

From Final Assembly to Delivery – Flight Testing Production Aircraft at Airbus in Hamburg



Airbus
COMMERCIAL AIRCRAFT
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AIRBUS

Introduction

- 1994 Vocational training
- 1997 Studies in Aeronautical Engineering (HAW Hamburg)
- 2001 Studies in Air Transport Management (Cranfield)
- 2006 Flight Test Engineer training (Airbus, EPNER)
- Since 2006 Active LFTE in Toulouse und Hamburg
- Since December 2019: Leading the Hamburg Flight Test Team



Airbus Group Flight Test Teams

- Airbus Commercial Aircraft
Toulouse, Hamburg, Tianjin, Mobile



- Airbus Defense and Space
Sevilla, Getafe, Manching



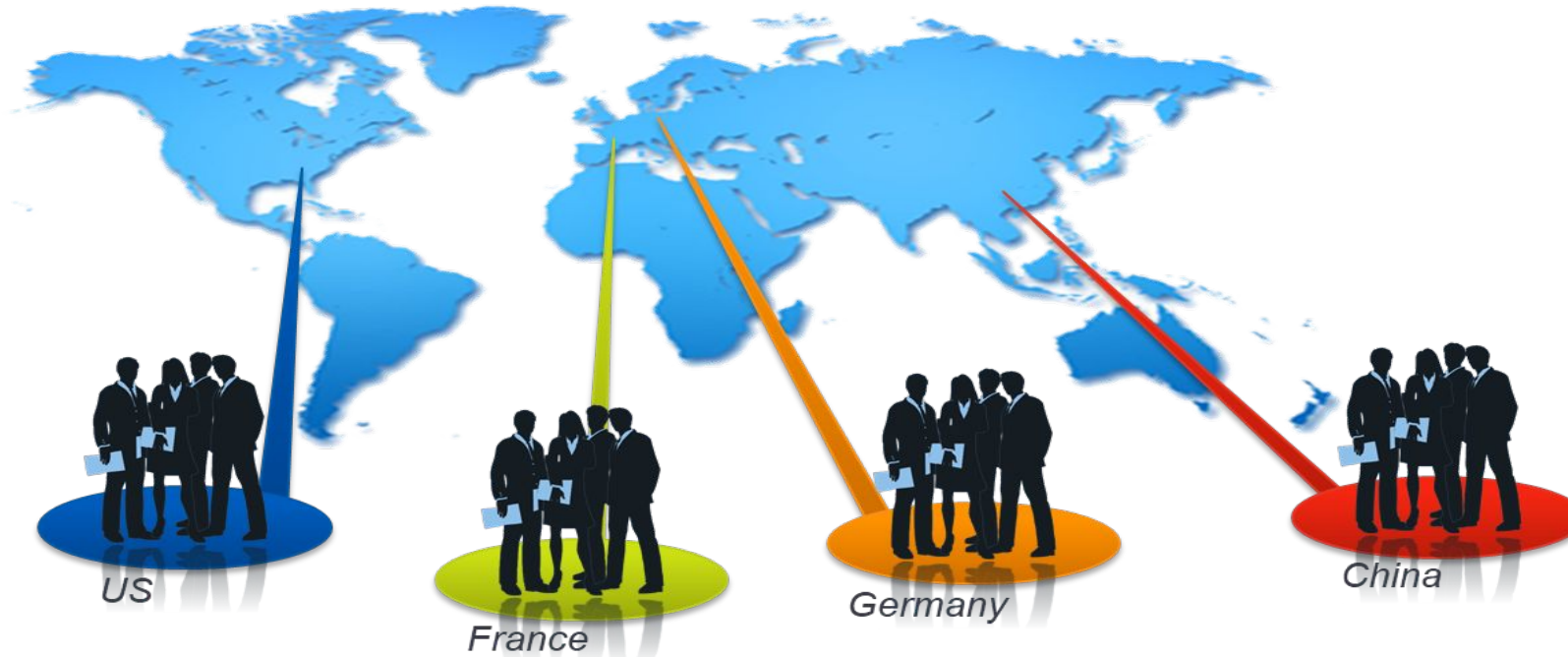
- Airbus Helicopters
Marignane, Donauwörth



Airbus Commercial - Global serial aircraft flight test activities

- Toulouse (A320 Family, A330, A350)
- Tianjin (A320 Family, A330 and A350 cabin furnishing)
- Mobile (A220, A320 Family)
- Hamburg (A320 Family)

Airbus Commercial - Teams and mission



- Demonstrating compliance to original type design (EASA Pt. 21 requirement)
- Quality assurance aspect
- Playing a key role in aircraft delivery

Tasks and qualifications of flight test team members

Test Pilot

- Responsible for safe conduct of flight

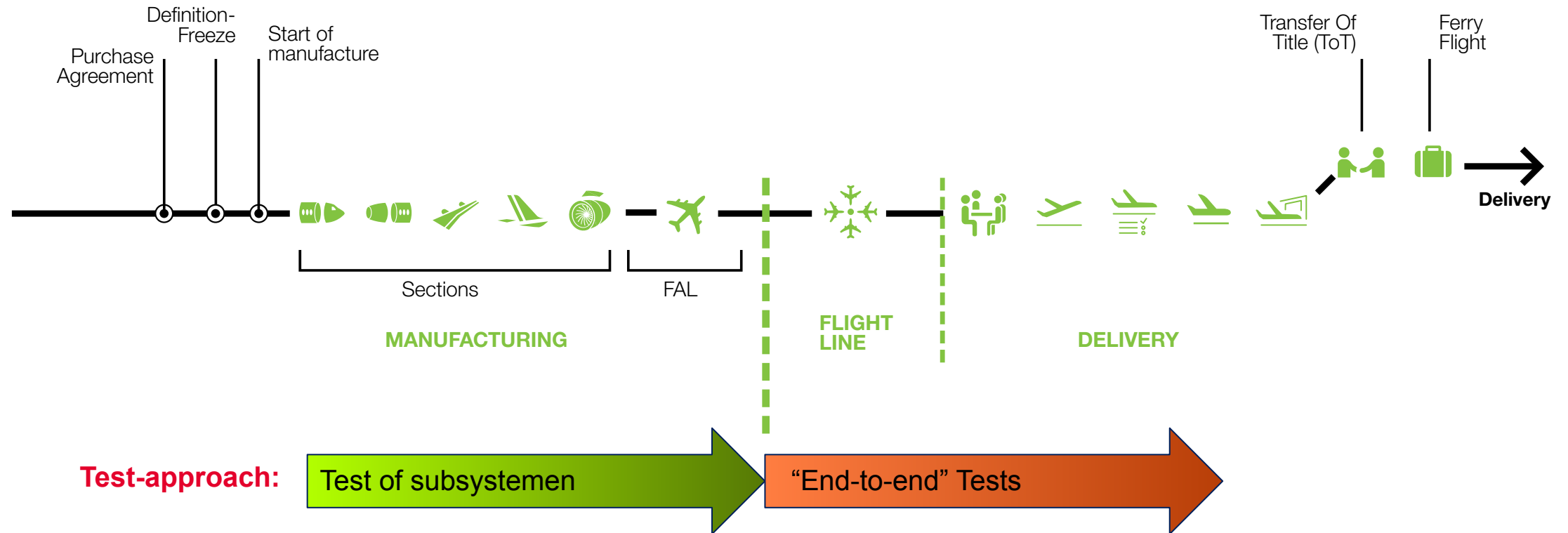
Lead Flight Test Engineer (LFTE)

- Responsible for establishing the flight test programme
- Responsible for integrating the test programme into the flight operation
- Third crew member in the cockpit (=third pair of eyes)

Ground Test Engineers / Cabin System Specialist

- Responsible for ground tests
- Responsible for cabin tests and for safety of cabin occupants during Customer Acceptance Flights

Where is flight test in the production cycle?



Our mission in detail...

First aircraft operations (delegated to Quality Assurance department)

- Avionic tests and destorage of the Auxiliary Power Unit (APU)
- Engine Cranks (“Dry” and “Wet”)
- Engine destorage
- Engine “Power Assurance Run”, Low Speed Taxi and compensation of Standby Compass

High Speed Taxi tests (“Rejected Take-Off Test”)

- Crewing: Test Pilot und Ground Test Engineer in the cockpit
- First tests of Autoflight-, Engine-, und Brake Systems, etc.

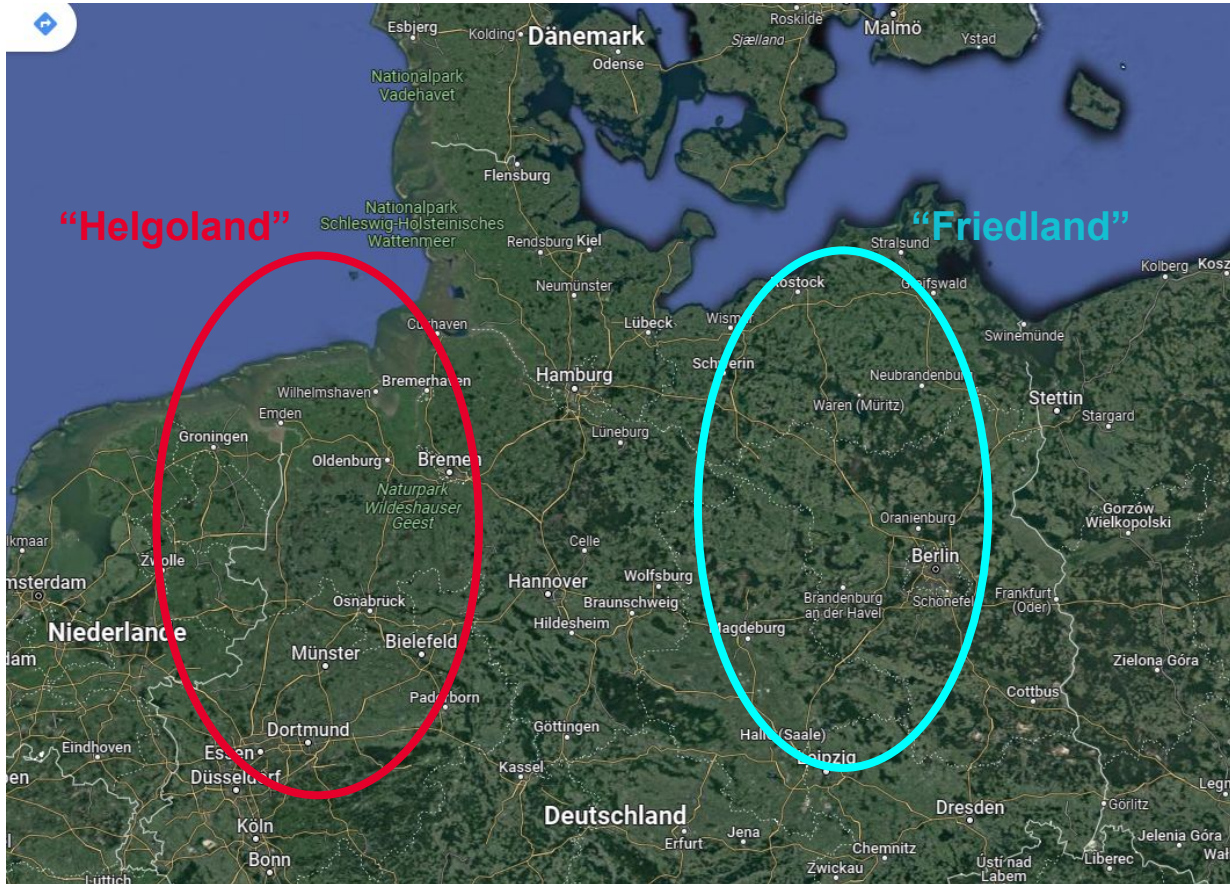
First Flight and possible Check Flights

- Crewing: 2 Test Pilots, 1 LFTE, 1 Ground Test Engineer
- Tests within the entire flight domain (low speed, high speed,...)
- Tests of main and backup systems (incl. degradation of systems)
- Depressurisation

Customer demonstrations

- Ground Tests (1 Ground Test Engineer)
- Customer Acceptance Flights (2 Test Pilots, 1 LFTE, 1 Ground Test Engineer)

“Our” Airspaces



- Supported by an individual controller on dedicated frequency (flight safety)
- Adjacent sectors can be used upon request (ATC coordination)
- Lower Airspace (<FL240)
 - DFS Center Bremen (2 Positions for West and East)
- Upper Airspace (>FL240)
 - DFS Center Karlsruhe (East)
 - DFS Center Maastricht UAC (West)

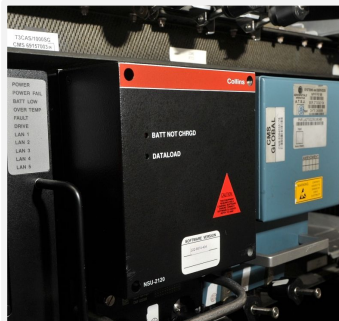
Our (little) Flight Test Installation



CABIN



COCKPIT

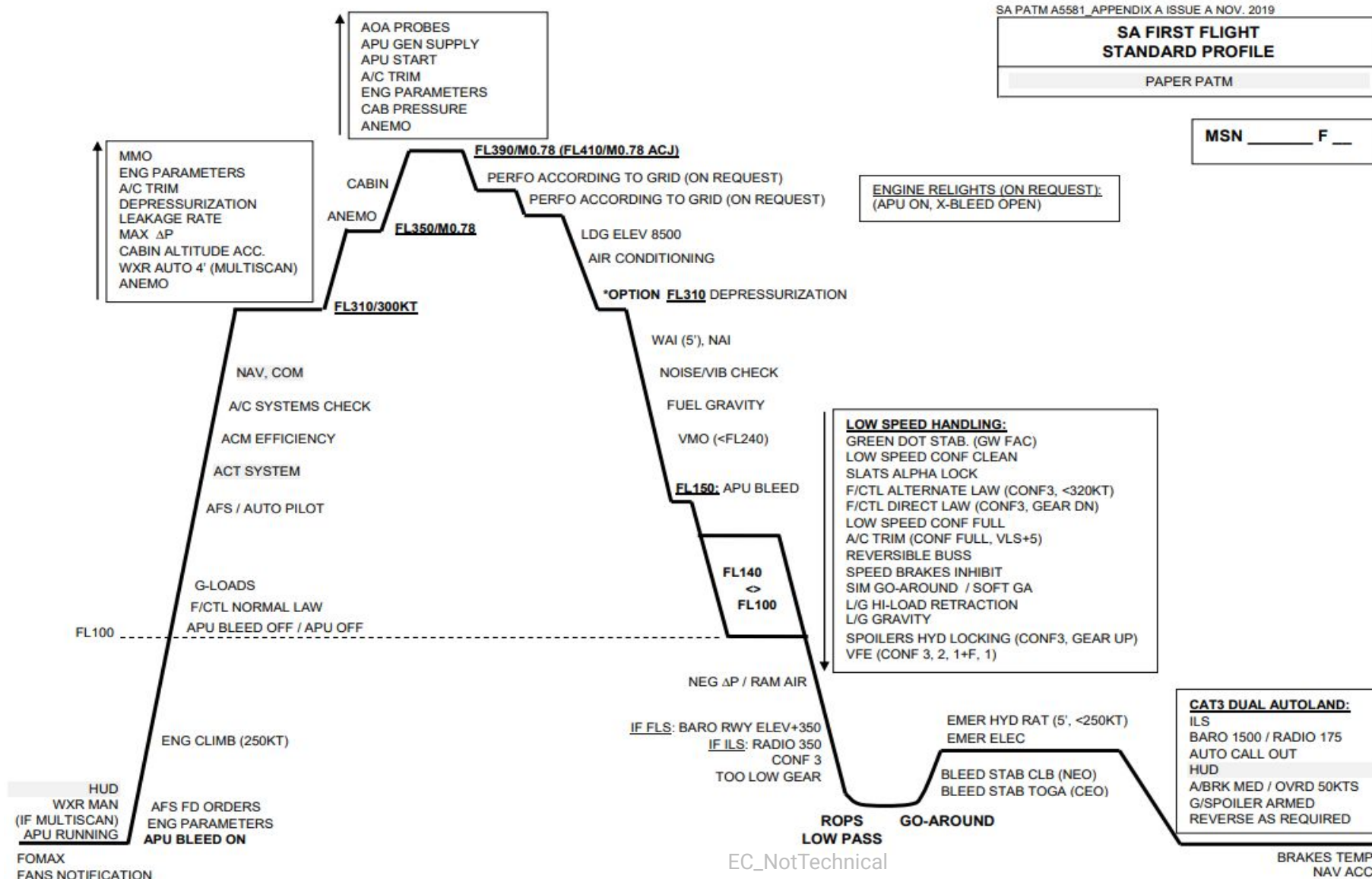


AVIONICS
COMPARTMENT

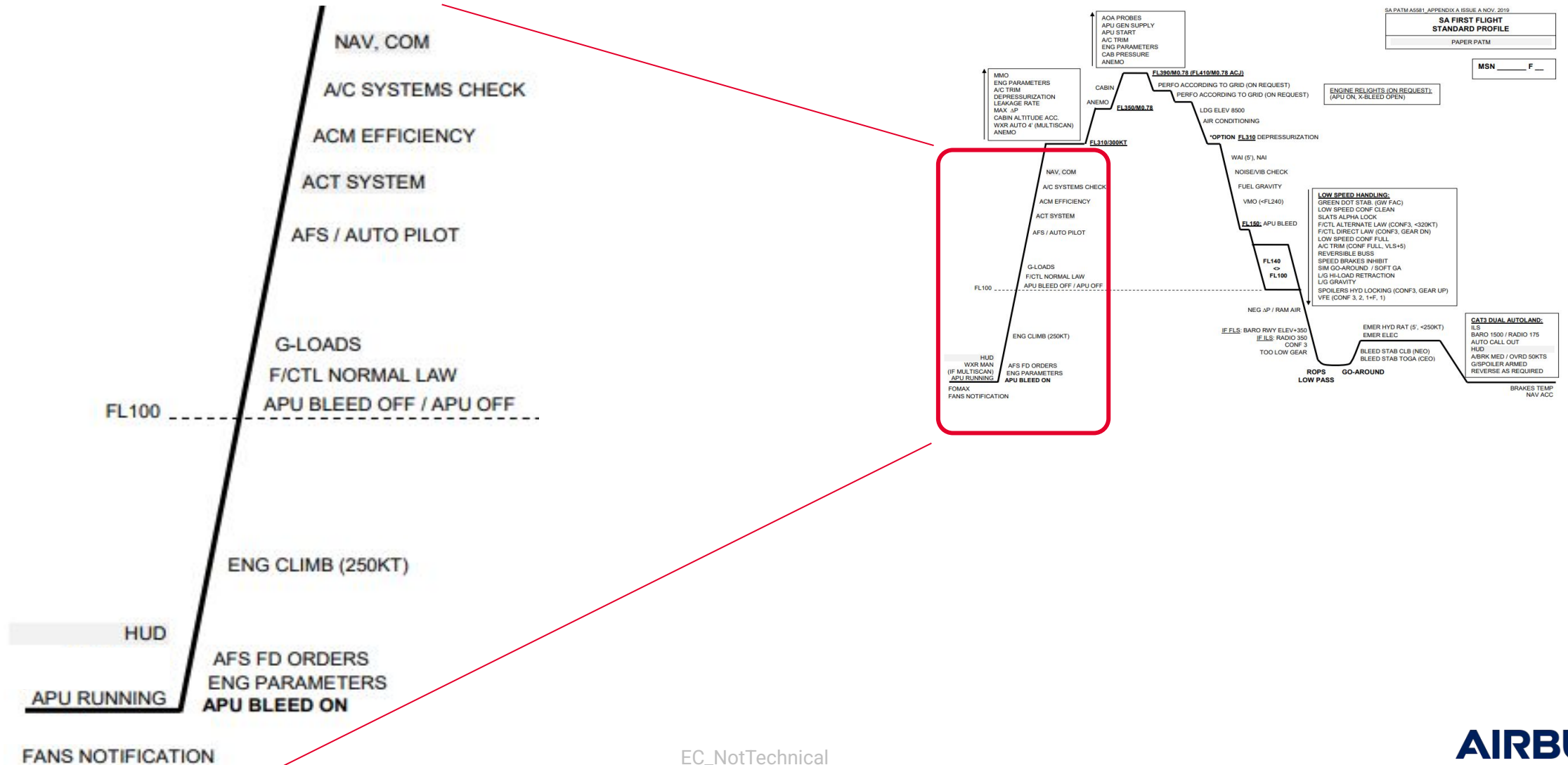


Database

Typical flight profile of a First Flight

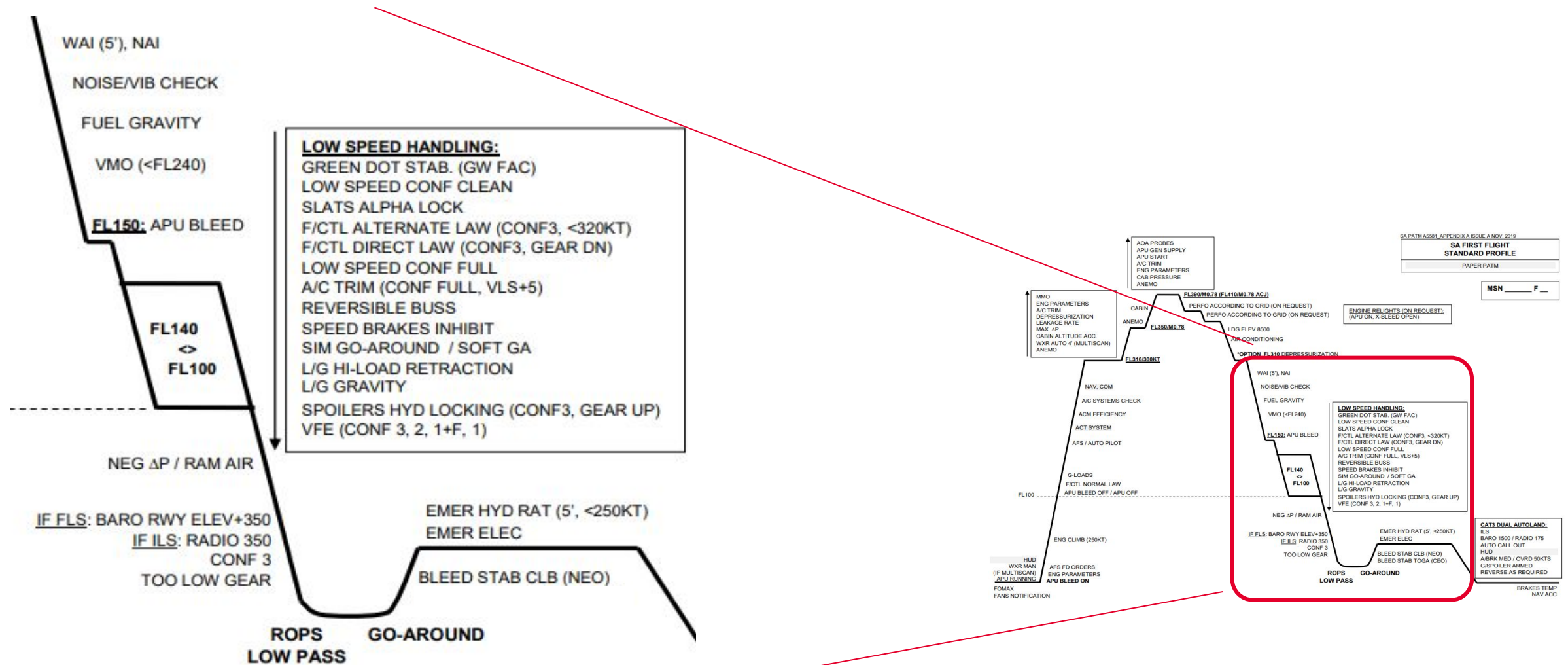


Typical flight profile of a First Flight





Typical flight profile of a First Flight



Typical flight profile of a First Flight

CAT3 DUAL AUTOLAND:

ILS

BARO 1500 / RADIO 175

AUTO CALL OUT

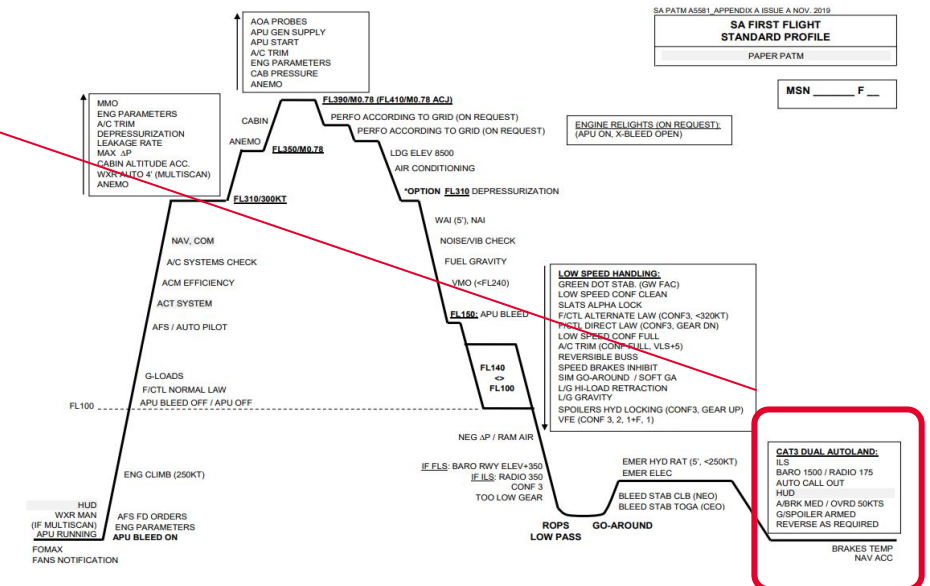
HUD

A/BRK MED / OVRD 50KTS

G/SPOILER ARMED

REVERSE AS REQUIRED

BRAKES TEMP
NAV ACC



Mission during Aircraft Delivery

Ground "demonstration":

- Execution of a series of ground tests, incl. backup and emergency systems
- Engine run

Flight "demonstration":

- Execution of a selection of system checks
- Demonstration of cabin systems and cabin checks by our customers

Mission: contributing to establishment of "Statement of Conformity" (EASA Form 52)

Thank you

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