



THE LAUNCH OF THE BOEING 747-100 HERALDED THE BEGINNING OF THE ERA OF MASS AFFORDABLE AIR TRAVEL. AS THE QUEEN OF THE SKIES CELEBRATES 50 YEARS OF AMAZING SERVICE THIS YEAR, LET'S LOOK INTO HER REMARKABLE HISTORY

*years  
of the*

*Words by Jennifer Coultts Clay*





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ABOVE: AN ICONIC LOGO, AIRLINE AND AIRCRAFT

BELOW: MANY EARLY B747s FEATURED LUXURIOUS FIRST CLASS LOUNGES ON THE UPPER DECK  
PHOTOS: PAN AM MUSEUM FOUNDATION



Television reports regularly show the President of the United States waving from the boarding door of a huge aircraft known as Air Force One. Do viewers realize that the President is flying on a Boeing 747? This is the same 'Jumbo' jetliner that has successfully carried billions of airline passengers over the past five decades. So how did the Jumbo's development start?

Boeing annals show that the world's first wide-body twin-aisle aircraft was built in just 29 months by hand (i.e. no robots). During the B747 feasibility process, including definition, design, development, testing, certification and introduction into service, 75,000 engineering drawings were generated – and those were pre-computer days...

The first B747-100 test flight took place at Everett, Washington, on February 9, 1969. There were two more aviation sensations that year: on March 2, André Turcat piloted the first Concorde test flight at Toulouse; and on July 20, Neil Armstrong and Buzz Aldrin walked on the moon while Michael Collins orbited in Apollo 11.

Some 50 years later, Concorde services are no more and extra-planetary missions remain the preserve of astronauts; but the B747 has revolutionized long-haul air travel.

#### WHO WERE THE INNOVATORS?

Inspired by the achievements of B707 operations, for which Pan Am had been the launch customer, Juan Trippe, the airline's formidable chief executive, predicted a vast increase in intercontinental air travel during the ensuing

ABOVE LEFT: AN INFLIGHT DINING EXPERIENCE MANY AIRLINES NOW DREAM OF BEING ABLE TO OFFER  
PHOTO: PAN AM MUSEUM FOUNDATION

decades. In the mid-1960s, Trippe forcefully argued the case for a completely new jetliner design that would carry two to three times as many passengers as the B707. He eventually sealed his business plans with a handshake at Boeing: according to contemporary reports, Trippe said "If you build it, I'll buy it", to which Bill Allen, then-chairman of Boeing, responded "I'll build it if you buy it".

Although reportedly verging on bankruptcy, Boeing constructed at Everett the world's biggest building by volume to house the production of the B747, – at that time the largest commercial aircraft ever built. A dedicated team of engineers was assembled – called 'The Incredibles' – led by the legendary Joe Sutter.

In his book *747: Creating the world's first Jumbo Jet and other adventures from a life in aviation* (Smithsonian Books, 2006), Sutter outlines Boeing's two-stage marketing strategy



LEFT: A BRIGHT AND SPACIOUS UPPER DECK CLIPPER LOUNGE

BELOW: IN-SEAT LUXURIES IN FIRST CLASS INCLUDED SEVEN-CHANNEL AUDIO IFE

INSET BELOW: CONTRASTING SEAT COVERS VISUALLY BROKE UP THE LARGE ECONOMY CABINS  
IMAGES: PAN AM MUSEUM FOUNDATION

previous long-range aircraft. With 16 cabin crew and much improved inflight service standards, passengers were able to enjoy the interior spaciousness, plush cabin furnishings, 10% wider seats, bigger armrests and the smooth quiet ride. Naturally, everyone loved the attractive economy class fares.

“For the four-engine program, Pratt & Whitney developed a high-bypass turbofan engine, the JT9D-3, generating more than 40,000 lb of thrust, and the B747

for B747s: when no longer required for passenger service they would fly as freighters. Hence the unprecedented width of the passenger cabin: 20ft (6m), compared with 12ft 4in (3.8m) for the B707, to accommodate high-density passenger loads with twin aisles. The cabin could accommodate 20in (51cm) wide, 10-abreast economy class seating, or main-deck double pallet-loading based on the standard dimensions of 8 x 8ft (2.4 x 2.4m) containers. The ‘weird hump’ at the front of the fuselage was to accommodate the massive hinged nose-section, or ‘mouth’, for straight-in front cargo-loading. The three-crew cockpit was positioned above the main deck.

“Would the B747 have been built without Pan Am?” mused Joan M Benham, formerly system director for frequent traveler marketing at Pan Am, during a recent interview. “Probably not. Juan Trippe had a vision: to provide an aircraft capable of flying more passengers and more cargo further and faster than ever before.

“Pan Am’s initial commitment of US\$590m was made without even seeing a prototype of the B747. And Pan Am played a dominant role in the engineering and design aspects of the aircraft,” she added. “Of prime importance was the objective to build an airplane that would prove safer, more efficient, more comfortable and easier to fly than any other



flew at 30% lower operating costs than its predecessors, contributing to airline profitability.”

#### WHY PLAN B FOR FREIGHTERS?

Sutter’s memoirs describe the wave of optimism that swept through the aviation sector in the ‘sizzling’ 60s. In Europe, Russia and the USA, there was a firm belief that intercontinental passenger routes would soon be served purely by supersonic transport (SST). But those dreams did not materialize because of economic crises, the termination of the B2707 SST developments, the collapse of the Russian Tupolev SST program, spiking jet-fuel

## ABOUT THE AUTHOR

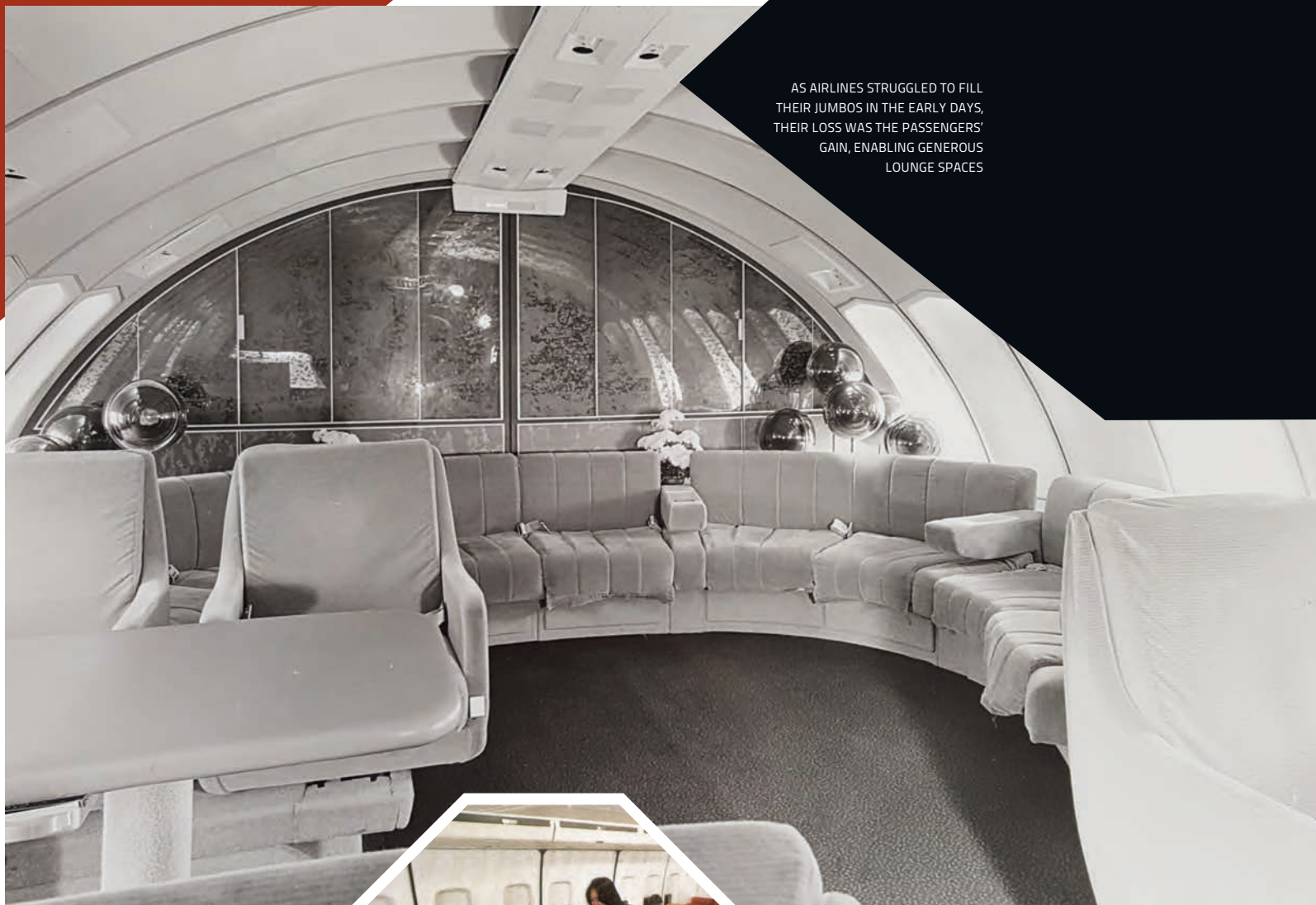
Jennifer Couatts Clay has worked on the refurbishment and upgrade of several Boeing 747 fleets, across all classes of service: at British Airways when she was controller of corporate

identity; at Pan American World Airways (Pan Am) when she was general manager of product design and development; and when she was consultant to South African Airways.

Jennifer is the author of the e-book *Jetliner Cabins: Evolution & Innovation*, available on Amazon, Apple iTunes and Google Play (more information at [www.jetlinercabins.com](http://www.jetlinercabins.com)).



AS AIRLINES STRUGGLED TO FILL THEIR JUMBOS IN THE EARLY DAYS, THEIR LOSS WAS THE PASSENGERS' GAIN, ENABLING GENEROUS LOUNGE SPACES



prices, and environmental concerns. And Concorde ceased operations in 2003.

Instead of SST, it was the B747 that opened up the world's long-haul routes and transformed the lives of countless numbers of airline passengers. It is only in recent years that airlines have started to retire B747s from passenger-service operations, and in several cases these units have been converted into freighters (kudos to Boeing strategists).



#### REACTION TO THE B747

Critics said the outline of the B747 resembled a “flying ocean liner” or “horizontal apartment block”. But the big-time gamble by Boeing and Pratt & Whitney (representing billions of dollars) quickly turned into a triumph.

At Paris Air Show in 1969, the ‘Queen of the Skies’ was a sensation, and Pan Am’s New York to London inaugural flight on January 21, 1970 created a media frenzy.

At New York’s JFK Airport, there was a vast expansion of the Pan Am hangar and workshop complex, along with a five-fold increase in passenger-handling facilities. B747 utilization averaged nine hours per day, and in September 1971 Pan Am carried its millionth B747 passenger.

Progressively, the B747 became one of the most readily recognized jetliners, operated by many dozens of airlines

in even the most remote parts of the world. In 1998, the total number of B747s in service peaked at over 1,000.

The B747 interior program was headed by Walter Dorwin Teague Associates (Boeing’s in-house design company), with input from Pan Am as launch customer.

Traditionally, galleys, lavatories and coat closets were positioned along the aircraft sidewalls. But in the B747, to free up space for more window seats, fixtures were moved to ‘center islands’ between the two aisles. There were six galleys and 12 lavatories: bracketed by cross-aisles, these structures created ‘divider walls’, sectioning the interior into separate ‘rooms’, designated A, B, C, D and E zones. The main and upper decks were connected by a stairway.

Other innovations included broad flat ceiling panels; flip-up armrests so that passengers could spread out when space was available; closable storage bins instead of hat-racks; PSUs located between seats because the ceilings were too high for access; stereo-sound, seven-channel plug-in audio-IFE; wide movie screens mounted on aft-facing decorative panels; and direct and indirect cabin lighting and wash-lit ‘architectural reveals’ on vertical sidewall panels to make windows seem larger and brighter, even though they were same size as the B707 windows.

Pan Am’s publicity announcements described the décor style as “gracious living”. The sidewalls were finished in ‘pale eggshell’, the basic shade for upholstery was ‘neutral

ABOVE: AMAZING INFLIGHT SERVICE HELPED MAKE A LONG FLIGHT AN ENJOYABLE EVENT  
PHOTOS: PAN AM MUSEUM FOUNDATION



stone beige, and wall-to-wall carpet was 'charcoal brown with grey flecks'. For variety, each zone had its own color identity: blue in first class, with gold, orange and scarlet in the remaining zones.

Asked about the cabins, Kelly Cusack, director of collections and curation at The Pan Am Museum Foundation ([www.ThePanAmMuseum.org](http://www.ThePanAmMuseum.org)) summarized: "In 1970, on the B747-100, Pan Am offered two classes of service with a total of 362 seats, compared with an average of 145 seats on the B707. There were 26 first class seats in A zone and 32 in B zone. Economy class seating was nine-abreast in C, D and E zones: 104, 86 and 114, respectively. The upper deck was furnished as an elegant cocktail lounge with 16 seats that were not sold to passengers.

"During the first oil crisis, airlines had problems with over-capacity. When Pan Am could not fill first class, the airline offered a 'convertible lounge' in B zone, with fore-and-aft seating. Depending on the competition, seats could be sold in B zone, or they could be made available free of charge as part of an economy class lounge.

"In 1972, Pan Am tested a 'dining room' concept in B zone. Following successful feedback, the airline refurbished its upper-deck lounges to accommodate the fabled 'Dining-in-the-Sky', designed by Maxim's de Paris.

"In 1974, Pan Am reduced first class seating to 30 in A zone; and B zone was converted to a quiet area for an innovative frequent traveler program: 10-abreast seating with fold-down middle-position seatbacks provided table space for newspapers, etc. Unsold seats were left empty, no movies were shown, and no children were booked in this zone."

To serve ultra-long-haul routes non-stop (e.g. New York to Tokyo, Los Angeles to Sydney, New York to Tehran), Boeing built the B747SP

ABOVE LEFT AND BELOW: PAN AM WAS AHEAD OF THE CURVE WITH MARKETING PREMIUM PRODUCTS TO FEMALE CUSTOMERS

ABOVE RIGHT: THE STAIRS THAT LED PASSENGERS UP TO EXTRAORDINARY LOUNGES AND EXPERIENCES

(Special Performance) variant (with no E zone), and Pan Am was the launch customer, in 1976. This aircraft interior was *the* real game-changer of the era: the product upgrades revolutionized the first and business class travel markets.

As Cusack explains, "Pan Am had only 10 B747SPs, so it was possible to retrofit the entire fleet relatively quickly and assess commentary from high-net-worth customers. Initially, there were two classes of service: 44 first class seats spread across A and B zones; and 136 and 86 economy class seats in C and D zones, respectively. The upper deck accommodated 14 passengers for dining services.

"The B747SP first class seats were 'sleeperette' style, with extendable footrests, similar to stretch-out seats flown by Pan Am during the piston era. This unique upgrade was instantly popular. In C zone, Pan Am subsequently launched Clipper Class, heralded as the first dedicated, branded airline business class cabin. The cabin featured luxurious service standards and competitive fares to attract long-haul business travelers at a time when corporations had restrictions on employees flying first class.

"Because the SP product developments generated excellent occupancy levels, Pan Am started to upgrade its B747-100 fleet in 1980; 21 first class Sleeperettes were installed in A zone, and 10 in the upper deck, replacing the earlier dining room usage; 42 Clipper Class seats were installed in B zone, initially eight-abreast, but later re-configured to six-abreast. So other airlines had to scramble to catch up and compete."

Since the 1980s, airlines have waged brutal wars of attrition, with every market segment up for grabs. At all times, however, the 'gentle giant' B747 has been a prestigious presence, both in the air and at airports worldwide. This aircraft has more than earned its place in history as a transformative element in global society and the enabler of mass affordable air travel.

Billions of appreciative Jumbo customers – including presidents – have enjoyed more options for onboard care and marketing ingenuity than had ever before existed in the history of aviation. In 2019, we have all these reasons to celebrate the 50<sup>th</sup> anniversary of the launch of the B747. ✪





*Upfront*

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# Aircraft *interiors* INTERNATIONAL

2019 SHOWCASE

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How aircraft with fewer seats can help airlines maximize profits

### BOARDING INNOVATION

A concept aircraft interior that could help make boarding more efficient

### CABIN VALUE ANALYSIS

Generating value from aircraft cabins at the end of their operational lives

### 50 YEARS OF THE BOEING 747

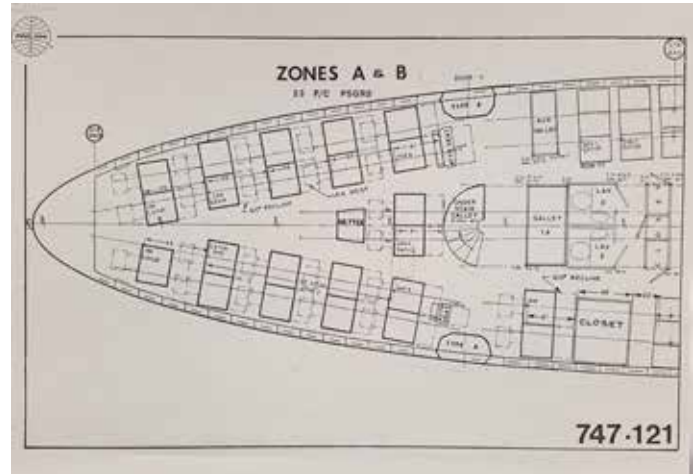
Celebrating 50 years of the Queen of the Skies

**2019**  
DESIGN  
SHOWCASE



# Boeing 747

Courtesy Pan Am Museum Foundation



# Boeing 747

Courtesy Pan Am Museum Foundation





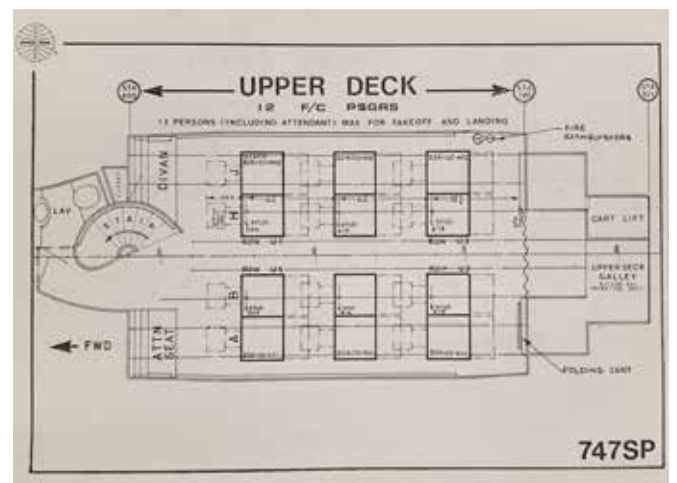
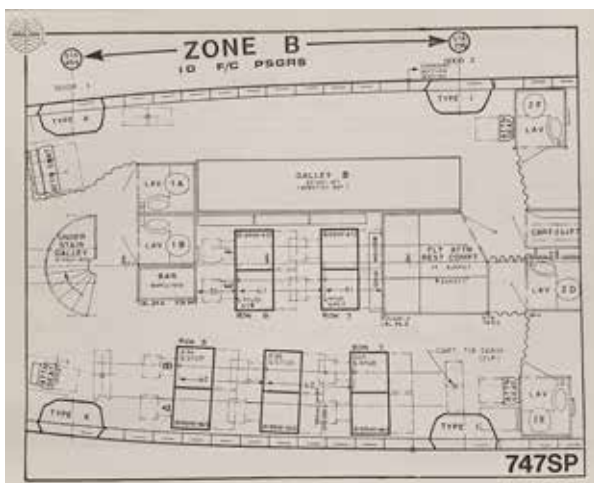
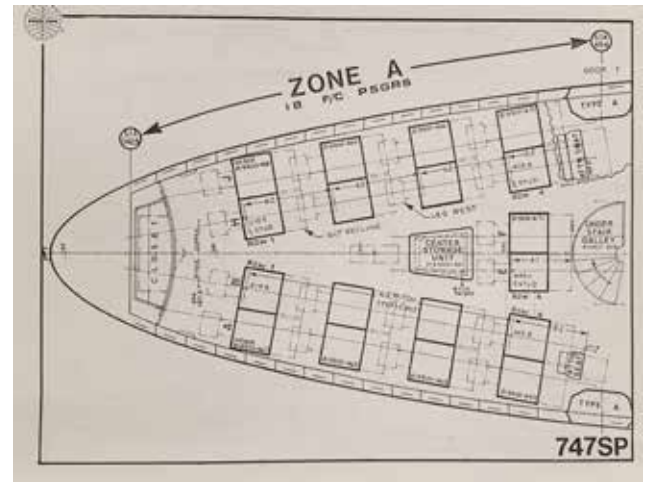
# Boeing 747

Courtesy Pan Am Museum Foundation



# Boeing 747

Courtesy Pan Am Museum Foundation





# Boeing 747

Courtesy Pan Am Museum Foundation



# Boeing 747

Courtesy Pan Am Museum Foundation





## Boeing 747



American Airlines,  
Courtesy Pan Am Museum Foundation



Continental Main Deck Lounge  
Courtesy Pan Am Museum Foundation



Courtesy Braniff/George Design Studio, Source: *JETLINER CABINS: Evolution & Innovation* E-Book App, Chapter 14/Flying Colours, Case Study 'Braniff Style' and Cabin Colours Picture Gallery



El Al, Source: *JETLINER CABINS: Evolution & Innovation* E-Book App, Chapter 3/Economy-Class Value and Economy Class Picture Gallery



Japan Airlines, Source: *JETLINER CABINS: Evolution & Innovation* E-Book App, Chapter 6/Dining a la Jet Set, In-Flight Dining Picture Gallery

# Boeing 747

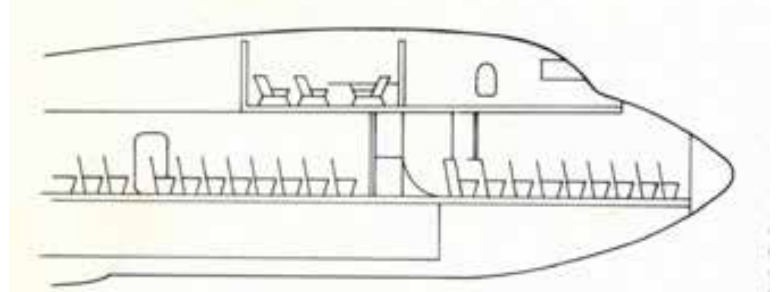


Many early model Boeing 747s featured luxurious first-class lounges on their upper decks.

Pan Am Museum Foundation



KLM, Source: *JETLINER CABINS: Evolution & Innovation* E-Book App, Chapter 11/Magic Carpet, Aviation-Grade Carpet Picture Gallery



Lufthansa, Source: *JETLINER CABINS: Evolution & Innovation* E-Book App, Chapter 11/Magic Carpet, Aviation-Grade Carpet Picture Gallery



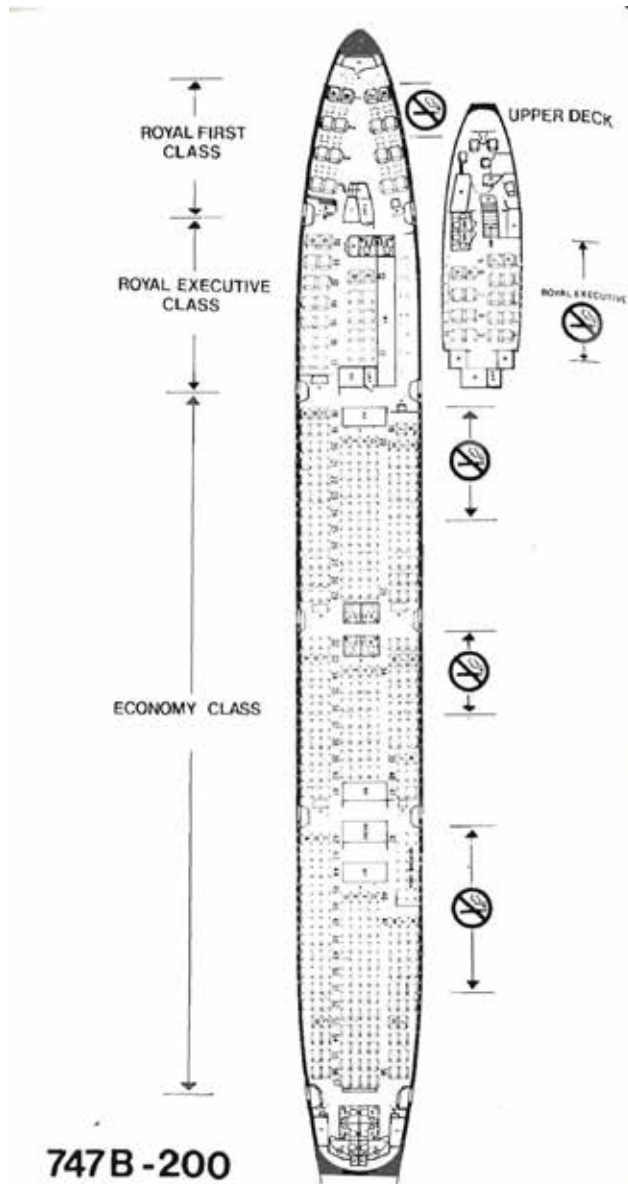
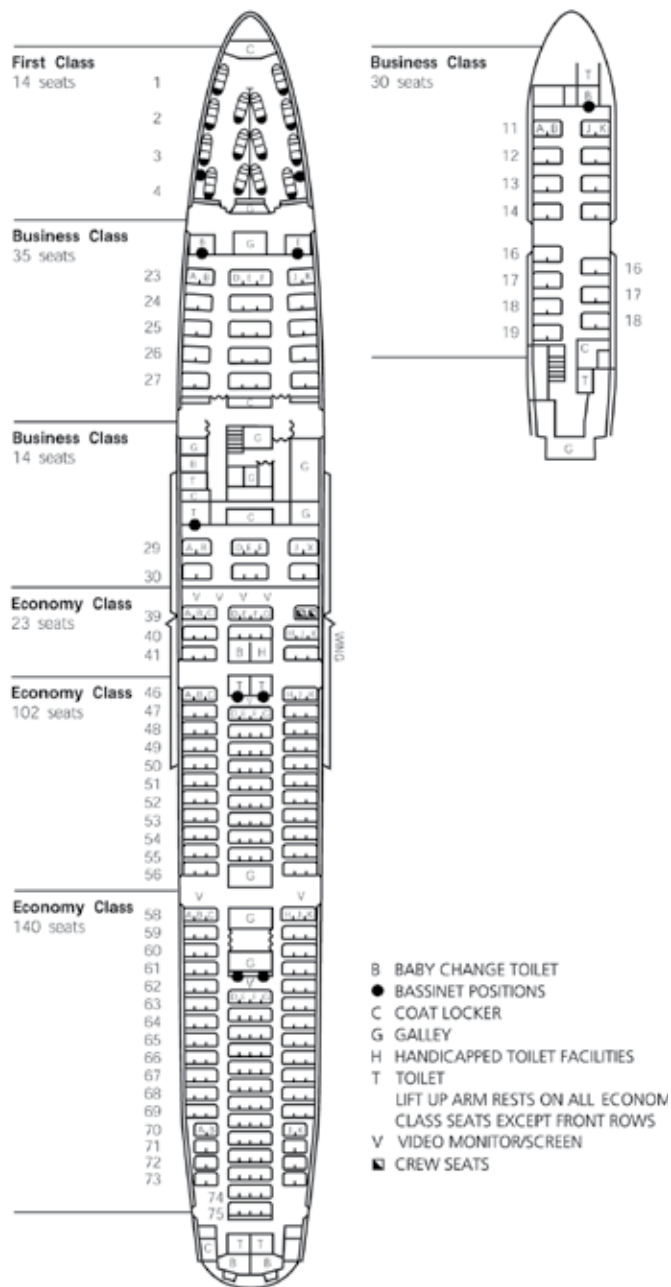
ANA, Source: *JETLINER CABINS: Evolution & Innovation* E-Book App, Chapter 2/Business-Class Comfort and Business Class Picture Gallery



# Boeing 747

## Boeing 747-438

14P/79J/265Y



## 747B-200

Configuration (Version 7425)

Royal First Class	: 16 seats
Royal Executive Class	: 42 seats
Economy Class	: 308 seats

**Seats Unsuitable for Movie Viewing**  
5K, 10AB, 11A, 19JK, 46C, 47 JK

Qantas, Source: *JETLINER CABINS: Evolution & Innovation* E-Book App, Chapter 4/Aero Identity, Timetables/Configurations Picture Gallery

THAI International, Source: *JETLINER CABINS: Evolution & Innovation* E-Book App, Chapter 4/Aero Identity, Timetables/Configurations Picture Gallery

## Boeing 747



The Boeing 747 Freighter variant, with the 'mouth', or hinged nose-cone 'door' open, for straight-in, front cargo loading (as described in Jennifer Cou tts Clay's article '50 years of the 747')

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**JETLINER CABINS: Evolution & Innovation E-Book App, Chapter 4/Aero Identity, Case Study 'Pan Am Blue' provides more images and descriptions of the pioneering achievements of Pan American World Airways.**

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# JETLINER CABINS: EVOLUTION & INNOVATION

**E-BOOK app**

by Jennifer Cou tts Clay



*"Fascinating reading and looking"  
- Airways Magazine*

*"The only comprehensive survey of the cabin  
environment from the 1970s to the present day"  
- Airliner World*

[jetlinercabins.com](http://jetlinercabins.com)