Flying the Vickers Viscount Aircraft

By Ron Austin

Ron Austin flew Vickers Viscounts for Trans Australian Airlines between November 1956 and August 1960. The following article reflects his recollections of this period in his long and interesting career. Unless indicated otherwise, the photographs that illustrate Ron's story are of individual aircraft that he has flown which the RAeS Melbourne Branch has been able to use by kind permission of Mr Bob Smith who set up and manages the AussieAirliners website (*www.aussieairliners.org).*

First Viscount at Essendon: 1953 London to NZ Air Race

While I was working as a maintenance engineer at Essendon Airport for Trans Australia Airlines (TAA) in 1953, we were all aware that an example of the new aircraft ordered by TAA was competing in the London to NZ air race in October of that year between London Heathrow and Christchurch International Airport.

This airliner was a Viscount built in the UK by the traditional aviation firm Vickers; my wife Audrey and I were there at Essendon Airport on 11 October 1953 when the Viscount arrived. Although this was obviously a PR exercise we were suitably impressed. The most noticeable difference from other aircraft we were used to at that time was the high pitched whine of the engines.

As a fitter in the Electrical Section of TAA, I was able to observe the preparation for G-AMAV's departure on the final leg of the Air Race. Planning ahead for TAA's introduction of this type, the Electrical Section had assembled an especially large set of lead acid batteries to start the Viscount's Rolls Royce Dart engines. The battery cart was similar to our normal units used to start other aircraft, however it was important to test this equipment.

Vickers Viscount prototype G-AMAV that took part in the London to NZ air race, flown by BEA Captain Baillie, was a 700 series prototype; its race number (23) is on the fin, location Tullamarine. (Credit Maurice Austin Collection)

Following a ground signal, the pilot pushed the start button; our battery cart was a complete failure. The propeller gave a part-rotation and smoke rose from below the lid of the battery cart. The engineers disconnected the electrical lead connecting the cart to the aircraft and the pilots immediately started the engines using the internal batteries. We later found the standard English Varley batteries installed in the aircraft were capable of producing engine starts under all extremes of Australian temperatures. TAA later bought several mobile petrol driven generators called "Red Devon" which were used to start the first engine then the aircraft batteries did the rest. These mobile generators were barely adequate for this task.

Introduction into Service and Type Conversion

By the time our senior TAA pilots had delivered these new aircraft to Melbourne in October 1955, I had been accepted on the flight staff and was learning the piloting profession on Douglas DC3s. I watched the introduction of this new aircraft type into the capital city routes

with great interest; the Viscount replaced the Convairs and DC4s. Passengers were impressed by the smooth turbo-propeller engine combination and the aeroplane's ability to fly at much higher altitudes in smoother air.

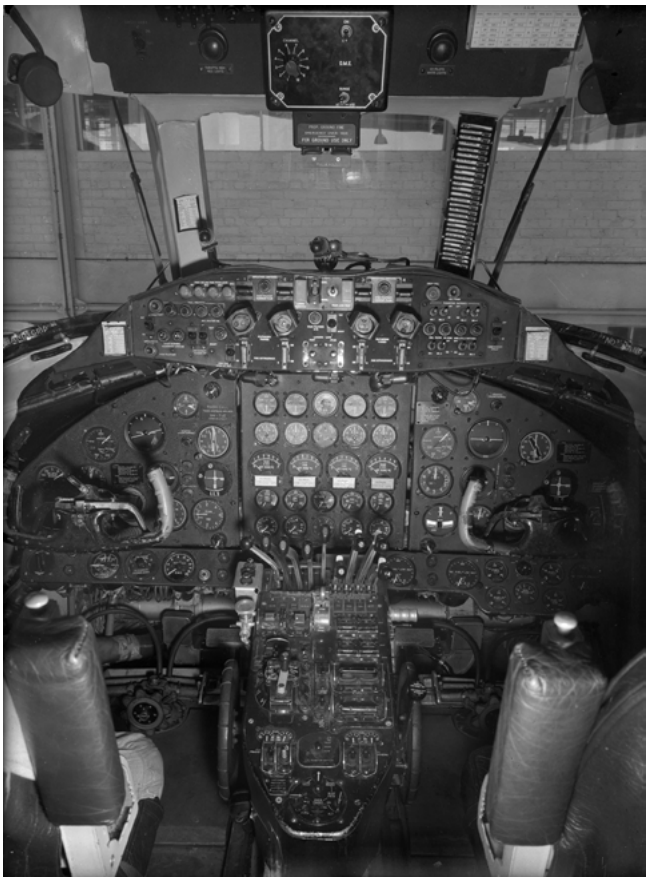
VH-TVE (Type 720 series) in the cruise painted in the original livery

After achieving a pilot's job with TAA in 1955, I was trained initially on Douglas DC3's. I later converted to the Viscount in November 1956. In those days, as a pilot, you had no choice about which aircraft type you flew, the type you were endorsed on being determined by the management team, so I was pleased to be promoted to the new turboprop aeroplane.

Our engineering lectures preparatory to flying the new aeroplane were conducted in ex-military huts located on the edge of Essendon Airport. These courses were run by very skilled ground engineers and normally took three weeks to complete. They covered all of the aircraft structure and systems and on completion of the course there were written exams.

The flying component of our Viscount training commenced two months later; while awaiting this conversion training we First Officers reverted back to our normal DC3 flying. Initial Viscount conversion flying was conducted at Mangalore Airport. The content of this conversion course was extensive as TAA trained all their First officers to the same standard as their Captains, that is to 1st Class Instrument Rating standard, but our First Officers' licence was only endorsed for a 2nd class Instrument Rating. This grading allowed the training section more latitude, because if we had the 1st class rating on our licence, the requirements would require TAA to flight check us every 6 months.

On the first day of conversion training I was put into the First Officer's right hand seat and Captain Don Winch gave me a full briefing on the complex switch panel located on the cockpit wall alongside the F/Os seat. This most unusual switch panel location precluded the Captain in the left seat from viewing or monitoring your switching actions. This switching panel included switches for 4 fuel booster pumps, 4 water methanol, 4 air conditioning spill valves, all engine starting and propeller de-icing. The control of these critical switches could only be reached by the F/O. You can appreciate the trepidation of some Captains who preferred to action all cockpit equipment themselves. Later models of the Viscount placed these system switches in the overhead panel where they were accessible to both pilots. Our first flight was from Essendon to Mangalore to learn how to handle the new aircraft.



Cockpit of Viscount 720 VH-TVE 'Charles Sturt' (Credit the CAHS collection www.airwaysmuseum.com)

On the first day I flew 3 hours. We practised flying circuits and landings in various flap configurations. Pressure on us increased later when engine failure training began and we found we could only maintain full concentration for about an hour. Training continued with two hours of night flying which included landing without any landing lights. This was rather difficult at Mangalore because only the runway lights were visible at this dark airport which is located 70 kilometres north of Melbourne in

the country. I must say that I considered this exercise both dangerous and unnecessary but it certainly honed our judgement skills. In later years during my Electra conversion in 1959, TAA was still insisting on pilots undertaking this difficult type of training.

VH-TVF (Type 720 series) at Essendon airport, 28 July 1956

Adelaide - Perth: A Fuel/Range Challenge

After a total of seven hours conversion flying on the Viscount I was allocated to Captain 'Chick' Clarke for 50 hours line training on normal passenger flights. I now discovered the limiting characteristics of this British aircraft as it was designed for much shorter stage lengths than we required in Australia. My third line training flight was Melbourne to Perth via Adelaide and I discovered the Viscount had a range problem. The flight sector from Adelaide to Perth was the maximum distance we could cover with a full fuel load but, if the normal westerly winds increased in strength, we had to consider refuelling at Kalgoorlie two thirds of the distance to Perth. This type of critical flight was complicated not only by wind strength, but also by the high air temperature both on the ground and in the upper atmosphere. Unfortunately Australian summer temperatures can reach 52 degrees and even cities like Adelaide often have temperatures over 40 degrees.

With a full load of passengers and extreme high temperatures the fuel range was reduced so much that even Kalgoorlie was too far to reach with the available fuel and, at times, we were forced to plan a track from Adelaide to Forrest, a tiny town with a sealed runway located adjacent to the famous Trans Continental train line. Here we could refuel with sufficient kerosene for the flight to Kalgoorlie and then on to Perth after another top-up of fuel.

The strategy to achieve the longest range with our fuel load was to fly a constant indicated airspeed (175 kts) for the entire flight. As the engines used our fuel, the aircraft became lighter and climbed very slowly through 20,000 feet; the lower air temperatures at high altitude assisted our fuel range. Abeam of Kalgoorlie the northerly wind drift sometimes brought warm air from the WA desert so this would raise the outside air temp and we would sink sometimes several thousands of feet while still holding the constant indicated airspeed.

The Australian registration letters registered by TAA began with TVA, which signified T for Trans Australian, V for Viscount and A for 1st aircraft. The alphabet progression increased to TVQ. TAA bought a total of eighteen Viscounts, seven 720 models, five 756Ds and the last two were 816s. A further 4 were subsequently obtained second-hand from other world airlines with surplus equipment. Two extra Viscounts were built for TAA but never delivered. It is interesting to note that one of these went to the Union Carbide Company and the other to Iran air. Both airframes came to Australia eventually when they were bought by the RAAF for 34 Squadron and used for VIP duties.

VH-TVD (Type 720 series) at Sydney Kingsford Smith airport

In an attempt to improve the restricted range on the Adelaide–Perth flight, the second batch of three aircraft to be delivered - TVD, TVE and TVF - came equipped with auxiliary slipper tanks which held 175 gallons of fuel. If required on a particular flight, these de-mountable, streamlined tanks would be attached to the outer wings. Flight endurance for Adelaide-Perth was determined when flight planning in Melbourne and the Captain would advise the Adelaide engineers to fit these tanks before refuelling if required.

There was considerable discussion amongst the aircrew as to the benefits of these slipper tanks. Many thought that the extra drag on the aircraft would erode some range advantage; it

is also noteworthy that the slipper tanks had no fuel quantity gauges. When a sufficient amount of fuel had been consumed in flight from the normal wing tanks, the two fuel pumps in each slipper tank were turned on and left running for a specific length of time. On one occasion on our return to Adelaide from Perth the engineers unbolted the right-hand tank and it dropped on to the barrow as it still contained some fuel. Obviously this had reduced the available fuel reserve but we always carried extra fuel to cover such an eventuality. The two booster pumps in the tank may not have been working properly.

VH-TVM (Type 756 series) in original 'Day-Glo' livery at Adelaide West Beach airport

As mentioned above, TAA only had three Viscounts that were designed to use the slipper tanks. These same aircraft were delivered to us without automatic pilots so there was no alternative but to hand fly them constantly. To make it more difficult, we used the Creep Climb technique westbound which involved flying at a constant airspeed of 175 knots to get maximum range. When hand flying, any movement of passengers and flight attendants along the cabin required you to use subtle pressure changes on the elevators. As we burnt fuel the flight altitude would slowly increase.

When hand flying on the return flight from Perth when extended range was not a factor we were able to fly at a constant altitude throughout the night. Departing Perth at 0200 and landing on schedule at Adelaide at 0700, we did 5 hours of instrument flying in the small hours of the night. After a one hour break in Adelaide when we had breakfast, we then departed for Melbourne arriving at 0900. On this leg with the sun coming up and shining straight into your eyes it required a conscious effort to concentrate.

The first seven Viscounts, TVA to TVG, were delivered without auto pilots. Apparently when the instrument specifications for the TAA aircraft were being finalised, the TAA radio engineer was sent to Vickers in Weybridge in the UK to select the instrumentation to be fitted. The new Sperry 'Zero Reader' instrument was presented as an advanced flying aid and our engineer bought this instead of an autopilot as a result of the Sperry 'hard sell' having demonstrated the pilot guidance for holding an altitude and a heading in flight. As the TAA Operations Division required "creep climb" procedures for fuel range, the altitude hold function on this instrument was useless.

Even when the first aircraft fitted with an autopilot was delivered (VH-TVH), we continued to hand fly the older, manual control aircraft, to Perth as these were the only aircraft modified to carry the slipper tanks.

Braking, Landing Lights & Windscreen Wiper Issues

The braking on early model Viscounts had a strange characteristic. The original brakes were pneumatic in the British style, not hydraulic as was the case with American aircraft. There was a positive delay between the initial application of the brakes and then feeling the aircraft decelerate. It became second nature to squeeze the hand-braking control and then immediately release the pressure and reapply it; subsequent applications produced the required level of braking.

The secondary runway at Essendon was oriented North-South and had just enough length to be used for normal operations, but the length of this runway (approximately 4700 feet) required us to touchdown early; even so, with normal to heavy braking we used the entire length of this runway. After touchdown we always selected "ground fine pitch" on all 4 engines but the early, round-tipped propellers gave very minimal drag. On one occasion when stopping right at the runway end, the Captain said to me "We can always book a room at Coleman's pub". This pub was located several kilometres down Bulla Road, this road being aligned with the runway direction: some of our Australian humour.

We rarely used the toe brakes on the rudder pedals as you do in many other aircraft because the double hand levers on the Viscount Control wheel were so practical and convenient to use. Our Viscounts were fitted with the very earliest of aircraft 'anti-skid' braking systems in the world. The system was fitted by our own engineers and was later superseded by a Dunlop-designed system under the trade name Maxaret.

The fact that the Viscount was designed in England in the mid- to late-1940s meant there were some mechanical systems which lacked performance when compared with the equipment supplied on American-designed planes. Two important deficiencies were the landing lights and the windscreen wipers. The wing-mounted landing lights originally fitted were definitely ineffective, their intensity and range were abysmal when compared to the landing lights in the American Convairs. The solution was to fit Convair-type lights to all Viscounts which was a great improvement.

The design of the original windscreen wipers included an electric motor driving a small hydraulic pump; this in turn drove the wiper blades back and forth. The weakness was in the hydraulic system which could almost cease working due to air in the oil lines. I have flown approaches with the wiper just moving rapidly across 75 mm of the screen. Our vision through the windscreen was always restricted by the metal structure so if the windscreen was streaming with water it was most difficult to see through. The TAA modification was to remove the electric-hydraulic system and install Convair wiper motors and blades, another positive improvement.

Another change we made: when delivered the first Viscounts had two buttons on the centre pedestal to select the undercarriage 'Up' or 'Down'. TAA designed a metal cover for these two switches. On the top of the cover was a wheel-shaped knob which pivoted forward and aft to press these switches; a more logical presentation.

VH-TVL (Type 756 series) at Brisbane Eagle Farm Airport

Some Lighter Notes

Flying wasn't always serious; there were some very humorous incidents. In October 1957 there were very strong westerly winds across Southern Australia so we intended refuelling at Kalgoorlie on the way to Perth. All went well until after reloading the passengers at Kalgoorlie and plugging in the mobile battery cart to start the engines, the propeller on number two engine began spinning. We immediately unplugged the cart and the propeller slowed to a stop. Our Captain went into the terminal and rang Melbourne engineering. The engineers thought it might be the starter motor relay sticking in. They explained to Captain Merv how to hit the starter relay with a hammer.

Merv was great to fly with but his voice was very loud. In the crew room it used to be said that he didn't need a radio, he only needed to open the cockpit window and other aircraft could hear him speaking. So standing by the ground cart I awaited his actions to fix our problem. Merv struck the engine with his hammer. He then shouted "Give it a go!" Unfortunately this comment could be heard by the passengers in the cabin. The propeller again commenced to rotate and in all this happened 3 times. I could appreciate the concern of the passengers seated within the cabin. Eventually Merv abandoned this primitive solution and again rang Melbourne from the Terminal when it was decided to fly an engineer from Perth to fix the fault.

We took all the passengers back to the terminal and some hours later our engineer arrived in a light aircraft chartered for the trip. The fault turned out not to be in the starting system, it was an electrical generator that was stuck "online" thereby rotating the engine when battery power was applied to the aircraft. We eventually departed for Perth with the engineer as an additional passenger.

VH-TVH (Type 756 series) in standard livery at Essendon Airport

One morning we operated a charter flight to take some Navy personnel from Melbourne to the Royal Australian Navy Air Station, HMAS Albatross, located near Nowra. On arrival the passenger stairs were pushed to the rear door and a Chief Petty Officer stationed himself at the top of the steps and required every passenger to show their leave pass before leaving the aircraft. I felt that heavy-handed procedure conflicted with our desire to look after our passengers.

Another interesting day's work was our departure from Melbourne about 0700 direct to Brisbane, from there we went to Darwin via Mt Isa. In the summer the Queensland inland temperatures are usually very high and the Viscount air-conditioning only worked when the engines were running. As a consequence, during the Mt Isa stop, with the engines stopped, the cabin temperature became unbearable. On completion of the refuelling after doing the fuel drain and external inspection, my body temperature was rather high. After take-off it was a relief to feel the cold forced draught, but this cold air also came out through the overhead air vents in the cabin. As this cold air met the moist warm air a fog like vapour streamed down; this vapour was often mistaken for smoke.

After refuelling, every wing tank had to be checked in case water had entered with the fuel. To do this we used a fitting on an aluminium tube which was pressed into valves in the bottom of the wing tanks, the fluid in a glass bottle enabled us to visually test the fuel tanks for water contamination. The test sample of kerosene flowed down into the jar but some of this fuel usually tracked down your arm into the long sleeves of our white uniform shirts; the cotton absorbed the kerosene. The result was that after doing the external checks at all northern ports you returned to the cockpit sweaty and smelling of kerosene.

Occasionally when doing this water check in Darwin I have collected a milky liquid in the jar not like the clear kerosene I expected. Normally we would reject this fuel but investigation by the Company had proven that this was normal in tropical conditions. Kerosene is hydroscopic and it absorbs water when warm. The moisture becomes visible when this warm, humid fuel is pumped into the aircraft tanks and mixes with the colder fuel. Turbine engines are not affected by small amounts of water, unlike piston-powered engines so this was not a problem.

Other Operating and Engineering Issues

When compared to European airports, many runways used by TAA within Australia in the 1950s were rather low in terms of their surface strength. To counter this, the Dunlop Tyre Company developed an alternative wheel for the Viscount which was fatter and used a low pressure tyre. This improved ground handling particularly at those airports located in the Centre and North of our continent which experienced very high runway surface temperatures.

As Australia has ideal flying weather the year round, with no snow or ice, our aircraft accumulated flying hours faster than any airline overseas. Our Viscounts were flying an average of 9 hours every day and very soon they had accumulated sufficient landings to require a mandatory change of their primary wing spars.

Changing the wing spars on each aircraft was carried out by TAA's Overhaul Division. To commence the spar change, a large wooden cradle was built below the fuselage to hold the wings and body steady. The aluminium sheeting on the lower surface of the wing was peeled back and the T-shaped spars, which are the backbone of the wings, were disconnected from the body and new ones fitted. After rebuilding and extensive checks the aircraft was handed to the test pilots to check if this work had induced any change in the aircraft's flight characteristics.

VH-TVP (Type 816 series) outside the hangar at Essendon Airport, January 1976

Days of flight testing followed while we checked all stability aspects and compared our results with the originals and also checked the performance up to maximum take-off weight.

I will include some comments on the "galley" fitted to the Viscounts. It was located in the front of the cabin and had electric heater pads

fitted for both food and beverage containers. The tea and coffee containers came on board already filled and were secured in place on hot plates. Between flights these containers were refilled in the catering kitchen on the ground and occasionally, due to work load, they were not completely emptied so occasionally new tea was added to a residue of coffee. In-flight when drinking from our plastic cups it was difficult to tell any difference, was it tea or was it coffee?

On long flights such as Adelaide – Perth the capacity of the kitchen stowage was stretched. We often found that surplus space below the radio rack, just behind the Captain, was utilised by catering to carry the cheese and biscuits. As time passed this cheese would get warm and release a very strong odour. We often wondered if it was the same block of cheese we had been carrying to and from Perth for years.

As Time Went By

Passenger numbers continued to increase and TAA needed more aircraft. Capital Airlines in the USA were selling some of their Viscounts so TAA bought VH-TVO and procured TVR from Cuba. The cockpit layout of these two aircraft was different. They were built by Vickers to a specification desired by Capital. They were very American and differed dramatically when compared to the British standards. Many switch actions and warning lights were different. In fact the electrical switches were all down for ON, this being the reverse to the British standard and a classic Human Factors 'accident waiting to happen'. It was decided that only a limited number of TAA pilots would be converted to these "strangers".

Passengers disembarking from VH-TVQ (Type 816 series) at Essendon airport

Next came the second generation of Viscount, designated the Type-800 series delivered in 1959. They were heavier, more powerful and the cabin was fitted out to impress the passengers.

Unfortunately the rear baggage locker area had been redesigned as an occasional lounge for passengers but it was far too small to be of any benefit and it drastically reduced our ability to carry all the passengers' baggage. This created a task for the DC3 fleet in that a freighter was required to follow in the wake of these -800s loaded with the baggage and freight which could not be carried on the -800. When the DC3 arrived at destination with the passenger bags these were then delivered by taxi to the passenger's destination address. Eventually this lounge at the back of the aircraft was removed and the area converted to carry baggage.

All Viscount Pilots were dual endorsed on the Type-700 and -800. Viscounts operated as the background of the TAA system from 1954 until they were replaced on the premier routes by Lockheed Electras in 1959; I converted onto the Electra in August 1960. Viscounts continued in revenue service with TAA until 1970, some airframes being converted into freighters before they were retired.