AIR TRANSPORT

Jumbo Roll-out: the Background

From Neil Harrison, Seattle, October 1

ON MONDAY, SEPTEMBER 30, Boeing ceremonially rolled out the first 747 from the brand-new factory at Everett near here and got a thoroughly well-earned round of applause from politicians, Press and public. Once again this most impressive company had confounded the sceptics and maintained its proudly unbeaten tradition for doing big things on time.

When the project was launched in spring 1966 the roll-out was promised for autumn 1968, and at 10.30 a.m. yesterday the tall blue centre doors of the enormous three-bay assembly building were slid aside and the 747, painted gleaming white on the upper fuselage and with a red flash down the side and on the fin, was rolled out and parked in front of a crowd of many hundreds of visitors and workers. One could hardly believe that the project had begun to crystallise only about three years before; that a US-wide network of cost-sharing collaboration partners had been set up; and that it was even more recently still that work began on clearing the forest site for this new hall of the giants. An achievement in the spirit of Paul Bunyan, the legendary giant who is reputed to clear whole forests in a day with his mighty axe—he and his motto, "we will do it," have been coined by the management-staff relations experts to set the mood of confidence at Everett.

Today, however, on the day after the party, the enormous factory was virtually idle because 80 per cent or so of the workers were meeting in Seattle to hear and vote on their union leaders' negotiated terms for a new pay agreement to last for the next three years. By four-to-one they agreed to the deal which brings an immediate 9 per cent rise for 68,000 workers. Pay rates will now range between $2.87 and $4.60 (£1 4s and £1 18s) per hour with provision for a rise next year varying from 7 per cent for the lower paid to 3 per cent for the higher paid. There will be a 3 per cent rise for all in 1970. Boeing was last of the US aircraft builders to conclude an agreement with the International Association of Machinists and Aerospace Workers—union leaders are quoted as calling the deal "second to none in the aerospace industry."

Brave gamble

I asked Mr George Sanborn, Boeing director of commercial marketing, what would be the effect of the wage increase on $20 million (£8.3 million) price of a 747. The company, it seemed, had already expected a rise of about this amount and so had made allowances when fixing the price and escalation clauses in existing contracts. Mr Sanborn was not willing to say what the longer-term effects might be. Airlines have ordered 158 aircraft, plus a further small batch on option by an undisclosed operator. In fact the first aircraft bears the insignia of the 25 announced airline purchasers, plus that of Sabena. Competition is such these days that new aircraft rarely go ahead without orders for a substantial number, but the 747 sales backlog also marks an exceptional and most significant step-up in the scale of pre-flight financial stakes by the customers and by the manufacturer—a courageous gamble by all concerned.

At the height of the roll-out celebrations, Boeing senior men were careful to speak with extra caution of the way ahead. The orders are substantial, but the stakes are colossal and Mr T. A. Wilson, president of the company, said that the roll-out was "not a celebration, but a milestone in a difficult year." He did not elaborate on the difficulties, but it is not hard to see that the company had its fingers firmly crossed as competition mounts with the appearance of long-haul versions of the three-engined Douglas DC-10 and Lockheed 1011. Less immediately threatening, but nevertheless having a distinct bearing on the 747 market potential in the mid-1970s, is the Concorde and nobody in Seattle is underestimating the importance of this advanced Anglo-French aircraft. There was a mild shock when it was realised that the publicity impact of the 747 first flight, scheduled for December 17 (weather permitting), could be eclipsed by the first flight of Concorde on or about the same day.

But overshadowing the wonder of the 747 programme, and contributing most of all to the present worries of the Boeing management, is the thorny problem of the SST design and research programme, the failure of which threatens to put the company into an exceedingly tight financial situation. If a promising new proposal has not come up by next January then the company is liable for the return of the very considerable sum of Government money that has been advanced over the past year. To put it mildly, the company is in one devil of a dilemma.

SST choices

On the one hand the choice is to admit technical defeat and to face the financial strait-jacket, or worse; or, on the other, to try to set new economic and operational targets for the aircraft —for instance, by an acceptance of higher seat-mile costs, or of a smaller-capacity but longer-range aeroplane aimed at the premium-fare travel market. A solution somewhere approaching the latter is sure to be more favoured by Boeing, but any idea such as this, which hints at a compromise on operating costs, is sure to cause some political protest. It is always possible, of course, that further design refinement and engineering genius will throw up a significant advance that would make the low-cost, long-range SST a technical feasibility. Completion of the 747 has established a great many important engineering guidelines that, even at this late stage, could help to point the way to a successful large SST.

Despite its state-of-the-art appearance, the 747 is an advanced aeroplane. The detailed engineering is exceedingly imaginative and is a brilliant combination of the skills of aerodynamicists and structures and mechanical engineers. The net result is a technically exciting aeroplane. The main load-bearing elements of the airframe are basically light alloy with some bigger-than-ever assemblies of titanium as well as much steel at points of maximum load concentration. On to this backbone is attached vast areas of secondary structure such as leading edges, control surfaces, fairings and so forth, made of glass-fibre and/or aluminium honeycomb. A serious weight growth, well in excess of estimates, was detected early in 1967 and a rigorous programme of weight-saving was begun and is still going on throughout the aircraft. The first aircraft weighs just over 300,000lb empty and is about in accordance with the estimates on which the payload guarantees were based. Recent wind-tunnel testing has also given grounds for optimism that the low-speed lift, the cruise speed and the specific-range estimates are just about right, too.

Five 747s will take part in the flight-test development and certification programme which is due to begin around December 17 with a first flight piloted by Mr Jack Waddell. The second aircraft (ultimately destined for Pan American) will roll out early in November and fly in late January. The next three aircraft will fly during April and May. The end of October next year is the target date for airworthiness certification and Pan American plans to begin services before Christmas. A handful of leading carriers will have the type in service for the 1970 transatlantic season.