

A380 and B747-8 wake vortex separation design

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A380 – Design of the A380 Wake Turbulence Separations

- B747-400 (MTOW 400T), A380 (MTOW 560T)
- Need to redesign new separation for this “Super” Heavy aircraft
- Separation designed on the basis of relative comparison of LIDAR wake turbulence measurement

Back to Back tests

Spacing > 5 min

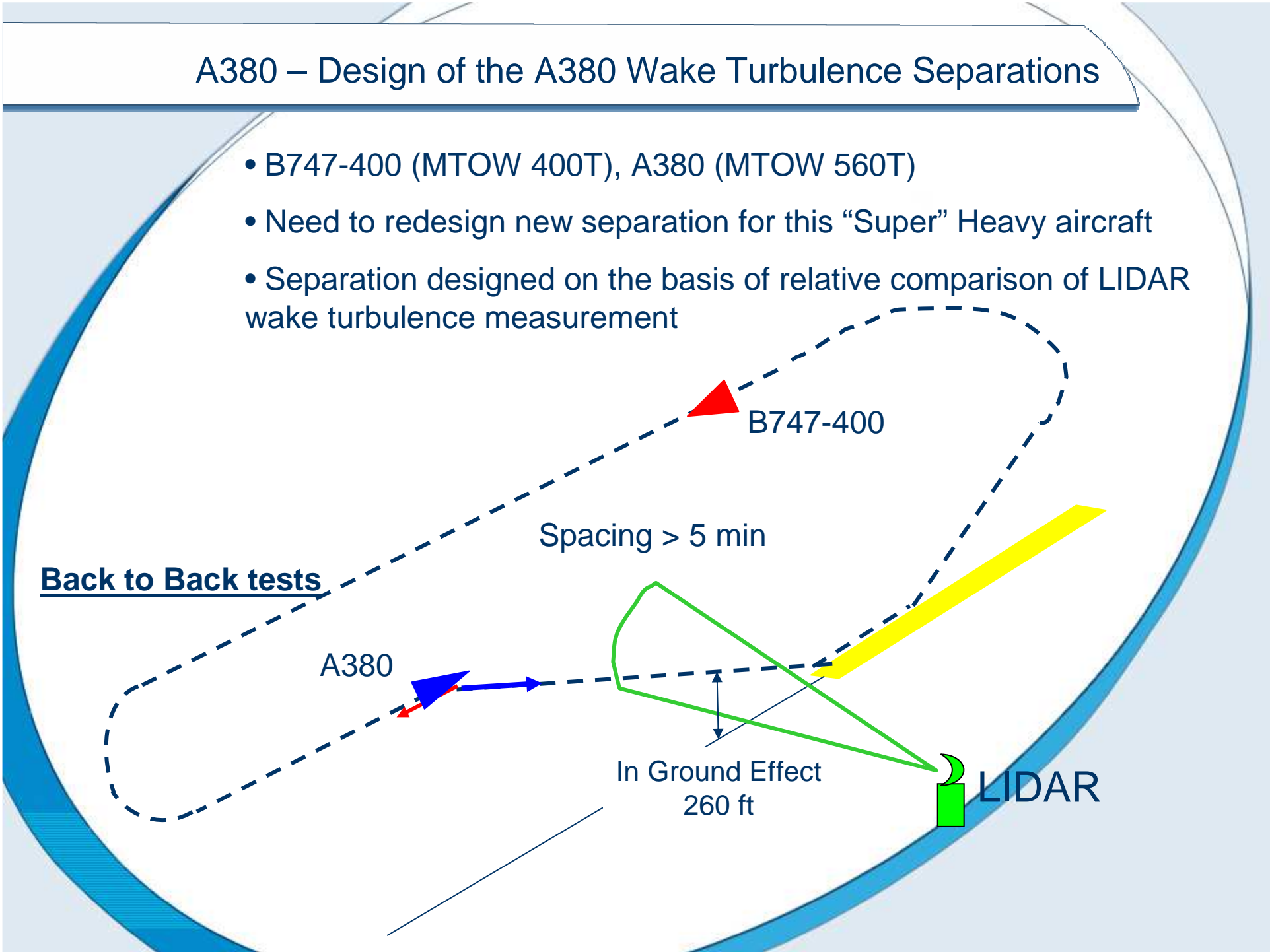
A380

B747-400

In Ground Effect
260 ft

LIDAR

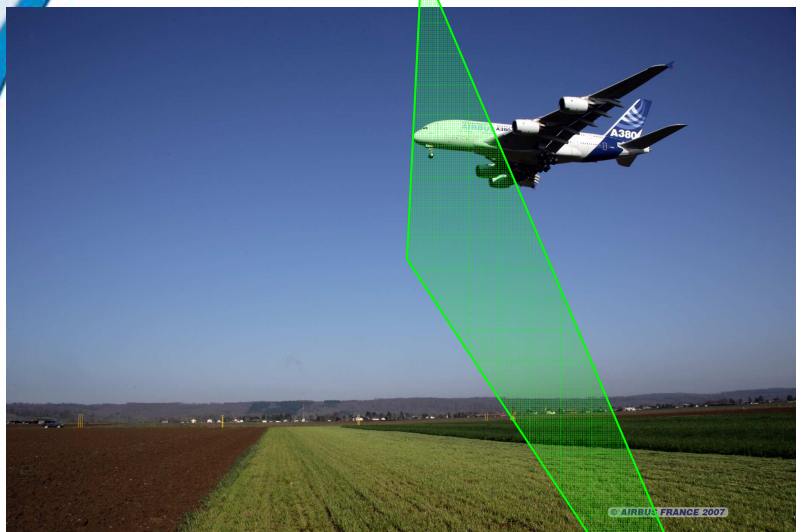
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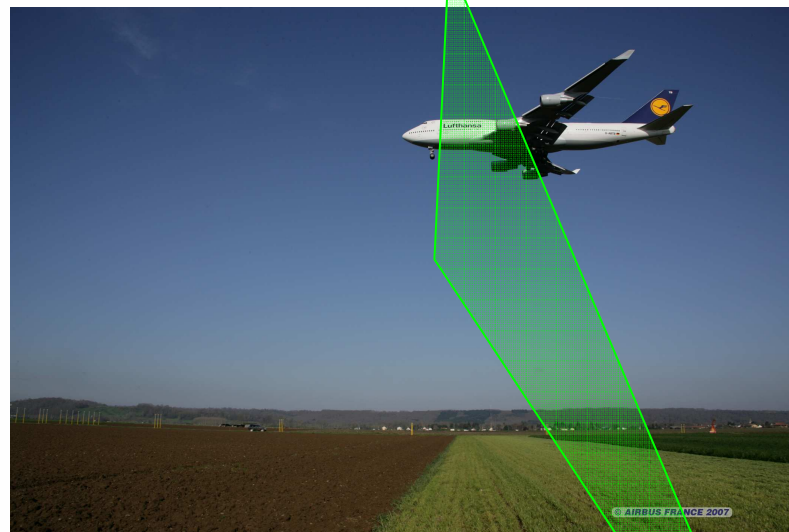
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Back to Back tests

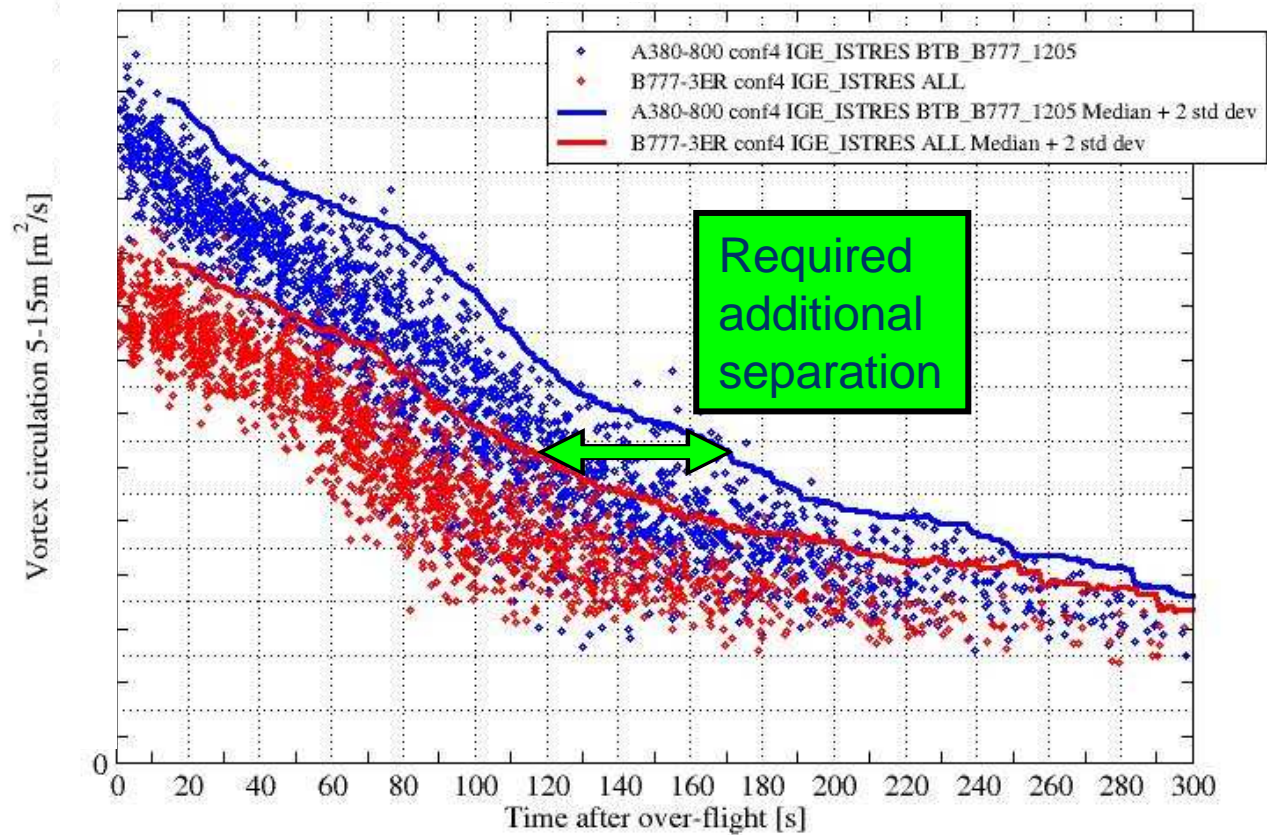
A380



Reference a/c: here B747-400



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Previous results

- First set of separations based on a first LIDAR measurement campaign delivered to ICAO in OCT 2006
- Reduction of the separations based on a second LIDAR measurement campaign delivered to ICAO in JUL 2008

<i>Preceding aircraft</i>	<i>Succeeding aircraft</i>	<i>Wake turbulence radar separation minima</i>	<i>Wake turbulence separation minima</i>	
non-	A380-800	A380-800	7.4 km (4.0 NM)	Required*
	A380-800	Non-A380-800 HEAVY	11.1 km (6.0 NM)	6.0 NM)
	A380-800	MEDIUM	14.8 km (8.0 NM)	8.0 NM)
	A380-800	LIGHT	18.5 km (10.0 NM)	10.0 NM)

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Ongoing work

- Potential further reduction of current wake separations based on advanced metrics for WVE characterisation

Follower



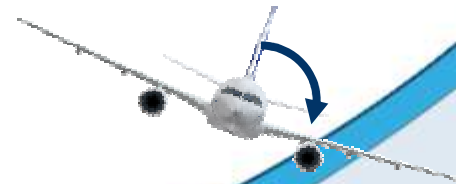
Wake

Generator

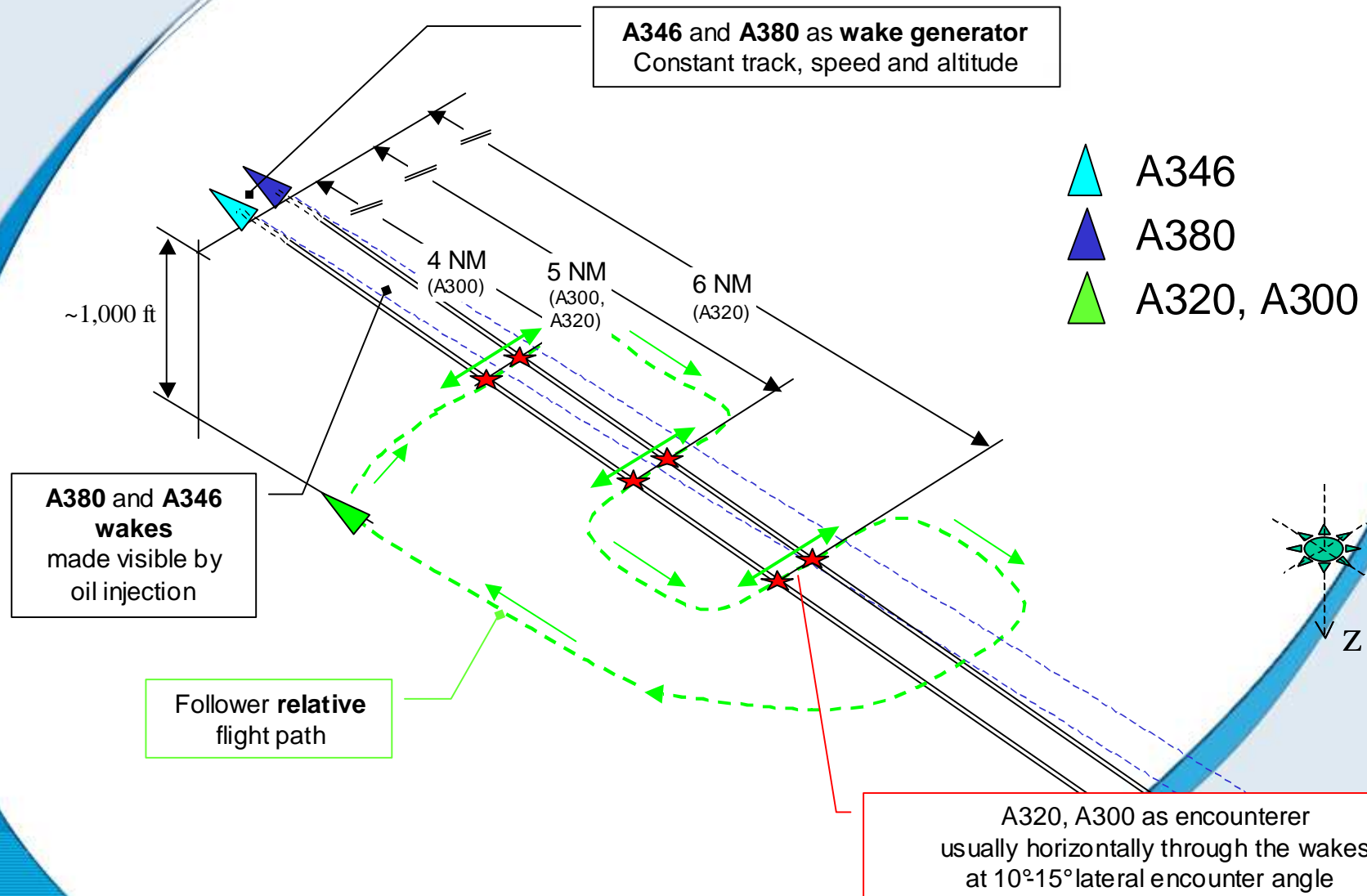


Roll rate

Roll acceleration



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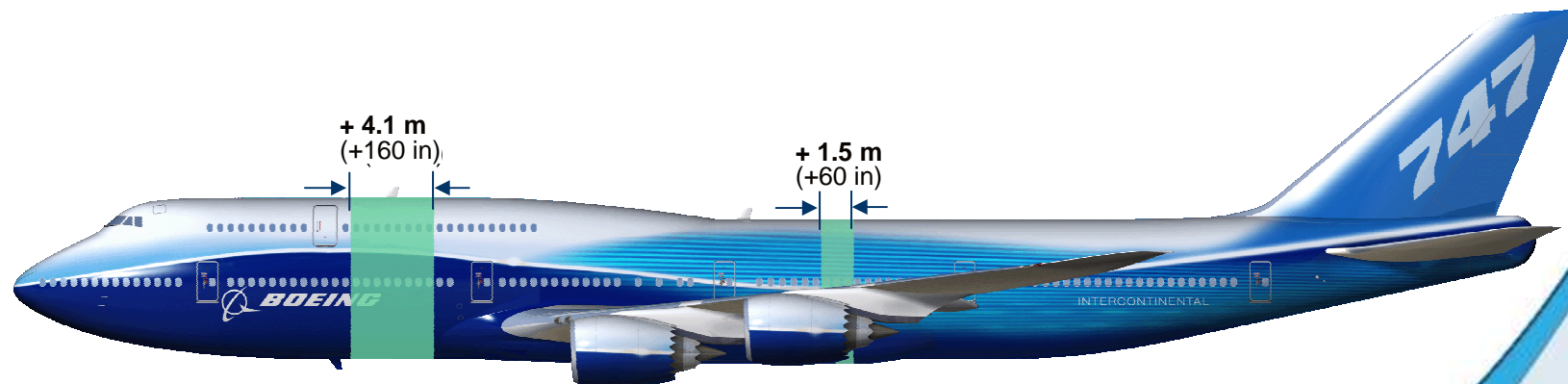
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Ongoing work

- Potential further reduction of current wake separation based on advanced metrics for WVE characterisation
- Airbus Post-processing algorithm was discussed with the WG and finalised early in 2010
- Preliminary Flight data was post processed by Airbus and delivered to the WG
- WG has analysed the data in order to define if further reduction of separations can be achieved using the WV encounter technique.
- Final report of the WG to be delivered to the SG in December 2010

B747-8 – Design of the B747-8 Wake Turbulence Separations

- B747-400 (MTOW 400T), B747-8 (MTOW 440T)
- Approach similar to the one used for the A380 wake separation design



B747-8 – Design of the B747-8 Wake Turbulence Separations

Results and expectations

- Recommendation about the interim separation have been provided by the B747-8 SG to ICAO
- The site surveys has defined the most suitable location for the WV LIDAR measurements
- The LIDAR campaign took place between September and November 2010
- The data analysis and the safety case are expected to be completed in 2011.

B747-8 – Design of the B747-8 Wake Turbulence Separations



B747-8 – Design of the B747-8 Wake Turbulence Separations





Questions?

