Short-haul Questions and Answers

AS the prospect approaches of Anglo-German co-operation in the building of a 40-50-seat short-haul airliner it is perhaps timely to consider the views of a leading American authority on short-haul airliner design. This interview with Mr J. E. (Jack) Steiner, Boeing project engineer and 727 and 737 designer, is by staff writer Neil Harrison, following a visit to the Seattle factory for an up-to-the-minute briefing on the 737 for the description which appeared in *Flight* last week. Although the 737 has more than twice the capacity of the proposed Anglo-German design, the sales-success story of the type contains many lessons for the smaller aircraft.

First, a check on 737 progress:—

NEIL HARRISON: *Boeing is approaching the half-way point between go-ahead and the planned first flight of the 737. How is the programme going and is it on schedule?*

JACK STEINER: Yes, the 737 programme is on schedule. The strike [early in October] lost us about 13 days, but we believe that will be picked up long before roll-out. We always target ahead of our published dates so we do have some leeway, even if it were not picked up, but I believe there is no question that it will be picked up, and it is only 13 days to start with. The release of the engineering programme is a little ahead of schedule. On the combined 727/737 programme we are employing 2,450 personnel at this moment. Commercially, the programme is going well and our order book compares favourably with those of our longer-established competitors.

Which version of the 737 is proving to be the more important, the -100 or the -200?

It is a little hard to say. When we brought out the -200, we thought it would take over the line, but this has not proved to be the case and the reason is twofold. First, there are certain airlines where field-length performance at high altitude is the critical factor and the 737-100 basic operating weight is substantially less than that of the -200.

The other point is that there has been much more call for the cargo and quick-change versions than we anticipated. Some airlines have an honest QC intention—and I don't mean that as an insult to the airlines—let me say a normal QC intention, which is passengers by day and cargo by night. That is one type of QC operator. There is another and quite different type of cargo operator interested in the 737 and this is the territorial operator who wants to use a mixed-traffic aircraft with pallets and passengers.

Now the 737-100, because it is lighter and somewhat smaller, is slightly more versatile than the -200. The pallets capable of being carried in both 737s are the same, and, of course, are identical to the pallets carried on the 727C, and the long-range DC-8F and 707-320C. So we have operators, for instance Alaska Airlines with the 727C, who have an interchange agreement on pallets with United Air Lines.

Recalling the excessive costs incurred by Boeing in the early days of the 707, when many versions were built, each for relatively few customers, is there any risk that Boeing is again bending over too far with a very wide range of 737 options?

Well, my answer to that is that we know how to do it now and we didn't then. The solution lies in the production-release system. The basic 737 was designed just like an automobile: for a large series of customer variations. All the options are pre-engineered, and fed into the IBM computer system, from which production is controlled. Every page of the customer variations manual describes a standard option. That doesn't mean they are all free; some of them are, but some of them are not, but they are all priced. None of this was true of the 707. This whole enterprise is now run like an automobile factory.

Bearing in mind the remarkably low break-even load factor promised by the 737, do you see a case for building an even smaller aircraft, say with 40-50 seats?

To answer that let us examine the operating costs of various aircraft over a 150-mile stage. If one pays $30,000 for a DC-3 (total coach passengers at 24), and assuming 75 per cent d.o.c. for indirect costs and 90 per cent of the local-service revenue rate, it would take 16¼ passengers (69 per cent load factor) to break even. The DC-3 profitability ratio, even though you paid almost nothing for the aircraft, would be 1.45. If the average operator is to avoid serious difficulties in coping with traffic peaks, a load factor of around 65 per cent is generally considered the maximum acceptable. As a matter of fact, you ought to be counting on 50 per cent and then you are really handling the market, and nobody in the CAB can criticise. Once the figure gets up around 70 per cent then your peaks are going to be too crowded and you cannot confirm space and pretty soon the CAB will hold a hearing to put another line on a section and this is the last thing an operator wants to happen.

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"Flight" photograph

Vero Beach, Florida, is the smallest United States community to be served by a scheduled air service. Eastern Airlines' Convair 440s call on the daily stopping service from Jacksonville to Miami. In the interview which starts on this page Mr J. E. Steiner of Boeing says that the Convair 340/440 has, for a short-haul aircraft, ". . . the best profitability ratio prior to the jet age"