Aircraft with Folding Wingtips

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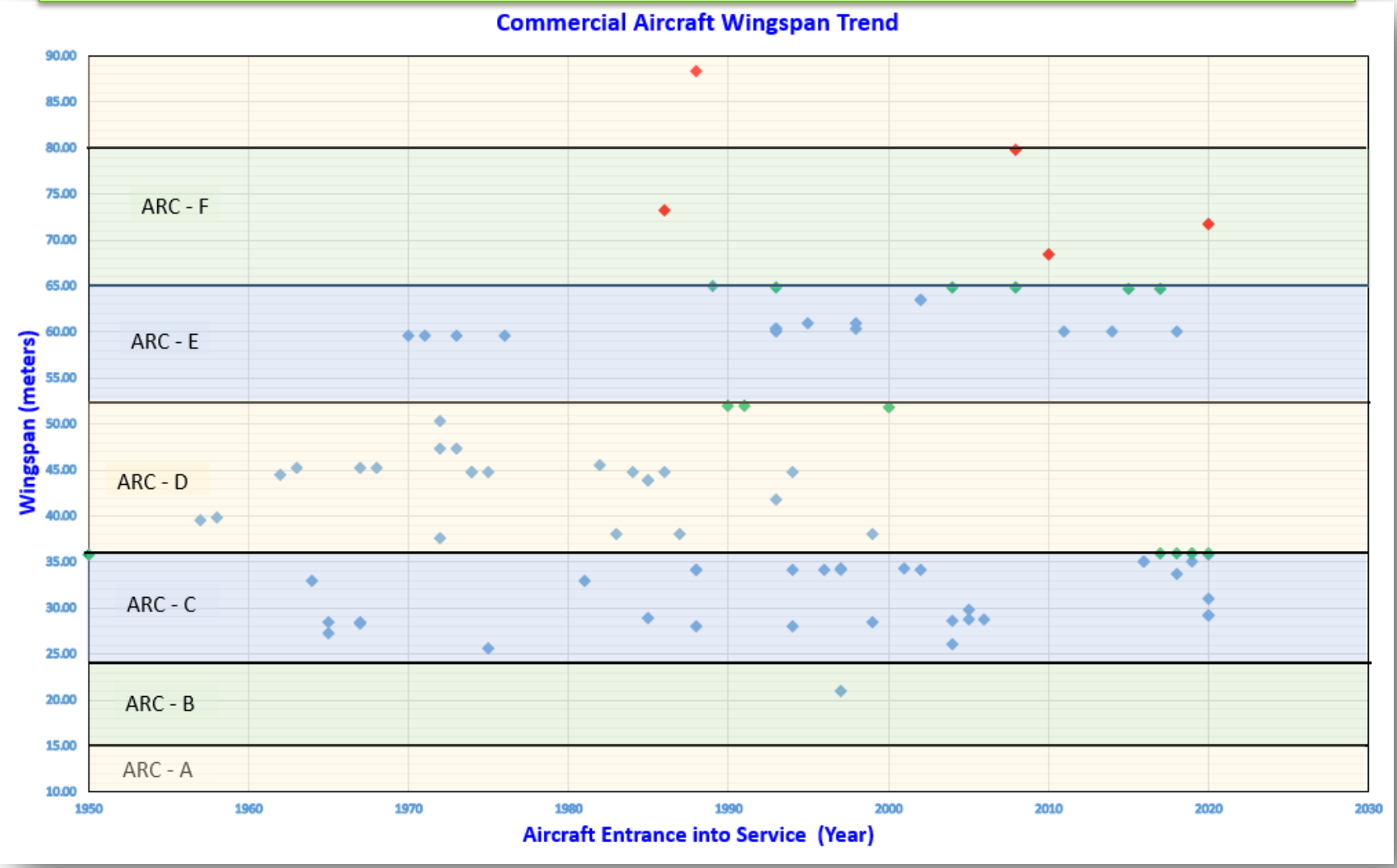
Demand for Greater Operating Efficiency

As the demand for greater operating efficiency has driven manufacturers to combine technological advances with increases to wingspans, successive new aeroplane models in each code letter category have increased wingspan to the span limit of the corresponding Aerodrome Reference Code letters.



Impact to Existing Aerodrome Infrastructure

Aerodrome design criteria **	Code E (m)	Code F (m)
Runway width	45	60
Taxiway width	23	25
Runway/taxiway separation	182.5	190
Taxiway/object separation	43.5	51

** Example of large set of design parameters

- Aerodrome Reference Code (ARC) E vs F
- Over 200 aerodromes accommodate Code F operations today
  - Exceptions and operational plans

Impact to Existing Aerodrome Infrastructure

- Today's approach to accommodate Code F aeroplanes may not be enough as the number of operations of these aeroplanes increases.

- Building new and upgrading existing infrastructure to current Code F standards is costly, and in some cases, impossible due to surrounding "encroachment".

A Solution to Existing Aerodrome Infrastructure

In order to balance the improved benefits to the airlines with any potential impacts to the aerodrome infrastructures, manufactures have to incorporate aerodrome compatibility into the design of aeroplanes.

Folding Wing Tip

- Longer wing spans improve aerodynamic efficiency and reduce fuel burn

BUT…

- Longer wing spans create aerodrome compatibility issues

THEREFORE:

- A Folding Wing Tip (FWT) maximizes aerodrome compatibility and retains aerodynamic efficiency and fuel burn reduction

A Solution to Existing Aerodrome Infrastructure

Folding Wing Tip

- Folding wing tips / wings have been found on military aircraft since the 1930s to offset the limited parking available aboard aircraft carriers.

- A folding wing was offered on the original 777-200 (mid-1990s), reducing the wingspan from Code letter E to Code letter D so that it could fit into a gate designed for DC-10.

A Solution to Existing Aerodrome Infrastructure

Folding Wing Tip

A commercial aeroplane entering into service in early 2020 will be equipped with a folding wing tip (FWT) system in order to secure the aerodynamic performance benefit of the larger span in flight, yet have the benefit of aerodrome compatibility of the lower ARC on the taxiway and apron systems.

FWT is seen as a favorable solution for:

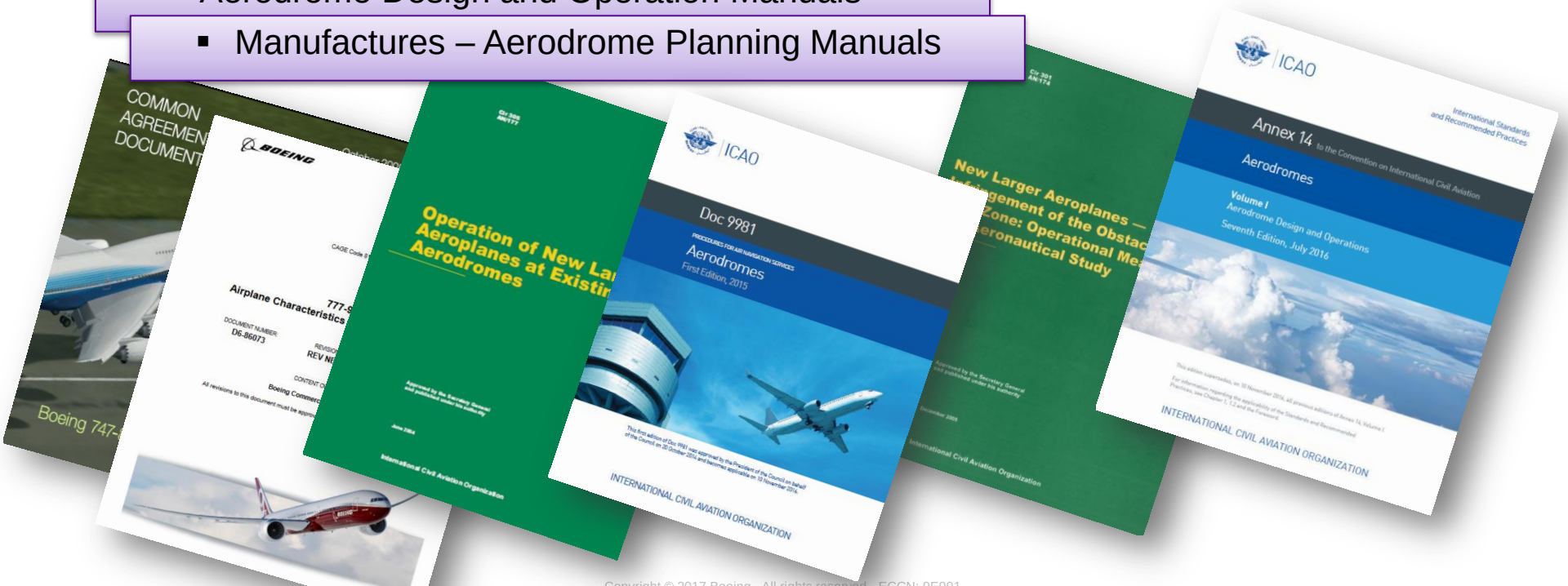
- Gate width (wingspan) compatibility
- Solving the Code F / E aeroplane-aerodrome challenge

The FWT is a less disruptive and more cost effective alternative to accommodate the higher code letter aeroplane as a result of a larger wingspan

Regulatory Support

- What works for the A380 and 747-8 today may not work as the number of Code F operations at each aerodromes increases.
- Great work has been done already to support NLA's
- There is still work to be done
  - Need of industry collaboration to update and produce new documents to accommodate Aeroplanes with Folding Wing Tips (FWT).

- Aerodrome Design and Operation Manuals
  - Manufactures – Aerodrome Planning Manuals



QUESTIONS