

DC-10 FLIES

The first flight of the McDonnell Douglas DC-10 took place on August 29 when chief project pilot Mr Clifford L. Stout flew the aircraft from Long Beach to Edwards Air Force Base. The trip took 3hr 26min and the planned speed of 345 m.p.h., 555 k.p.h. and an altitude of more than 30,000ft, 9,000m were attained. The DC-10, which took off at a weight of 340,000lb, 154,200kg (some 70,000lb, 31,750kg below the maximum take-off weight of early production DC-10s) used 4,980ft, 1,520m of runway. The aircraft had a four-man crew and carried about 25,000lb, 11,300kg of test instrumentation and 100,000lb, 45,400kg of fuel. Handling characteristics were explored and instrumentation and telemetry calibration was carried out. Several flights have now been made from Edwards, including a 1½hr flight on September 7, according to Californian sources. The aircraft will later move back to Long Beach.

THE FIRST FLIGHT OF THE McDONNELL DOUGLAS DC-10 has come some five weeks after roll-out on July 23. When the aircraft first took off from Long Beach on August 29 it was heading by all indications for a most successful future. Orders and options to date for all DC-10 variants now total 119 and 122 respectively from 15 airlines. Of these, 75 orders and 49 options are for the medium-range DC-10-10, while the Pratt & Whitney JT9D-powered long-range DC-10-20, ordered only by Northwest, accounts for 14 orders and 14 options. Where perhaps the largest market exists is for the long-range DC-10-30, which at the moment is the only long-range trijet being taken seriously by the airlines because it is more than a paper aeroplane. First delivery of this type to the airlines, the first of which are those of the KSSU consortium, should take place in 1972, while the first of the medium-range DC-10s should be delivered to American Airlines and United Air Lines for crew training in August 1971.

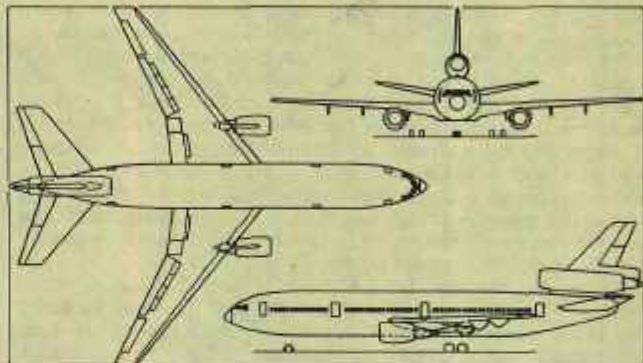
The DC-10 originated in American Airlines' April 1966 requirement for a large-capacity aircraft capable of flying the Chicago-Los Angeles route with a full payload and of departing from the short runway at LaGuardia, New York, in ISA +17°C conditions with a full-capacity payload for Chicago. To fulfil this specification American Airlines envisaged a twin-engine aircraft, but by the middle of 1967 both Lockheed and McDonnell Douglas were thinking in terms of larger markets, longer range, better drift-down performance and potential for further range stretch. The transcontinental TriStar and DC-10-10 were to result—these aircraft being able to carry 30,000lb, 14,000kg payloads about 4,000 n.m., 7,400km with full tanks and about 80,000lb, 36,000kg over 2,500 n.m., 4,600km stages.

The first of the trijet orders (for 25) came from American on February 19, 1968, when it chose the McDonnell Douglas aircraft. The airline took options on another 25 but did not at that time specify an engine. A go-ahead was not warranted by this total and things thus looked a little bleak for the DC-10 by the end of the next month, because on the last day of March 1968 Lockheed went ahead with the TriStar—its first commercial transport since the Electra. When the decision to go-ahead was taken there were 144 orders and options from Eastern, TWA and Air Holdings. Since then the total has increased to 178, says Lockheed.

But on April 25 United Air Lines ordered 30 DC-10-10s with an option on a similar number, and McDonnell Douglas gave the go-ahead. Soon afterwards both American and United chose the General Electric CF6-6 of around 40,000lb, 178kN thrust to power the aircraft.

Paradoxically the first order for a long-range variant (from Northwest) specified Pratt & Whitney JT9D-15 engines. It is so far the only, and probably the last, order for DC-10s with this type of powerplant, which is basically the same engine as that fitted to the 747. All other airlines have chosen the CF6-50 for their long-range DC-10s—known as the -30—and Pratt & Whitney has been left out on a limb having spent £20 million on the DC-10 installation.

The second big breakthrough in the DC-10 order situation, following the American and United decisions to buy the medium-range aircraft, was the KSSU order for the long-range -30 aircraft in June 1969, which came after Lockheed and McDonnell Douglas had had a pitched battle for the European foothold which KLM, SAS, Swissair and UTA



The latest general arrangement drawing of the long-range -20 and -30 variants of the DC-10

represented. Fourteen DC-10s were ordered and 21 taken on option at a cost of £8.3 million each with deliveries due to begin in 1972. Ten days later Overseas National ordered three -30F convertible passenger/freighters and took options on a further three, while TIA had earlier announced its decision to settle for two with two options on the same type.

Meanwhile, on January 6, 1969, McDonnell Douglas had started cutting metal on the first medium-range aircraft by milling a cockpit window-frame forging. Ceremonial fastening of the same component represented the start of DC-10 assembly. Manufacture of the aircraft is spread around North America and Europe, as has happened with the DC-9. Aerfer, for example, builds the fin and rudder in Naples, while Dowty Rotol makes half of the nose undercarriage legs. The rest are made by Abex Industries in Canada, but all are to a McDonnell Douglas design.

The -30 aircraft bought by KSSU was a true intercontinental design but offered a slightly lower payload-range performance than its proposed Lockheed competitor which was, in fact, more of a redesigned than a developed aircraft. The DC-10-30 fitted into the latter category despite a gross weight increase of some 145,000lb, 65,700kg over that of the -10 (which is in the order of 410,000lb, 186,000kg). This necessitated the addition of a third main undercarriage leg. Other major revisions, apart from a slightly lengthened fuselage, were made to the internal layout. Galleys were moved from under the floor to the main cabin giving a larger cargo volume.

Recently the Atlas consortium has also shown signs that it is moving *en bloc* to the McDonnell Douglas camp. The consortium originally wanted greater range than the DC-10 was able to offer and KSSU wanted. Since then the DC-10-30 has been stretched again, and of course is now the only aircraft in the long-range trijet market with a definite go-ahead. Alitalia could have been expected to buy the DC-10, having operated a large number of the manufacturer's other aircraft. But eventual firm orders for DC-10s by Lufthansa and Air France will be particularly significant (if they come) because both airlines were earlier thought to be firmly pro-Lockheed. Lufthansa has placed a letter of intent for five, and Sabena two, while Air France is still deliberating.

Work on the DC-10 at Long Beach is concentrated in a 1.3 million sq ft complex where the final assembly sequence begins