
- Changes in aircraft ownership, operator, long term out-of-service, engine model, etc.

Aircraft configuration
- Details on Service Bulletin or Modification incorporation.

Scheduled Maintenance optimization

Scheduled Maintenance

Aircraft Event

LRU Removal

Shop findings

Piece parts

Service Bulletin / Modification

Findings

Links between records

Aircraft Logbook

Summary Counts

Aircraft Hours and Landing

Aircraft Status change

Service Bulletin / Modification incorporation.
### Record structure

**Field name**

**Field identifier (XML element)**

**Field example**

**Field Business rules**

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**TEIs organized in Segments in the Records**

**TEIs reused across all the records**

**Records are XML files complying with XML schemas**

**Spec 2000 - Reliability chapters**

- TEIs reused across all the records
- TEIs organized in Segments in the Records
- Records are XML files complying with XML schemas
Component and aircraft performance measurement, based on Chapter 11 reported data.

**Dispatch metrics**
- Technical Dispatch Reliability (TDRL), Schedule Interruption Rate (SREL),...

**Service difficulty metrics**
- Flight incidents rates (Diversion, Air turn back, Aborted take-offs, ...)

**Component reliability metrics**
- Mean Time Between Removal (MTBR), Mean Time between Failure (MTBF), ...

**Logbook rates**
- Cabin log rate, ...

**Aircraft Logs**
- Aircraft Logbook, ...

**Aircraft Hours and Landing**
- Aircraft Hours and Landing, ...

**Aircraft Event**
- Aircraft Event, ...

**Shop findings**
- Shop findings, ...

**LRU Removal**
- LRU Removal, ...

**MTBR = ((Quantity Per Aircraft) multiplied by (Flight Hours)) divided by Total Removals (Unscheduled plus scheduled)**

\[
MTBR = \frac{(QPA \times FHL)}{TRS}
\]
Major and minor changes

Minor changes

- LRU Removal
- Shop findings
- Piece parts
- Service Bulletin / Modification
- Scheduled Maintenance
- Aircraft Event
- Aircraft Logbook
- Summary Counts
- Out of Service
- Aircraft Hours and Landing
- Aircraft Status change

Major change to better identify the reported task

Chapter 11: 2 new records

- Details on scheduled and unscheduled out-of-service
- Quantity per aircraft of key components either by aircraft or by fleet
- CSDD
  - 19 new or updated definitions

Chapter 13.2

- New metrics: Dispatch and Operational Availability (calculated from new OOS record)

ATA Spec2000

Chapter 13

- Reliability metrics

What’s new in the next Spec issue?

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Collected Data centralized into the Airbus customer service database (ISDS) and correlated with Airbus related information.

**Airbus strategy to develop automated Data exchange with operators:**
- Exchange driven & customized by the Operators
- Secured transfer, standard based (Spec2000)
- Lower or no more manual workload
4 Use case

Full automatic Data exchange

Specific solution implemented with AMOS and AMASIS:
- No human intervention needed
- Administration module to manage the type of information and the frequency of the exchange

Data upload

Manual upload of SPEC2000 chapter 11 compliant data or Airbus Data File Transfer compliant format
Dedicated interface ("Data Loading Interface") available on AirbusWorld
Why reporting?

- Components performance management: WISE MAST, IDOLS for Components
- IDOLS for Maintenance Costs
- Maintenance Costs Management
- Scheduled Maintenance optimization: IDOLS for Scheduled Maintenance
- Operational aircraft Reliability management: IDOLS for Reliability GOLD, SILVER, BLUE
- Recommendations for design improvement and tips: WISE Knowledge base WISE MAST
- Financial modification evaluation: Service Bulletin reporting for Technical Data update MOD Assessment Tool
- In-Service data sharing: SB Reporting Tool

We feed Fleet Performance tool-box
Summary

• Mature standard, widely adopted in the Industry
• Standard still improving

• Reporting is key for the improvement of the Aircraft and Component reliability.
• Reporting according to the standard is more efficient.
• Reporting from maximum of actors is more accurate.

• RIG open to new members. Next RIG F2F meeting to be held in November 2014 in Dallas.