

De Havilland Canada DHC-4 Caribou



*DHC-4 Caribou A4-225 in flight.
[Photo Gary Bridge]*

The De Havilland Canada aircraft company had made a reputation for itself as a manufacturer of small utility aircraft able to operate in difficult conditions. Two of its most famous aircraft were the single engine DHC-2 Beaver and the DHC-3 Otter. Both aircraft had short take off and landing (STOL) capability and were of 'rugged' construction. Sensitive to the needs of the aviation world, the company realised that the STOL concept was a success and if they were to maintain a lead in STOL design, a bigger transport aircraft needed to be built.

The design adopted was the DHC-4 Caribou (cargolifter). The design incorporated two engines, a cruising speed 145kts/270kph and a maximum speed of 184kts/340kph. With maximum payload it had a range of 390 kilometres but under normal loading conditions, its range was 2,100km, and it could reach a ceiling of 7,560m. Lightly loaded the ceiling was 8,680m or more.¹

As with the Bell OH-58A Kiowa, it was the US Army that first showed an interest in the design and placed an order for five evaluation aircraft to be produced, designated YAC-1.

¹ Performance data via Steve Nelson from flight manual

The initial flight of the Caribou took place on 30 July 1958. The US Army ordered a total of 165 aircraft with the last being delivered in 1973.

The US Army proved how good the Caribou was when used as a light tactical transport aircraft. During the Vietnam War it became important in both supply and evacuation roles, with particular reference to air supply drops, equipment movements and the prompt removal of casualties under battlefield conditions. Its twin Pratt and Whitney R2000 14 cylinder radial engines proved to be reliable power units when negotiating rough, short airstrips that few other larger transport aircraft could use. Coupled with the high mounted tailplane allowing for easy access loading doors, an inverted gull wing configuration, full



*DHC-4 Caribou A4-225 in flight.
[Photo Steve Nelson]*

span double- slotted flaps with the outer sections of the flaps acting as ailerons, it could also carry a payload of 32 troops, or 26 paratroopers, or, if needed, 22 litters, four seated casualties and four medical personnel. The added benefit of this aircraft was that it could carry up to 4 tonnes of cargo.

It was not surprising, therefore, that its potential came to the attention of those responsible for the transport requirements of the RAAF, whose existing transport aircraft was then the C47 (Dakota). This workhorse had been the transport mainstay of the RAAF since World War 2, but with Australia's involvement in the Vietnam War it could not meet the demands of modern warfare. In fact, the first six Caribou aircraft on charge to the RAAF were delivered directly to the RAAF Transport Flight in Vietnam. The Caribou served in Vietnam from 1964 to February 1971. During that time it carried

a total of 700,000 passengers, and 41,300 tonnes of freight over 47,000 flying hours. The Australian Unit became widely known as 'Wallaby Airlines'.

De Havilland DHC-4 Caribou Royal Australian Air Force

In May 1963 eighteen aircraft were ordered from De Havilland Canada for service with the RAAF. The first of this order (A4-134) was handed over at the DHC plant at Downsview, Toronto, on 25 February 1964. These 18 aircraft were given the RAAF serial numbers A4-134

to A4-210. A further seven aircraft were ordered later in 1964, bearing the serial numbers A4-225 to A4-236. Another four were ordered individually between the years 1968 and 1971, bearing the serial numbers A4-264, -275, -285 and -299.. The total number of Caribou aircraft purchased for, and operated by the RAAF, was twenty nine.

A4-225 – Now displayed in the South Australian Aviation Museum

This aircraft was accepted from De Havilland Canada on the 28 May 1964. Arrangements were made to ferry the aircraft on the 11th June 1964 from Toronto to Australia via the Atlantic, Europe and the Indian Ocean. It was delivered to the RAAF on the 4 December 1964 on arrival at Richmond Air Force Base.

The aircraft was allocated to 38 (transport) Squadron in June 1965 and served with that unit for much of its active life, including in New Guinea with Detachment 'A' between 1965 and 1971. There it was used to qualify crews in tropical and difficult terrain conditions before their deployment to Vietnam. During its time in New Guinea the aircraft discovered the wreck of an RAAF Dakota missing since 1945.

It was extremely difficult for most aircraft to negotiate the isolated roughly cleared mountainous airstrips of New Guinea, let alone an aircraft as large as the Caribou. The problems of flying Caribou aircraft in to these strips cannot be better described than by one who had to do it a number of times. South Australian Aviation Museum member Steve Nelson, who retired from the RAAF as a flight lieutenant in 1985 after ten years service, flew Caribou aircraft into these strips and explains how it was done:

Flying the DHC-4 Caribou in PNG



A demonstration of the hazards of flight in PNG: A4-147 crashed on approach to Tapini on 6 October 1968. The loadmaster and some passengers sustained injuries and the aircraft was written off.

[Photo/story from 'AF History' 6Oct2017/WGCDR Ian Gibson]

Even following independence in 1975, the Highlands districts of Papua New Guinea remained very dependent on the freight capabilities of the Caribou. There

were very few roads connecting highland villages so much of their needs had to be brought in by air.

While smaller items could be brought in on smaller charter aircraft, the Caribou remained the only aircraft capable of delivering outside cargo into the smaller airstrips not capable of handling a C130 Hercules. Indeed, it was the only aircraft that could deliver a long wheel base Land Rover complete with trailer. Its cargo hold was also ideal for long items such as construction timber, sheets of roofing iron and water piping. It could also handle many 200 litre fuel drums in one load.

So how were the flights planned? The central PNG government received requests from highland villages and when approved, Caribous were tasked usually starting from Port Moresby. The flights were planned to depart as early in the day as possible so as to arrive in the highlands, unload and depart for the coast before the inevitable afternoon thunderstorms. Policy was to avoid unnecessary overnight stops in the highlands as there was malaria everywhere.

All highland flying was done in daytime visual conditions. The variable weather, lack of accurate weather forecasting and very high terrain meant to do otherwise would be highly dangerous.



*DHC-4 Caribou A4-225 in flight.
[Photo Steve Nelson]*

Once in the highlands, flying had to be done via the major valleys as the terrain was too high for the Caribou to clear in the event of an engine failure. Local knowledge of the prominent features to identify the major valleys and connecting saddles was essential.

Most of the highland airstrips were hand-carved out of any reasonably flat land available. They could therefore be located anywhere: on the top of a ridge, the

bottom of a valley or even half way up a valley. This meant that flying a normal circuit and landing was nearly always impossible. The experienced pilots developed other procedures by trial and error so that these airfields could be consistently located and landed on safely. Even so, many of the runways only allowed a straight in approach landing uphill with a commit point, where a missed approach could no longer be made, as far as five miles before touchdown.

Some of the strips were so steep that once on the ground wheel braking was not needed to stop, but rather significant engine power was required to taxi to the far end of the strip for the downhill take off.

Take off was always potentially hazardous as once the aircraft started moving downhill there was no way it could be stopped in the event of a malfunction. Policy was that the take-off weight had to be low enough to allow the aircraft to climb to at least 100 feet above the runway in the event of an engine failure. This would theoretically allow a circuit at 100 feet AGL and a return to land. Pretty risky!

Some of the airstrips visited became famous by the difficulty of their approach procedure.

Kompiam *required a straight in approach over a ridge line that put you twice as high on final as a normal approach. The technique was to aim for a large tree on the mountainside in line with the runway and fly over it fully configured for landing. You then needed to bunt over and fly down the mountainside 50 to 100 feet above it at idle power until the normal approach path was intercepted at about 300 feet on final approach for the runway.*

Tapini *was probably the best known for its unique approach procedure. Being located halfway up a deep valley, hidden behind a ridge, made it very difficult to line up on the short final approach. That was until someone noticed a downward sloping goat track on the other side of the valley opposite the strip. Then it became as easy as configuring the aircraft for landing and flying the*



*Tapini airstrip, PNG
[Photo/story from 'AF History' 6Oct2017/
WGCDR Ian Gibson]*

right wing in line with the goat track until the strip became visible on the left. Then turn left 90 degrees to land. Simple. It became known as the "Goat Track ILS"!²



*A4-225 disassembled for transport by SAAM volunteers at Oakey Qld, June 2016.
[Photo S Nitschke]*

in acquiring it and five other Caribous through Aus Tender. SAAM's proposal was accepted and the aircraft was dismantled by SAAM volunteers at Oakey Army Aviation centre and the wings, engines, propellers and tail unit arrived at SAAM on the 17th June 2016. The fuselage was transported separately by low loader via the Strzelecki Track due to NSW road width restrictions, departing Oakey on the 27th July and arriving at SAAM on the 7th August.



*A4-225 being transported on the Strzelecki track, June 2016.
[Photo Murray Fox]*

An interesting fact about the fuselage transportation was that unlike most of the other tendered Caribou aircraft, A4-225 did not have its centre wing box separated to facilitate transportation. Organisations acquiring aircraft that had to be transported through NSW had to cut the fuselage to meet that jurisdiction's width restrictions.

² Steve flew A4-225 in PNG on a training flight between 19-15 October 1978. The airfields visited during this exercise were Pt Moresby, Tapini, Aseki, Mt Hagen, Kompam, Kopiago, Mendi, Madang, Sinbai, Kar Kar, Chimbu, Lae, Tsili Tsili, Menyanya, Wau, Garina and Woitape. He flew this aircraft 74 times between October 1976 and July 1979, logging just under 100 hours at the controls.

Since its installation in the new hangar at SAAM, A4-225 has been brought up to exhibition standard with the necessary safeguards to allow the general public access to the interior of the aircraft.



A4-225 on display at the South Australian Aviation Museum in November 2017. The starboard wing was not re-attached for space saving and is displayed on the wall behind the aircraft with nav and formation lights operative.

[Photo M Milln]

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South Australian Aviation Museum Library.

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