

Technical specification

1439

PAN AMERICAN AIRWAYS SYSTEM

PACIFIC DIVISION

427 Post Street - San Francisco, Calif.



TRANS-PACIFIC CLIPPER SHIPS

SPECIFICATIONS OF THE NEW BOEING - MODEL "314"

Weight: loaded - empty	82,500 pounds (41-1/4 tons) 41,680 pounds (21 tons)
Surface area:	4,000 sq. ft. (1/10 acre)
Wing span: area: chord (maximum width):	152 feet 2,867 sq. ft. 29 feet
Height: hull at center section: at tip of fin:	19 feet 28-1/2 feet
Length of hull:	109 feet
Draft:	4 feet
Volume, interior:	Equal to that of five-room house and basement.
Tail span:	49 feet (as great as wingspan of Lockheed Electra transport plane)
Structural material:	"Duralumin" - an aluminum alloy almost as light as aluminum, yet almost as strong as steel - used principally.
Comparative size and load:	Load carried is 2-1/2 times greater than that of the present type Martin Clippers. Size is about 1-2/3 times greater than that of the Martin clipper, or twice that of the Sikorsky S-42 flying boat used by Pan American in pioneering the trans- Pacific route. Weight is 3-1/3 times greater than that of most domestic trans- port planes. Largest commercial transport plane ever built in America.
Power Plants:	4 Wright Cyclone, 14 cylinder, radial, twin row, air cooled engines--the most powerful of this type ever built in America.

Power:

rated maximum total: 6,000 horsepower or 1500 each motor.  
 on takeoff, ea. motor: 1,380 horsepower, at 40.2 manifold pressure, and 2300 r.p.m.  
 on cruising, ea. motor: 950 horsepower, at 29 manifold pressure, and 2100 r.p.m.  
 on minimum cruising, ea motor: 600 horsepower, at 45% throttle.

Propellers:

4 three-bladed Hamilton Standard Steel hydromatic, full feathering propellers, 14 feet in diameter.

Communications:

3 transmitters, 3 receivers, and radio direction-finding equipment make constant ship-to-shore communication over the entire trans-Pacific. Also there is interphone equipment between all crew stations.

Crew consisting of ten:

Captain	Flight Engineer
First Officer	Asst. Flight Engineer
Second Officer	Radio Officer
Third Officer	Asst. Radio Officer
	Purser
	Steward

Passenger capacity, maximum: 74 by day - 34 by night.

Furnishings

8,000 pounds of luxurious equipment, lightweight materials in airy colors of Skyline green, Miami sand, beige, and Pan American Blue.

Sound-proofing material:

Spun glass felted Kapok which reduces sound level in cabins to point lower, during cruising, than that found in most Pullman cars.

Air conditioning system

Would heat five 7-room houses, set to maintain constant 70° temperature.

Mail, Air Express and Baggage Capacity:

2-1/2 tons.

Gasoline capacity

4200 gallons (12-1/2 tons, enough to drive average car 2-1/2 times around world), including usual 6-hour fuel reserve.

Fuel:

90-100 octane aviation gasoline.

Fuel stowage:

In hull, hydro-stabilizers, and in wings (reservoir).

Cruising range: 6500 miles in still-air under maximum conditions. 3150 miles in still air, at 50% of throttle capacity with 34 passengers and 3148 lbs. mail and freight.

Service ceiling: 20,000 feet.

Rate of climb: 1,000 feet a minute.

Takeoff speed: 70 to 80 miles an hour fully loaded.  
run: between 1/2 mile and mile.  
time: approximately 30 - 50 seconds.

Landing speed: 70 m.p.h. with flaps, full load. Up to 80 without flaps.

Maximum speed: 200 m.p.h.

Original cost of first: Approximately \$1,000,000 - 6 - \$4,000,000

Maintenance of level flight: With two motors on different sides, fully loaded, or 2 on same side partially loaded.

Development: Built on basis of Boeing Aircraft Company's 22 years of experience in constructing transport airplanes, and Pan American Airways System's 11 years of experience in flying large flying boats on the world's longest over-water routes.

Construction: Required 9 acres of blueprints, 2000 technicians engaged in fabrication of 50,000 parts, not including 1,211,294 rivets, nuts, bolts, on 24 hour shifts for 9 months (including work on 5 other Boeings), and 9000 men in full day shifts, assembling for 18 months. Total time for engineering, fabrication, construction and tests: three years.

Tests: Has already carried world record load at greatest speed and altitude ever attained for three factors. In three months of testing, was flown more than 5,000 miles, taxied 450 miles, and landed, taken off more than 80 times. 314 items completely checked through 261 accurate instruments under widely varying conditions. Pronounced satisfactory by Boeing Aircraft Company, Pan American Airways Company and the United States Government.