LOCKHEED L-188 ELECTRA

The 1950s was a transitional period for Australia's two major domestic airlines Ansett-ANA and TAA (Trans Australia Airlines), and its international airline Qantas. The decade began with the carriers operating all piston engine aircraft and concluded with a number of turbo-prop powered types being introduced to the respective fleets. Among the new types was the Lockheed L-188 Electra.

In comparison with other aircraft types flown by Australia's major airlines, Electra numbers were comparatively small, with only 11 being operated between the three major carriers. Despite their limited numbers, they proved to be a worthy, reliable airframe, bridging the gap between piston power and the forthcoming jet era.

Built by the American Lockheed Corporation, the Electra came in response to requests, particularly from Capitol Airlines and American Airlines, for a short/medium haul airliner carrying 60-70 passengers over an average range of 700 miles (1300 km). American Airlines placed an order for 35 Electras in June 1955, followed shortly by an order from Eastern Airlines for an additional 40 aircraft. Thus committed, Lockheed proceeded with final design work, resulting in the prototype being completed by December 1957. The L-188 project, as it had been known prior to the name Electra being bestowed on it, could boast some impressive features. A low wing aircraft, powered by four Allison 501 turbo-prop engines (similar to the power plants found in the C-130 Hercules and P-3 Orion), providing a cruising speed of 350 knots/650kmh at a altitude of 28,000 feet and carrying 80 passengers . Additionally, range was increased to well in excess of 2,000 nautical miles/3,700 km, allowing the aircraft to operate direct Melbourne-Perth services.

The Electra entered service in early January 1959 with US operator Eastern Airlines.

Unfortunately, three L-188s were to crash with loss of life within the first 16 months of the type's introduction to service. The cause, called "whirlpool mode", was eventually identified as a weakness in the engine mountings which produced excessive engine nacelle vibration, leading to wing flexing and finally wing separation. Electras were still permitted to operate while the crashes were under investigation, but their cruising speed was reduced to 255 kts/475kmh. After the fault had been determined, Lockheed recalled all Electras built to that point and, at its own expense, carried out a number of modifications including engine mount bracing and installation of additional wing supports. Each aircraft took approximately 20 days to modify, eventually costing Lockheed a total of some US$25 million.

Reg Ansett had visited Lockheed in 1957 and on his return to Australia announced he had ordered four L-188s for his airline. Meanwhile, TAA had been carrying out its own research, which led to it wanting to procure the Caravelle, a short/medium range twin jet built by French manufacturer Sud Aviation. On the other hand, Qantas elected to go with the Electra, as it believed it would best suit its shorter routes into the Asia/Pacific region. In May 1958, the Federal government advised that under the shortly to be enacted Airlines Equipment Bill[1], both Ansett-ANA and TAA would each have allocated two Electras and Qantas four.

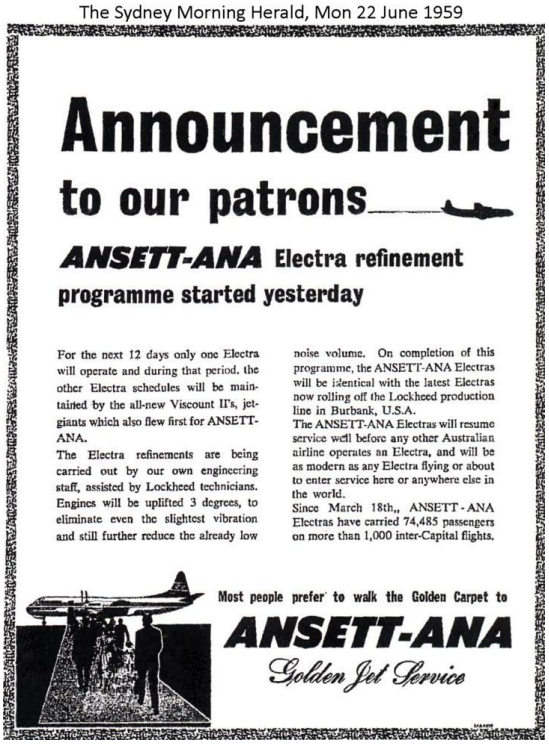
Ansett-ANA was first to introduce the Electra to Australia with the arrival of VH-RMA in March 1959. The registration letters, not surprisingly, stood for the airline founder's name: Reginald Myles

[1] The Bill was passed on 10 October 1958 and became the Airlines Equipment Act 1958

Ansett. Because of TAA's preference for Caravelle aircraft and the Federal government's decision to back the Electra instead, TAA's first L-188 did not arrive until June 1959.

Electras quickly proved to be popular with the travelling public, reflected by the airlines soon recording high load factors. However, a problem did shortly arise for Electra operators, including those in Australia, when a high noise level and vibration became apparent in the forward cabin, identified as being caused by propeller resonance. Lockheed's solution called for modification to the engine nacelles. Under Lockheed supervision, work was carried out locally by the airline whereby the engines were given a upward tilt of three degrees, the task taking six days to complete.

The Sydney Morning Herald, Mon 22 June 1959



Announcement

to our patrons

ANSETT-ANA Electra refinement programme started yesterday

For the next 12 days only one Electra will operate and during that period, the other Electra schedules will be maintained by the all-new Viscount II's, jet-giants which also flew first for ANSETT-ANA.

The Electra refinements are being carried out by our own engineering staff, assisted by Lockheed technicians. Engines will be uplifted 3 degrees, to eliminate even the slightest vibration and still further reduce the already low noise volume. On completion of this programme, the ANSETT-ANA Electras will be identical with the latest Electras now rolling off the Lockheed production line in Burbank, U.S.A.

The ANSETT-ANA Electras will resume service well before any other Australian airline operates an Electra, and will be as modern as any Electra flying or about to enter service here or anywhere else in the world.

Since March 18th,, ANSETT - ANA Electras have carried 74,485 passengers on more than 1,000 inter-Capital flights.

Most people prefer to walk the Golden Carpet to

ANSETT-ANA

Golden Jet Service

Further problems arose for the two Australian domestic operators and Qantas as a result of the three fatal L-188 crashes in the US. The upshot saw all of Australia's Electras having to return to Lockheed's Californian facility at Burbank to undergo substantial reworking at Lockheed's expense. This procedure commenced in December 1969 when Qantas dispatched the first of Australia's Electras back to the US.

Overall, the introduction of the Electra into Australia proved to be a winner, raising levels of passenger comfort and reducing flight times. For Ansett-ANA, results were quickly forthcoming in regard to its market share as passengers flocked to the Electra. The Commonwealth's refusal of TAA's bid for the Caravelle resulted in it not being able to place its first Electra into service until July 1959. With the necessary modifications carried out, the Electras settled in, providing fast and reliable service within Australia and to various destinations across Asia and the South West Pacific with Qantas. As an illustration of the Electras' capability and passenger appeal, Ansett-ANA was able to schedule six daily Melbourne-Sydney return flights within a month of the aircraft's introduction, such was the demand. Equally astounding was the fact that this demand was in spite of a ticketing/fare structure of either first class or full fare economy only. It would be many years before our airlines adopted cheap, "no frill" airfares.

Both Australian domestic airlines added a third Electra to their fleets by September 1960. These six aircraft maintained their dominant role for the next few years until the arrival of Australia's first commercial jet aircraft, the Boeing B727, in October 1964. As more jet aircraft were introduced, the Electras began to be phased out, with Qantas being the first to wind down its fleet between 1965-1970 and TAA withdrawing their L-188s through 1970-1971.

Ansett (from November 1968 renamed Ansett Airlines of Australia) chose another career for its Electras when, in 1972, they were converted in the US to a freighter configuration. In their new guise, the Electras could uplift over 15 tonnes of either palletised or bulk freight. With the success of Ansett Airfreight, a fourth Electra freighter was purchased in 1975. For many years these aircraft successfully plied their trade across Australia usually during the night hours (in airline parlance, "back of the clock"), carrying all manner of goods ranging from vegetables to race horses. Unofficially known as "Wombat Airlines" by their crew, a wombat logo normally appeared near the cockpit reflecting the nocturnal nature of their operations.

After 25 years of service with Ansett, the Electras were withdrawn from service in 1984, closing a era which illustrated the aircraft's flexibility and strength to operate in both passenger and freight roles. Interestingly, the Electra is to date the last commercially built aircraft by Lockheed to be operated by Australian airlines.

Ansett Airfreight L-188 Electra VH-RMA. A 25 year veteran of Ansett, it first served in a passenger role before being converted to a freighter

TAA L-188 Electra John Eyre wearing a "Dayglow Livery".
Note the large paddle-blade props with their 13ft 6in (4.1m) diameter.

Qantas Lockheed L-188 Electra VHECA *Pacific Electra* served QF from Nov 1959 to Jun 1967. Four Electras were purchased to operate routes in the Asian and South Pacific areas when QF was phasing out Constellations and introducing B707s

Sources:
Eric Allen, *Airliners in Australian Service, Vol 1 and 2*.
Samuel Brimson, *Ansett: The story of an airline*.
PJ Gates, "Electra! The Lockheed L-188", *Flightpath*, Vol 2, No 4, July/August 1990.
Stewart Wilson, *Ansett: The story of the rise and fall of Ansett 1936-2002*.

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History Group Member
October 2014.

APPENDIX

Lockheed L-188A Electra Specifications

LOCKHEED L-188A ELECTRA
Powerplants: *Four 3750eshp (2800kW) Allison 501D-13 or D-13A turboprops, driving four bladed constant speed propellers, or four 4050eshp (3020kW) 501D-15s. Fuel capacity 24,775 l (5450gal).*
Performance: *Max speed at 12,000ft 390kt (720km/h), cruising speed at 38,817kg (85,500lb) at 22,000ft 352kt (652km/h), stalling speed at 43,880kg (96,650lb) with flaps deployed 93kt (172km/h). Initial rate of climb at 51,300kg (113,000lb) 1970ft/min. Service ceiling at 45,400kg (100,000lb) 28,400ft. Max range with 2°hr reserves 2405nm (4455km). FAA takeoff distance at 51,300kg (113,000lb) 1440m (4720ft), at 48,440kg (106,700lb) 1265m (4150ft), at 42,675kg (94,000lb) 1220m (4000ft). FAA landing distance at 38,817kg (85,500lb) 1310m (4300ft), at 36,775kg (81,000lb) 1220m (4000ft). FAA landing distance at 38,817kg (85,500lb) without propeller reversal 1513m (4960ft).*
Dimensions: *Wing span 30.18m (99ft 0in), length 31.81m (104ft 6°in), height 10.01m (32ft 10in). Wing area 120.8m² (1300sq ft). Wheel base 11.29m (37ft 0in), wheel track 31.17m (31ft 2in), propeller ground clearance 0.53m (1ft 9in).*
Weights: *Empty 26,060kg (57,400lb), normal payload 9805kg (21,600lb), max payload 12,030kg (26,500lb), max landing 43,880kg (95,650lb), max takeoff 51,300kg (113,000lb).*
Accommodation: *Normal flightcrew of three and single class seating for up to 104 in a single class.*