Million-dollar modelmaking

Industrial design has a Moby Dick of its own in Walter Dorwin Teague Associates' big mock-up, a full scale model of the Boeing 707 commercial jet transport interior, seating 108 passengers. Mr. Teague is shown above with Danforth Cardozo, who organized its top-secret construction in a block-square warehouse on 11th Avenue in Manhattan, rented and outfitted with a workshop for the purpose. Now the finished model, working in all details from running water to a team of stewardesses, and simulating the sound and lighting of an actual flight, is open for showings as regular as the Roxy's for the executives of airlines that have ordered the 5-million dollar plane—or are considering it.

The mere physical problems of building such a behemoth are impressive: 16,000 man hours of design and 26,000 hours of construction went into it; 54 contractors had to be coordinated in supplying such special features as galley and lavatory equipment, lighting, hardware, seats, etc.; and it required two people working full time simply to procure materials for the furnishings. Robert Ensign, Robert Harper and Walter Teague from the New York office and Frank Del Guidice, Director of WDTA's Boeing Task Force, which has been working on features of this interior for the past three years, were in charge of design. Total cost: $500,000.

But even more impressive was the client's trust in its consultant designers. Boeing had already gambled 17 million dollars on a prototype which made its first flight in July 1954. It paid off when the Air Force ordered 707's for tanker-transports, and a year later, satisfied that it would not interfere with military production, released the design for commercial use. (Tested through 500 hours of flying time, the jet averages 600 m.p.h., flies up to 40,000 feet.) Meanwhile Douglas announced plans to build a jet DC-8, and the airlines were forced to decide between a jet already built by Boeing with an unknown interior, or Douglas' jet, still on the drawing boards (some have ordered both). Since Douglas has had long experience catering to commercial flights, Boeing was anxious to present such customers as Pan American, American and Sabena with a superior cabin. WDTA's relationship to Boeing is ten years old, since they tailor-made the interiors of the Stratocruiser. To facilitate completion of the mock-up in seven months, Boeing set up a unique arrangement: although the work was to be a joint effort between WDTA and the Interiors Division of Boeing Engineering, no Boeing executive was to see the design until it was ready for full-scale presentation. The interior at the right was the client's first view of the design, presented with the sound effects of a jet engine.

Walter Dorwin Teague Associates stage the customer's view of the Boeing 707

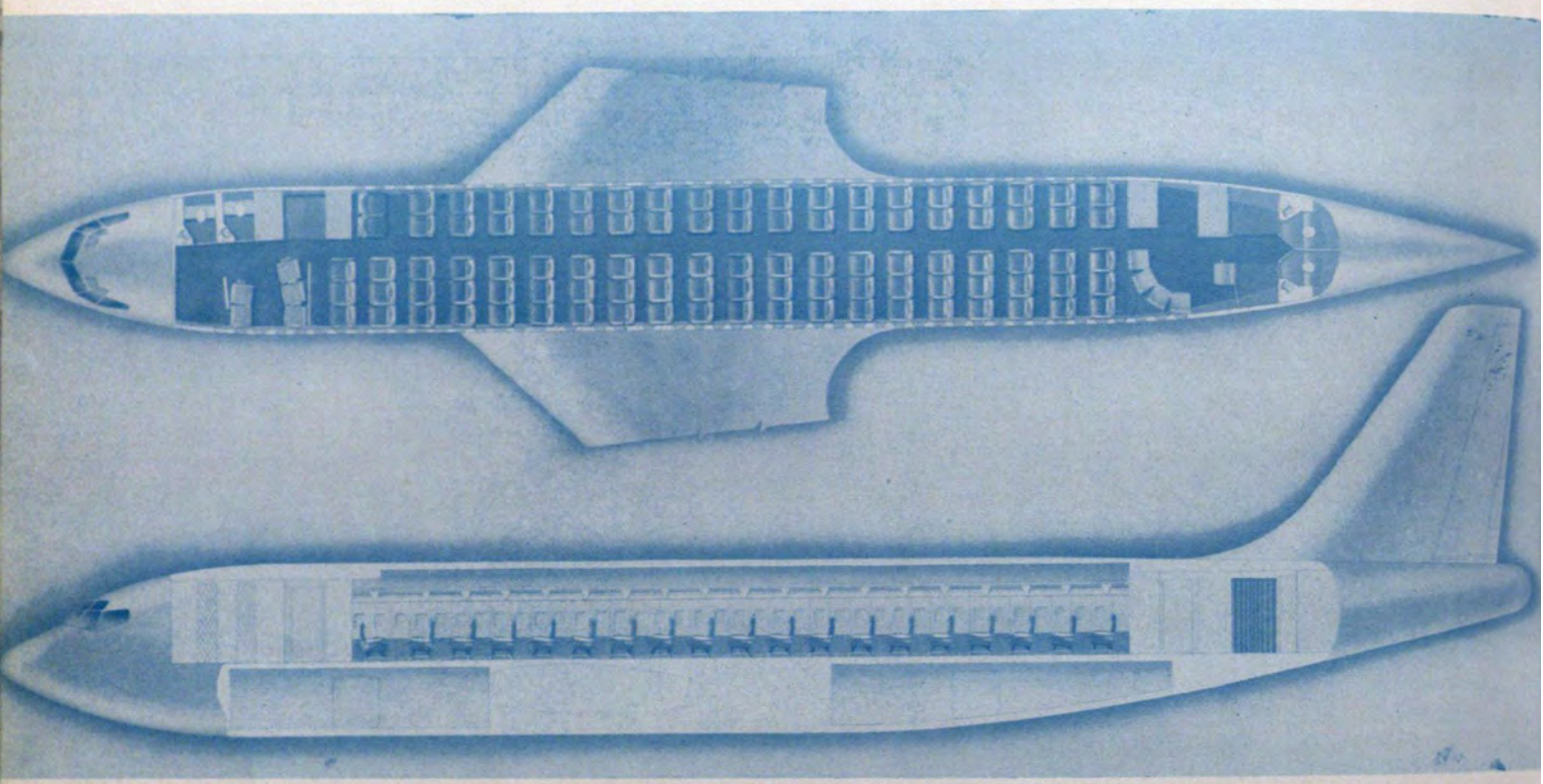
The passenger service unit is adjustable to the seat spacing, goes under the hat rack.

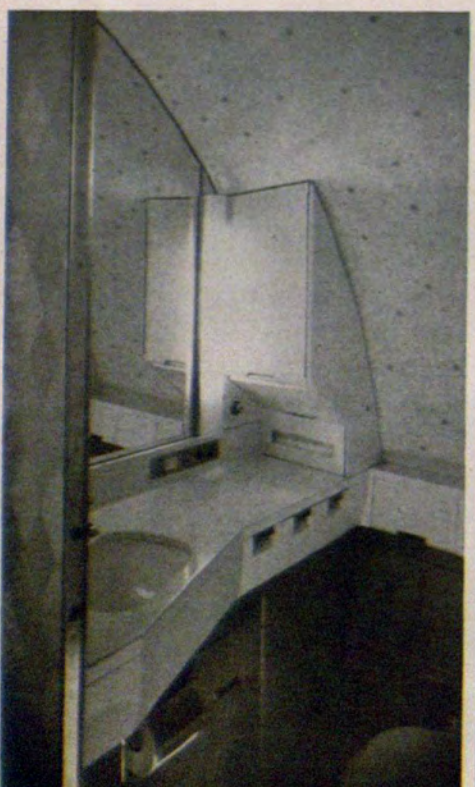
Designers touch up lounge area; pattern is on fabric, laminated under plastic.

Top, Robert Ensign and others test hat rack height. Numbers, representing inches on a grid running fore and aft. locate seating. Above, the finished cabin.

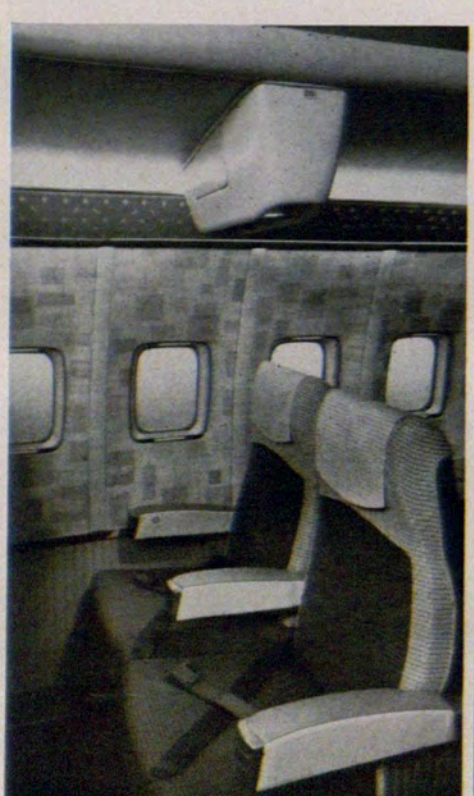
Backstage at the mock-up, sound equipment duplicates engine noise.

Also backstage, plumbing and insulation are put in place for a working model.





Lavatories have been decorated in three different color schemes.



Seats, made by Hardman Co., Los Angeles, are movable on tracks.

Galley with colored vinyl materials was made by REF, Mineola.

Customers can alter interior layouts to suit desired passenger density

What Boeing executives saw, when admitted to the finished mock-up, was a bright interior in many colors and light, laminated patterns: five abreast seating upholstered in groups of red and blue; a galley with colored vinyl paneling equipped for pre-set trays and another to service frozen meals; two roomy lavatories fore and two aft. Opposite the door is a space 57″ by 43″ for hand luggage and a 140-inch coat rack, taking some of the burden from the hat rack which runs the 94-foot length of the cabin at a point well above the head of the average adult. They were pleased to learn that all panels were plastic, washable and easily replaced by snap-in sections, since jet travel is subject to high pressures and requires frequent examinations of the air frame.

Windows are 10½″ by 14″ for safety and to save weight, with two to each row of seats. Conditioned air passes between the inner and outer panes, preventing condensation; it enters the cabin through a perforated grille under the hat rack, while exhaust air is withdrawn through a grille at the floor level. Artificial light comes from three sources: fluorescent tubes running below the two hat racks; night light slots in the ceiling above the aisle; and five large dome lights supplied by Luminator, Chicago, which provide normal as well as dramatic effects—a sunset red glow or a dimming starry blue. In general, the facilities are not different from planes now in service. Outstanding features are the pod-shaped passenger service units and, instead of curtains, sliding plastic blinds, one a smoke tinted screen against intense sunlight, the other opaque to provide total darkness, for the speed of jet travel hastens the change from night to day (below).

The 12-foot diameter of the airframe can accommodate seating as tight as six abreast. The mock-up, representing first class, shows rows of five seats with 40″ leg room; it represents the smallest of three 707 configurations that Boeing will build for the airlines, and on the basis of the mock-up, each company will request its own layout and color schemes.

Rather than providing more restful and varied spaces with a feeling of openness for the passenger that corresponds to the experience of flight, the airlines' tendency in jet travel seems to be to get more and more people into a longer tube. WDTA designed for the high density which Boeing and the airlines envision for the jet age (fuel costs are high); intercontinental tourist class seats 148. (To counteract this increasing sense of eggcrate monotony, a trial in all tubes of travel, it is to be hoped that the airlines will encourage designers to experiment with some reverse seating and further divisions of the bulkhead; varying the color scheme and allowing lounge space for ten are only a step toward overcoming the problem of cramped quarters.)

Three months after the mock-up was begun, Boeing decided to enlarge the diameter 4″ and raise the ceiling 7″. WDTA had to scrap everything but the floor and make up three months work in six weeks. A great deal of activity still continues by WDTA's Seattle staff and Boeing, adapting the details of the mock-up to the customer's needs and to the production line.—*s. b.*