International Military Airworthiness Regulation Conference

Difficulties Faced by Airbus Defence and Space During the KC30 Tanker Program

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- Airbus Derivatives Certification Process
- MRTT Modification complexity
- MRTT Certification Complexity
- MRTT Program status
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Background

- The MRTT is now a very successful program but it had a quite difficult start.
- MRTT program birth was a long lasting one (2000 – 2008).
- Four different configurations
  - Engines, AAR devices, Radios, Cabin
- Four different independent customers
# Background

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AIRBUS Derivatives Certification Process

- Civil STC over the commercial platform
- Military TC/STC
AIRBUS Derivatives Certification Process

- **Civil certification**
  - Same Certification Basis as the green aircraft
  - Certification Review Items (CRI)
  - Associated to AIRBUS NTO.

- **Military Certification**
  - Same Certification basis as the green aircraft
  - Military Certification Review Items (MCRI)
AIRBUS DS operates under two major Design organization Approvals:
EASA DOA: EASA.J21.032 – DOM DP-000-033
INTA ROD: INTA/ROD/003 – DDOM DP-000-075

In addition AIRBUS Defence & Space holds approvals from other NAAs:
- CoA: AEO – Compliance through CEMP
- UK Mod: DAOS through recognition of INTA ROD
- CAA: DOA under DP-000-078
- DGA: DAOS through recognition of INTA ROD
- Germany BAAINBw: SbF under DP-000-89
MRTT Modification Complexity

**FEM Models:**
- 9 Static & Fatigue
- Flutter (Full aircraft)

**CFD Models:**
- Pod-pylon
- Sensors and antennas

**Benches:**
- B3+ (EIS/FMS)
- Engineering Simulator

- 280,000 models
- 9,000 green A/C models
- 3,000 structural parts and
- 6,000 system new parts designed
- 1,000 design solutions

- 50 new computing LRUs
- 450 new wiring harnesses.
- 58.5 Km of new cabling
- 1,700 connectors
- 100,000 rivets
- 50,000 screws
- 12,000 different parts
- 250 special tools
- 10,900 kgs (10% of the MWE).
### MRTT Modification Complexity

#### Military Systems:
- MIL COMMS/NAV
- MIL IDENT
- MIL Data Links
- Self-protection
- Formation Flight
- Mission Planning
- Type Specific
  - Air to Air Refueling
  - Special Sensors and Cameras
  - Mission Console

#### Impacted Civil Systems:
- Flight Physics
  - Aerodynamics
  - Loads
  - Performance
  - Handling Qualities
- Systems
  - FMS
  - Interphone
  - FCS
  - FWS
- Structure & Fatigue
MRTT Modification Complexity

- ATA 21: Air conditioning System
- ATA 22: Auto Flight
- ATA 23: Communication
- ATA 24: Electrical distribution
- ATA 25: Equipment / Furnishing
- ATA 26: Fire Protection
- ATA 27: Flight Controls
- ATA 28: Fuel
- ATA 29: Hydraulics
- ATA 31: Indicating/Recording
- ATA 33: Lights System
- ATA 34: Navigation

- ATA 35: Oxygen
- ATA 36: Pneumatic System
- ATA 38: Water/Waste
- ATA 43: Tactical Comms
- ATA 46: Mission System
- ATA 48: Air-to-Air Refuelling
- ATA 52: Doors
- ATA 53: Fuselage
- ATA 55: Stabilizers
- ATA 57: Wings
- ATA 92: Electric installation
- ATA 99: Defensive Aids System
MTTT Certification complexity

- Lack of specific Tanker Regulation
- Adaptation of Civil Certification Review Items
- Development Military CRIs
- Consideration of effects on Receiver aircraft
- Operational scenarios
MTTT Certification complexity

- Four different Military Authorities
- Two different Civil Authorities
- MoUs with INTA
- Private Finance Initiative in FSTA

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# MRTT Program Status

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## AIRCRAFT DELIVERIES

- **A330 MRTT**
- **A330 FSTA FRU**
- **CONTINUED AIRWORTHINESS FORUM**
- **AIRCRAFT DELIVERIES**
- **EARLY OPS**
- **MATURITY PLAN**
- **A330 MRTT ENHANCED**

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IMARC 2016
A330 MRTT Continuous Airworthiness managed by AIRBUS DS based on EASA DOM and Military ROD procedures, based on IR21 and EMAR21.

A Continuous Airworthiness Forum (CAF) has been set up for proper coordination and information on any A330 MRTT fleet issues. This Forum includes all MRTT Military National Airworthiness Authorities, including CoA’s DGTA.

DGTA has signed a MoU with INTA for mutual recognition. In addition to the MoU, an Specific Certification Process (SCP) document has been agreed between INTA and DGTA for the Management of KC30 Changes to the Type Design.
MRTT Program Status

CONTINUED AIRWORTHINESS FORUM

1. Collect
2. Report
3. Investigate
4. Disseminate
5. Collect Feedback
EMAR Opportunities

- AIRBUS DS is seeking application of EMARs for the complete aircraft life cycle.
- While specific EMAR requirements apply to FAF and MMF MRTT programs we still suffer problems for Certification Basis acceptance (10 revised MCRIs + 6 new MCRIs).
EMAR Opportunities

1. Facilitate the recognition of a leading Military National Authority for each AIRBUS Defence & Space product.
2. Seek Agreement from other Military NAAs through appropriate MoUs for the avoidance of duplicating activities.
3. Reliance on a single Continued Airworthiness process agreed by all NAAs.
4. Provide our current customers with more efficient and flexible Services.
5. Reduction of development costs for new customers and hence increase our company competitiveness.