IATA

ANZSASI 2012   Sydney 1 – 3 June

Evidence Based Training
For Airline Pilots

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EBT Project Team

to represent, lead and serve the airline industry

APATS BANGKOK 20 / 21 Sep 2011
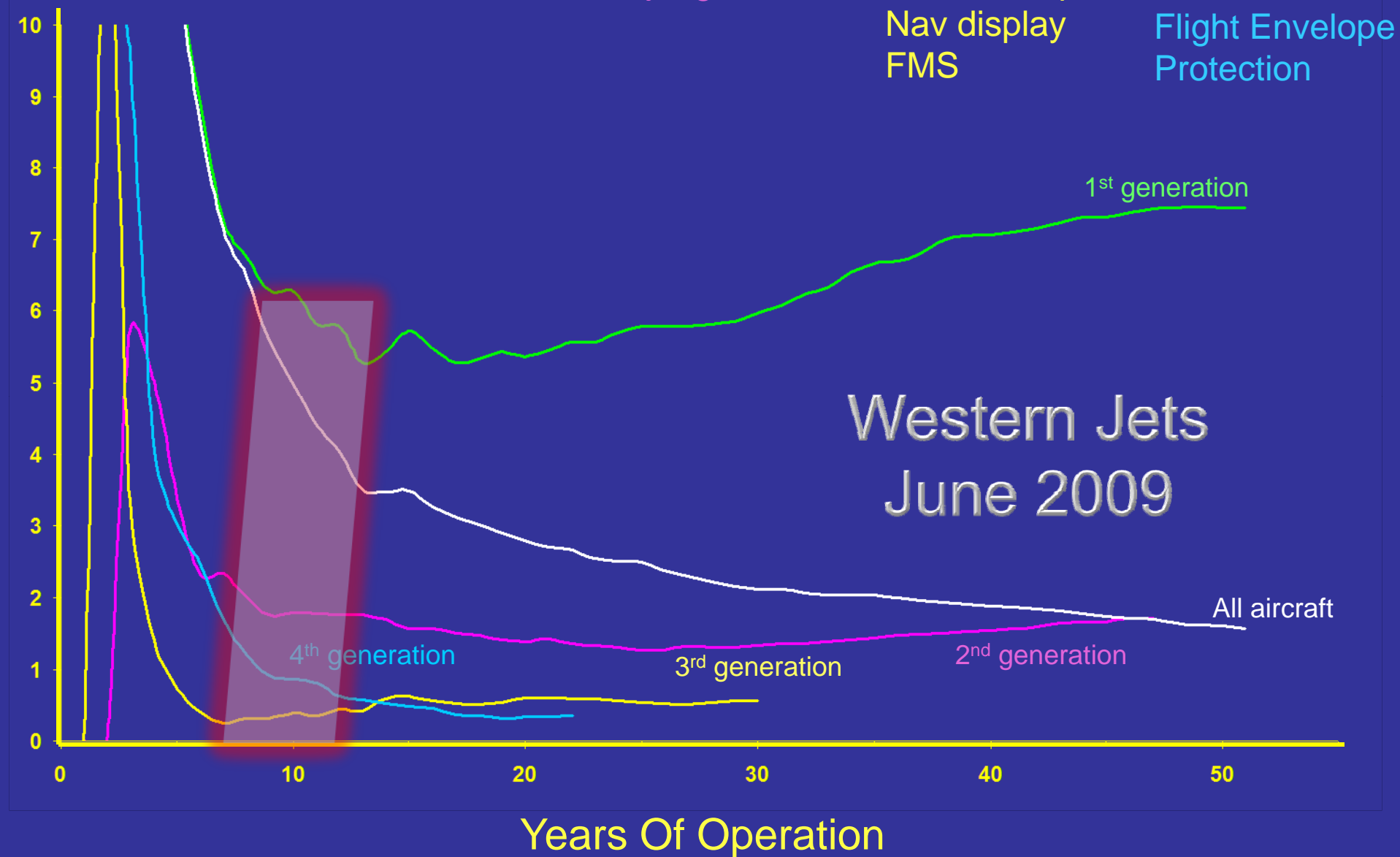
Hull Loss per million departures vs. Years Of Operation — Western Jets, June 2009

1st generation: Early jet
2nd generation: 2nd jet generation
3rd generation: Glass-cockpit, Nav display, FMS
4th generation: FBW, Flight Envelope Protection

Source: Airclaims, Airbus

Mandatory Items

- ➢ Flight Preparation
- ➢ Before take-off checklist
- ➢ Engine failure between V1 and V2
- ➢ Rejected take-off before reaching V1
- ➢ Instrument departure and arrival procedures
- ➢ Engine-out Precision Approach to minima
- ➢ Non-Precision approach to MDA
- ➢ Go-Around 1 engine-out at DA
- ➢ Landing critical engine inoperative

The Problem

➢ By regulation flight crew training and checking is based on <u>events</u>, many of which have become <u>highly improbable</u> in modern aeroplanes.

➢ Training programmes are consequently <u>saturated</u> with items that <u>may not necessarily mitigate the real risks</u> or enhance safety in modern air transport operations.

➢ Automation control, flightpath guidance and monitoring <u>not currently adequately considered</u> in regulations

Black Swans
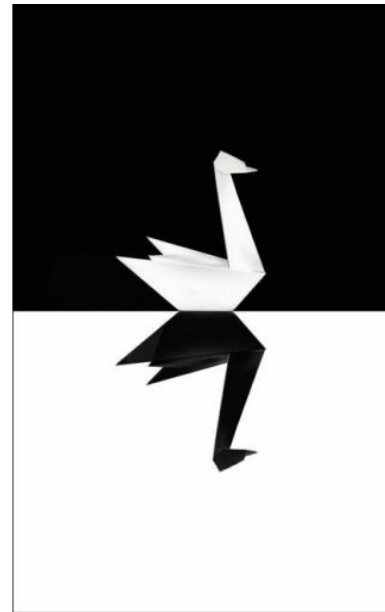
When people and complex systems interact, there will always be an infinite number of possible outcomes

Sioux City – "Black Swan"

QF 32 – A380 "Black Swan"

© EPA

QF 32 - A380 "Black Swan"

"The pilots were inundated with 54 computer messages alerting them of system failures or impending failures" during the two-hour airborne drama with more than 450 passengers aboard" said Capt Woodward, Vice - President of the Australian and International Pilots Association

Capt Woodward said

"I don't think any crew in the world would have been trained to deal with the amount of different issues this crew faced"
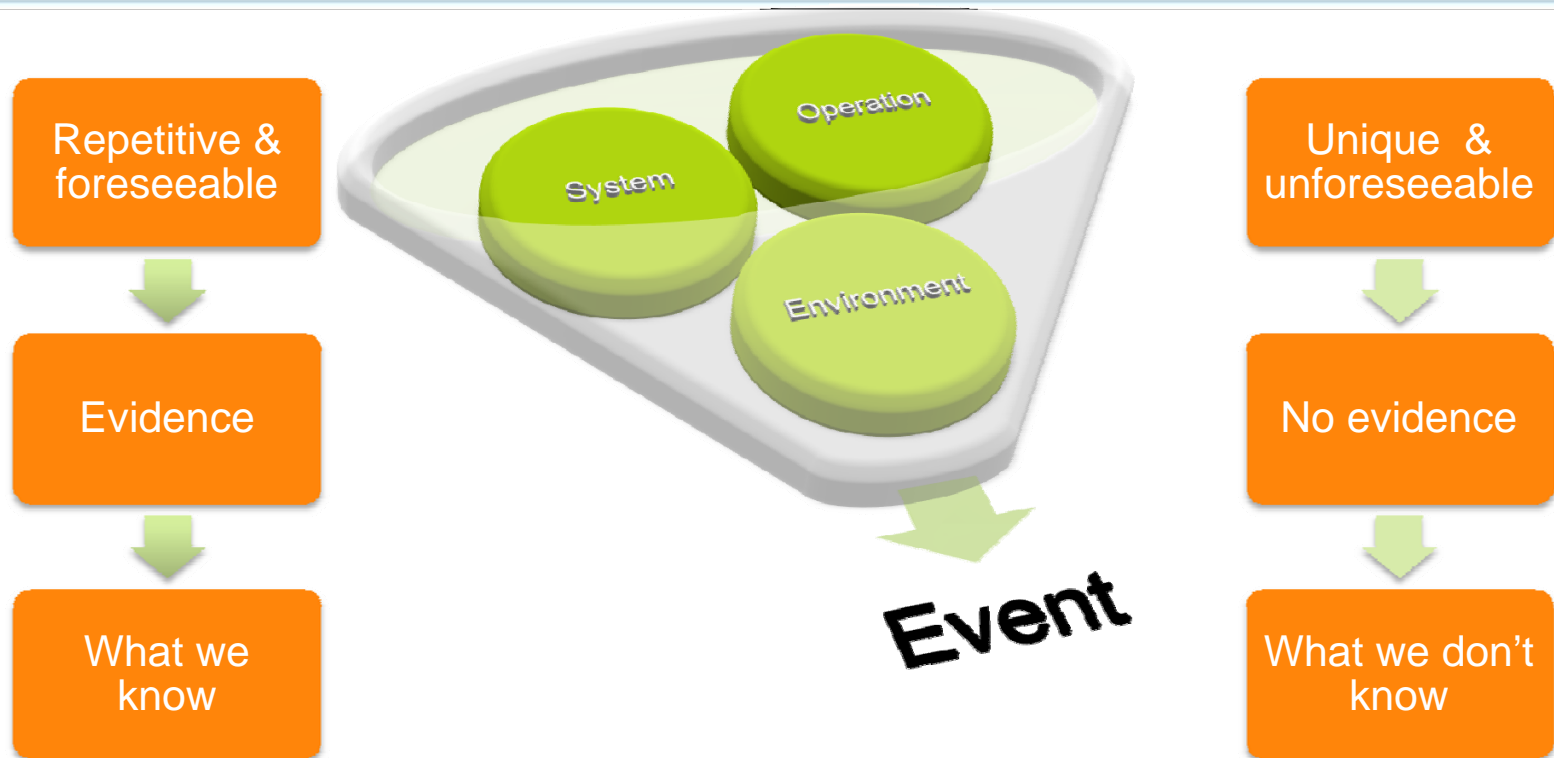
ENSURE COMPETENCY TO MANAGE BOTH FORESEEN AND UNFORESEEN EVENTS

- ➢ LOSA Archive data reports
  - ➢ Top 10 issues
  - ➢ Error Management effectiveness
- ➢ Flight Data Analysis studies
- ➢ Accident / Incident analysis
- ➢ Studies of ASR / ASQF Airline results
- ➢ Skill decay & Skill Retention Studies
- ➢ Flight deck Automation studies
- ➢ STEADES
- ➢ Airbus Special FDA Reports
- ➢ Boeing Pilot Survey

DATA SOURCES

Methods of Analysis – General

➢ **Results from the individual analyses are:**

➢ Distilled into singular declarative sentences
➢ Entered in Findings database
➢ Linked to:

➢ Data Report Objectives
➢ Phases of Flight
➢ Data Sources
➢ Topics discussed in the Conclusion
➢ Context and Comments surrounding findings

Methods of Analysis – General

> **Findings data base enables:**

> Partitioning the data in more practical ways.
> Managing multiple results from different sources
> View clear support of conclusions
> Traceability from conclusion back to source data and vice versa

Convergence

Some Findings - Priorities

➤ <u>Priorities</u> considered across aircraft generations

➤ One size does not fit all (Major differences across generations)

➤ Prioritisation validated by evidence

➤ Threat & Error Management = potential training scenarios

Threat and Error Management

- ➢ Threats & Errors considered across Flight Phases specific to aircraft generation

- ➢ "Trainability" a key feature

- ➢ Need to develop more effective monitoring and intervention

- ➢ "In – seat" training by instructors in certain exercises

Generation 4 Provisional "A List" *(∂ß order)*

- ➢ Adverse Weather
- ➢ Automation Management
- ➢ Compliance
- ➢ Go-Around Management
- ➢ Manual Aircraft Control
- ➢ Monitoring, cross checking, error detection
- ➢ Unstable Approach (recognition and management)

Typical Recurrent EBT Module

	1 Evaluation Phase	**2** Manouvres Training Phase	**3** Scenario Based Training Phase
Objective	• Assess competence • Identify training needs • Validate training system performance	• Train maneuver skills to proficiency. • Validate system performance and skill decay.	• Manage the critical threats according to evidence • Improve competency to manage foreseen & unforeseen threats
Conduct	• Line orientated One or more occurrence • Assessment of one or more KSA Competency Elements	• Sequence of deliberate actions to achieve a prescribed flight path • E.g. RTO, EF V1, OEI APP, OEI GA, Emer. Descent	• Line orientated flight scenarios • One or more predictable or unpredictable threats

EBT Program Implementation

Baseline EBT Programme

- Off the shelf solution
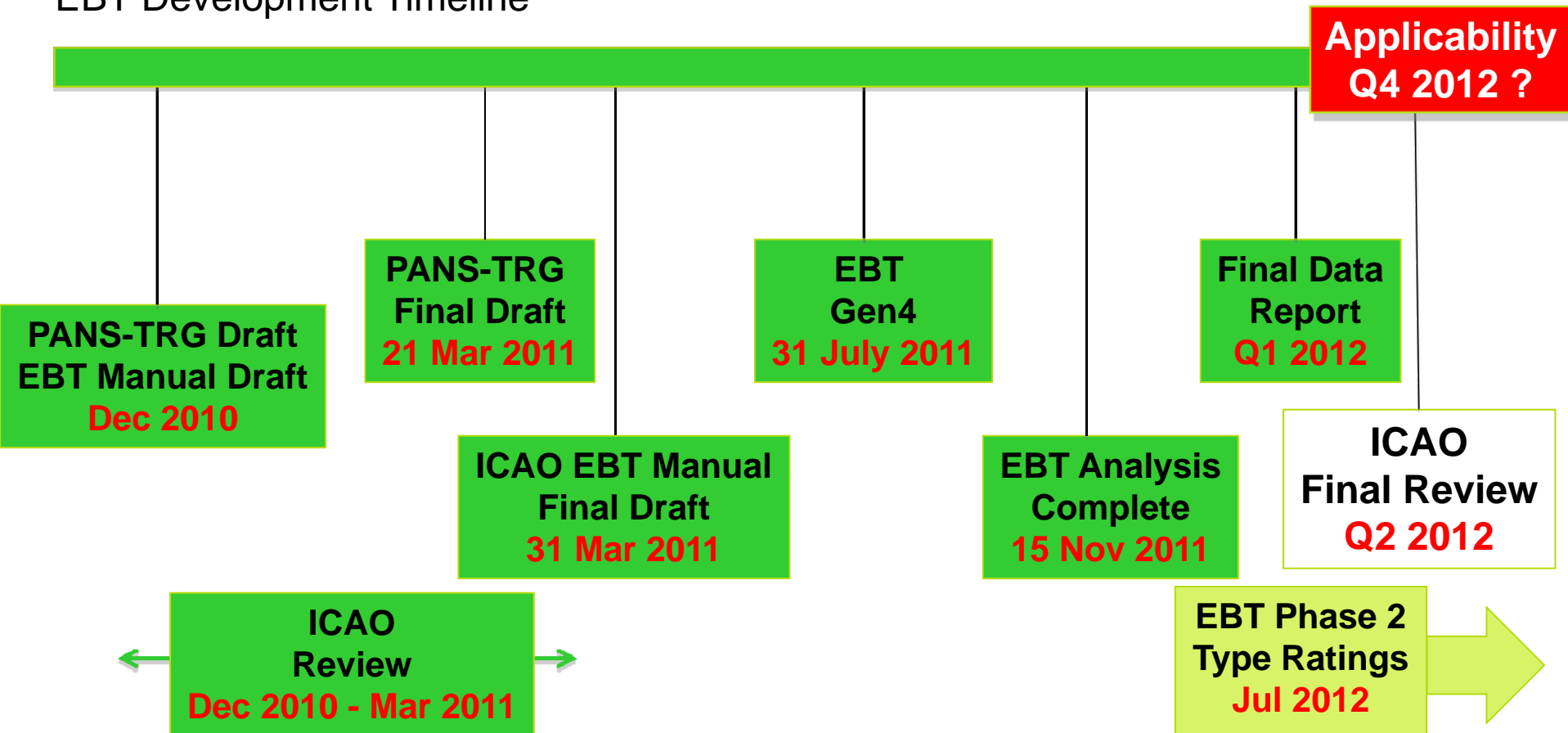- No analysis or design work by the operator required

Source: EBT Manual Appendices

Enhanced EBT Programme

- Data collection
- Aircraft type analysis
- Risk and training analysis
- Guidance development
- Program definition

Developed by the operator according the principles laid down in the EBT manual
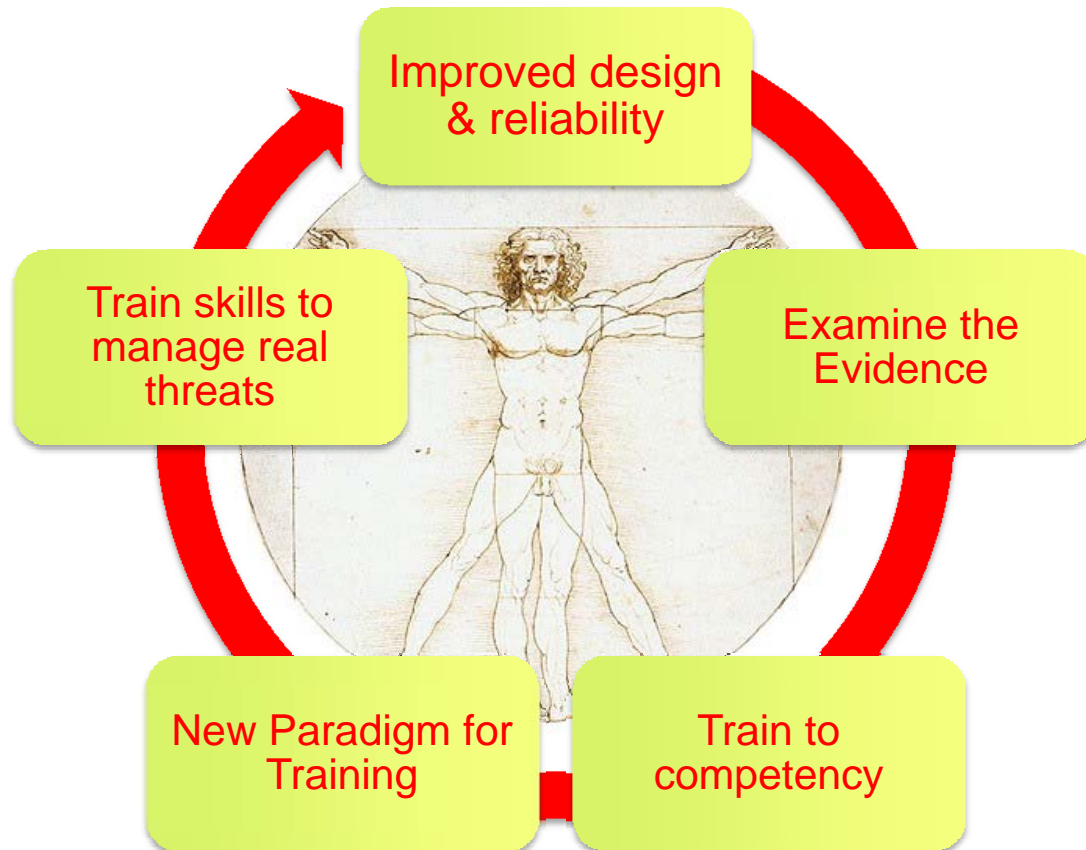
Proof of Concept Phase

➢ Adoption of EBT principles – Step 1 (existing rules)

➢ Baseline or Enhanced Programm

➢ Phase 1 (Recurrent)

  ➢ Emirates (Feb 2011) – GCAA

  ➢ Cathay Pacific (Dec 2011) - HK CAD

  ➢ Dragonair (April 2011) – HK CAD

  ➢ Qantas (2012) – CASA

  ➢ Virgin Australia (2012) CASA

  ➢ Air France (2012) – DGAC

  ➢ Air Transat (TBD) - Trspt Canada

  ➢ Qatar Airways (TBD) - GCAA

➢ Phase 2 (Type Rating)

  ➢ British Airways – UK CAA

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Thank you for your attention

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