Current and Future Product Review

Federal Aviation Administration Great Lakes Region

23rd Annual Airport Conference

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Boeing Commercial Airplanes

Renaissance Schaumberg Hotel - Schaumberg, Illinois
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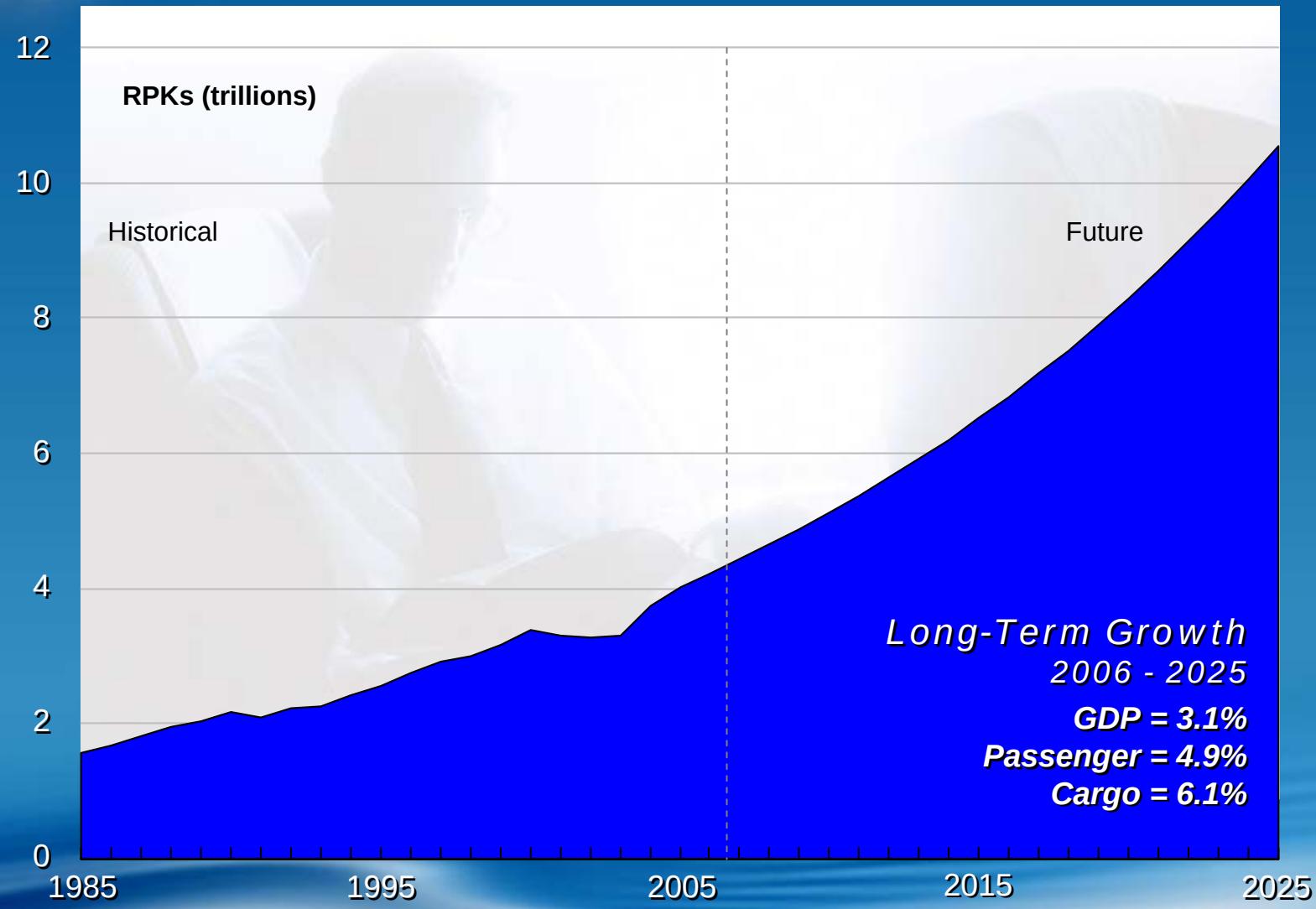
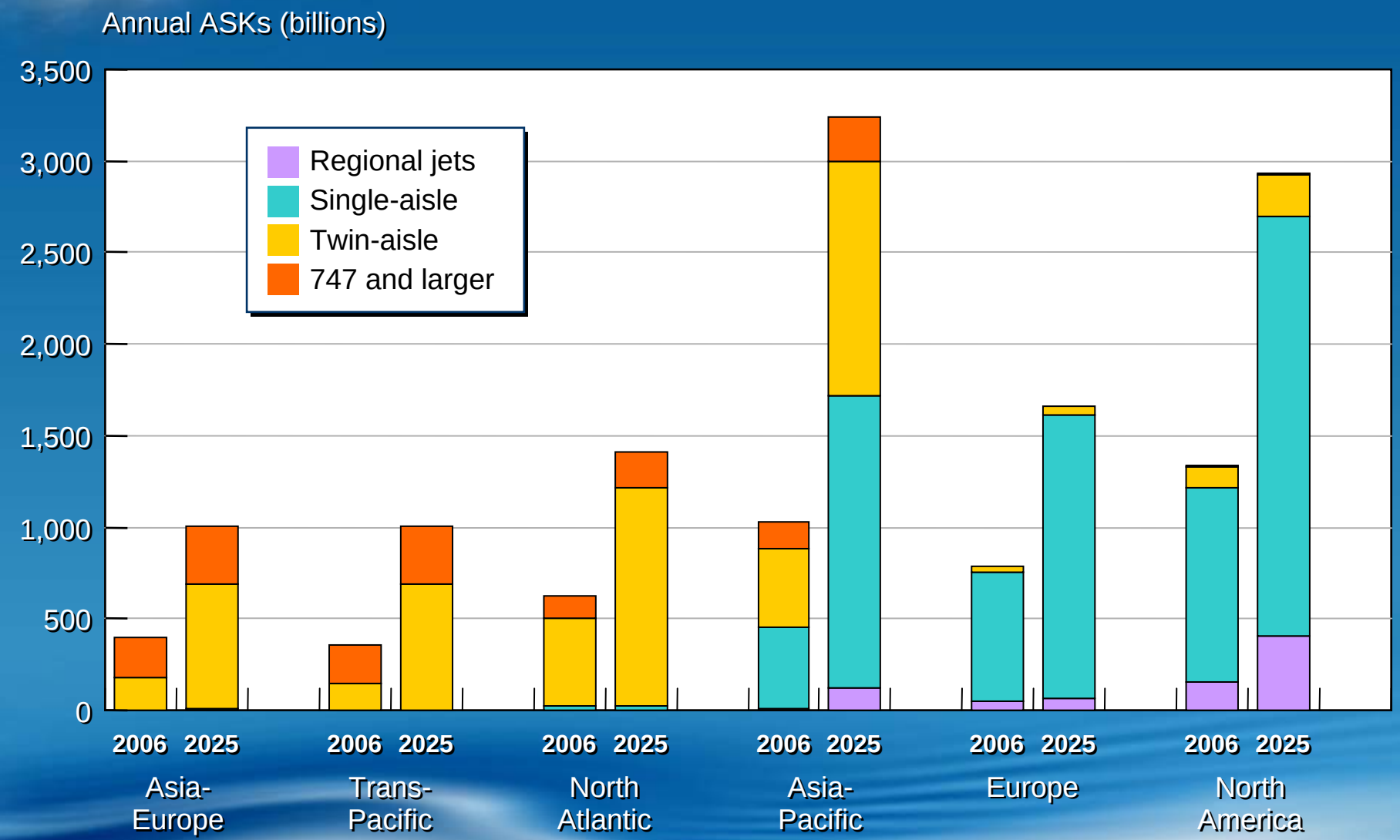
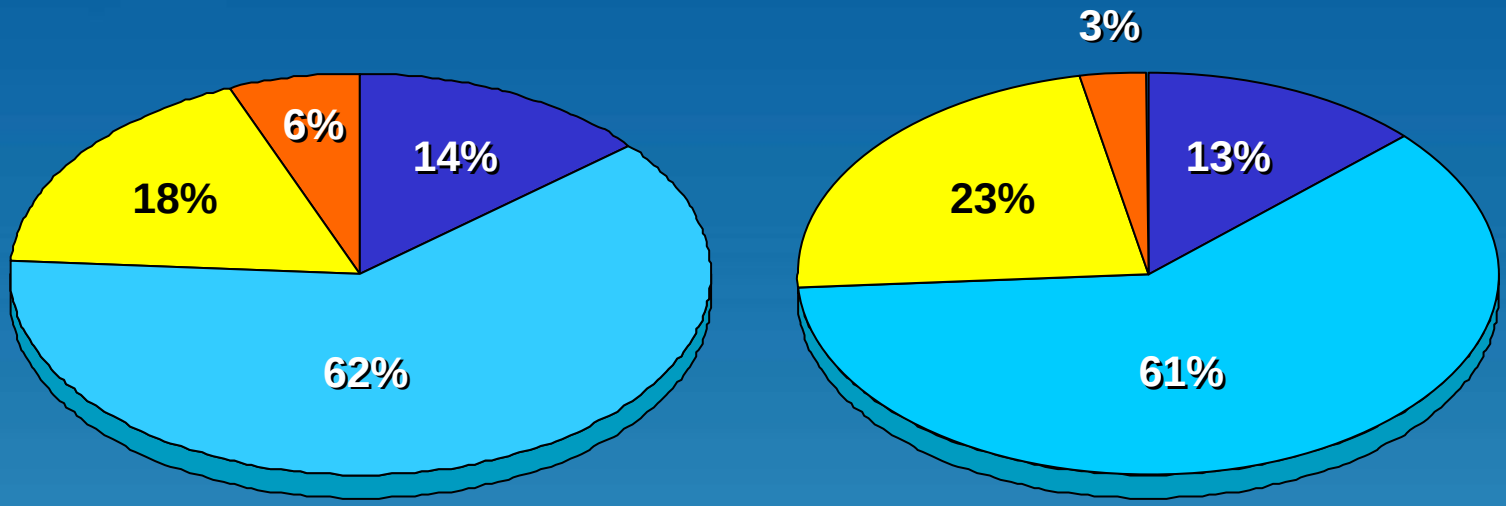
20-year Forecast: Strong Long-term Growth



Regional Market Evolution Shapes Fleet Requirements



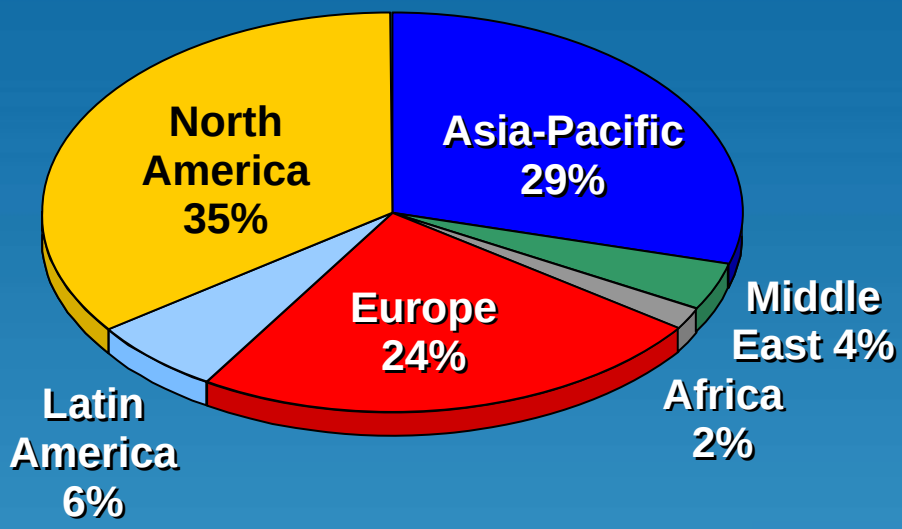
The World Fleet Will More Than Double Over the Next 20 Years



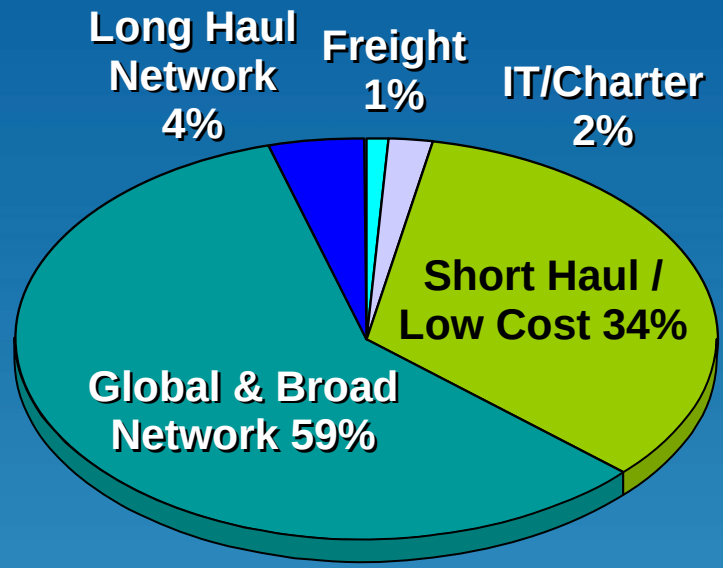
2006
16,168 airplanes

2025
34,764 airplanes

New Airplanes Will be Delivered to a Wide Mix of Regions and Operating Segments

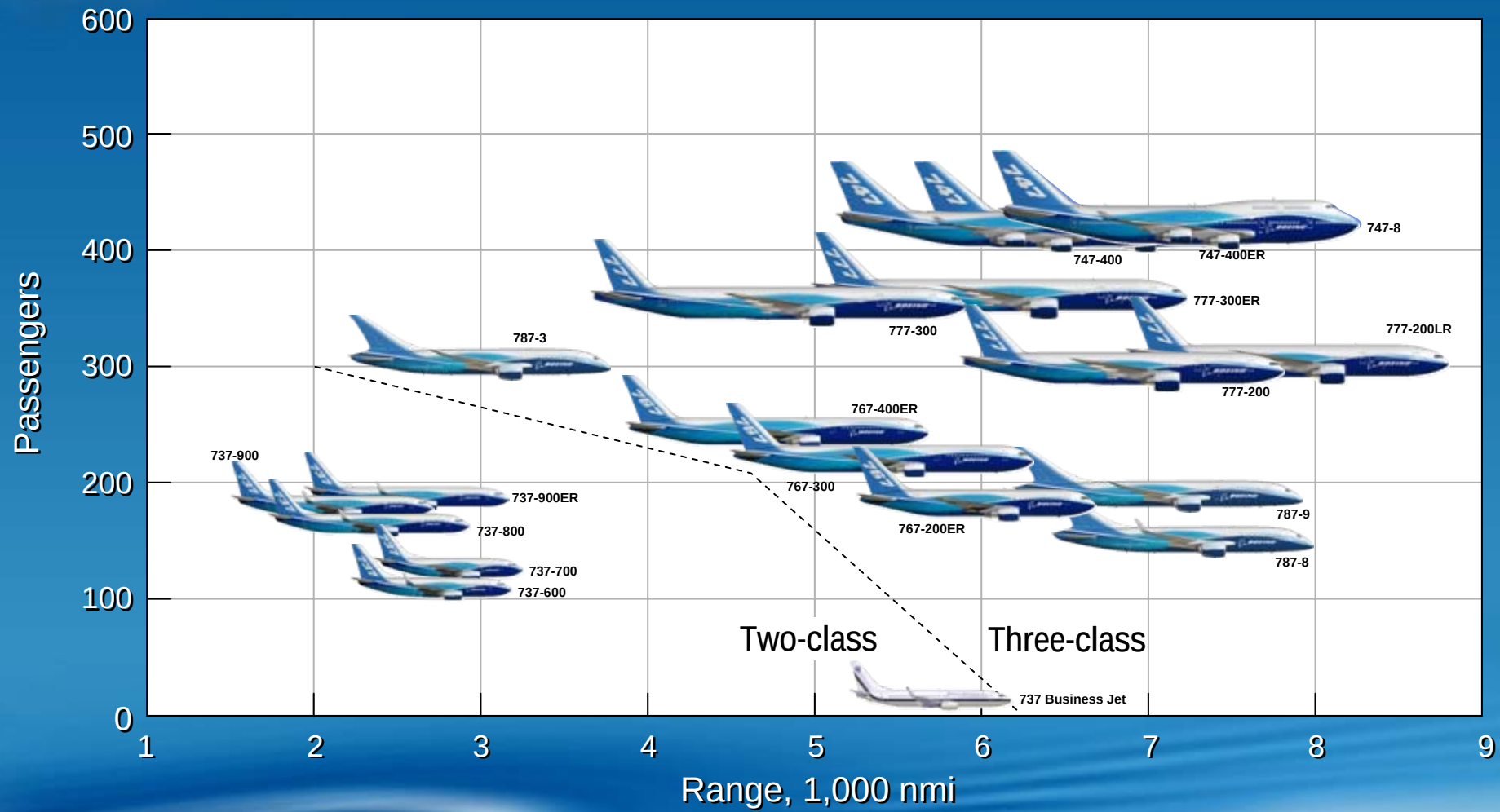


Where they'll go



How they'll operate

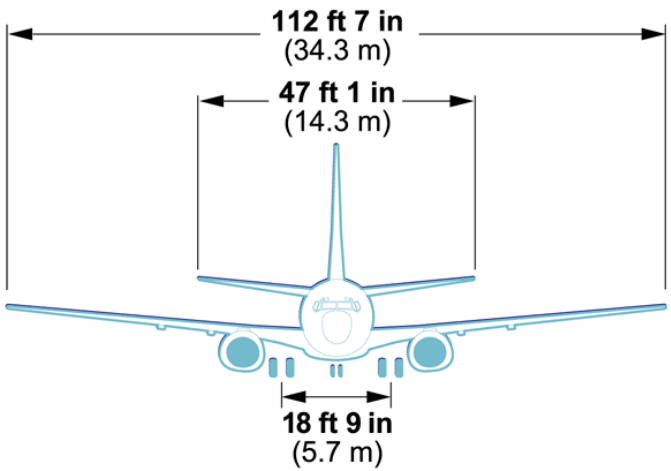
The Boeing Commercial Airplane Family

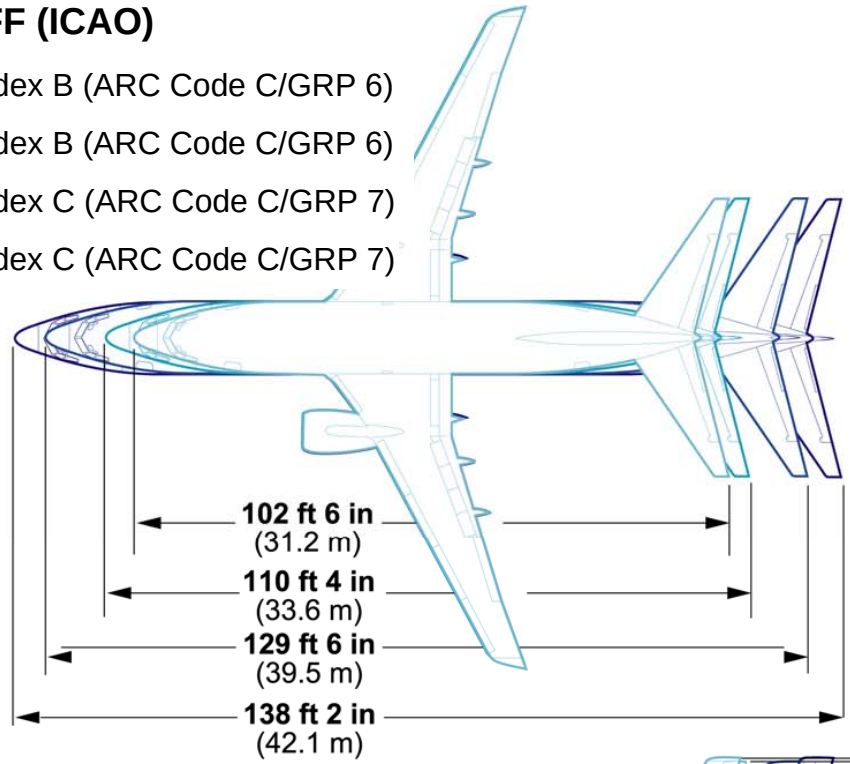


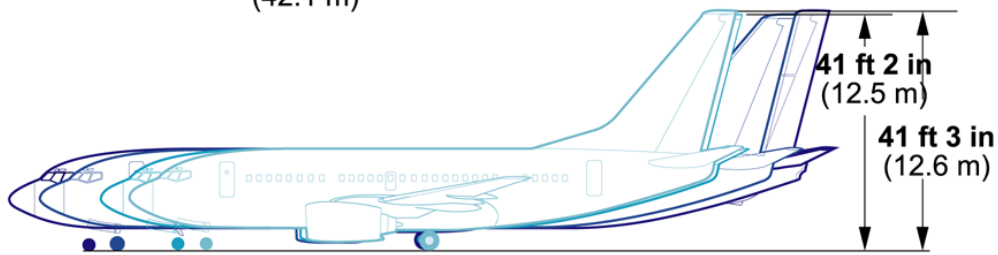
General Arrangement
737-600/-700/-800/-900

FAA Airport Design/ARFF (ICAO)

- 737-600 Airplane Design Group III / ARFF Index B (ARC Code C/GRP 6)
- 737-700 Airplane Design Group III / ARFF Index B (ARC Code C/GRP 6)
- 737-800 Airplane Design Group III / ARFF Index C (ARC Code C/GRP 7)
- 737-900ER Airplane Design Group III / ARFF Index C (ARC Code C/GRP 7)



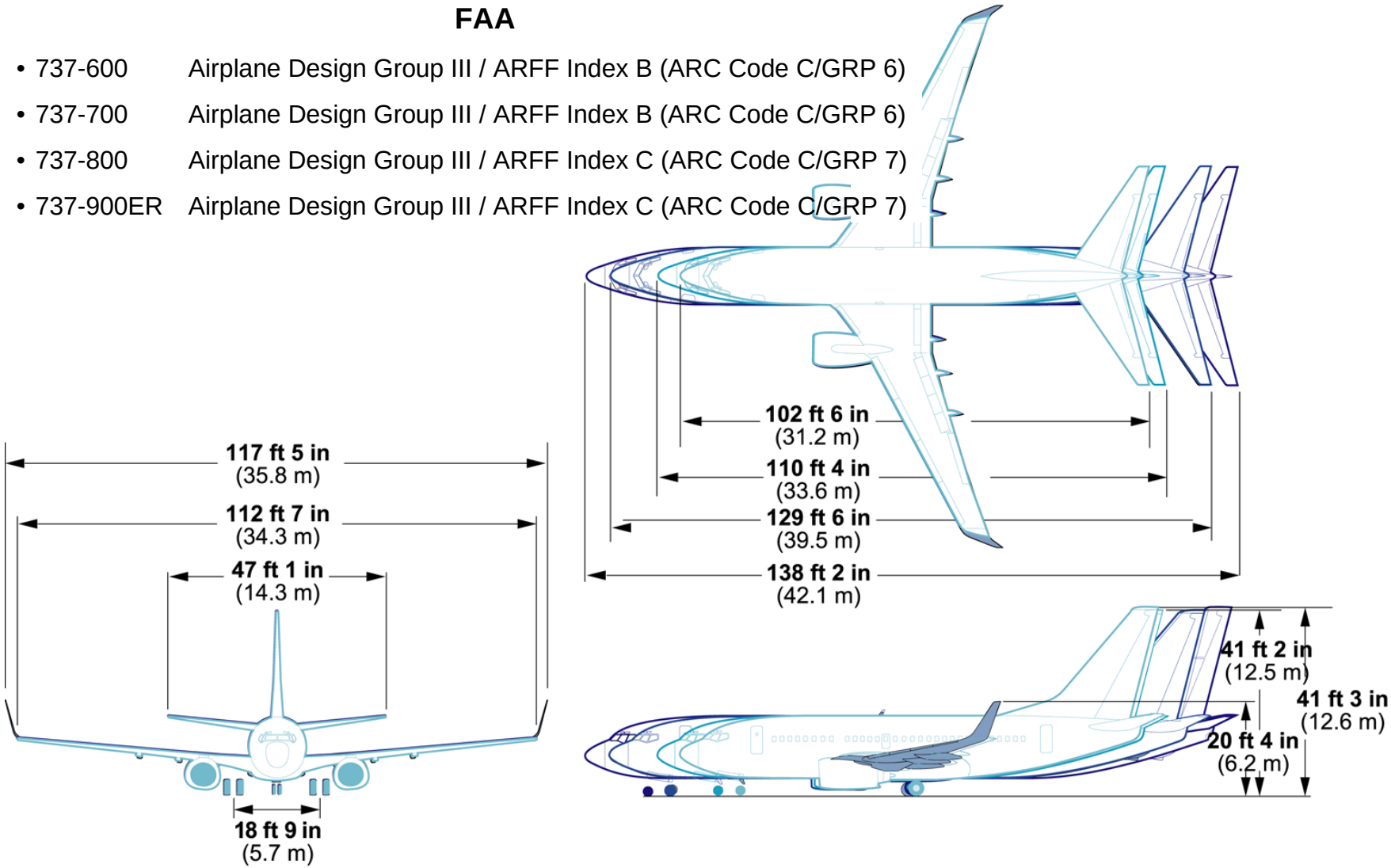




Size Comparison
737-600/-700/-800/-900 With Winglets

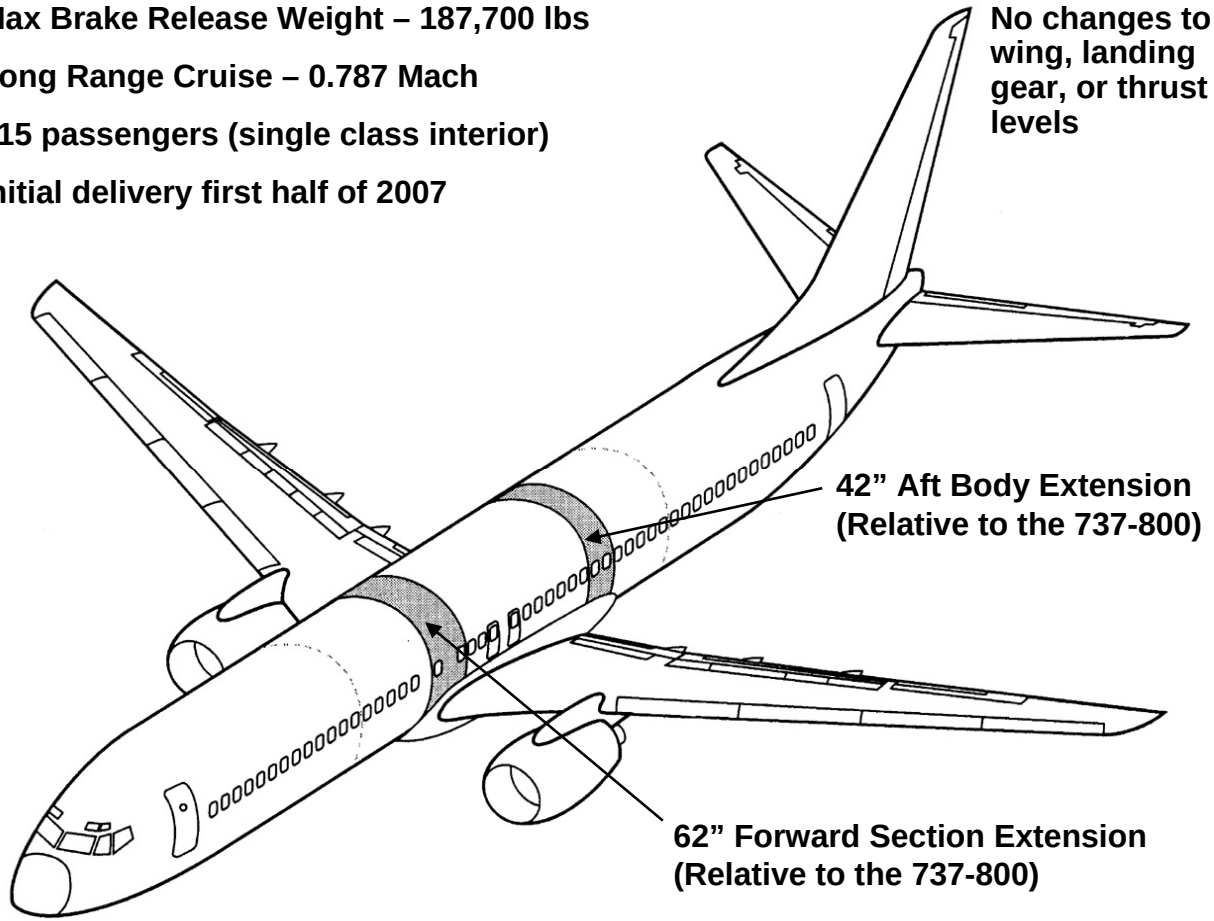
FAA

- 737-600 Airplane Design Group III / ARFF Index B (ARC Code C/GRP 6)
- 737-700 Airplane Design Group III / ARFF Index B (ARC Code C/GRP 6)
- 737-800 Airplane Design Group III / ARFF Index C (ARC Code C/GRP 7)
- 737-900ER Airplane Design Group III / ARFF Index C (ARC Code C/GRP 7)



Model 737-900ER

- Max Brake Release Weight – 187,700 lbs
- Long Range Cruise – 0.787 Mach
- 215 passengers (single class interior)
- Initial delivery first half of 2007



737 Range Capability From Chicago
Full Passenger Payload

737-600
145,500-lb (65,997-kg) MTOW
110 dual-class passenger

737-700W
154,500-lb (70,080-kg) MTOW
126 dual-class passenger

737-800W
170,230-lb (77,215-kg) TOGW*
162 dual-class passenger

737-900ERW
178,620-lb (81,020-kg) TOGW*
180 dual-class passenger

737-900ERW**
186,780-lb (84,720-kg) TOGW*
180 dual-class passenger

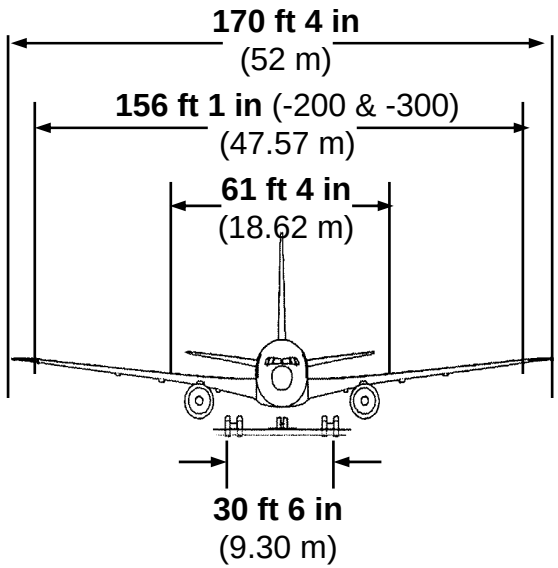
Conditions:
- Typical mission rules
- 85% annual winds
- Airways and traffic allowances included

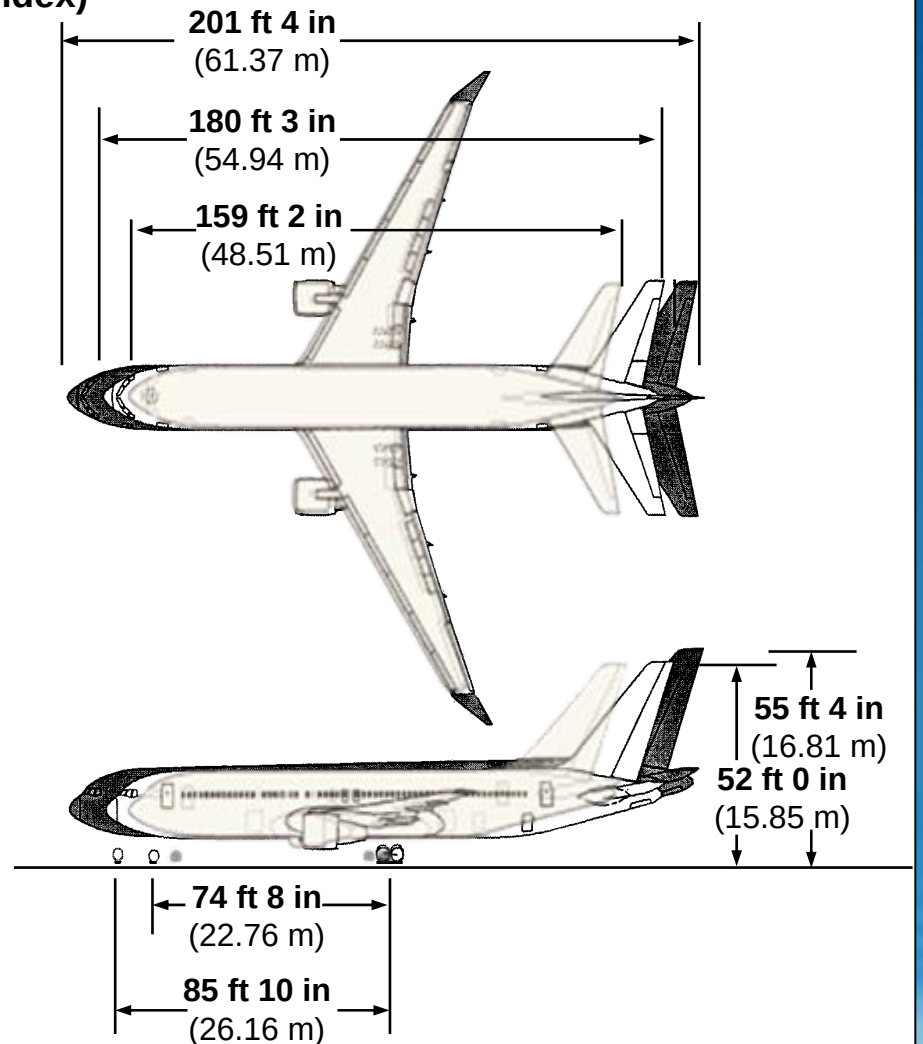
* Fuel Volume Limited
** Two auxiliary fuel tanks

General Arrangement
767-200/-300/-400ER

FAA Airport Design/ARFF (ICAO Code/ARFF Index)

- 767-200 FAA Group IV/AFRR Index D (D/7)
- 767-300 FAA Group IV/AFRR Index D (D/8)
- 767-400ER FAA Group IV/AFRR Index E (D/9)





Range Capability From Chicago
767-300ER/-400ER Full Passenger Payload

767-300ER
409,525-lb (185,755-kg) TOGW*
218 three-class passengers

767-400ER
440,595-lb (199,850-kg) TOGW*
245 three-class passengers

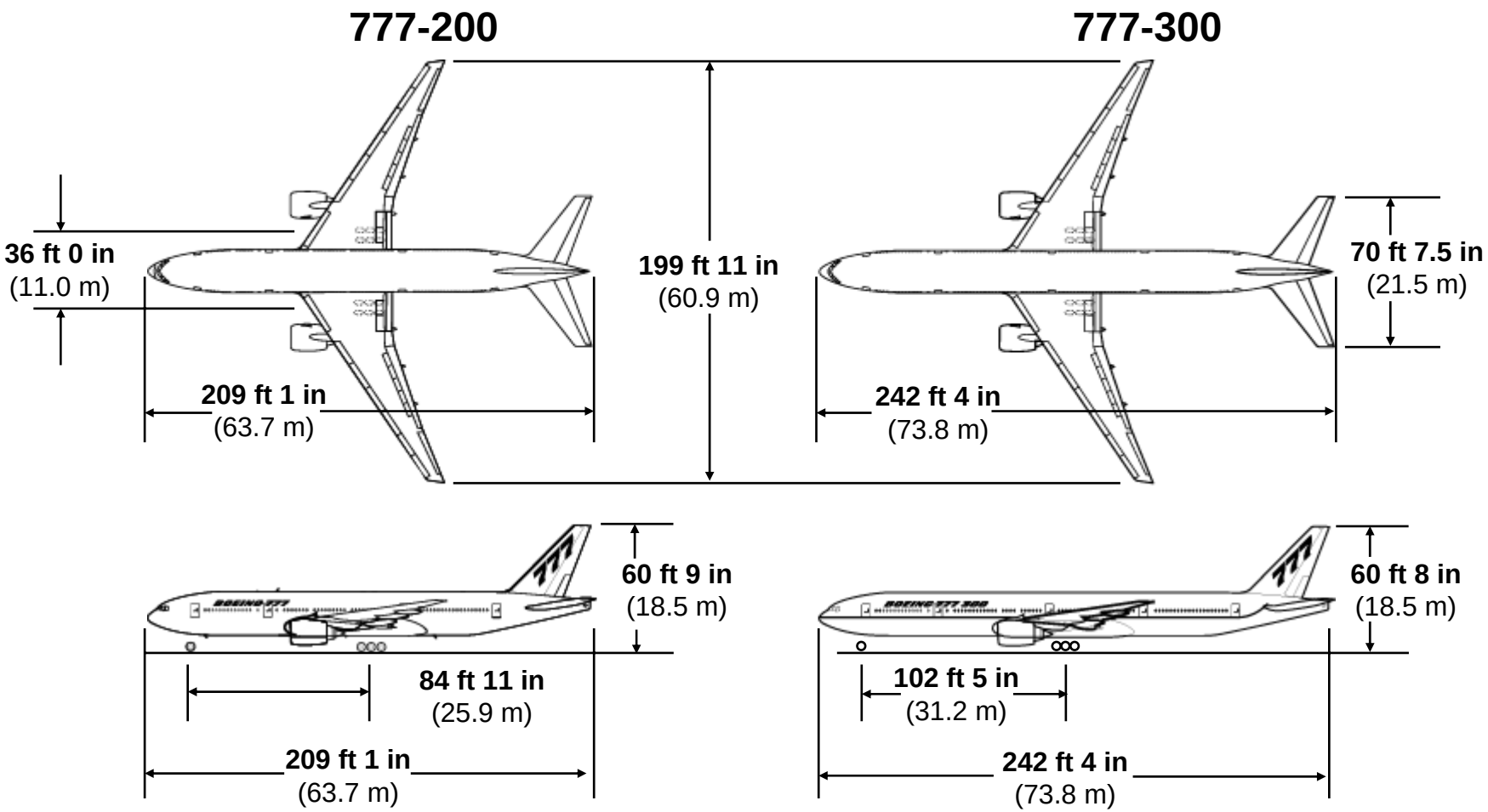
Conditions:
- Typical mission rules
- 85% annual winds
- Airways and traffic allowances included

* Fuel Volume Limited

General Arrangement
777-200/-300

FAA (ICAO Codes)

- 777-200 Airplane Design Group V / ARFF Index E (Code E/Category 9)
- 777-300 Airplane Design Group V / ARFF Index E (Code E/Category 9)

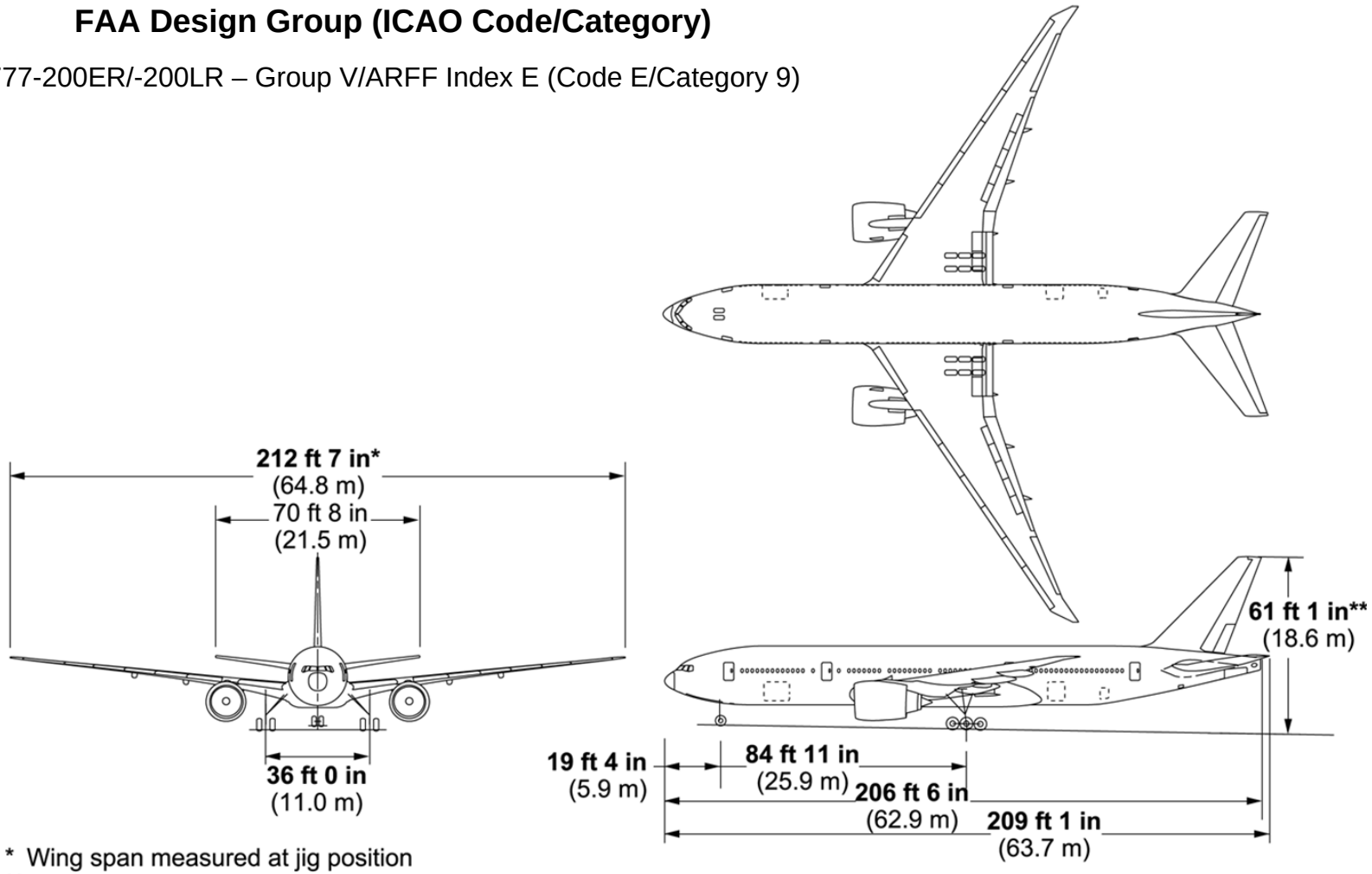


Airport Compatibility
777-200LR/-300ER

General Arrangement
Longer-Range 777-200LR

FAA Design Group (ICAO Code/Category)

- 777-200ER/-200LR – Group V/ARFF Index E (Code E/Category 9)

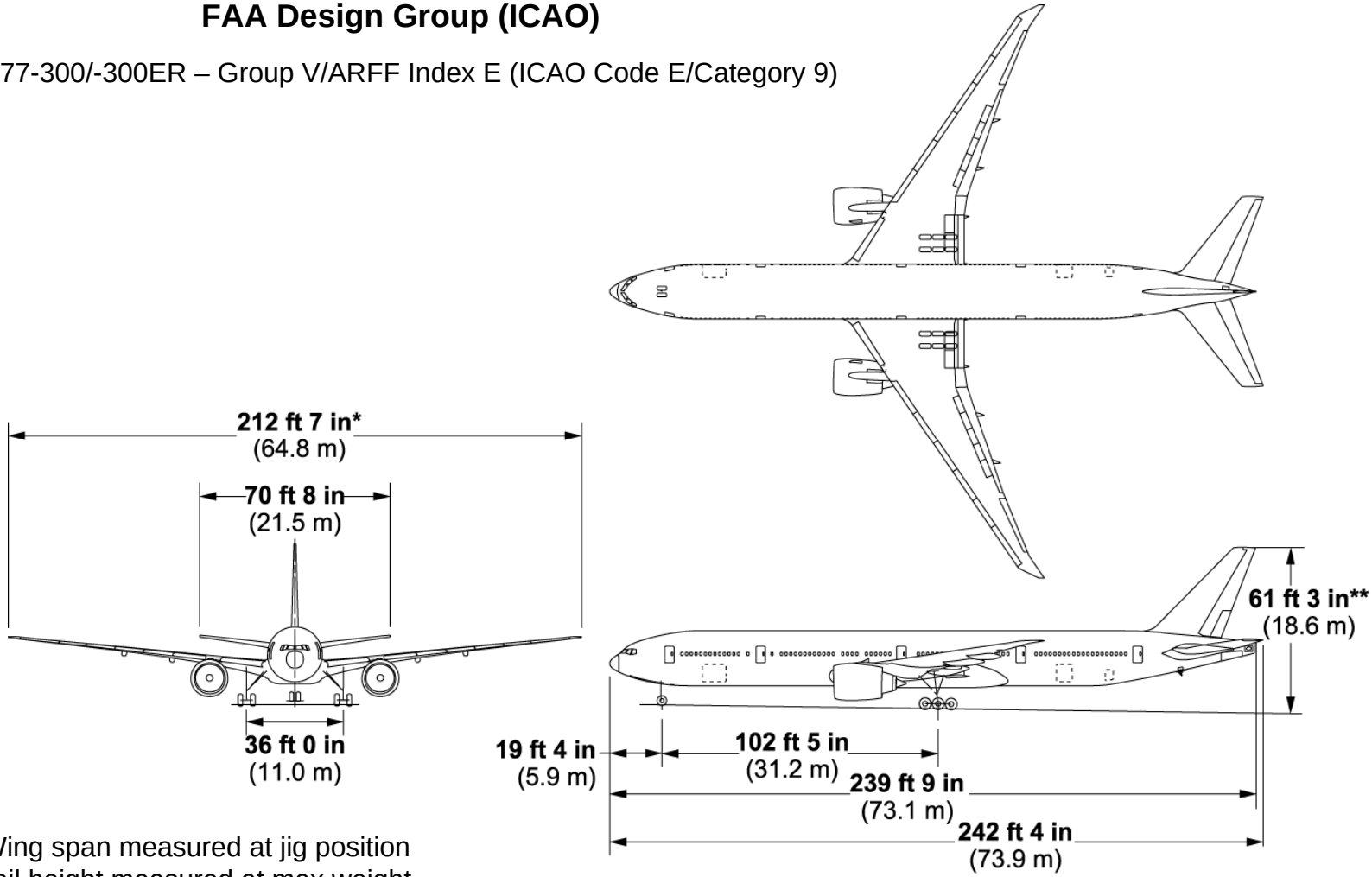


* Wing span measured at jig position
** Tail height measured at max weight

General Arrangement
Longer-Range 777-300ER

FAA Design Group (ICAO)

- 777-300/-300ER – Group V/ARFF Index E (ICAO Code E/Category 9)



* Wing span measured at jig position
** Tail height measured at max weight

777 Range Capability From Chicago
Full Passenger Payload

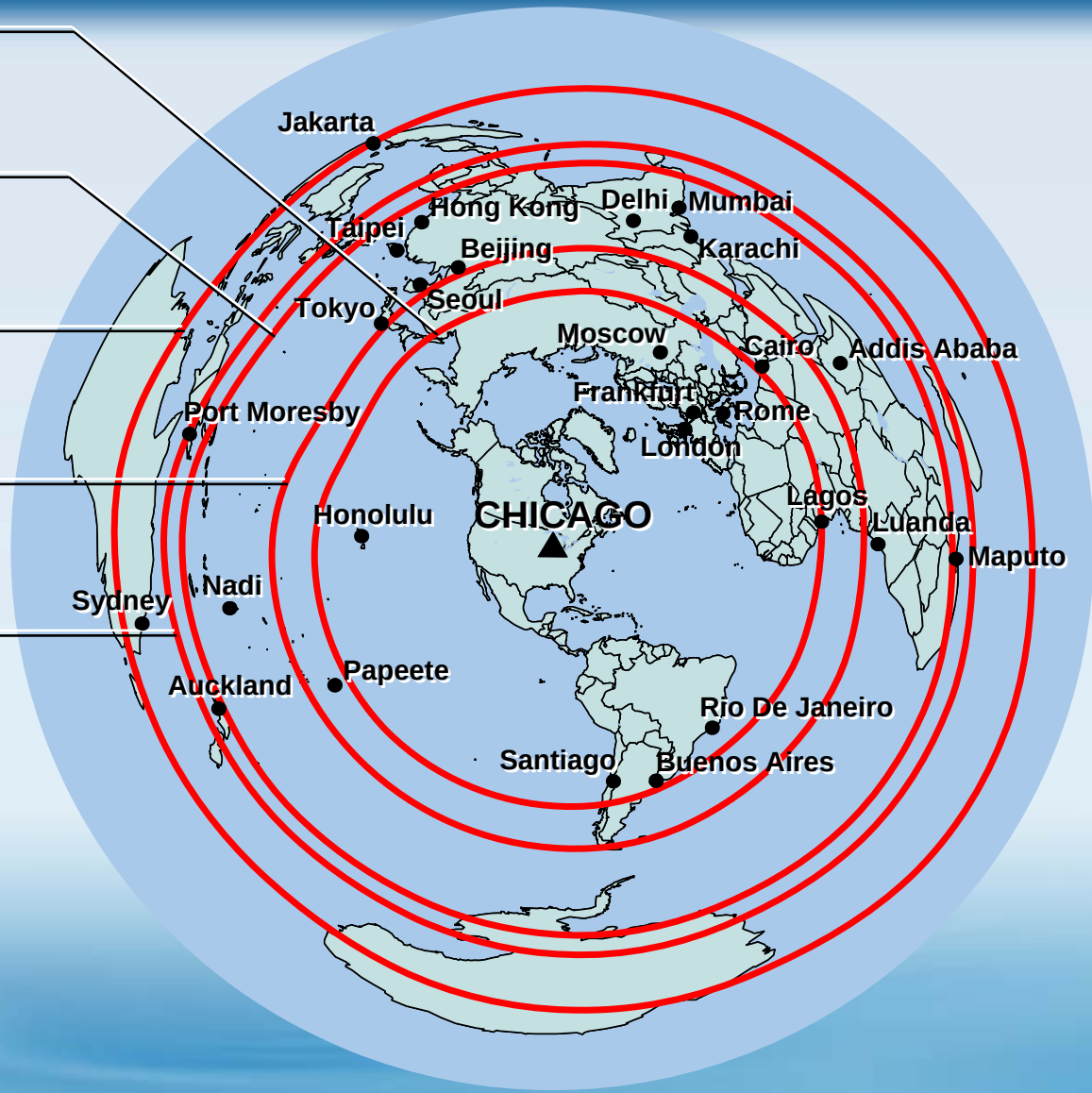
777-200
545,000-lb (247,207-kg) MTOW
305 three-class passenger

777-200ER
656,000-lb (297,556-kg) MTOW
301 three-class passenger

777-200LR**
752,250-lb (341,215-kg) TOGW*
301 three-class passenger

777-300
660,000-lb (299,370-kg) MTOW
368 three-class passenger

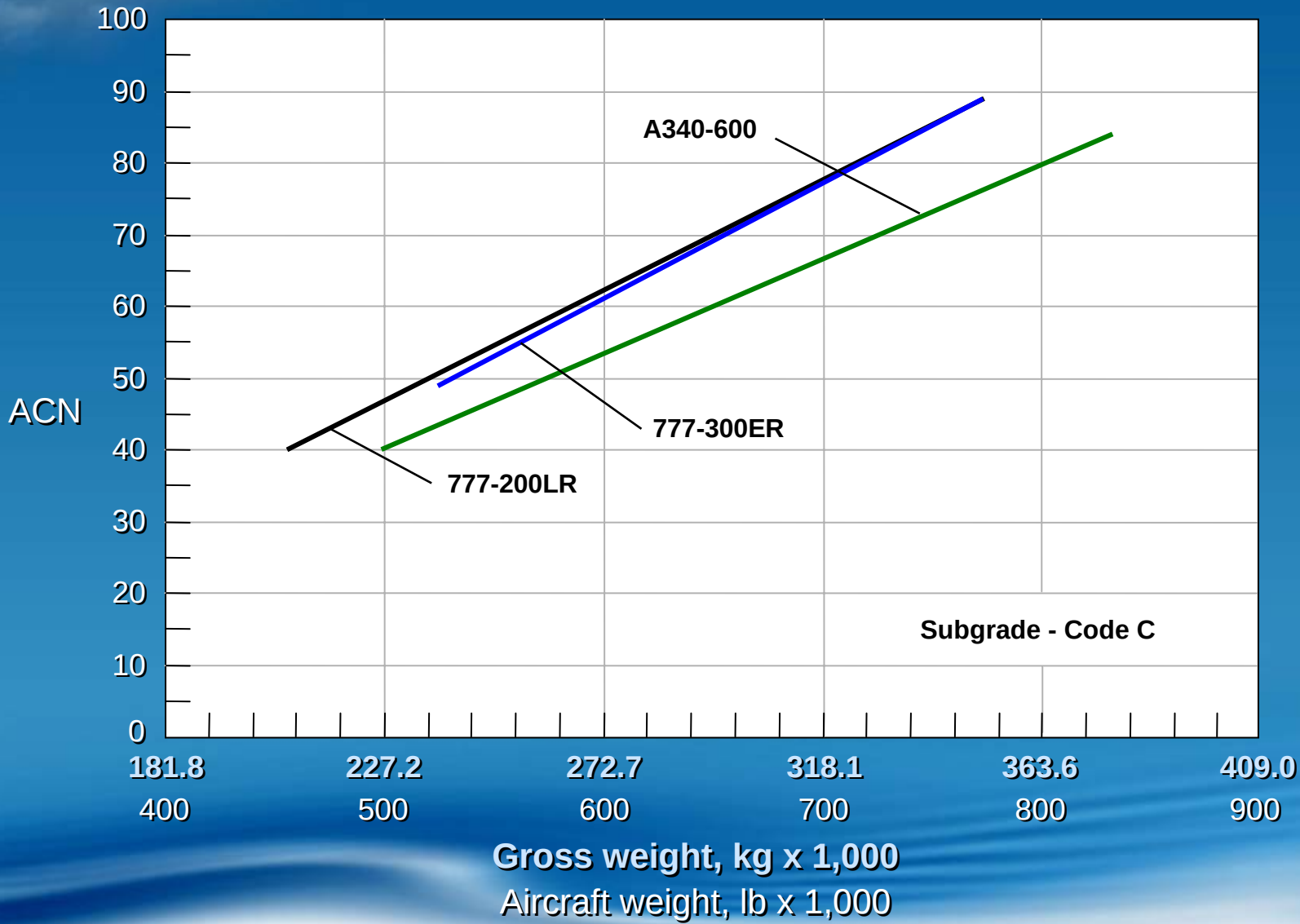
777-300ER
768,985-lb (348,805-kg) TOGW*
365 three-class passenger



Conditions:
- Typical mission rules
- 85% annual winds
- Airways and traffic allowances included

* Fuel Volume Limited
** Two auxiliary fuel tanks

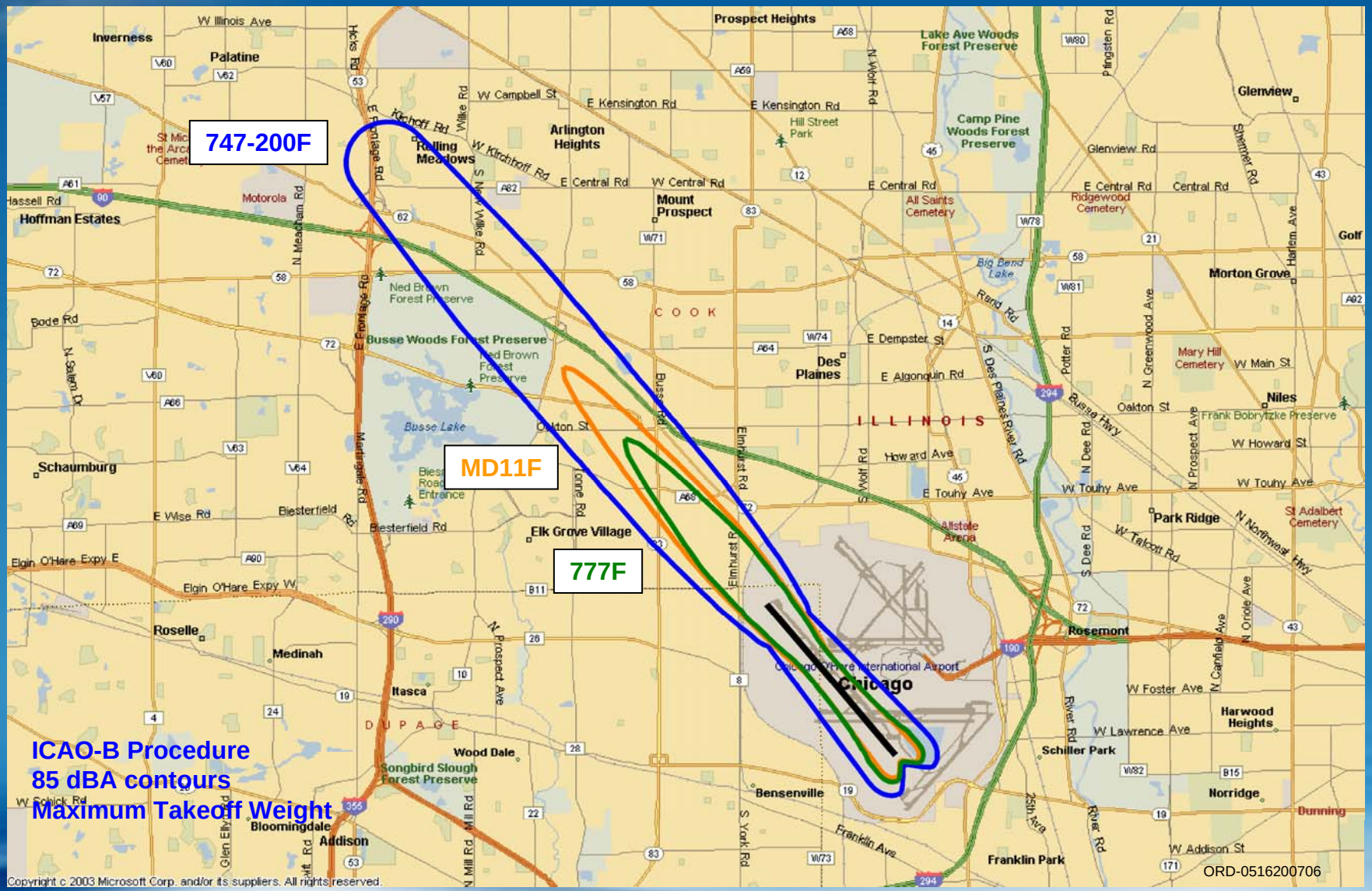
ACN Comparison
Flexible Pavement



777 Freighter

General Arrangement

777F Community Noise Improvement



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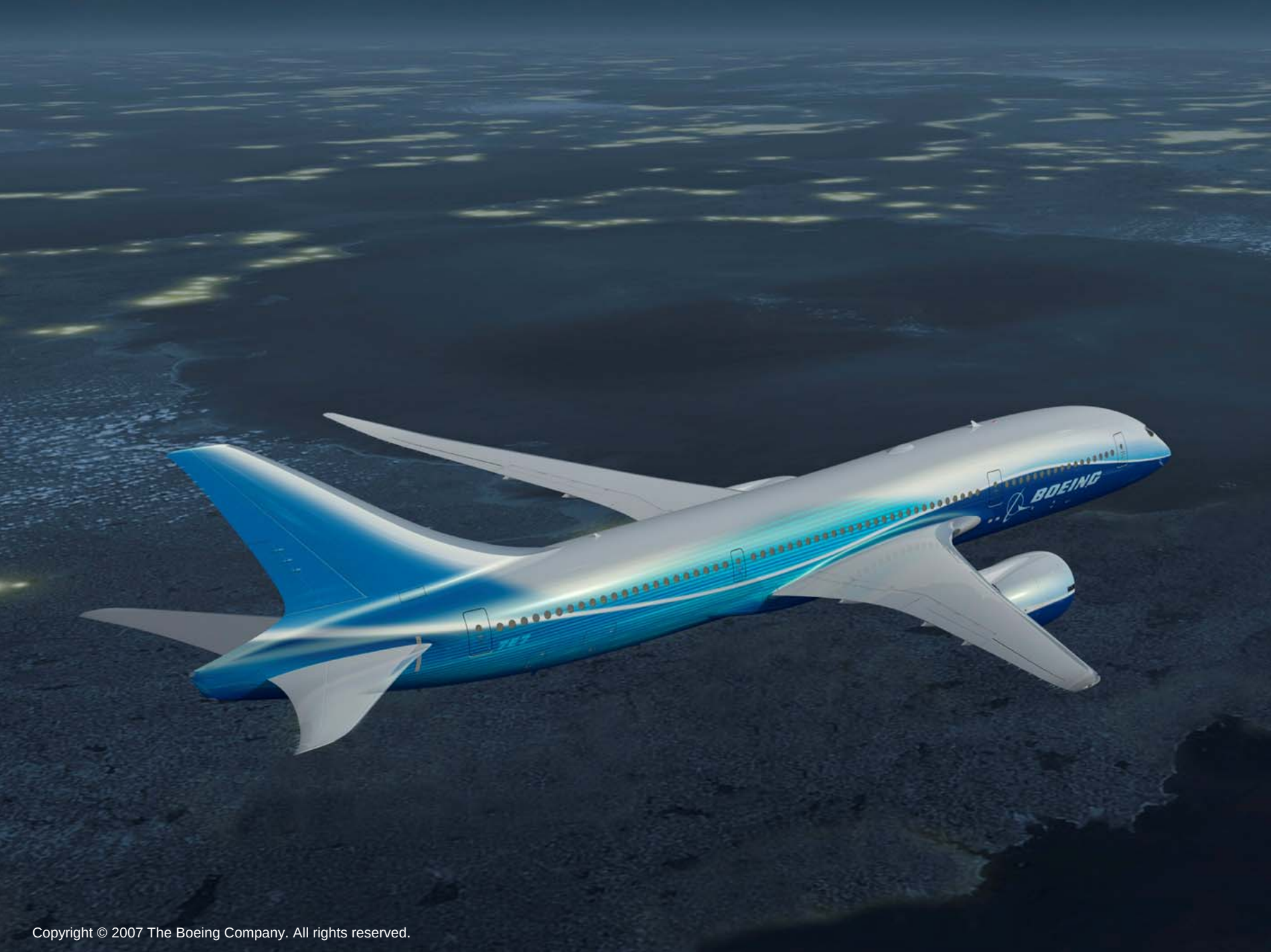
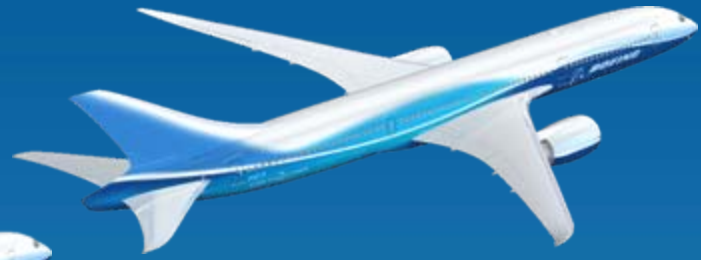
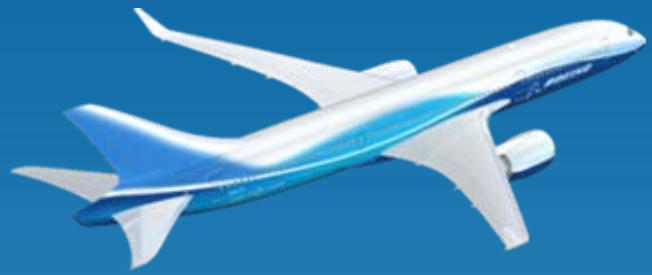


The 787 Is a Complete, Flexible, Efficient Family



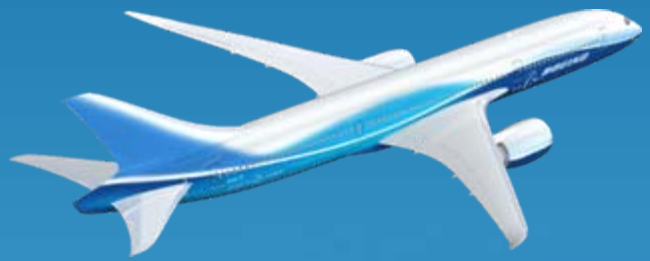
787-9

- 259 passengers (three-class)
- 8,300 nmi / 15,400 km



787-3

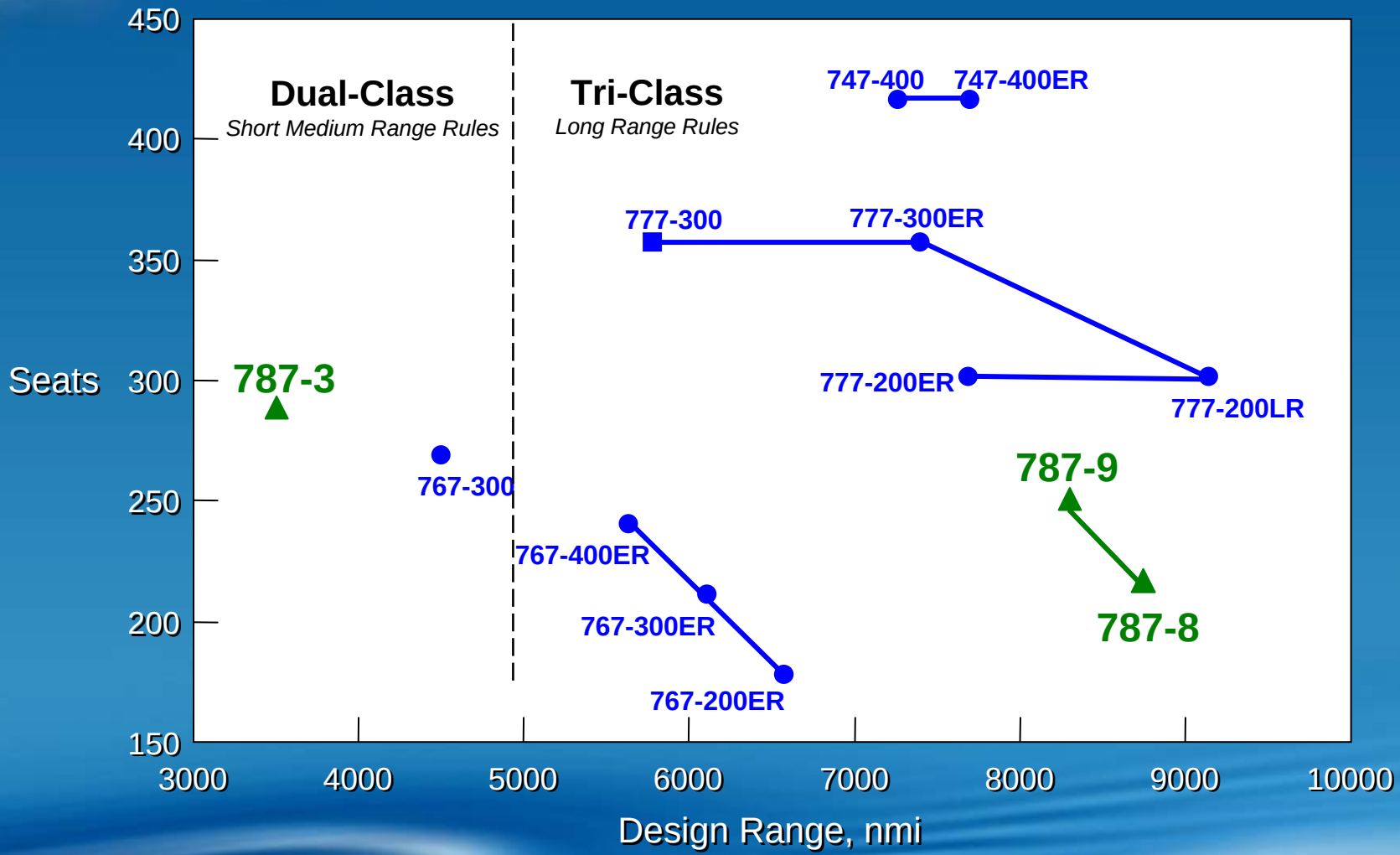
- 296 passengers (two-class)
- 3,500 nmi / 6,500km



787-8

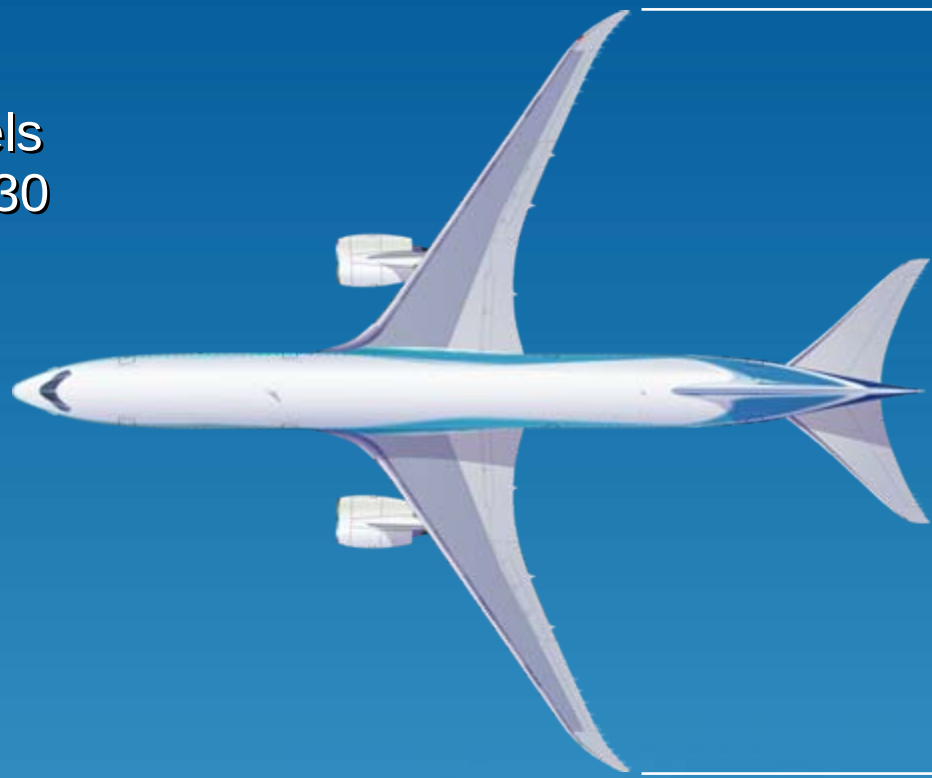
- 223 passengers (three-class)
- 8,500 nmi / 15,700 km

Efficiency for Medium- and Long-Haul Markets



787-8 General Arrangement

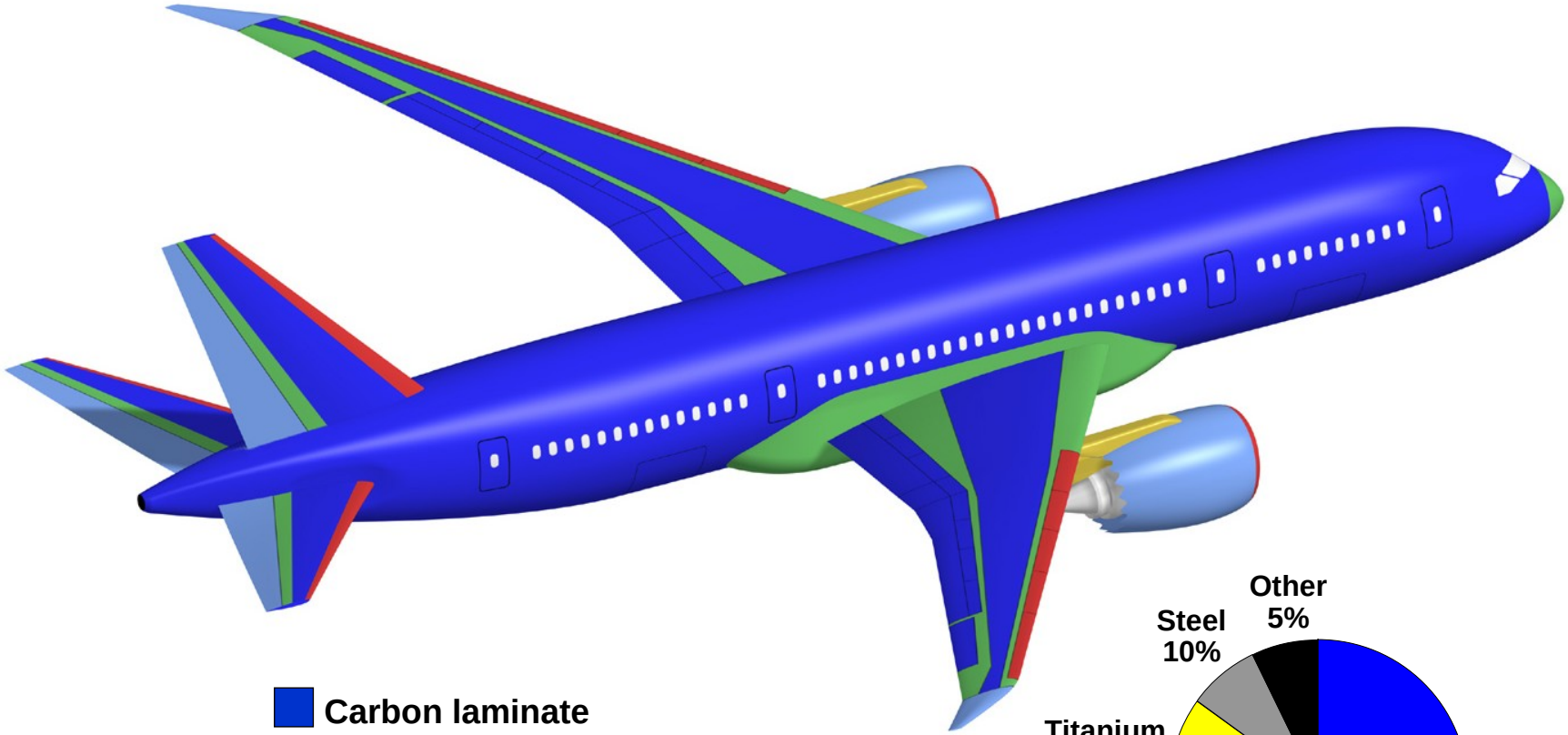
- ACN comparable to 767
- The tire pressure of all models will be similar to 767 and A330
- SWL is higher than 767, but gear spacing is wider
- U-turn width and fillet requirements comparable to 767-300/400

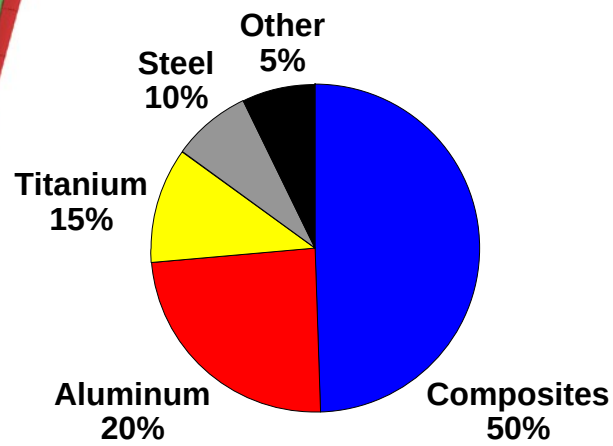


787 Is ICAO Code D and E Compatible

	787-3	787-8	787-9 Stretch	767-300
Wing Span	~170 ft (52 m)	~197 ft (60 m)	~197 ft	156 ft (47 m)
ICAO Code/ FAA Group	D/IV	E/V	E/V	D/IV
Overall Length	~186 ft (57 m)	~186 ft	~206 ft (63 m)	180 ft (55 m)
U-Turn Width	~138 ft (42 m)	~138 ft	~154 ft (47 m)	146 ft (44 m)
Twy Turn Size	Similar to 767-300	Similar to 767-300	Similar to 767-400	

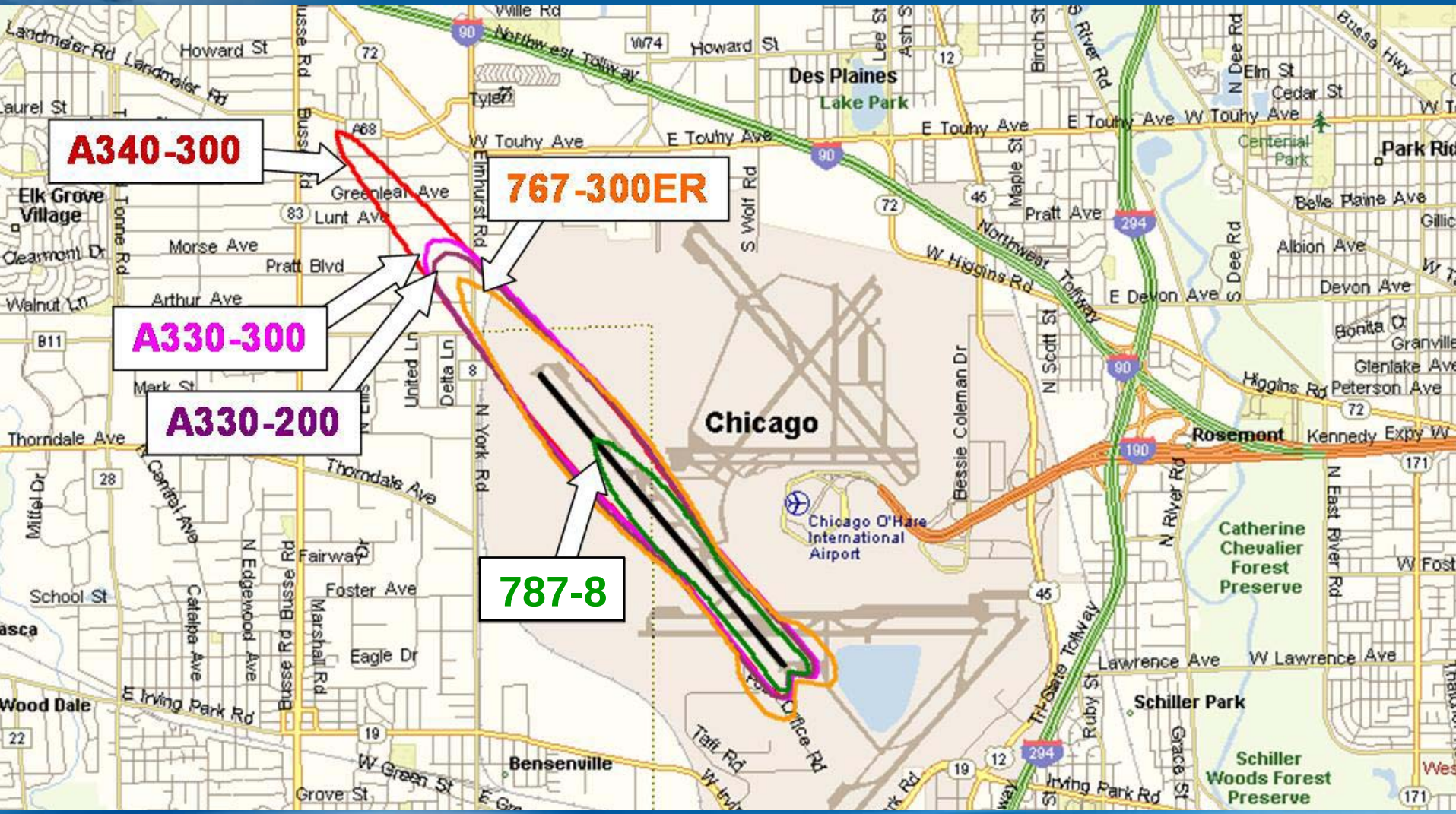
Building on Proven Materials





Quiet for Airport Communities

85 dB Noise Contours at O'Hare



Source MS Mappoint, (c) Microsoft, Inc.

- 85 dBA contours
- 3,000 nmi mission

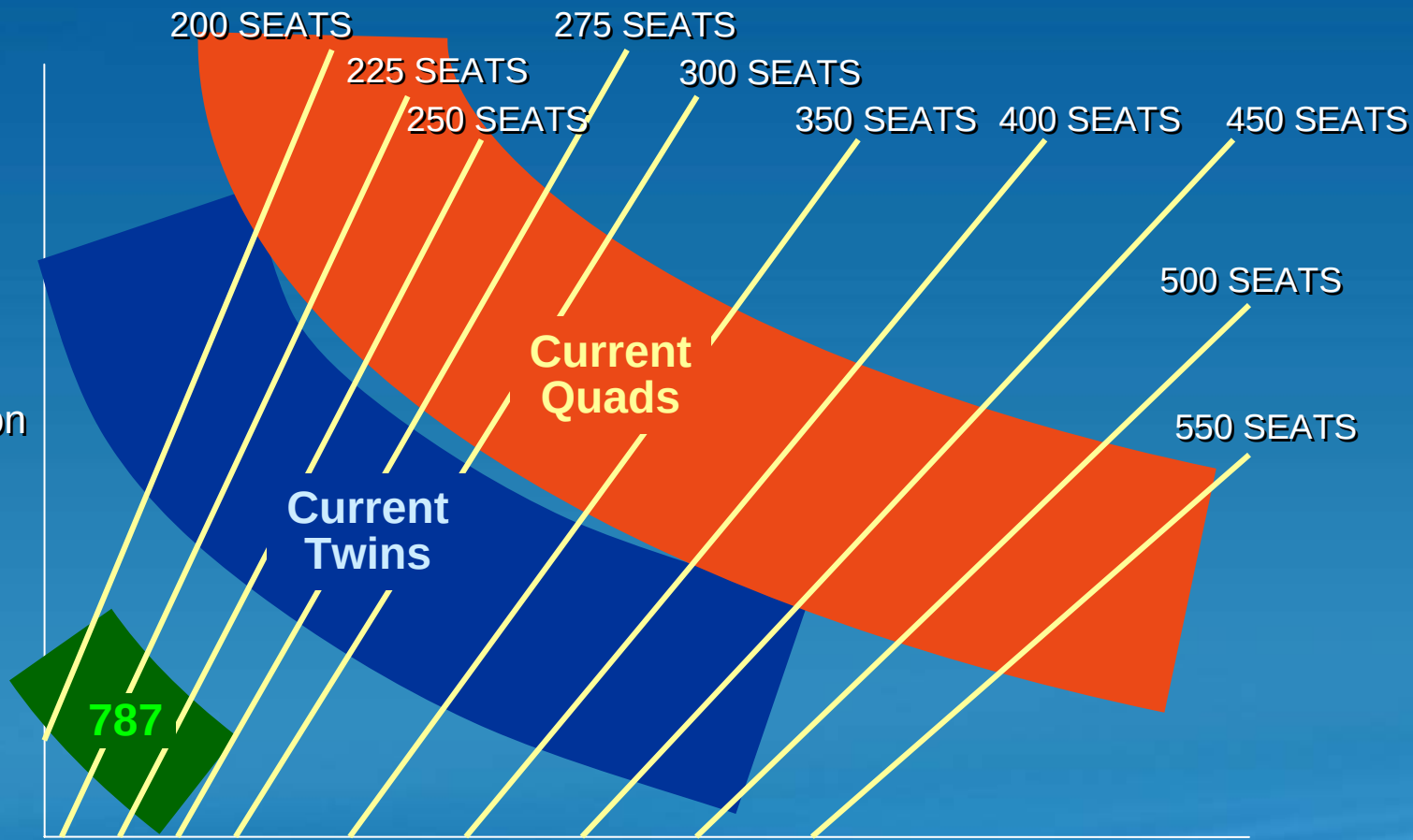
Creating New Non-Stop Routes

The 787 can connect more than 450 new airport pairs

Possible New Airport Pairs

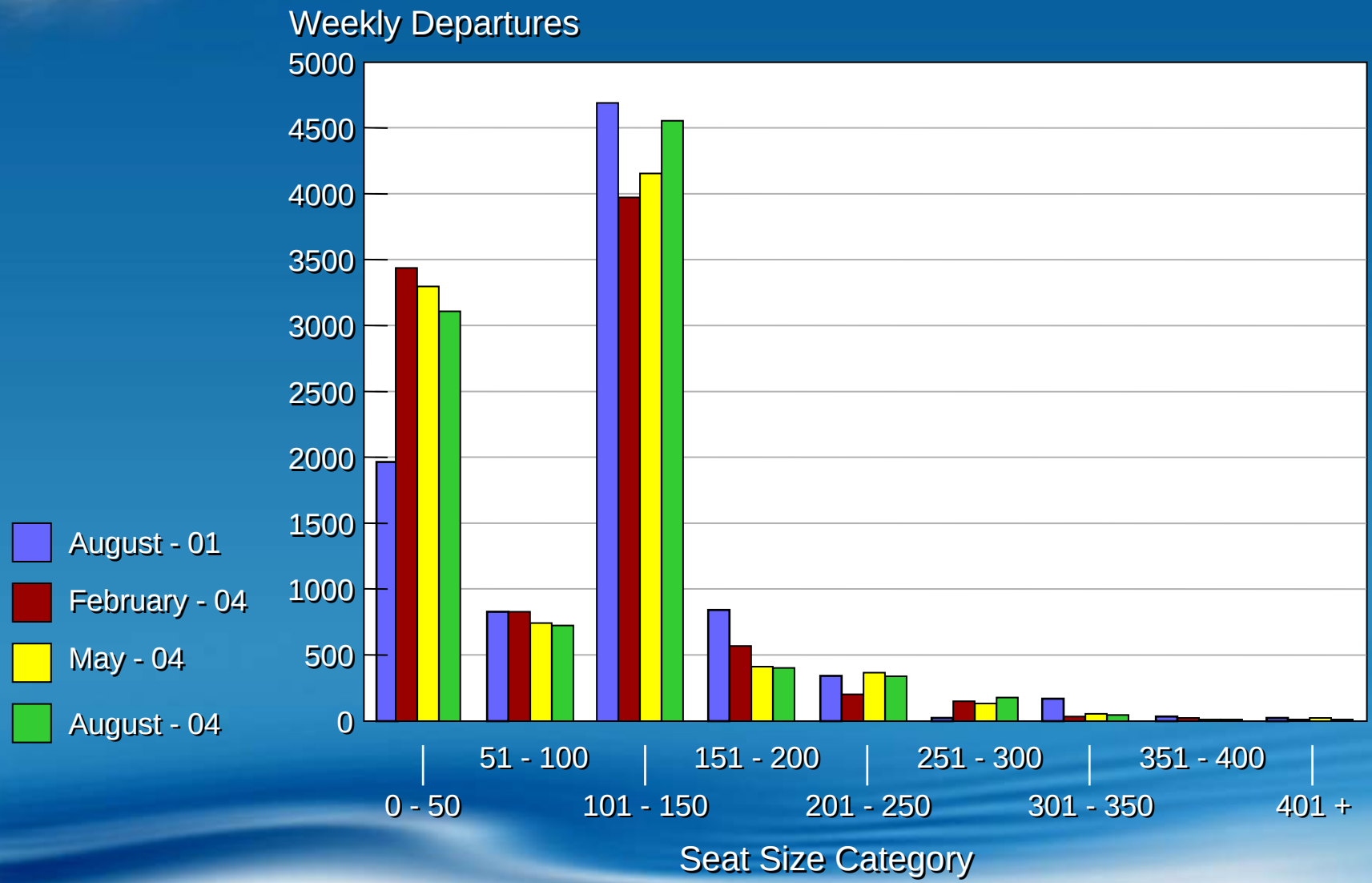
Vancouver - Sao Paulo	Munich - Nairobi
Seattle - Shanghai	Geneva - Singapore
San Francisco - Manchester	Dubai - Taipei
Boston - Athens	Madrid - Manila
Tel Aviv - Montreal	Auckland - Beijing

A New Standard in Performance

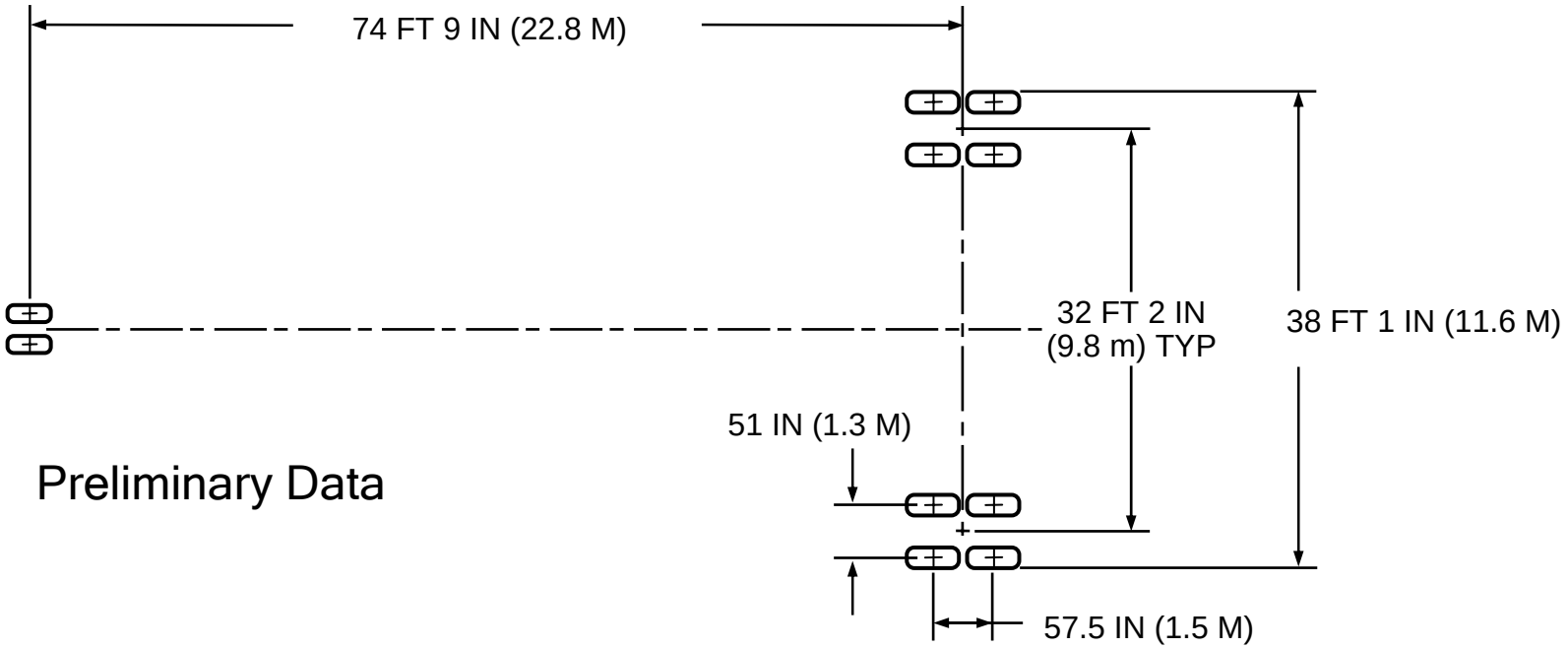


- Tri-class seating
- 3,000 nmi mission

Very Large Airplanes Will Not Reduce Airport Congestion – ORD



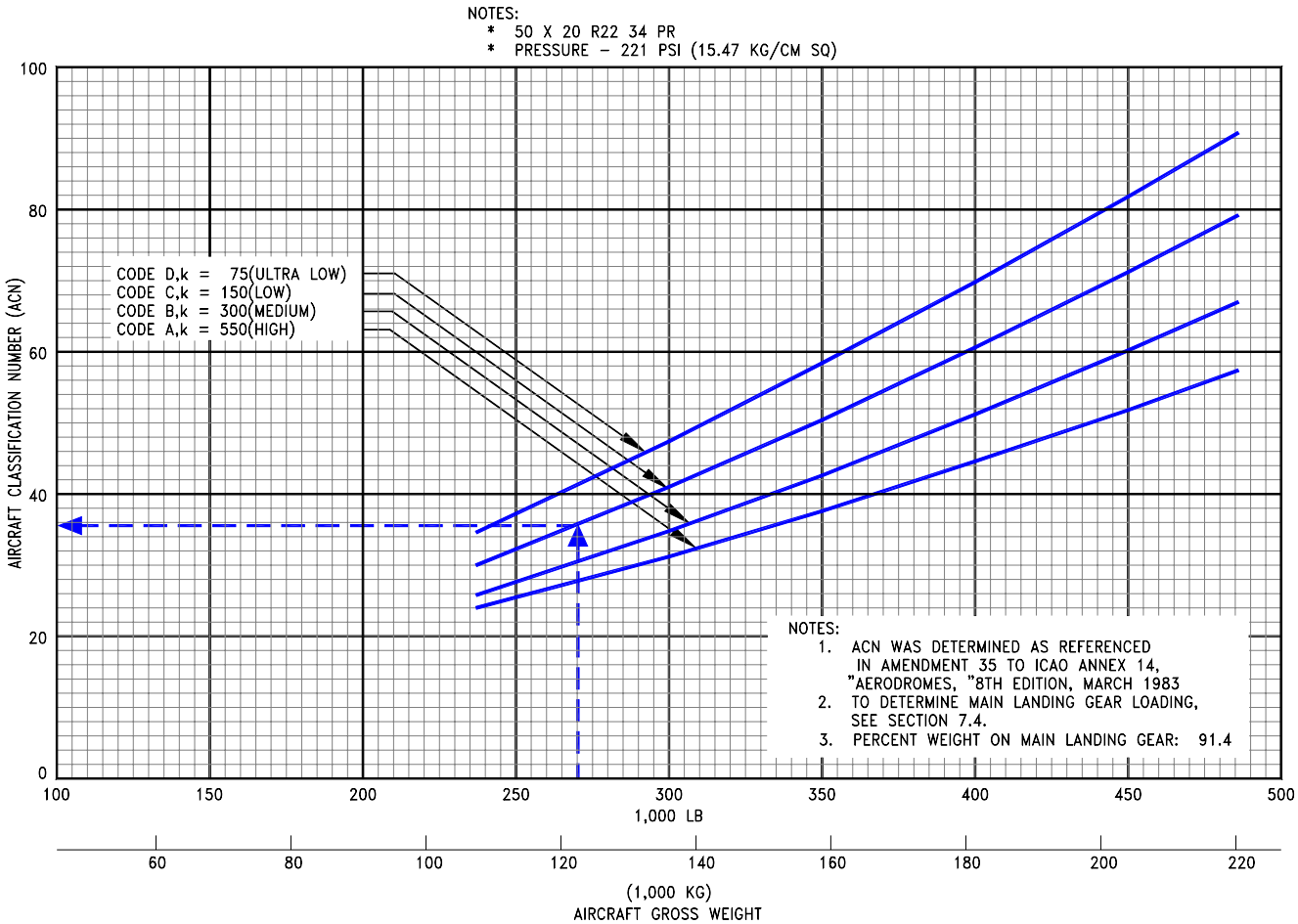
787-8 Landing Gear Footprint



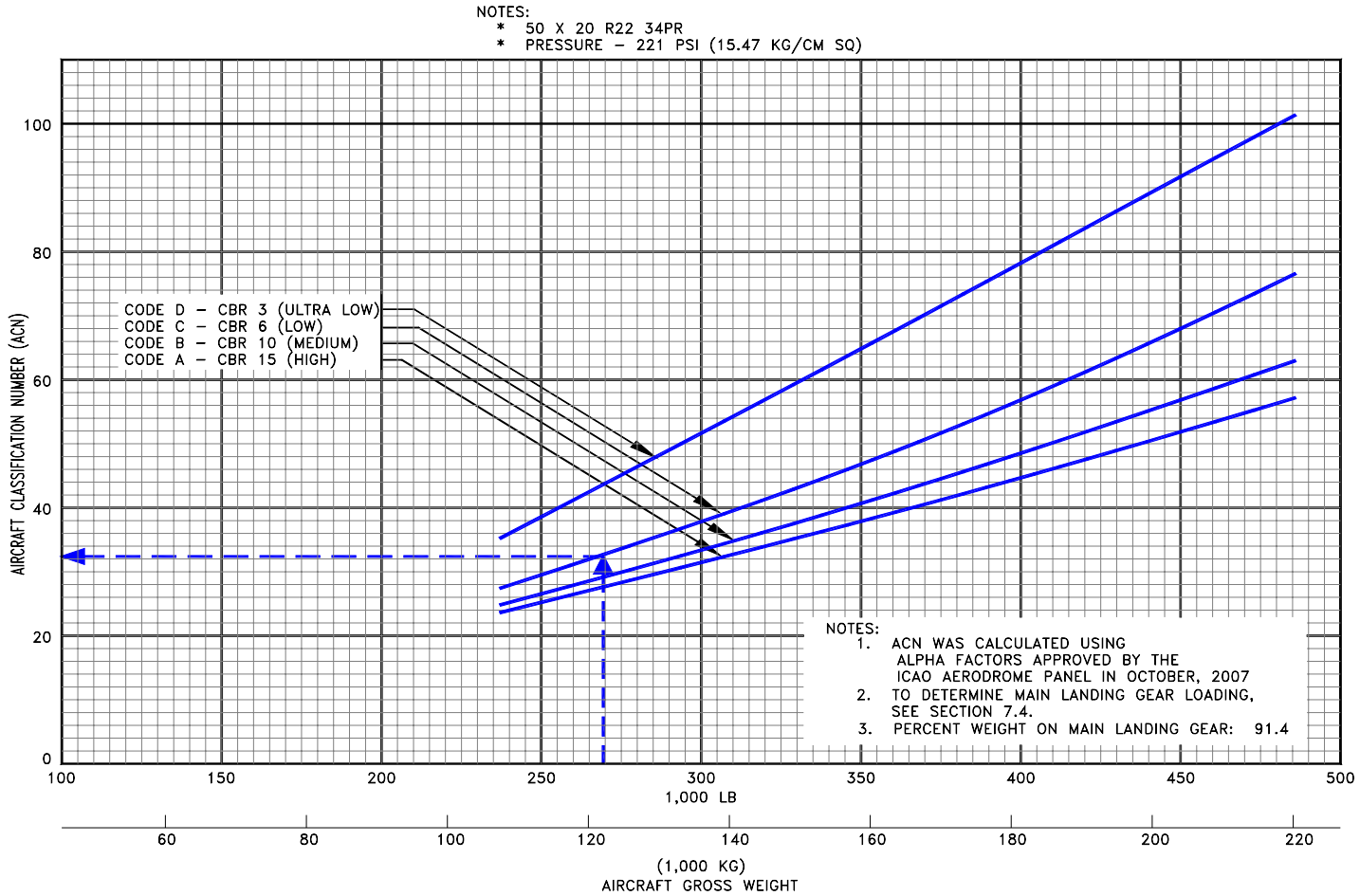
Preliminary Data

CHARACTERISTICS	UNITS	787-8
MAX DESIGN	POUNDS	478,000
TAXI WEIGHT	KILOGRAMS	216,817
NOSE GEAR TIRE SIZE	IN	40x16.0R16/26PR
NOSE GEAR	PSI	187
TIRE PRESSURE	KG/CM^2	13.15
MAIN GEAR TIRE SIZE	IN	50X20.0R22/34PR
MAIN GEAR	PSI	221
TIRE PRESSURE	KG/CM^2	15.47

787-8 Pavement Loading
Rigid Pavement



787-8 Pavement Loading
Flexible Pavement



Worldwide Market Interest Strong

736 Announced Orders

Program Schedule

Airplane Announcement

Authority to Offer

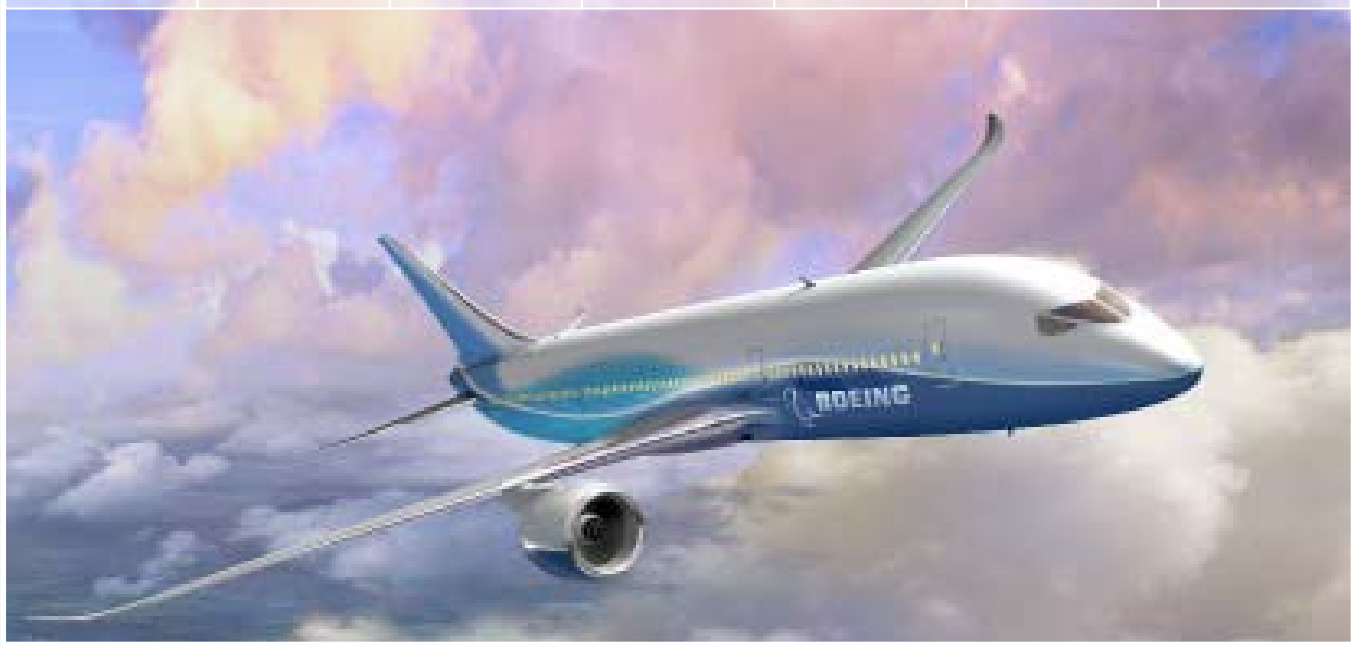
Customer Commitments

Firm Configuration

First Flight

Certification and Delivery

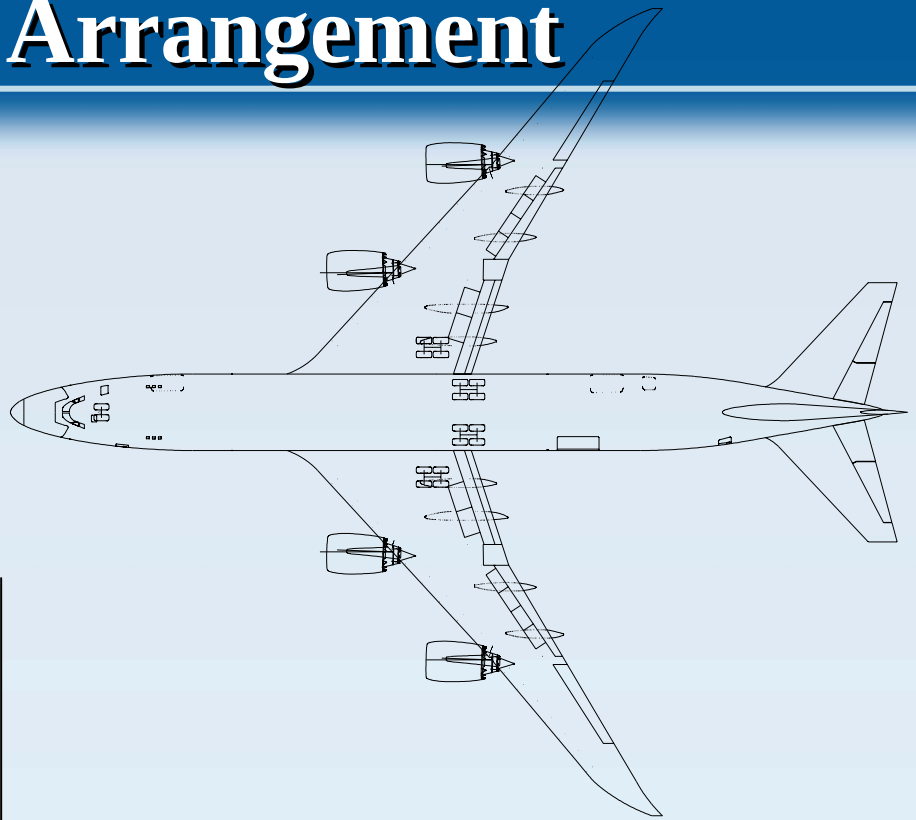
2002	2003	2004	2005	2006	2007	2008

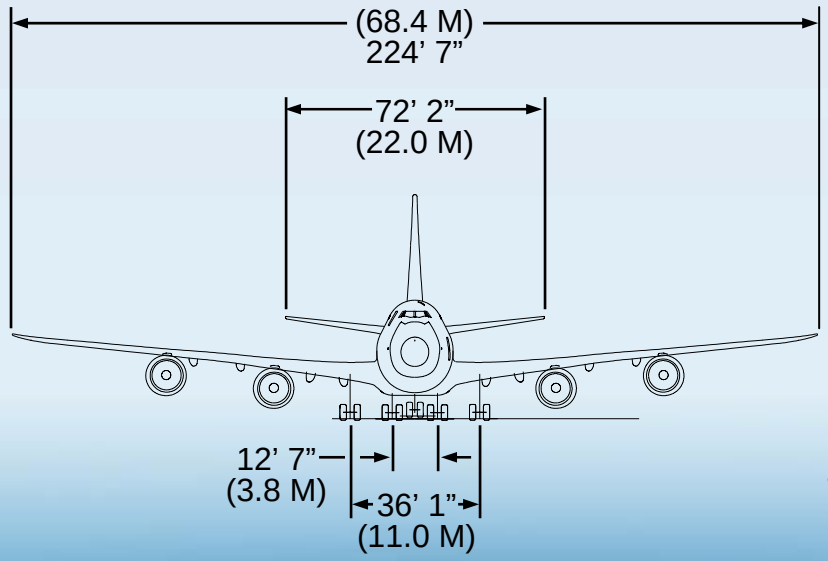


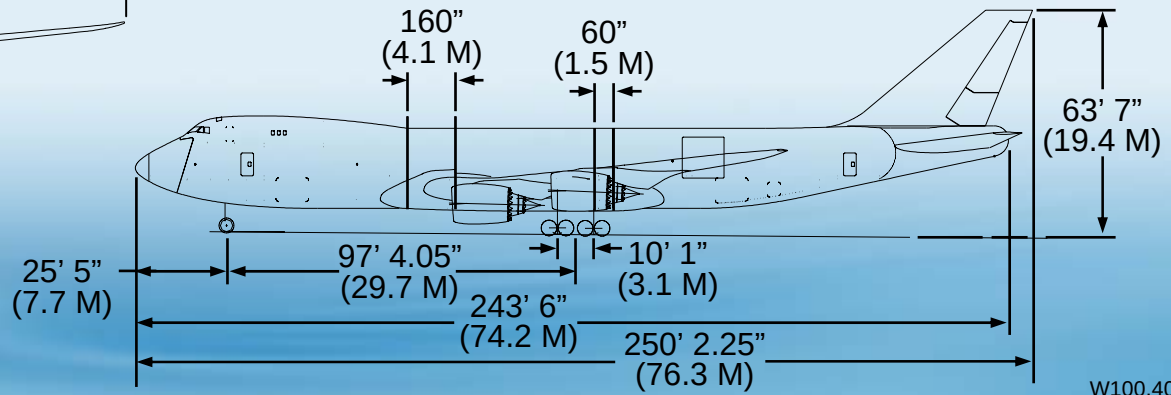
747-8 Program

- 963,000-lb (436,810-kg) MTOW
- Increased wingspan (225 feet)
- Increased fuel capacity
- Cruise speed 0.86 mach
- 11.7 ft (3.6m) stretch
- New 787 advanced-technology engines
- 8000 nmi range

747-8 Freighter – General Arrangement

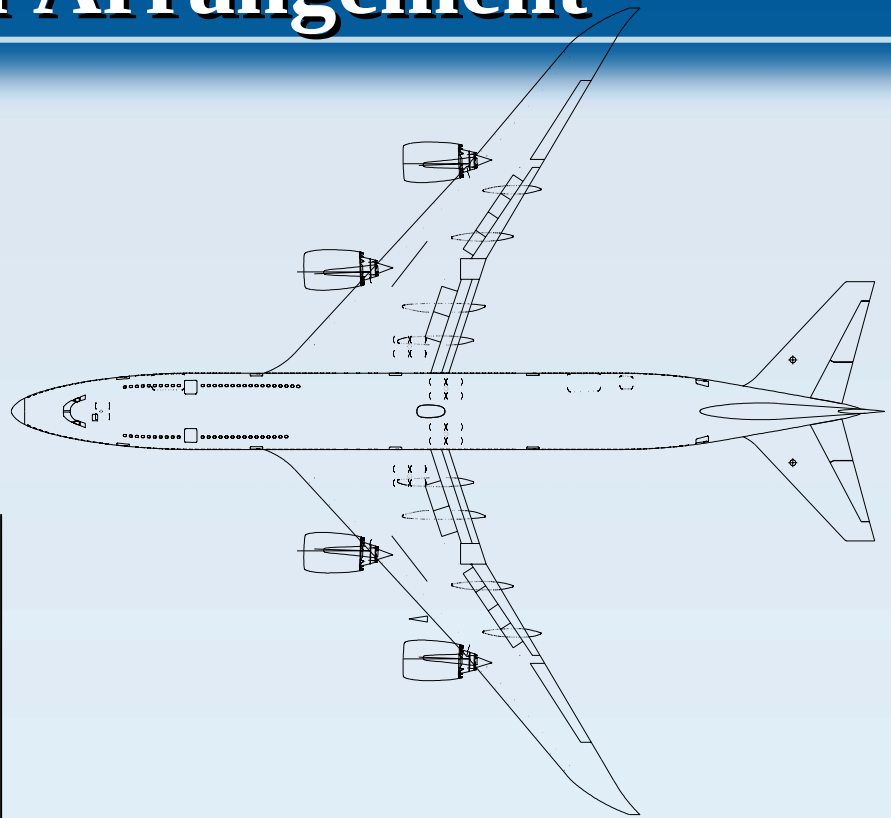


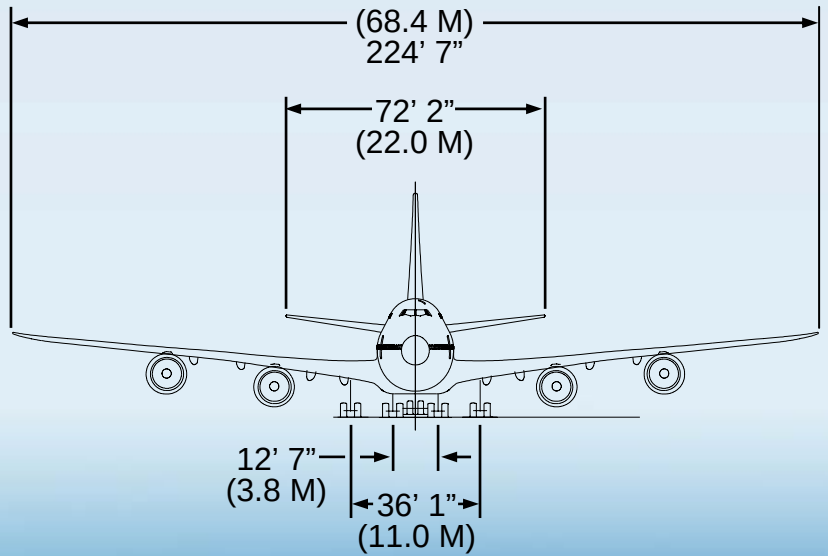


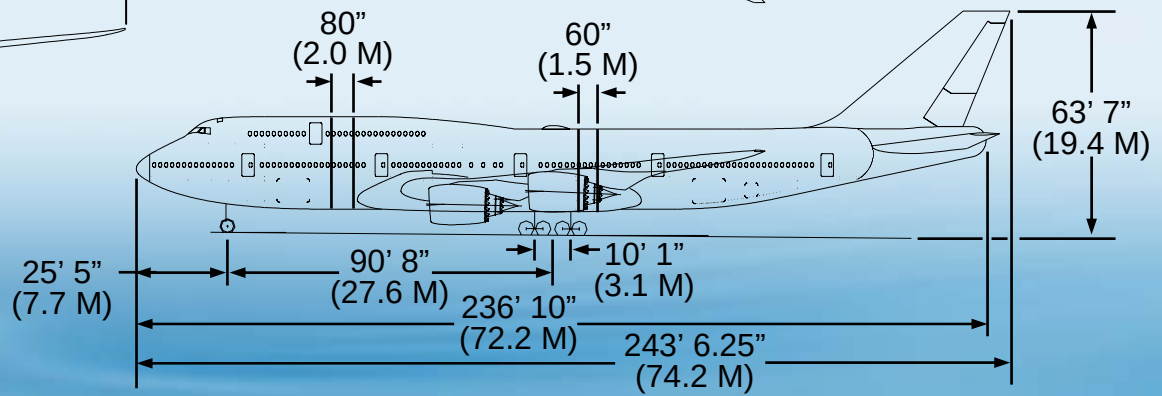


Preliminary Data

747-8 Intercontinental – General Arrangement

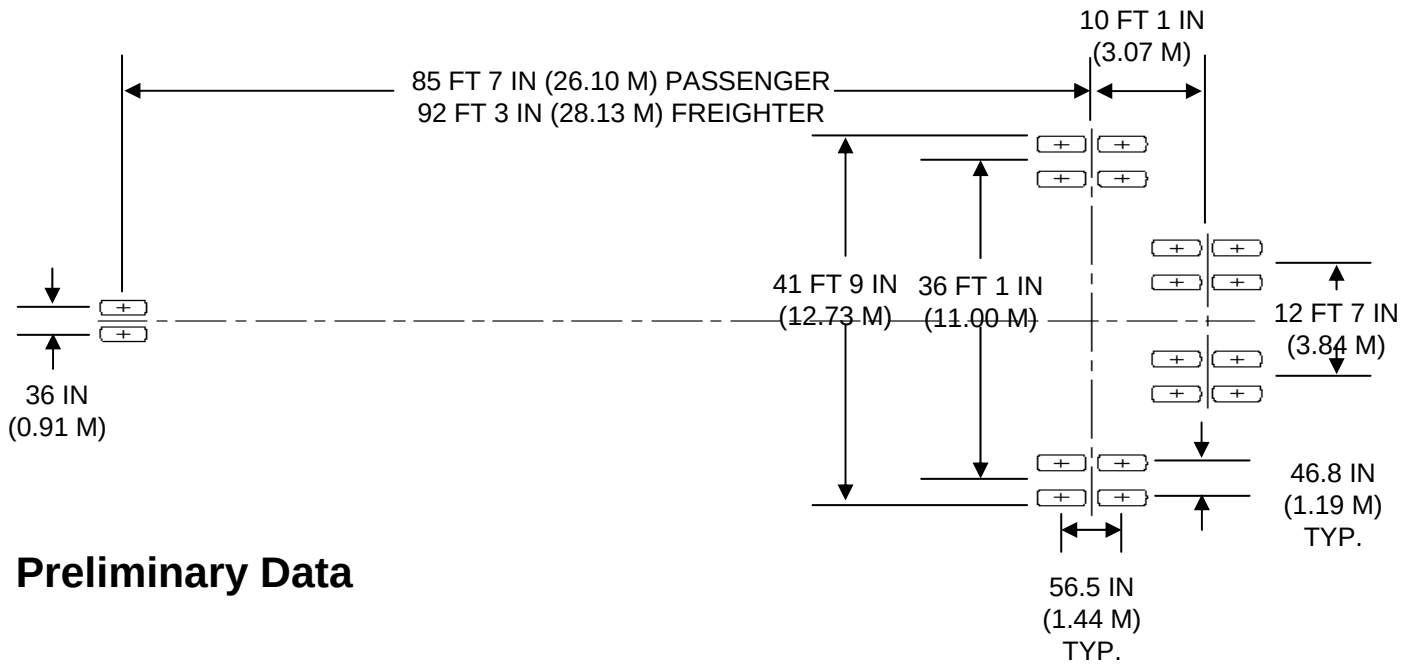






Preliminary Data

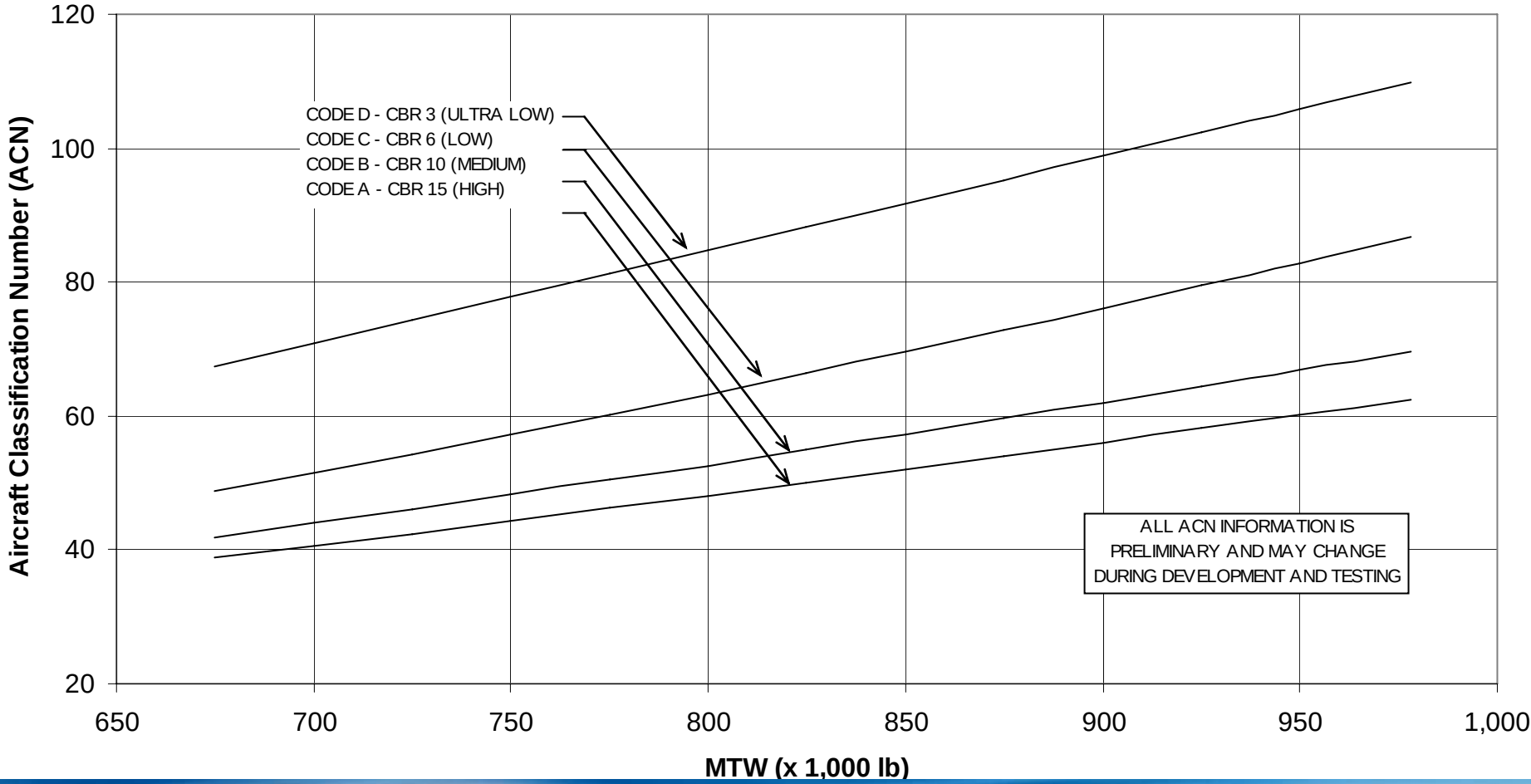
747-8 Landing Gear Footprint



Preliminary Data

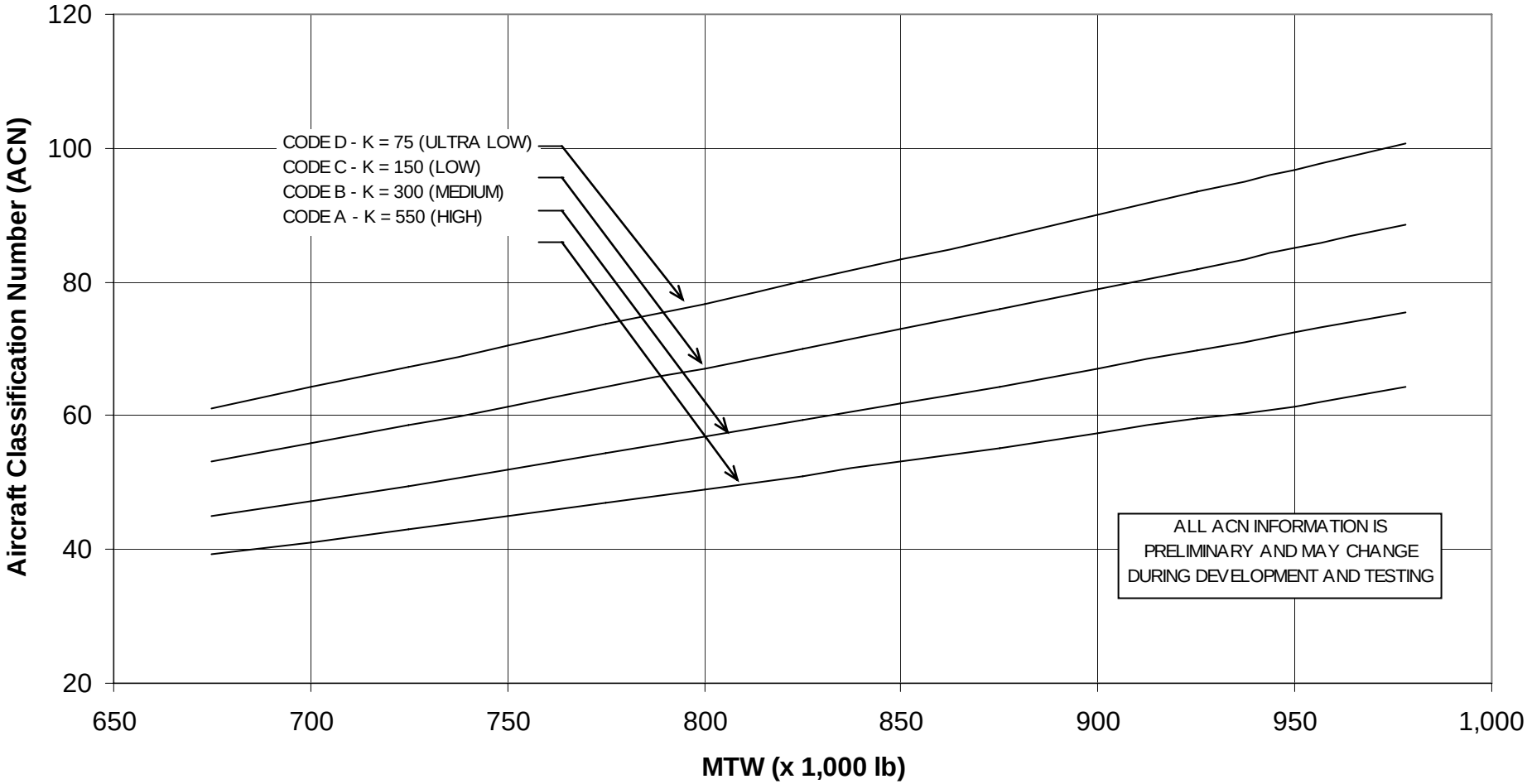
CHARACTERISTICS	UNITS	747-8 PASSENGER	747-8 FREIGHTER
MAX DESIGN TAXI WEIGHT	POUNDS	963,000	963,000
	KILOGRAMS	436,809	436,809
NOSE GEAR TIRE SIZE	IN.	50x20R22/34PR	50x20R22/34PR
NOSE GEAR TIRE PRESSURE	PSI	190	190
	KG/CM^2	13.36	13.36
WING GEAR TIRE SIZE	IN.	52x21R22/36PR	52x21R22/36PR
WING GEAR TIRE PRESSURE	PSI	220	220
	KG/CM^2	15.47	15.47
BODY GEAR TIRE	IN.	52x21R22/36PR	52x21R22/36PR
BODY GEAR TIRE PRESSURE	PSI	220	220
	KG/CM^2	15.47	15.47

747-8 Flexible Pavement ACN



Flexible ACN's are based on the Alpha Factors approved by ICOA in October 2007

747-8 Rigid Pavement ACN



Range Capability From Chicago
Full Passenger Payload

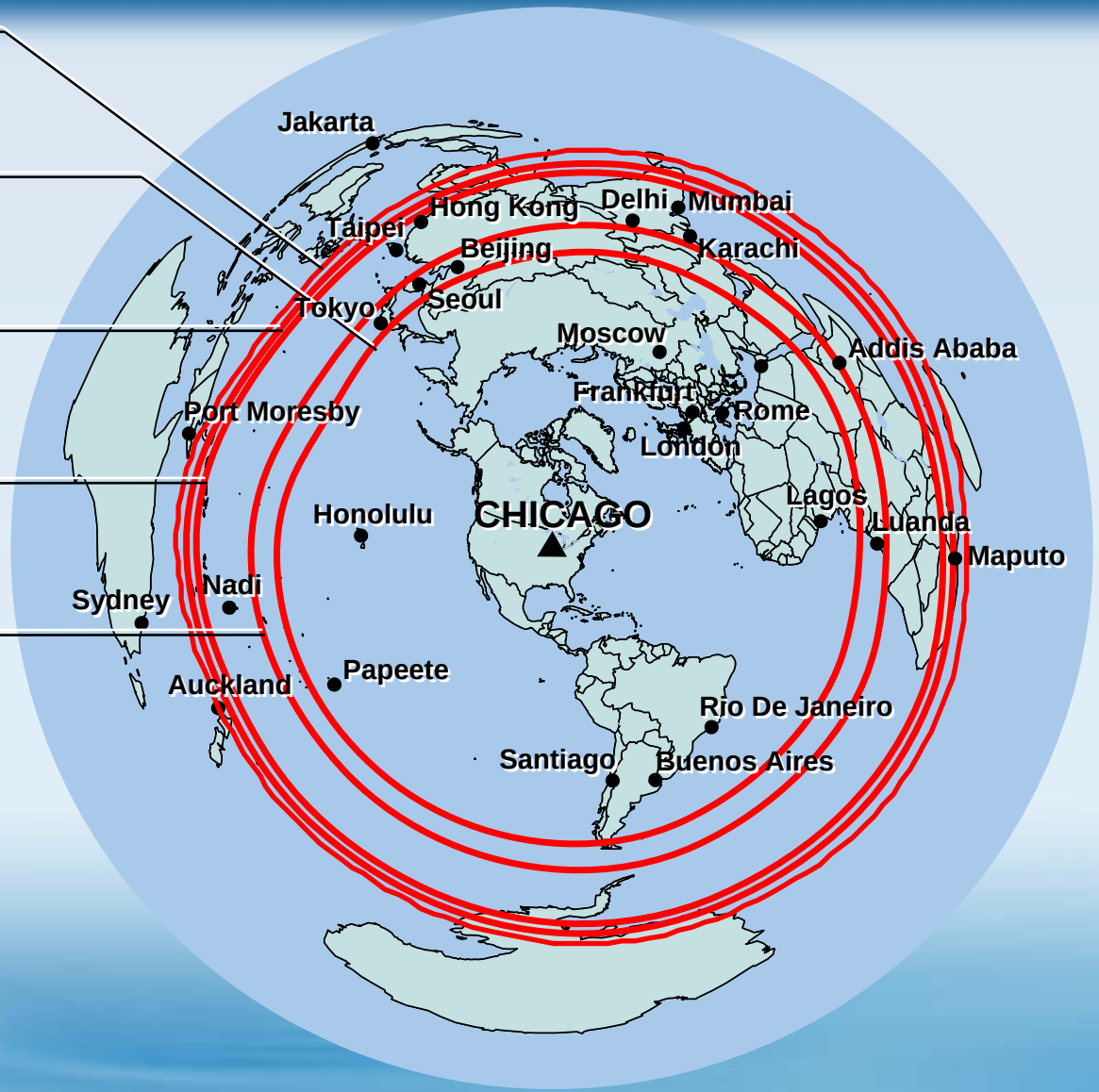
747-8
975,000-lb (442,252-kg) MTOW
467 three-class passenger

767-300ER
409,525-lb (185,755-kg) TOGW*
218 three-class passengers

777-200ER
656,000-lb (297,556-kg) MTOW
301 three-class passenger

787-8
484,000-lb (219,538-kg) MTOW
242 three-class passenger

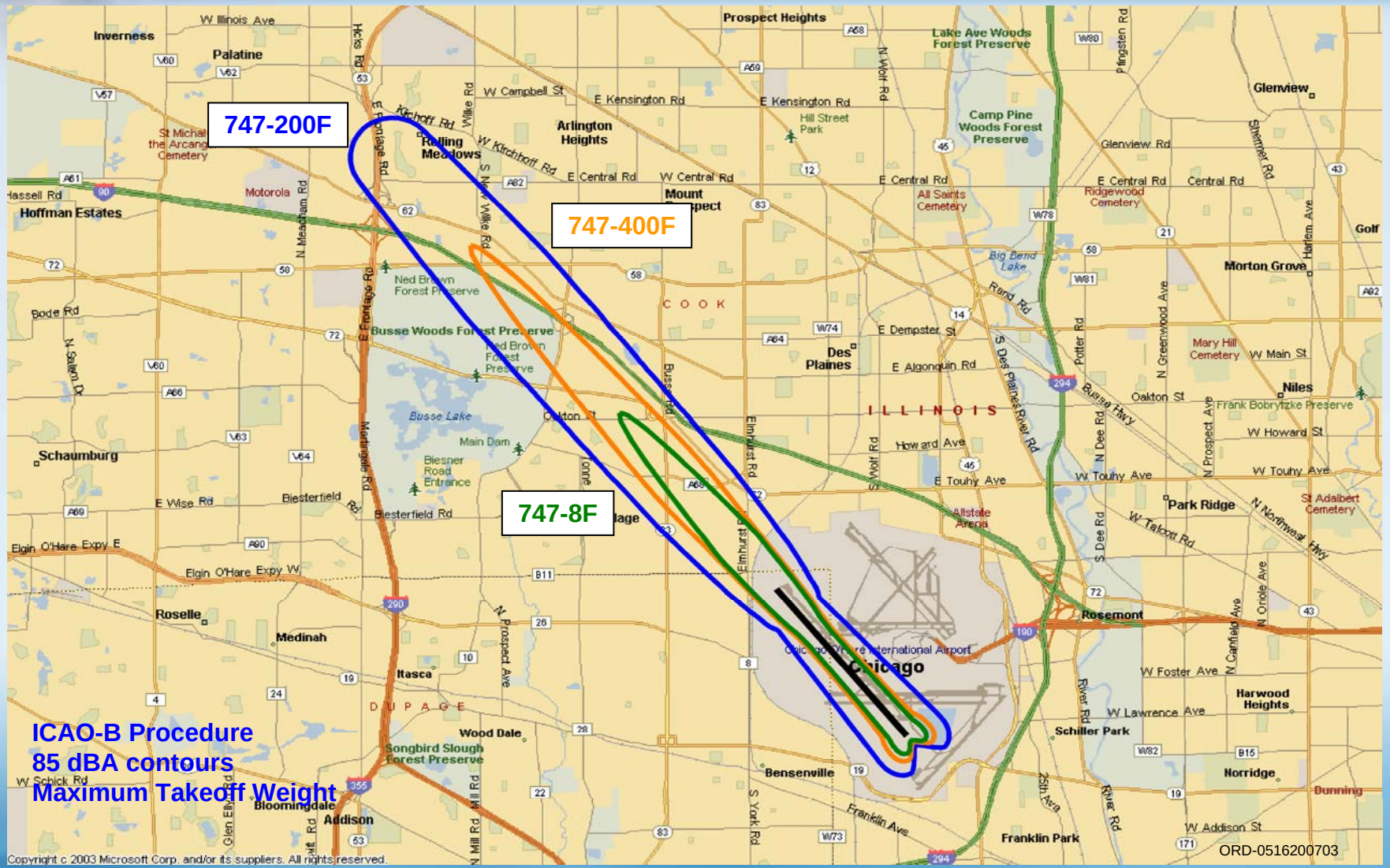
A330-200
513,700-lb (233,010-kg) MTOW
245 three-class passenger



Conditions:
- Typical mission rules
- 85% annual winds
- Airways and traffic allowances included

* Fuel Volume Limited

747-8 Freighter Community Noise



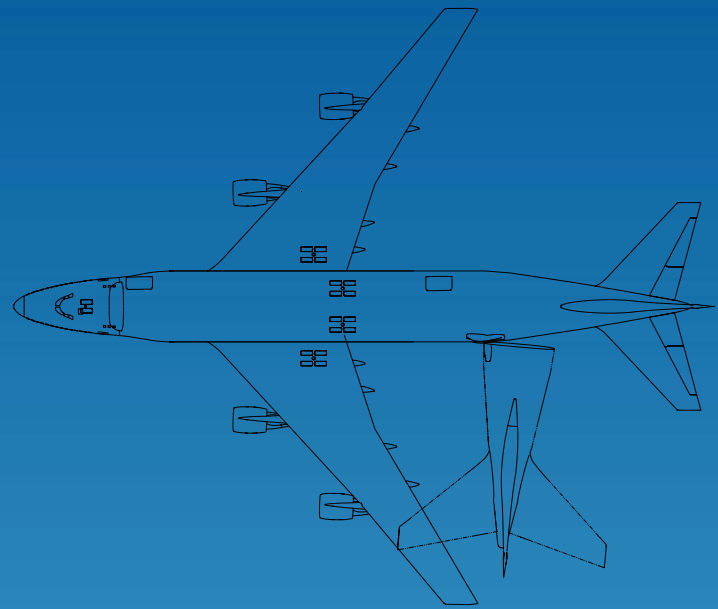
98 Announced Orders for the 747-8

As of November 9, 2007

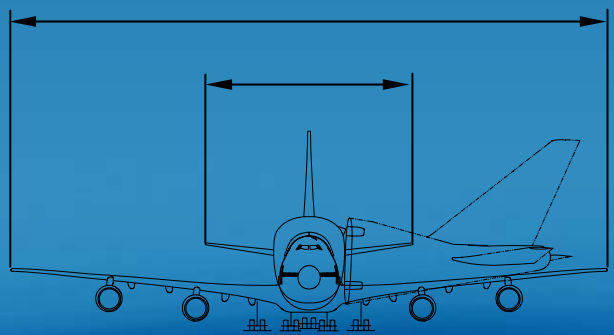
13 cargolux	20 Lufthansa
14 NCA Nippon Cargo Airlines	4 GUGGENHEIM
12 ATLAS AIR	5 BBJ Boeing Business Jets
10 Emirates SkyCargo	5 KOREAN AIR
5 AirBridgeCargo	10 Cathay Pacific

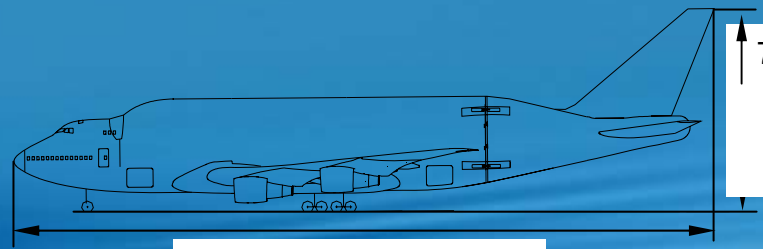
747 Large Cargo Freighter (LCF)

General Arrangement
747 LCF



211 ft 5 in (64.4 m)





70 ft 8 in (21,5 m)

243 ft 11 in (74.3 m)

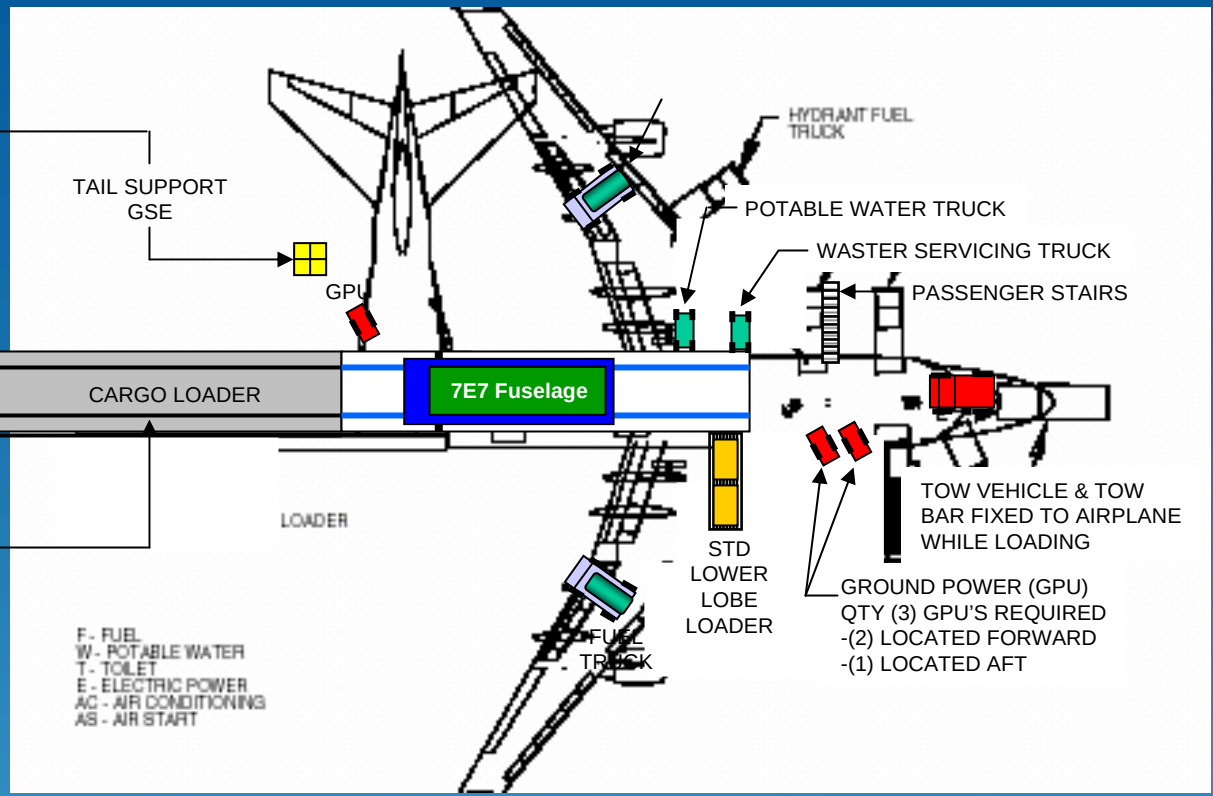
Ground Servicing Arrangement
747 LCF

Hinged Tail Support GSE

(Required at each Airport)

Cargo Loader

(Required at each Airport)



ADDITIONAL GSE REQUIRED (NOT SHOWN)

ENGINE AIR START CART

AIR CONDITIONING GROUND UNIT

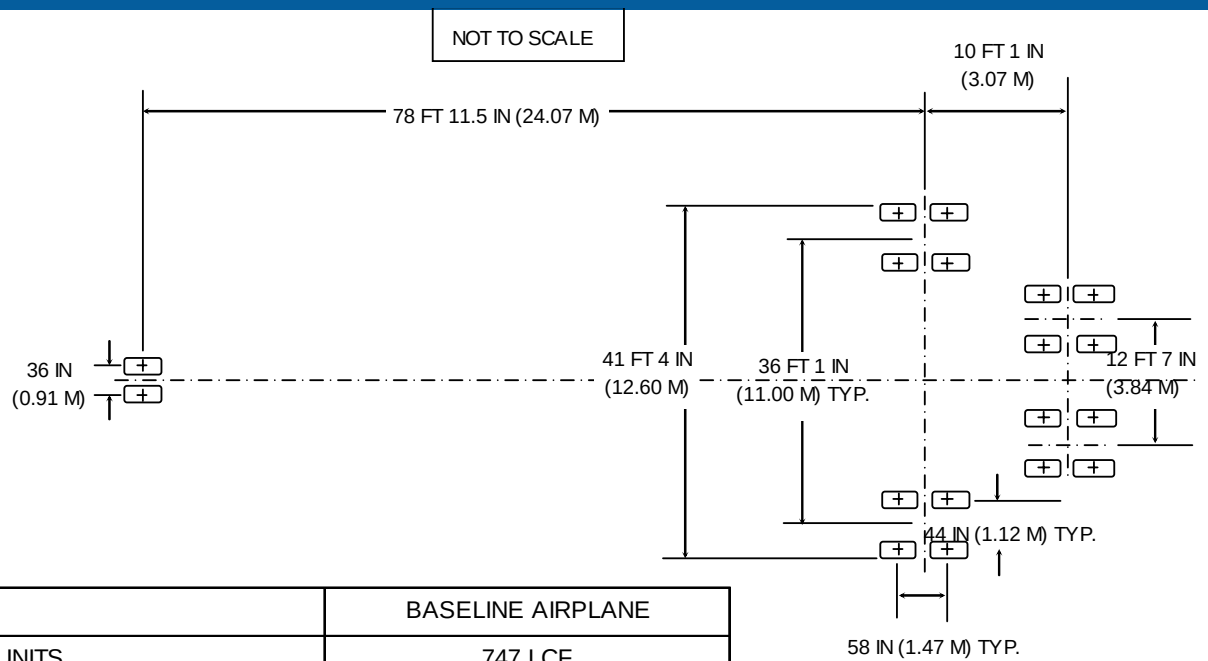
WHEEL CHOCKS (MLG & NLG)

LIGHTING FOR VISIBILITY AT NIGHT

(PORTABLE LIGHTS ON STANDS)

Landing Gear Footprint
747 LCF

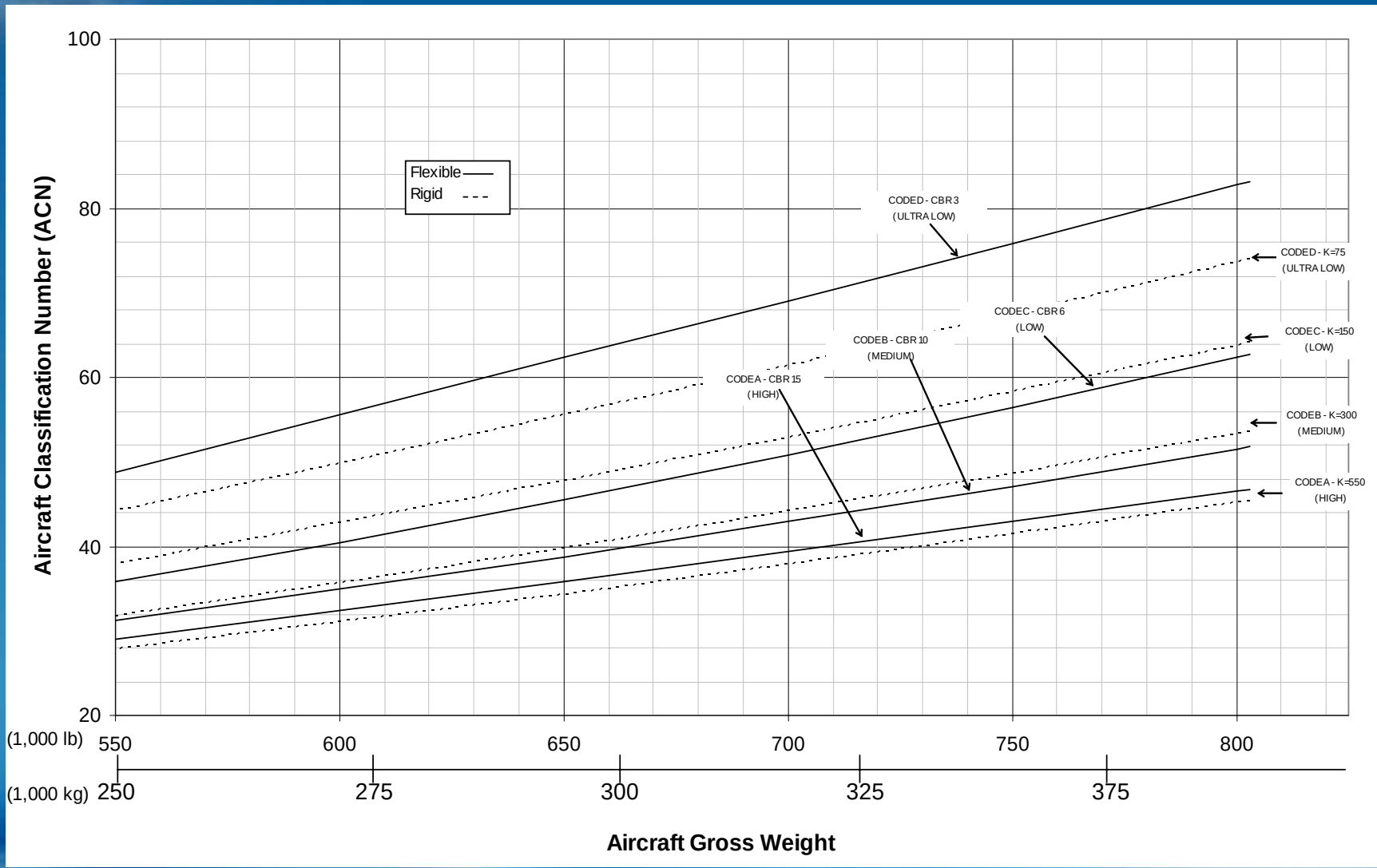
* Foot Print the same as 747-400



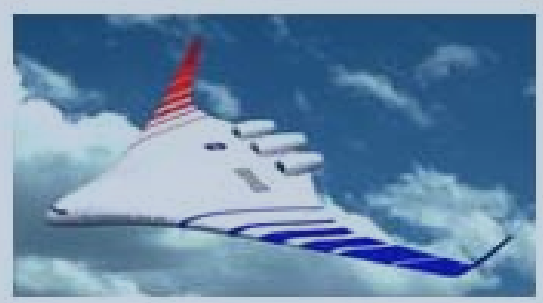
		BASELINE AIRPLANE
CHARACTERISTICS	UNITS	747 LCF
MAX DESIGN	POUNDS	803,000
TAXI WEIGHT	KILOGRAMS	364,235
NOSE GEAR TIRE SIZE	IN.	H49X19.0-22 (32PR)
NOSE GEAR	PSI	175
TIRE PRESSURE	KG/CM^2	12.3
WING GEAR TIRE SIZE	IN.	H49X19.0-22 (32PR)
MAIN GEAR	PSI	190
TIRE PRESSURE	KG/CM^2	13.36

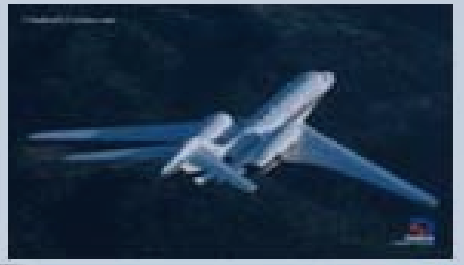
Aircraft Classification Number (ACN)

747 LCF



Innovative Concepts



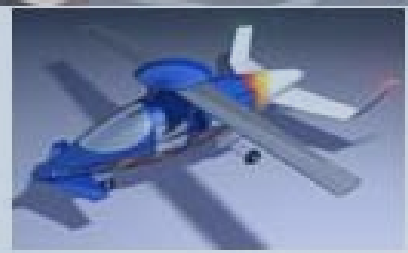




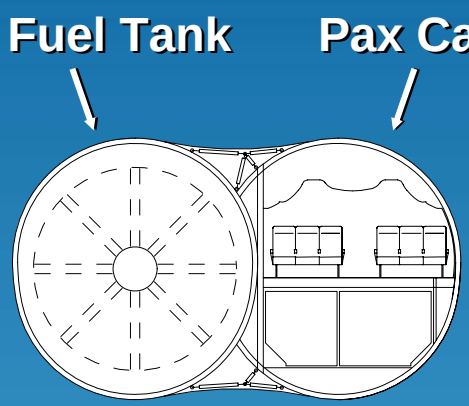




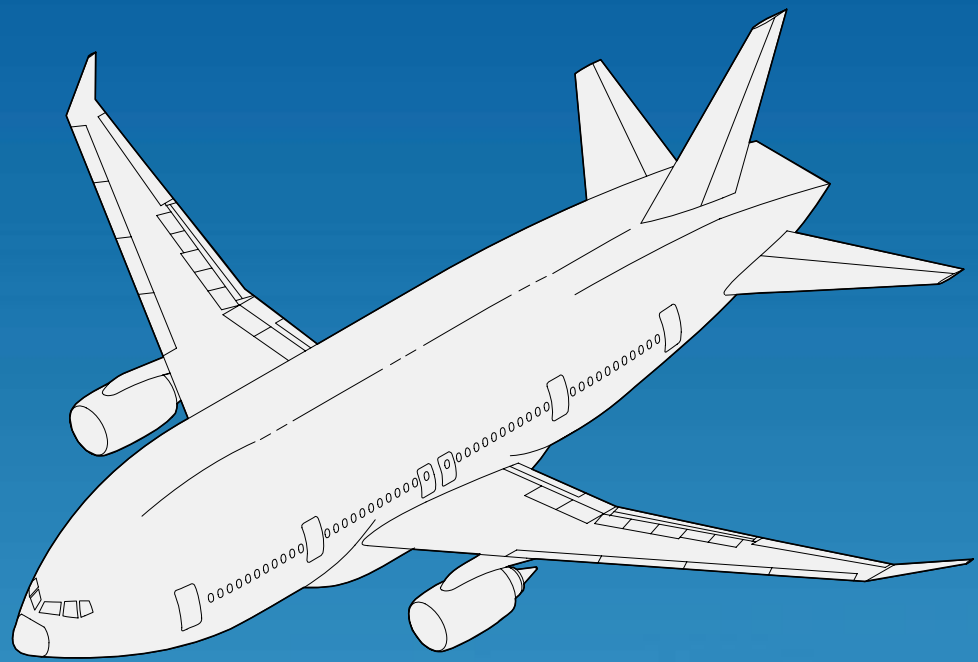




Large Side LH2 Fuel Tank Option



Airplane Cross Section



Liquid Hydrogen
(LH_2) Airplane

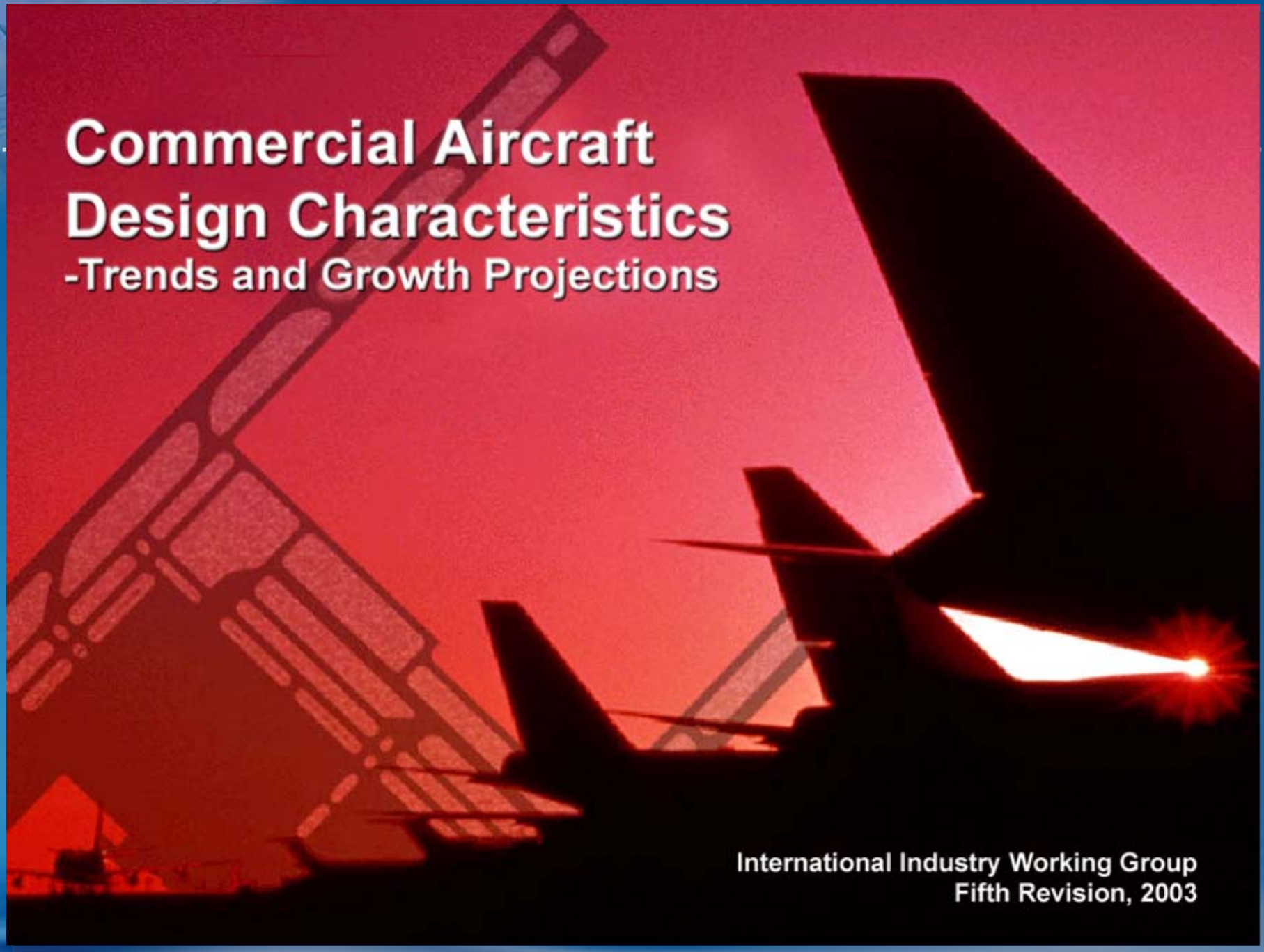
Airport Planning Manuals

http://www.boeing.com/airports/

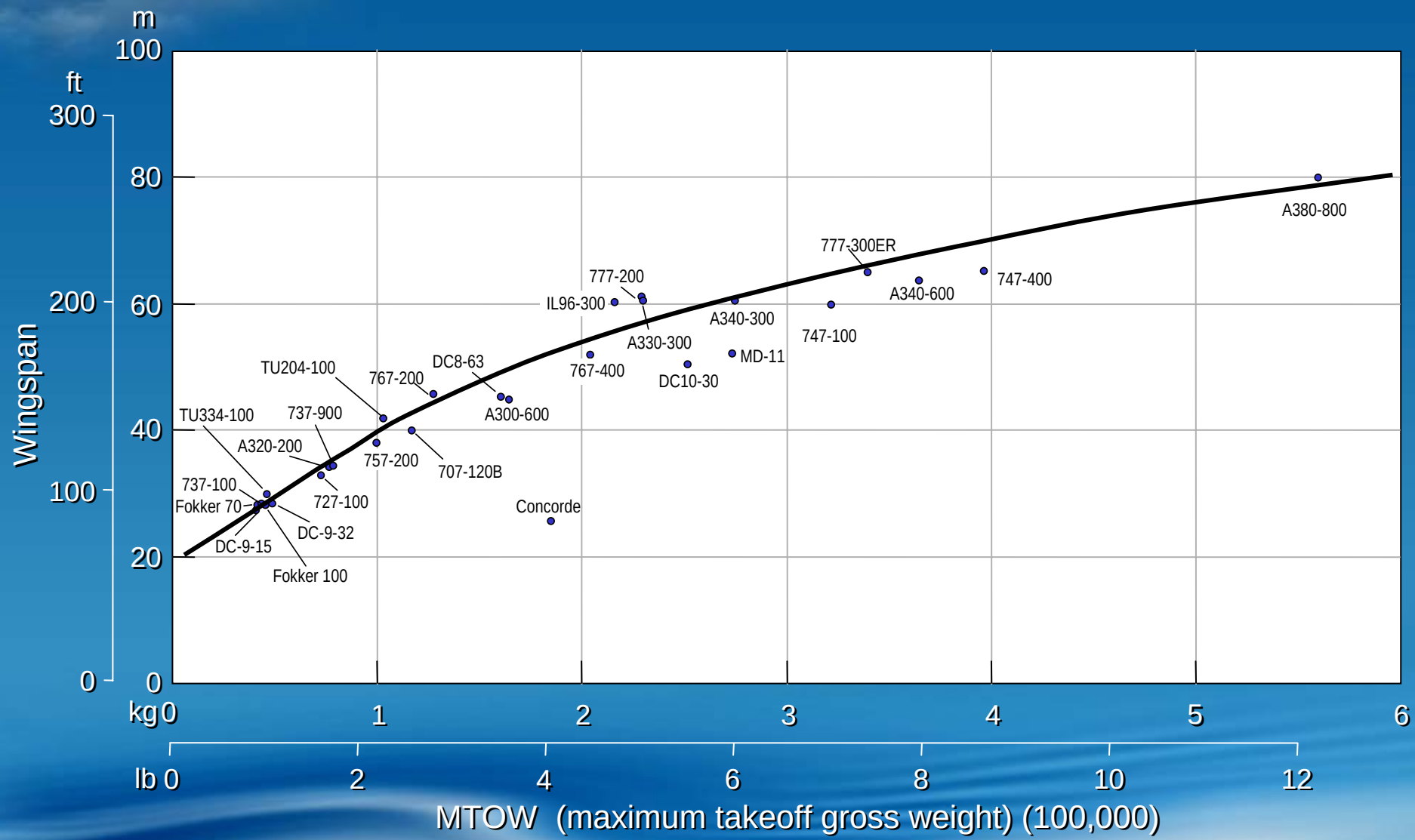
Airport Technology

Airplane Characteristics for Airport Planning

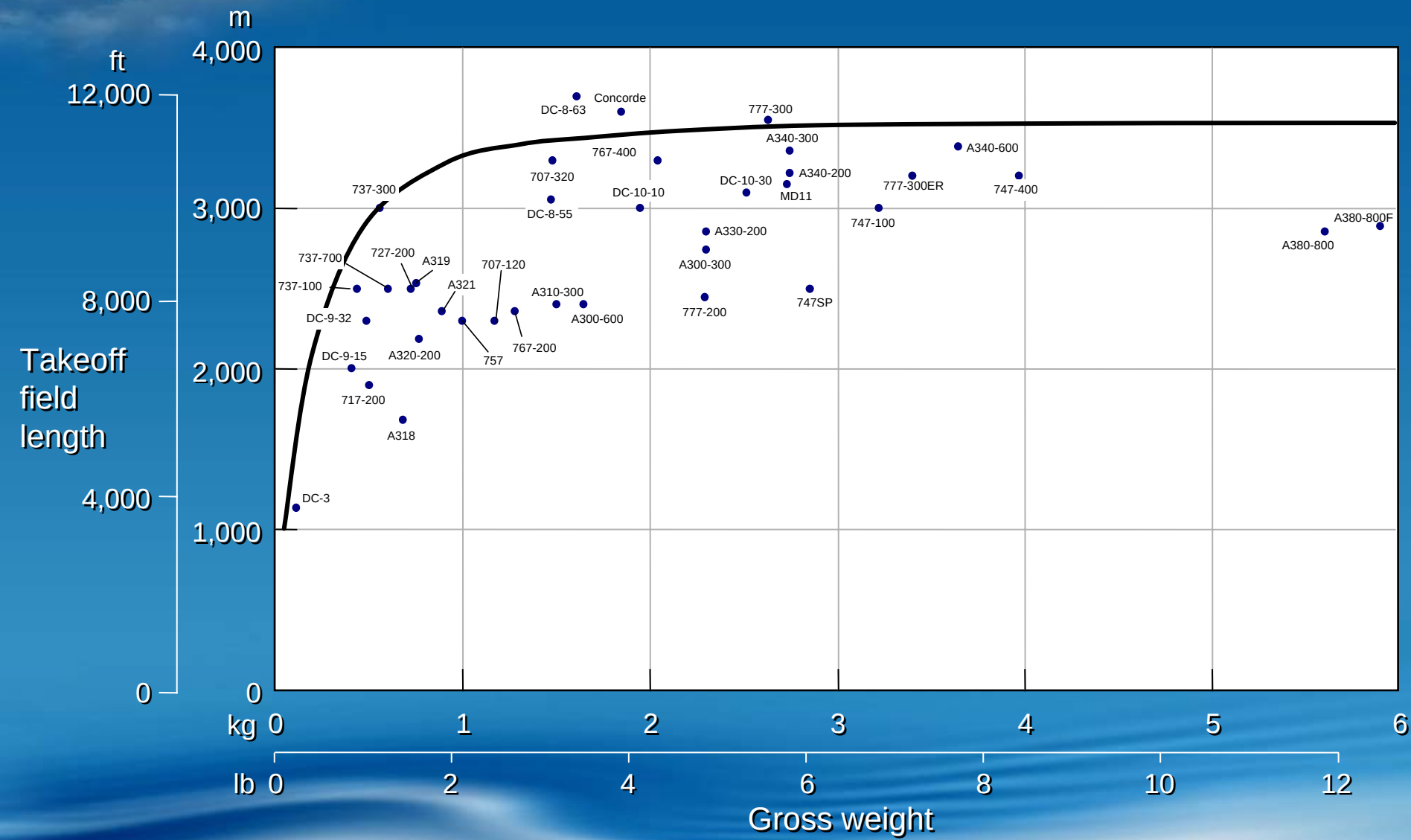
Airplane	Version	Document	Revision	Date
707	(all versions)	D6-58322	-	December 1968
717	(all versions)	D6-58330	A	August 2001
720	(all versions)	D6-58323	-	March 1969
727	(all versions)	D6-58324	C	April 1985
737	100/200	D6-58325	D	September 1988
	300/400/500	D6-58325-2	A	July 1990
	600/700/800/900	D6-58325-3	D	December 2001
	700/800/900 (Winglets)	D6-58325-5	A	September 2003
747	100/200/300/SP	D6-58326	E	May 1984
	400/400ER	D6-58326-1	D	December 2002
757	(all versions)	D6-58327	F	August 2002
767	200/300/200ER/300ER	D6-58328	G	December 2003



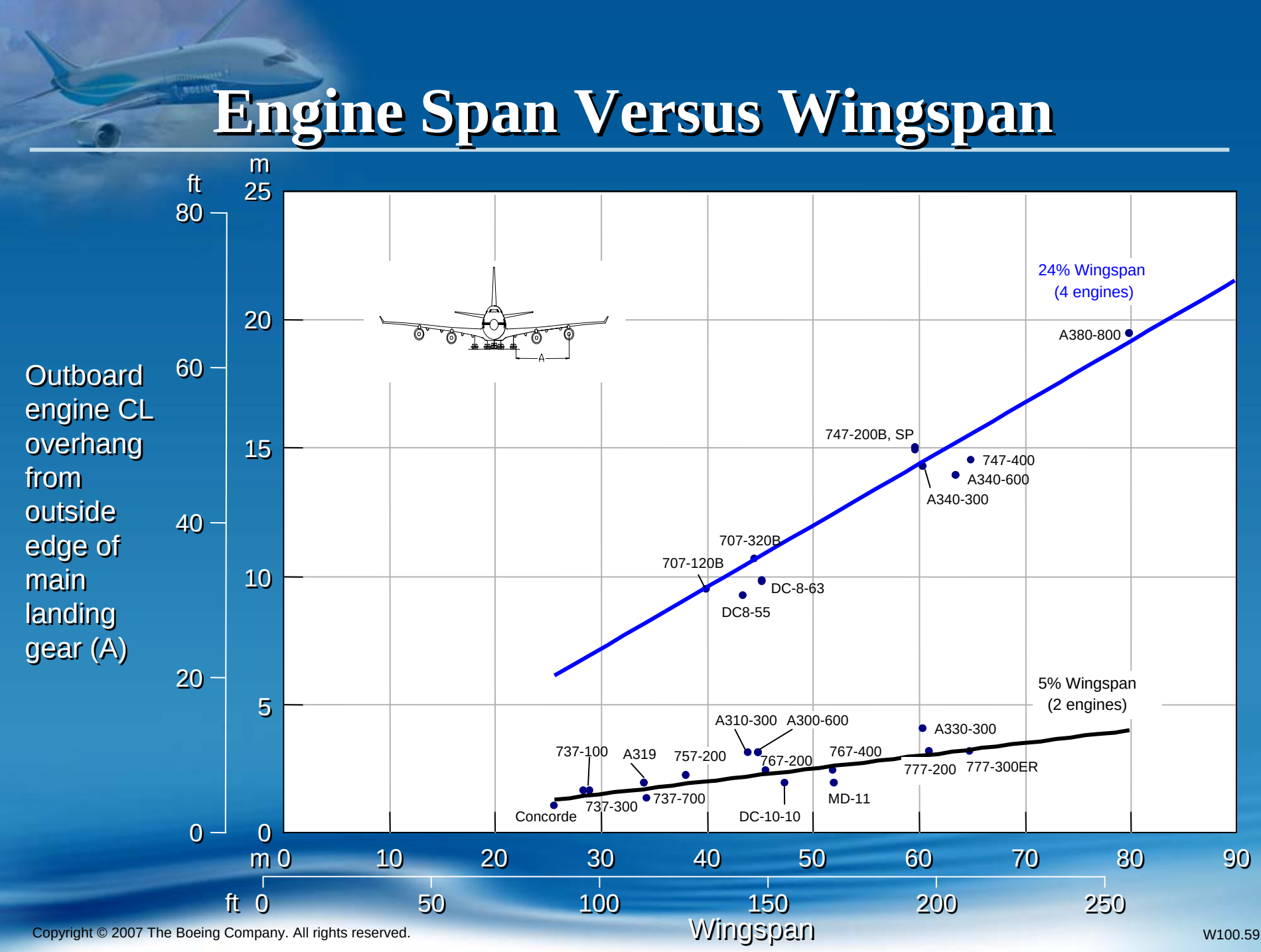
Wingspan Growth Versus Gross Weight



Takeoff Field Length

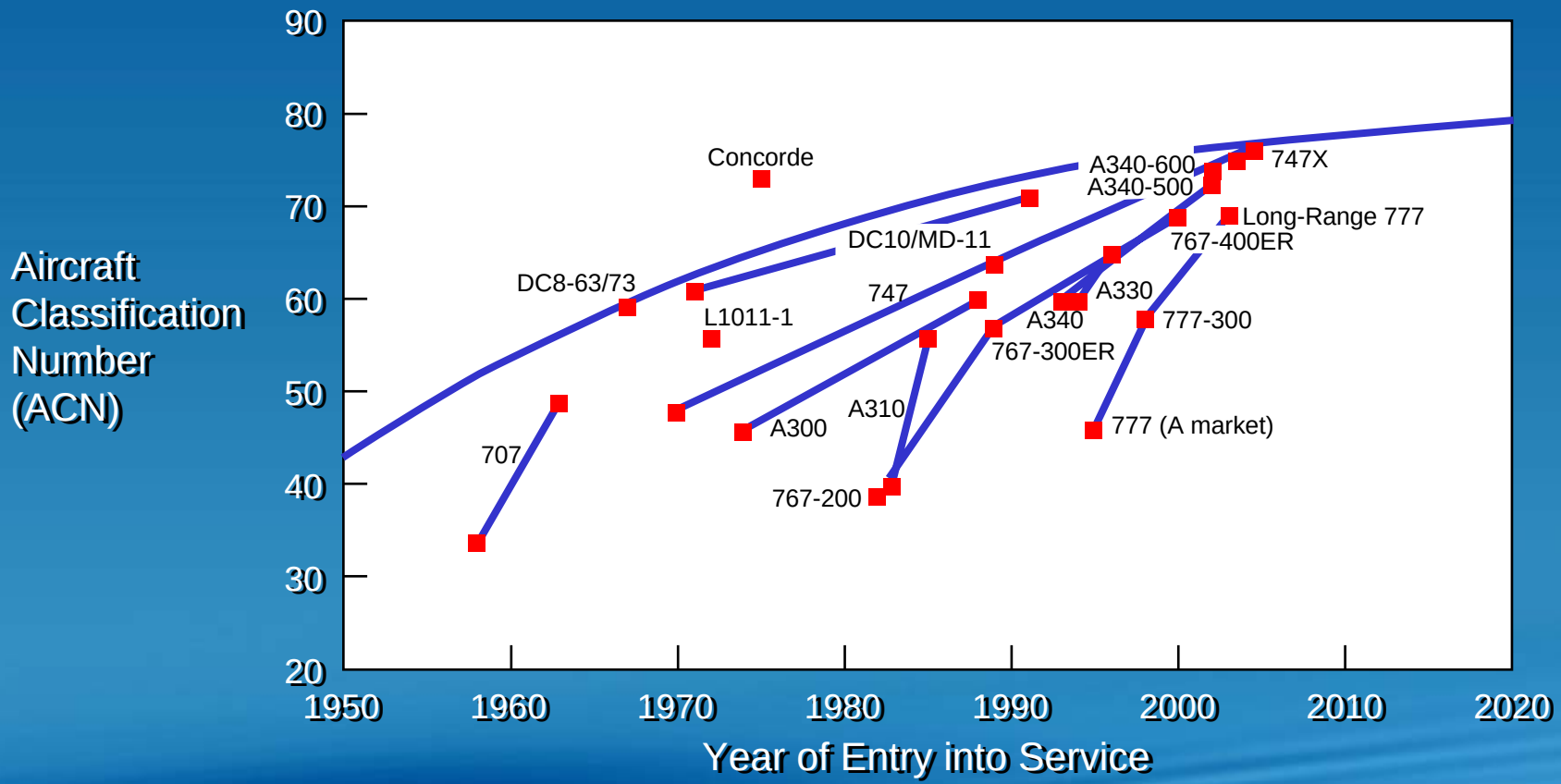


Engine Span Versus Wingspan



Trends in Pavement Loading

Trend in ACN Flexible Pavement – Code B Subgrade



Federal Aviation Administration Great Lakes Region

23rd Annual Airport Conference

Edward L. Gervais, P.E.
Technical Fellow – Airport Technology
Boeing Commercial Airplanes
Renaissance Schaumberg Hotel - Schaumberg, Illinois
November 29, 2007