

# SILVER CITY AIRWAYS (AUSTRALIA) Pty Ltd

*Geoff Goodall tells the story of a little-remembered air service catering to the mining industry.*

Broken Hill NSW has been known as "Silver City" since the early discoveries of silver deposits in the area. But why was this name given to a successful British airline?

Silver City Airways Ltd was formed at Langley Aerodrome, England in 1946 and is remembered as the pioneer of car air ferry services across the English Channel. Its fleet of Bristol Freighters carried cars and their occupants to France and other European countries.. It also operated extensive overseas charter operations with DC-3s, Bristol Freighters, Handley Page Hermes and Viscounts before being merged into British United Airways in 1962.

Silver City Airways Ltd was registered on 25 November 1946 at Langley Aerodrome. It was a subsidiary of the British Aviation Services group, founded immediately after the war by Air Commodore G. J. "Taffy" Powell as a maintenance and ferrying operation. Powell became Silver City's first Managing Director. This new airline was financed by The Zinc Corporation of London and Melbourne, the name reflecting key silver, zinc and lead mines at Broken Hill, Australia and Broken Hill, Northern Rhodesia, both known as Silver City.



Air Commodore Powell

The registration paperwork for the airline listed its key financial backers: Mr. J. V. Govett: Chairman of Consolidated Zinc Corp and Imperial Smelting Corp, Mr. W. S. Robinson: Managing Director The Zinc Corp.

Australian William S. Robinson had been Managing Director of Broken Hill Associated Smelters, based in London. He had played a key roll in negotiating the British Zinc Corporation's investment in mining at Broken Hill NSW and formation of the resultant Australian business The Zinc Corporation. Returning to Australia, he was appointed to high levels of Australian Government during the Second World War to formulate policy on wartime demands for Australia's industrial and metals supply. Robinson was held in high regard by successive Prime Ministers and was a close associate of Essington Lewis, head of Broken Hill Pty Ltd (BHP).

W.S. Robinson was a strong believer in aviation and business and air transportation having backed the purchase of two DH.84 Dragons in 1933 by associate company Western Mining Corporation to carry out a 12-month aerial photographic survey. He promoted the formation of Commonwealth Aircraft Corporation at Fishermans Bend, Melbourne to ensure Australian production of military aircraft.

In 1938 Robinson was a founder of Australia's first business airline when the mining companies combined to finance a new company Associated Airlines Pty Ltd based at Essendon Airport, Melbourne. A new Lockheed 12A VH-ABH Silver Star (cleverly recognizing both BHP and Zinc Corp) was imported to carry mining managers all over Australia, including regular courier flights to Broken Hill. The Lockheed's cruising speed was higher than any RAAF aircraft at the time

and was flown by experienced pilots including Len Diprose, O.B. "Pat" Hall and Eric Chaseling. It continued to be used during WWII and was later joined by two more Lockheed 12As, a Heron, Gulfstream 1s and other types before Associated Airlines introduced executive jets during the 1970s.

## Silver City Airways commences operations

With an initial capital of £500,000, a huge sum in 1946, it was clear that the Zinc Corporation had big plans for Silver City Airways. It was to be a commercial airline but which could also provide the mining companies with freight and passenger air transport as required, including a private regular air link between Britain, Australia and South Africa.

To prove that the new Silver City Airways could provide fast private air transport between mining centres, three Avro Lancastrians were immediately purchased. In the early post-war period these were the fastest British airliner type available, with seating for 10 to 13 passengers. The Lancastrians were given names to emphasise their international capability and planning commenced for courier services from Blackbushe to South Africa and Australia: G-AHBT City of New York. G-AHBV City of Canberra. G-AHBW City of London.



Parent Silver City Airways Avro Lancastrian G-AHBV  
"City of Canberra" visiting Broken Hill.  
(Ron Cuskelly collection)

In October 1946 even before Silver City Airways Ltd was formally registered, the first long range Lancastrian flight was operated to Johannesburg and onwards to Australia. G-AHBV departed a muddy and makeshift temporary terminal at Heathrow Aerodrome at 9.30am on 24 October 1946. The crew comprised Captain John Adams, pilot Sam Pritchard, second pilot Roy Day, Flight Engineer Eric Crane, Wireless Operator Joe Saggars and Steward Frank Guest. Most were ex RAF men who had only been recruited by Silver City Airways during the preceding week.

They refueled at Malta, Cairo, Khartoum and Kisumu in Kenya. After departure Kisumu, Captain Adams was forced to return due to an unserviceable engine. The crew and passengers transferred to G-AHBW, which had arrived from England with a maintenance crew and flew on to Johannesburg, then returned to Kisumu on 22 November.

The next day the same crew continued in G-AHBV, routing Aden, Karachi, Calcutta, Singapore, Batavia, Darwin, Sydney, arriving 28 November 1946. They flew on to Broken Hill on 30 November, bringing mining officials and South African geophysicists. A big crowd welcomed their arrival, and



later that day Captain Adams took Zinc Corp officials and local dignitaries for a local flight at Broken Hill. G-AHBV, the Lancastrian departed Broken Hill for Sydney on 1 December before the long flight back to London. The same crew cleared Customs at Darwin on 12 December and reached Heathrow on 17. December 1946.

Early in 1947 Taffy Powell moved both companies from Langley to the former military airfield at Blackbushe which had just been handed over to the Ministry of Transport and Civil Aviation. Silver City Airways Lancastrians were making a series of mining company charters to Australia and South Africa.

G-AHBW, City of London is recorded arriving at Auckland NZ from Australia on 14 February 1947.

On 15 April 1947 G-AHBT departed Heathrow on a fast flight to Australia, carrying a replacement cockpit roof hatch and other parts for the Bristol Freighter demonstrator G-AIMC grounded at Darwin. The hatch had detached during a local flight from Darwin the previous day and struck the tailplane. G-AHBY reached Darwin in three days and after the Bristol parts were unloaded, continued to Sydney. The Lancastrian crew comprised Captain John H. Frewen, First Officer Roy Day, Navigator J. W. Longhurst, Wireless Operator G. F. Holtum and Flight Engineer R. H. Wills, all previously wartime RAF except the navigator who was previously with BOAC. G-AHBT departed Sydney 25 April for the return flight, reaching Heathrow on 1 May 1947. On 20 November 1947, Lancastrian G-AHBV arrived at Mascot at 10.40am from Darwin. This flight had originated at Blackbushe under command of Silver City Airways Senior Captain John Adams.

Bristol Freighters purchased by Silver City Airways to begin car ferry services across the English Channel were also gaining long-range charter work, particularly carrying equipment and supplies to Borneo in support of British oil drilling ventures. In June 1948 a Silver City Airways Bristol Freighter arrived at Broken Hill, carrying freight.

On 6 May 1948 Lancastrian G-AHBV arrived at Mascot from England, now converted to an eight passenger VIP interior. This flight to Australia marked the end of the Lancastrian long-range flights for the mining companies. Whether there were additional flights to Australia to those mentioned above is not known.

Interestingly, the day that G-AHBV arrived at Sydney it was sold by Silver City Airways to Australian aviation inventor Sidney Cotton, living in London. It was en-route to Australia when negotiations began and Cotton recalls making a long distance telephone call to the Silver City Airways chief engineer at Sydney Airport. When Cotton was told it had landed safely and was parked, he signed the cheque for its purchase. Cotton had purchased two other Lancastrians from British charter firm Skyways Ltd, and with crews from Skyways and Silver City, set up a humanitarian airlift operation in Pakistan. The city of Hyderabad had been cut off since refusing to become part of India during Partitioning. G-AHBV flew from Australia to Pakistan in May 1948. Cotton obtained four more Lancastrians for the clandestine operation to attempt to break the blockade. There was worldwide publicity when a medical mercy flight to Hyderabad by G-AHBV on 19 July 1948 was attacked in flight by the Indian Air Force. In September Indian ground forces invaded Hyderabad and on 18 September Cotton called off his airlift after an Indian Hawker Tempest dropped bombs on the runway while one of his Lancastrians was taking off.

#### **Meanwhile at Broken Hill.**

During 1945 with the war coming to an end, the Melbourne head office of the Australian company The Zinc Corporation Ltd implemented a plan for extensive ground surveys to locate more mineral deposits - "grow the business"

in today's parlance. To support the surveys a Zinc Corp Aircraft Division was established at its main Australian mining site Broken Hill NSW. The initial plan was to employ pilots and ground maintenance staff to operate RAAF disposals DH.84 Dragons then becoming available through the Commonwealth Disposals Commission. The aircraft would support the ground survey expeditions planned in remote areas of western Australia and Northern Territory over the next five years.

The first Dragon VH-AQW (ex RAAF A34-79), was purchased on 15 October 1945 at Evans Head RAAF Station. Zinc Corp pilot John Woolcock ferried it to Broken Hill that month via refueling stops at Moree, Bourke and Wilcannia.

After civil conversion at Broken Hill, it was issued with a Certificate of Airworthiness on 1 July 1946. Another Dragon followed, VH-ALL (ex A34-33) and Auster 3 VH-BHA (ex A11-37). These aircraft were registered in the name of The Zinc Corporation Ltd, Melbourne and put to work. In August 1947 Dragon VH-ALL was based at Broome WA with a mineral survey ground team and was damaged on the ground at Palentine Mission Station. The Dragon was repaired by MacRobertson-Miller Aviation Co (MMA) maintenance staff from Broome.



**VH-AQW was one of two former RAAF DH.84 Dragons used by Silver City Airways. (David Vincent collection)**



**Smallest of the fleet was this ex RAAF Auster 3 VH-BHA. (David Vincent collection)**

Zinc Corp pilot Dudley Hart was flying one of the Dragons out of remote Halls Creek WA in June 1947 supporting a survey team when he discovered the large meteorite crater which would be named The Wolfe Creek Crater.

With the Zinc Corp mineral search extending to Northern Territory and Western Australia, and including specialist surveying for oil deposits as well as metals. Two Noorduyn Norsemen were purchased from Kingsford Smith Aviation Service, Sydney. These were former RAAF aircraft which Kingsford Smith had acquired and were undergoing civil conversions in their Mascot hangar. The first Norseman VH-BHF was delivered from Sydney to Broken Hill on 17 April 1948 but continued on to Broome WA, reaching there on 26 April 1948. Zinc Corp pilots Allan Polkinghorne and Lloyd Miller flew the Norseman, fitted with seating for up to 8





Norseman VH-BHG seen at Eagle Farm Airport, Brisbane in July 1953 on delivery flight to New Guinea after its sale to Gibbes Sepik Airways. (H.W. Pryor collection)

passengers, on supply runs to survey parties in the inland desert basin. When no landing area was available, supplies were dropped by parachute.

The second Norseman became VH-BHG, following the "Broken Hill" registration series, commenced with Auster VH-



Norseman VH-BHF arriving for a refueling stop at Alice Springs N.T. (R. Smith via Civil Aviation Historical Society of SA)

BHA. A third Norseman A71-6 was later purchased at RAAF Tocumwal NSW in June 1949 and ferried to Broken Hill by a Zinc Corp crew, where it was held in reserve.

#### Zinc Corporation Douglas DC-3s .

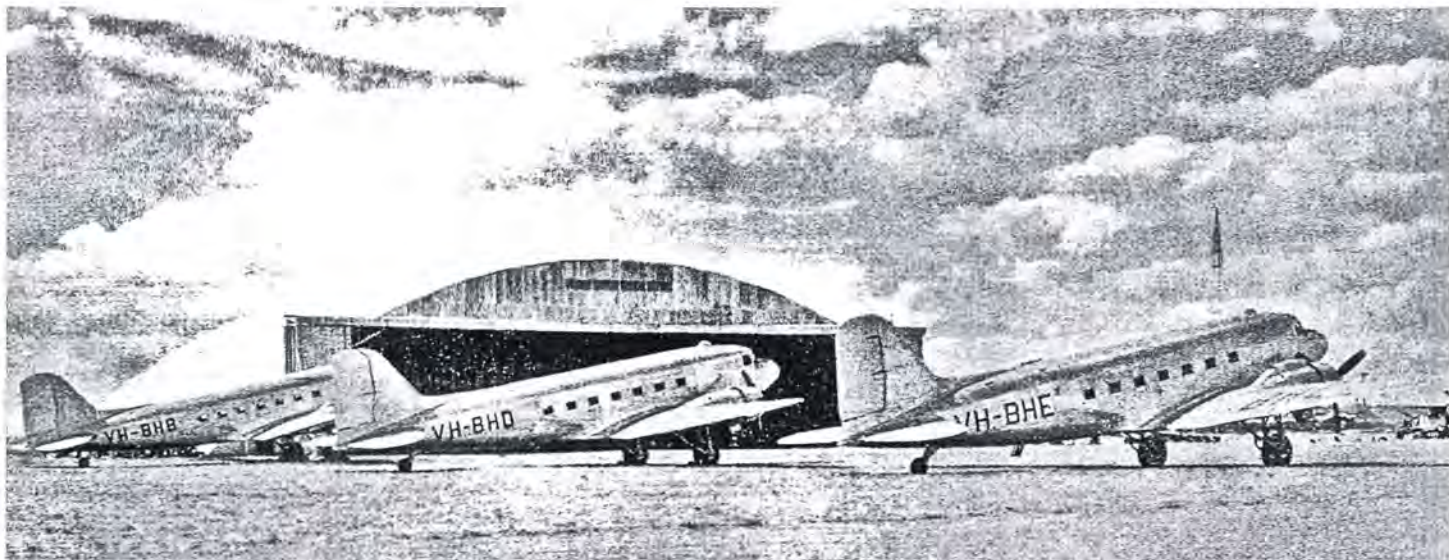
By late 1946 The Zinc Corp needed bigger long-range aircraft and decided to purchase retired US Army Air Force Douglas C-47s then becoming available at US Foreign Liquidation Commission disposals sales at Clark Field, Philippines. Such was the optimism for the future of the mining industry, the company decided it would require four C-47s for company use, with an additional two to provide spare parts. On 18 April 1946, Zinc Corp Ltd applied to DCA for an Australian Import Permit for six C-47s, which was approved.

Purchasing C-47s from the US Foreign Liquidation Commission in Manila was not straight-forward. Demand from so many airlines eager to acquire aircraft had spawned a barrier of black-market dealings with US military personnel "middle men" and shady local agents, before purchases



Clark Field, near Manila, Philippines in 1946 showing the hundreds of US Army Air Force aircraft retired here at the end of the Pacific war. They are lined up awaiting civil disposal by the US Foreign Liquidation Commission.





: Three Silver City Airways (Australia) DC-3s outside the newly built hangar at Broken Hill Aerodrome in February 1948. (The Conveyor)

could be finalised. ANA and other Australian airlines had worked their way through these obstacles and were not about to share their methods with a newcomer to the market. Eddie Connellan travelled from Alice Springs to Manila to purchase Beech C-45s for Connellan Airways but came away empty-handed after the American Air Force colonel he was dealing with demanding a much higher bid than the listed prices.

These complications probably explain why the Zinc Corp Aircraft Division accepted the proposal of a small Sydney aviation company to provide their six C-47s, rather than simply arranging with an established airline. Aerial Transport Company, headed by wartime RAAF fighter ace Clive R. "Killer" Caldwell was awarded a contract to select, purchase and deliver six C-47s to Sydney for The Zinc Corporation.

Aerial Transport Company was one of several pre-war light aircraft businesses set up by prominent grazier, businessman and aviator George Falkiner of "Haddon Rig" Station, Warren NSW. After the war Falkiner reactivated Aerial Transport Co as an aircraft sales and agency business and invited former RAAF Group Captain Caldwell to become Managing Director. Caldwell was glad of the offer, having just left the RAAF after suffering the humiliation of a drawn-out court-martial over allegations that while he was CO of No.80 Fighter Wing at Labuan he traded with American forces liquor smuggled to Borneo on RAAF Dakota courier flights. It was a notorious episode which stained the career of Australia's highest scoring fighter pilot, with 28 confirmed kills of enemy aircraft in the Middle East, Europe and Pacific, promotion to Group Captain and awarded DSO, DFC and Bar, and Polish Cross of Valour.

Soon after joining Air Transport Co, Clive Caldwell was in Manila, Philippines taking delivery of a USAAF C-47A on behalf of the Commonwealth Bank of Australia which would become the Bank's executive aircraft VH-CBA. Caldwell delivered the C-47A to Mascot in May 1946, reportedly with a Qantas flight crew, where Qantas carried out its civil conversion to a corporate-furnished DC-3.

The charismatic Caldwell used this experience to convince Zinc Corp officials that he could get the job done and deliver them six C-47s to Mascot before Christmas that year. He began contacting old flying friends and demobbed RAAF aircrew to select a total of 16 pilots, engineers and radio operators.

But how to get his selected aircrew to Manila, prior to any regular airline service between Australia and Philippines? Caldwell knew that Geoffrey Wikner's ex RAF Handley Page Halifax bomber G-AGXA was parked idle at Mascot since its

arrival from England in June 1946. On 30 August 1946 Caldwell wrote to DCA on Aerial Transport Co letterhead stating his company was interested in acquiring the Halifax and asking the conditions under which DCA would allow it to be operated commercially as a freighter, or alternatively as a privately owned aircraft. In the latter case it would be used "as an Australian private aircraft used to carry personnel employed by Aerial Transport Co on regular overseas flights, to operate freely in the development of this company's business." He added that if they purchased the Halifax it must be capable of entering service by 20 September 1946 to carry 20 employees to Japan (sic) to inspect and ferry six C-47s to Australia. The reference to Japan is assumed to be a little subterfuge by Caldwell to mask his pending purchases at Manila. Certainly no C-47 disposals sales occurred in war-torn Japan at that time.

The DCA response was understandably negative, and in fact it took nearly a year to get the Halifax flying as a civil freighter VH-BDT. Instead discussions began with Qantas for a one-way charter to an Asian destination. Sydney solicitor A. E. Barkell was engaged to travel with them to Manila to handle the legal side of the aircraft purchases and aspects of the delivery flights. Caldwell left for Manila to inspect the available stored C-47s and purchase the best six for The Zinc Corporation. His means of travel has not been established, but probably on a Qantas Lancastrian courier service to Japan for the British Commonwealth Occupation Force.

Caldwell also purchased five Stinson L-5 Sentinels in the name of his company Air Transport Co, which would be carried to Sydney dismantled in the C-47s. These USAAF reconnaissance aircraft were in poor condition and would be given major overhauls before being resale by Air Transport Co as civil aircraft in Australia.

#### The DC-3s arrive from Philippines

Meanwhile the selected aircrew departed Sydney for Manila on 22 October 1946. A charter had been arranged with Qantas Empire Airways, operated by DC-3 VH-AIH under the command of Captain E. C. Sims and three Qantas crew. The passenger manifest was as follows:

J R PALMER	Pilot
R C GODSALL	Pilot
A H McEWAN	Pilot
E C MARCHANT	Pilot
A W PAGE	Pilot
H GIBSON LEE	Pilot
C E LIGHT	Radio Operator/Pilot
L F McINTOSH	Radio Operator





Cover of the February 1948 edition of "The Conveyor", the Zinc Corporation Australian staff monthly journal. It proudly shows a DC-3, Dragon and the Auster inside the newly-constructed Zinc Corp hangar at Broken Hill (courtesy Roger McDonald)



J H MOON	Radio operator
A H TILDEN	Radio operator
J V RHONE	Radio operator
G F PIGGOTT	Radio operator
G M CLAYTON	Engineer
H J V VINCENT	Engineer
H M GARTSIDE	Engineer
W G FRANKLIN	Engineer
A E BARKELL	Solicitor

Caldwell placed the aircrew under the supervision of Joe Palmer, a widely-known Sydney share broker and commercial pilot who had been flying since 1924. Pre-war Palmer had owned an American Eagle, Avro Avian and a Waco and flew airline services for Butler Air Transport before enlisting in RAAF in 1941 as an instructor and later went on to Dakotas. Harold Gibson-Lee DFC, AFC had a meritorious wartime career in Britain on RAF Sunderland flying boats and was later to be killed in March 1950 when Mandated Airlines Lockheed Hudson VH-BDN crashed at Lae. Reginald Godsall was chief pilot for the Commonwealth Bank's private DC-3 VH-CBA.

At Clark Field, the team went to work preparing the six C-47s for the ferry flight to Australia. During one test flight, Caldwell's aircraft was struck by ground fire from a Filipino guerrilla group hiding in the bush near the airfield. A bullet pierced a hydraulic line to the brakes and another left a hole in the rudder fabric.

On 30 October 1946 the Department of Civil Aviation in Melbourne issued Import Licences to The Zinc Corporation Ltd, 360 Collins St, Melbourne for the import of 6 C-47s. The import licence ledger noted that two were to be used for spare parts.

The six C-47s arrived at Darwin on Sunday 1 December 1946. Each C-47 carried fuselages, engines or wings of the five Stinson L-5s. Customs paperwork referred to each aircraft by its USAAF serial number on the tail. The hardy solicitor Mr. Barkell was a passenger on board 43-15484 commanded by Joe Palmer. Press reports stated all the C-47s were in USAAF camouflage, however 43-15484 had been based in Australia firstly on loan to RAAF as callsign VHCXL, then from February 1946 operated by ANA on a USAAF Courier service to the islands. Photographs show it was operated by ANA in all metallic finish with the call sign painted across the tail.

The loose formation then continued to Sydney arriving at Mascot Aerodrome on 4 December 1946. Their delivery received considerable press coverage because of Caldwell's involvement, referring to him as Killer Caldwell, a wartime nickname he loathed. Most newspaper reports indicated that Caldwell bought them for his own air service and quoted him saying they would be used on contract work in West Africa. In retrospect, one suspects that Clive may have had some fun at the reporters' expense due to their lurid reporting of his court-martial.

The Stinson L-5 Sentinels were given Australian civil overhauls by Marshall Airways at Mascot, later moving to Bankstown. Each was test flown by Caldwell on completion, and resold to Australian buyers.

#### **Preparation for Australian service**

The four C-47s selected for Zinc Corp use were given overhauls to the DCA specifications required for civil certification as DC-3-S1C3G, with Pratt & Whitney R1830-S1C3G engines. Three were carried out by Qantas at Mascot and the fourth sent to Adelaide to the Department of Aircraft Production at Parafield Aerodrome. The Parafield DAP hangars provided extensive airframe and engine maintenance for RAAF Dakotas and RAF Dakotas based in Australia in the early post-war years.

The remaining two spare C-47s were parked at Mascot and their engines, control surfaces and other parts removed. Late the following year the two stripped airframes were deemed no longer needed by Zinc Corp and were sold to Australian National Airways to be rebuilt.

On 7 March 1947 Mr. K. Flehr of The Zinc Corp personally visited DCA head Office in Melbourne to hand over application forms for civil registrations for four of the C-47s. The application forms were dated 28 February 1947 and DCA agreed to the Zinc Corp's request that they be registered in the VH-BH series (for "Broken Hill") and they were issued with Certificates of Registration effective 28 February 1947 as VH-BHB, -BHC, -BHD and -BHE.

The six C-47As delivered to The Zinc Corp were:

43-15484 to VH-BHB  
 43-15935 to VH-BHC  
 43-48166 to VH-BHD  
 43-15468 to VH-BHE  
 42-92806 spares use Mascot, sold to ANA 11.48 as VH-INF not converted, to Butler as VH-AKR 12.50  
 43-15485 spares use Mascot, sold to ANA 11.48 as VH-ING.



**DC-3 VH-BHC at Blackbushe, England on 10 October 1948 after the flight from Australia. Note the forward four cabin windows have been removed.**

(David Freeman)

In preparation for the DC-3s at Broken Hill Aerodrome, The Zinc Corporation had a large hangar built. Designed to house three DC-3s, it was constructed by local contractor Les Radford & Sons. The hangar was completed in February 1948, when the Zinc Corp's two Dragons and Auster, which had previously shared the Flying Doctor Service hangar, moved in. The DC-3s, fresh from their civil conversions, soon followed.

The Zinc Corp Aircraft Division fleet was based at Broken Hill and operated across Australia in support of minerals and oil exploration activities.

#### **Silver City Airways (Australia) Pty Ltd**

At boardroom level of the Zinc Corporations in Australian and Britain, the success of Silver City Airways and the growing aircraft fleet of the Australian operation were discussed. It was decided that the Australian company's Aircraft Division should become an extension of Silver City Airways to their mutual operational benefit.

An early indication was given in an Australian newspaper story on 26 October 1946 reporting that Australian mining interests have decided to establish a privately owned passenger/freight aircraft service which will move executive staff of Zinc Corporation Ltd and Broken Hill Pty. Ltd.

"Present plans include at least two Lancastrian, four Dakotas and two Lockheed 12 Electras. The venture will be an extension of the present Associated Airlines, in cooperation with the B.H.P., Zinc Corporation and other mining organisations. The air company will be known as the Silver City Airways. The fleet will be based at Broken Hill aerodrome, which is owned by B.H.P."





This picture of Aero Club of Broken Hill DH.94 Moth Minor shows Silver City Airways Avro Lancastrian G-AHBT, "City of New York" at Broken Hill. (Ed Coates collection)

Silver City Airways (Australia) Pty Ltd was registered as an aviation company based at Broken Hill. In July 1948 the formation of a new airline name was publicly announced. A press release said Silver City Airways (Australia) Pty Ltd is a newly-formed company which purchased the Zinc Corporation's aircraft "as a wholly owned subsidiary of that great Corporation". That same month The Zinc Corp wrote to DCA advising "the activities previously carried out by The Zinc Corporation are now carried out by Silver City Airways (Australia) Pty Ltd. Captain M. H. H. Jackson, previously with The Zinc Corporation, is now manager of Silver City Airways (Australia) Pty Ltd."

The new Zinc Corp hangar at Broken Hill was now emblazoned with "Silver City Airways (Aust.) Pty Ltd". Operations Manager was Captain Malcolm H.H. Jackson, Chief Pilot Captain Malcolm Baker. Initial Chief Engineer was Douglas C. Muir, a wartime Qantas ground engineer and flight engineer on the Catalina Double Sunrise services across the Indian Ocean from Perth. Pre-war he had been senior engineer with Stephens Aviation in New Guinea. He was to go on to form Muir Aviation at Darwin and later Muir Airlines of WA at Perth.

On 6 July 1948 The Zinc Corp wrote to the Department of Aircraft Production (DAP) maintenance division at Parafield SA, which had carried out the civil conversions of VH-BHE earlier that year. Zinc Corp requested DAP carry out Certificate of Airworthiness inspections on their four DC-3s.

"These aircraft are based at Broken Hill where the Corporation has formed a wholly owned subsidiary Silver City Airways (Australia) Pty Ltd to operate these in conjunction with lighter aircraft also being used. New hangars and workshops have been established at Broken Hill aerodrome to carry out routine maintenance on the four Dakotas but it will not be sufficient to carry out major CofA overhauls."

DAP responded that it could do the work but warned there would be significant delays because it had to give priority to work on RAF Dakotas based in Australia at that time. On 14 July 1948 Zinc Corp advised DAP that Mr. Jackson of Silver City Airways (Australia) Pty Ltd would visit

Parafield shortly to discuss details. Zinc Corp also wanted DAP to overhaul 14 spare Pratt & Whitney R1830 engines. In the event, DAP did not carry out the DC-3s annual CofA renewals, which were given to ANA at Essendon.

DCA recorded a change of ownership of the Zinc Corporation aircraft fleet to Silver City Airways (Australia) Pty Ltd in August 1948 and the following month Silver City Airways (Australia) Pty Ltd applied to DCA for operating licences in its own name. On 26 October 1948 DCA issued the new company with an Airwork Licence and Charter Licence.



Noorduyn Norseman VH-BHF at Broken Hill in 1948. (Zinc Corp via Ed Coates Collection)

#### Australian Silver City Airways operations.

A July 1948 Zinc Corp report stated that its aircraft were presently based at Wallaroo SA, Kopperamanna SA, Cobar NSW and Craboon NSW. A map in the following year's annual report indicated large areas at Broome WA and Southern Cross WA which were to be surveyed for minerals and oil deposits.

The aircraft were away from Broken Hill for extended periods supporting the ground surveys. Norseman VH-BHF



was based at Broome April-June 1948. It carried exploration parties to the desert basin, serviced remote camps and dropped supplies by parachute to ground parties. On 16 May it made a forced landing in desert terrain without damage, the pilot and a geologist on board were unhurt and soon picked up. The Auster VH-BHA was based at Broome and NT to provide further support.

In December 1948 delays in delivery of the second Norseman VH-BHG having its civil conversion in Sydney threatened Zinc Corp's commitment to evacuate 17 men plus baggage from the Kopperamanna SA mine site to Broken Hill prior to their Christmas stand down. They were forced to use Dragon VH-AQW instead and with the extra flights required, just made the deadline.

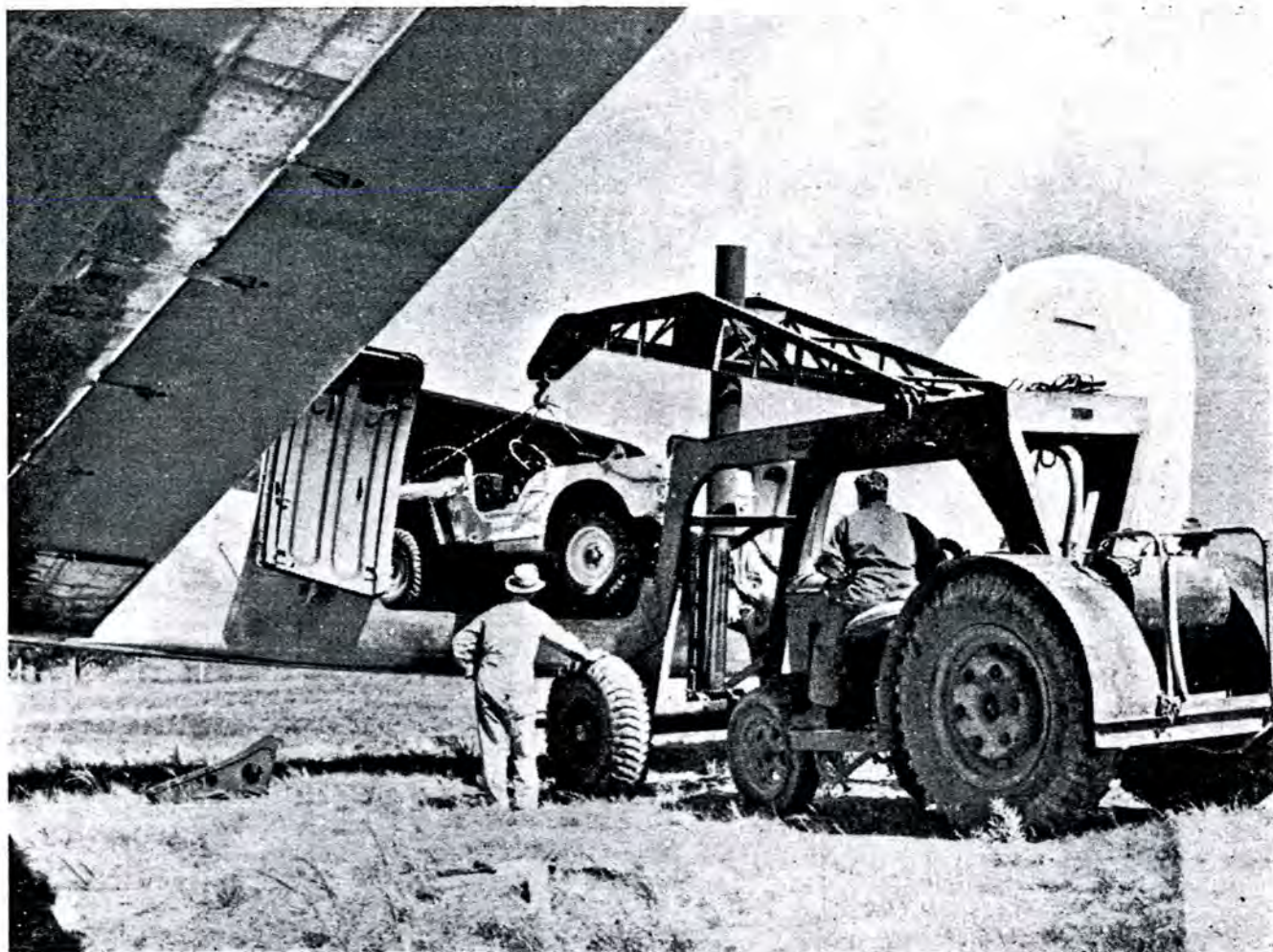
During March 1949 severe flooding in the far west of NSW and northern SA isolated many towns and properties. A Silver City Airways Norseman joined Flying Doctor Service Dragons in delivering and dropping supplies. During May and June 1949 Silver City Airways operated an emergency air

service due to flooding in the Channel Country, the remote area embracing the south-west corner of Queensland, extending into NSW and SA. The company carried passengers, mail and foodstuffs to small towns and cattle stations cut off from surface transport. After the floods had receded, residents of the Channel Country made strong representations to the federal Government for a regular air service. This resulted in TAA making trial scheduled flights through the area during the 1950 flood-prone months April to July. The following year TAA commenced scheduled routes year-round from Charleville Qld to Leigh Creek in SA via 37 towns and cattle stations. Dragons were used at first, replaced by DHA-3 Drovers then DC-3s from 1955.

An April 1949 letter from Silver City Airways to DCA mentioned that they were fully committed to "the air lift to northern areas". The second Norseman VH-BHG had been delivered to Broken Hill in February 1949 following delays completing its civil conversion in Sydney waiting for parts from overseas.

## FIRST ZINC DOUGLAS IN BROKEN HILL

First of the new Zinc Corporation D.C.3 aircraft to arrive in Broken Hill was flown in this month by ex-R.A.A.F. pilot, Malcolm Baker, also formerly test pilot for the Department of Aircraft Production. Second Pilot was Len Bottom, an airline pilot with A.N.A. before joining the Zinc Staff, wireless operator was Jack Rhone and flight engineer, Stewart Hempel.



Our picture shows one of the Zinc jeeps being loaded into the plane at the Broken Hill aerodrome. The jeep was transported to Gorrie, about 300 miles south of Darwin, for use by Zinc engineers working in that area. The plane returned to Broken Hill via Alice Springs.



The DC-3s carried jeeps and large equipment to the survey areas. They also flew from Australia to Borneo in support of British oil exploration. One such flight is recorded, VH-BHB departed Broken Hill in April 1948 for Palembang, Sumatra en route to Borneo, with flight engineer Doug Muir. VH-BHB did another overseas trip later that year when it was sent to Burma to replace a British Silver City Airways DC-3 during its annual CofA renewal overhaul. The Australian crew was Captains Walker and Baker, Wireless Operator Boord, Flight Engineer Cliff Brown. Cliff Brown, who went on to a long aviation career in WA, recalled shuttles between Rangoon and Lashio during December 1948 with Burmese Army troops guarding the aircraft on the ground at Lashio because of rebel activity. VH-BHB departed Rangoon on 24 January 1949 returning to Broken Hill.

The 1949 edition of "Australian Aviation Annual" edited by Stanley Brogden gave the following summary for Silver City Airways (Australia) Pty Ltd: Registered address: 360 Collins Street, Melbourne Directors: J. P. Fitzgerald, G. P. Brooks, G. R. Fisher Chief Technical Advisor: Air Commodore G.J. Powell Manager of Operations: M.H.H. Jackson Engineering Superintendent: W.J. Fisher Senior Pilot: Captain M.W. Baker AFC Pilots: W.D.Hart, A.J. Polkinghorne DFC, C.T. Walker, L.L. Miller Aircraft: DC-3 VH-BHB, BHD, BHE, Norseman VH-BHF, BHG, Dragon VH-ALL, Auster VH-BHA

This company's operations may be classified as world-wide, as its aircraft may be called upon to fly anywhere in the world. It is a unit of the British company of the same name. Lancastrians, Dakotas or Bristol Freighters of that parent company visiting Australia are serviced at Broken Hill.

The company serviced and supplied geological and geophysical exploration parties in NT and WA during 1948, which were surveying for oil.

#### DC-3s leased to Qantas

The original projections that 4 DC-3s would be needed to support the ground surveys across Australia soon proved excessive. As early as March 1948, VH-BHD & VH-BHE were placed on extended lease to Qantas Empire Airways at Sydney. In February 1949 Silver City Airways advised DCA of a new leasing agreement with Qantas for VH-BHB and VH-BHD.

From incomplete Customs records and Qantas pilot logbooks, the following Qantas services have been identified. It provides an interesting view of DC-3s still in use on international services in the postwar years after Qantas introduced L.749 Constellations on the London-Singapore-Sydney route.

- 29.3.48 BHE arr. Sydney ex Lae, 2 pax, Cpt. G.S. Richardson, 2 crew
- 4.4.48 BHE arr. Sydney ex Rabaul, 10 pax, Cpt. Bamman, 3 crew
- 18.4.48 BHE arr Sydney ex Singapore, pax included Greek migrants
- 3.5.48 BHE arr. Sydney ex Singapore, 15 pax, Cpt. Richardson, 4 crew
- 25.5.48 BHE arr. Sydney ex Singapore, 15 pax, Cpt. Richardson, 4 crew
- 2.6.48 BHD Arr. Sydney ex Singapore, 17 pax, Cpt Brown, 4 crew
- 4.6.48 BHD Schofields crew training, Cpt Jack Murray
- 18.6.48 BHD arr. Sydney ex Lae, no pax, Cpt Jacobson, 3 crew
- 27.6.48 BHE arr. Sydney from Singapore, 12 pax, Cpt Richardson, 5 crew
- 4.7.48 BHD arr Sydney ex Rabaul, 5 pax, Cpt Brodie, 3 crew
- 8.7.48 BHE arr. Sydney ex Lae, 2 pax Cpt. Richardson: 3 crew

- 4.10.48 BHE arr. Sydney ex Singapore, 17 pax, Cpt. Richardson, 5 crew
- 28.10.48 BHE arr. Sydney ex Ambon, 18 pax, Cpt. Jacobson, 5 crew
- 17.10.48 BHD arr Sydney ex Lae, 10 pax, Cpt Herbert, 3 crew
- 19.10.48 BHE arr. Sydney ex Singapore, 10 pax, Cpt. Richardson, 5 crew
- 2.11.48 BHD arr Sydney ex Singapore, 20 pax, Cpt. Richardson, 5 crew
- 14.11.48 BHE arr. Sydney ex Singapore, 15 pax, Cpt. Robinson, 5 crew
- 21.11.48 BHE arr. Sydney ex Ambon, 21 pax, Cpt. Proctor, 5 crew
- 25.11.48 BHD arr. Sydney ex Lae, 7 pax, Cpt. Jacobson, 6 crew
- 26.11.48 BHE arr Sydney ex Ambon, 22 pax, Cpt. Richardson, 5 crew
- 1.12.48 BHD arr Sydney ex Lae, 18 pax, Cpt. Bamman, 6 crew
- 1.12.48 BHE arr. Sydney ex Lae, 3 pax, Cpt Jack Murray, 3 crew
- 14.12.48 BHD Sydney-Charleville-Cloncurry-Daly Waters-Katherine-Darwin, Cpt Jack Murray
- 15.12.48 BHD Darwin-Ambon-Darwin, Cpt Jack Murray
- 16.12.48 BHD Darwin-Daly Waters-Cloncurry-Charleville-Sydney, 23 pax, Cpt. Jack Murray 5 crew
- 19.12.48 BHE arrived Mascot from Ambon, 14 pax, Cpt. Herbert, 5 crew
- 25.12.48 BHD arr. Sydney ex Singapore, 14 pax, Cpt. Jacobson, 5 crew
- 6.2.49 BHD dep. Sydney via Darwin
- 12.2.49 BHD arr. Sydney via Darwin, 14 pax
- 15.2.49 BHB dep. Sydney via Darwin. Nil pax
- 17.2.49 BHB dep. Darwin via Sydney 21 pax
- 24.2.48 BHD arr Sydney via Darwin, 11 pax
- 25.2.49 BHB dep. Sydney via Darwin 22 pax
- 27.2.49 BHB dep. Darwin for Sydney 22 pax
- 1.3.49 BHD dep Sydney via Darwin
- 4.3.49 BHD arr Sydney via Darwin
- 15.3.49 BHB Sydney instrument check flight Cot Jack Murray QEA

During 1948 there were reports of European migrants wanting to settle in Australia reaching Singapore by airlines or ships but being stranded there due limited onward air services to Australia. It is believed that many travelled on the Singapore-Sydney flights above, to the extent that the majority of Qantas DC-3 Singapore services were primarily for this trade. Customs Arrivals Cards, which often did not record the registration of the aircraft, just the airline or flight number, show flights above between March-June 1948 at least had Greek and Bulgarian migrants as passengers.

#### A DC-3 is sent to England

At the time Silver City Airways (Australia) was being established at Broken Hill, a request came from the parent Zinc Corporation in London for a DC-3 to be released to them. Even with two DC-3s leased to Qantas, it was decided that another could be spared. Accordingly, VH-BHC was prepared for the long delivery flight. It departed Broken Hill on 25 August 1948 flown by senior captains of the Australian company, Malcolm Baker and Lloyd Miller.

Intriguingly, prior to leaving Australia VH-BHC had modifications to its fuselage, which removed the forward four windows, replaced by a small horizontal slit window. The reason for a darkened cabin remain obscure, with suggestions of some form of survey work, but there is no evidence of any photographic mapping conducted by Silver City Airways - and the need for a windowless cabin is





DC-3 VH-BHC after British certification as G-ALFO. The metal reskinning of the forward fuselage is clear in this view, but the purpose remains obscure. (A.J.Jackson)

unexplained. It certainly wasn't mineral survey, which Silver City was to introduce to Australia the following January with a different DC-3. A possible clue is a November 1947 memo in the VH-BHC's DCA file which mentions that BHC and BHD were "currently at Brisbane for modifications to executive interiors to transport company Directors." If it was a darkened sleeping area, it is hard to imagine the need for the windows to be removed rather than just closed off from inside. It would also be right on the highest engine noise line. VH-BHD was still in cargo configuration in March 1948 when it had its annual CofA renewal at Broken Hill.

After arrival in England, VH-BHC was parked at British Aviation Services' hangars at Blackbushe for several months waiting for British certification. That inspection was completed at the end of the year and British CofA was effective from New Years Eve 1948 now registered G-ALFO with the forward four windows removed. No reports have been found to indicate its role with the parent Zinc Corp, but it was sold to USA in December 1950. Air Britain journals record G-ALFO parked outside in the snow at Blackbushe on 3 December 1950, and its departure from Blackbushe on 6 January 1951 now repainted N94529. A report of it clearing Customs at Prestwick, Scotland the same day added that the first four windows of the cabin were removed. This DC-3 went onto a long life in USA and is still flying today as a warbird, painted in WWII camouflage.

#### More international air activity at Broken Hill.

During August 1948 Bristol Freighter G-AIME of the parent Silver City Airways visited Broken Hill bringing mining personnel and equipment. The airline had been building up a large fleet of Bristol Freighters and would eventually own over

30 of various models. As well as the English Channel car ferry services, their Bristols operated long-distance charters to the Far East including the Shell Oil Co's exploration sites in Borneo. G-AIME arrived at Sydney 21 August 1948 inbound from Ambon, Sumatra under the command of Captain M. Cockron. He had a crew 6 and was carrying 18 passengers plus freight.

G-AIME was back in Australia in January 1949, arriving at Sydney 21 January via Darwin and Charleville. After a brief crew rest, it departed Sydney late the same day outbound via Darwin.

The next overseas visitor was a Douglas DC-4 ZS-BYO. The parent Zinc Corp had purchased this aircraft and registered it in the name of associate company Air Charter Survey and Exploration Ltd, Johannesburg. It was delivered in September 1948 to British Aviation Services' base at Blackbushe. The DC-4 was named "Discoverer" at Blackbushe on 30 September by the wife of the South African High Commissioner to London. The naming ceremony was a grand affair hosted by Mr.J.R. Govett, joint Chairman of Zinc Corporation and New Broken Hill Consolidated Ltd. The event received media attention because the DC-4 was the largest British business aircraft and the stirring speeches predicted a bright future for Empire mining.



Zinc Corp Douglas DC-4 ZS-BYO "Discoverer" at Blackbushe in 1948. It visited Broken Hill in October that year, bringing components of the magnetometer mineral survey system to be installed in DC-3 G-AIRH for an extensive Australian survey. (Peter Brown)



British Silver City Airways Bristol 170 Freighter G-AIME arriving at Darwin 1948 (David Vincent collection)



To emphasise the DC-4's value, a few weeks later "Discoverer" departed London for Australia and South Africa carrying company equipment and mining executives in far more comfort than the Lancastrians. ZS-BYO reached Darwin on 25 October 1948 and continued to Sydney and Broken Hill. The return trip commenced with a stop at Kalgoorlie WA where its passengers inspected the Western Mining Corporation operation. The DC-4 then routed via Darwin-Singapore-Colombo-Mauritius-Johannesburg-Nairobi-Valetta-London.

In the meantime, Zinc Corp London had decided that their new DC-4 should be operated as a British aircraft, rather than South African. British Aviation Services at Blackbushe were requested to carry out a British certification overhaul. It emerged as G-ALEP registered to yet another associate Mining and Exploration Ltd, Blackbushe, and British CofA was issued on 21 January 1949. It retained the name "Discoverer" and included in work was a strengthened floor with security armour to carry gold bullion from African mines, which added 2,000 pounds to the aircraft's empty weight. The cabin was fitted with a 15 passenger luxury seating area. The Zinc Corp announced that same month that the DC-4 was about to depart on an around-the-world business trip, London-New York-Monterey-Mexico City-El Paso-Los Angeles-Honolulu-Canton Island-Sydney-Darwin-Singapore-Calcutta-Karachi-Valetta-London.

#### **Zinc Corp carries out Australia's first aerial mineral survey.**

On 7 January 1949 Malcolm Jackson, Manager of Operations Silver City Airways (Australia) Pty Ltd wrote to DCA advising them that a British registered Douglas DC-3 G-AIRH owned by the parent Silver City Airways was scheduled to arrive at Darwin on 22 January. It was planned to operate within Australia for six months on a geophysical survey for The Zinc Corporation. The DC-3 is equipped with a magnetometer system and SHORAN radar navigation. General maintenance would be carried out by Silver City Airways (Australia) at Broken Hill, engine overhauls by Qantas at Sydney and a scheduled British CofA renewal by ANA at Essendon. All aircrew held appropriate British licences and were listed as Captain David S.Flett, copilot D. W.Cox, Navigator E.R.Walsh, Radio operator P.D.Skingley. The copilot's wife was listed as qualified stewardess.

This DC-3 G-AIRH had been taken off airline work with the parent Silver City Airways early the previous year to test experimental magnetometer equipment on behalf of Zinc Corp. It was the first magnetometer system used outside North America and required the aircraft to be demagnetised to reduce interference with the sensitive equipment. At Blackbushe magnetometer equipment was installed and tested under the supervision of leading geophysical survey expert Oscar Weiss. Renamed "Silver City" for its new role, G-AIRH departed Blackbushe in June 1948 for South Africa where it was operated by a Zinc Corp newly-formed associate

company, Air Charter Survey and Exploration Ltd, Johannesburg. It flew mineral surveys in South Africa, Mozambique and Rhodesia, while technicians adjusted the magnetometer system.

In January 1949 G-AIRH departed Johannesburg for Australia, arriving at Darwin 23 January. It proceeded the following day to Broken Hill in a 10 hours 5 minutes flight. After unloading gear, the DC-3 positioned to Sydney Airport for a maintenance inspection by Qantas and replacement of both Pratt & Whitney R-1830 engines prior to commencing the Australian survey. It arrived back at Broken Hill on 10 February 1949. An advance party of 16 mineral survey scientists and technicians from Britain and South Africa had already arrived at Broken Hill to prepare for the survey. The latest refinements in magnetometer equipment, delivered to Australia on board the Zinc Corp DC-4 were now installed. This first commercial aerial mineral survey in Australia was carried out by Air Charter Survey and Exploration Ltd, Johannesburg, under the personal supervision of mineral survey pioneer scientist Oscar Weiss.

G-AIRH covered extensive areas, flying at altitudes between 500 feet and 4,000 feet above the ground depending on the circumstances. Australian geophysical survey operator and historian Doug Morrison takes up story.

"G-AIRH's aeromagnetic work was mostly for The Zinc Corporation and its subsidiary Enterprise Exploration Co Pty Ltd although some work was also carried out for BHP and Western Mining Corporation. The crew were joined by geophysicist Peter Goodeve, who was later be crew chief on the Australian Bureau of Mineral Resources DC-3s VH-BUR and VH-MIN. In mid February 1949 G-AIRH was flown on a major regional aeromagnetic survey that extended from Broken Hill as far east as Nyngan NSW and as far west as Lake Gairdner in South Australia, possibly landing at Nyngan, Cobar, Whyalla, Port Pirie, Port Augusta. Survey flying was then made to Bourke NSW and return from Broken Hill. An extensive aeromagnetic survey was then conducted based at Broken Hill throughout the rest of February and March. 15,000 kilometres of survey lines were flown. 30th March to 4th April additional reconnaissance was flown from Cobar extending as far north as Louth and Bourke and Nyngan. In mid April G-AIRH flew to Whyalla for BHP and based from there flew surveys over the known iron ore deposits in the Middleback ranges (Iron Prince, Iron Duke, Corunna etc). A reconnaissance traverse was flown along the Kimba-Whyalla Road.

At the end of April G-AIRH was flown to WA for a survey for WMC centred on Southern Cross (Bullfinch to Marvel Loch). During May 1949 it flew a coastal aeromagnetic survey near and across the SA and Victorian border, most likely based from Mount Gambier. After that it returned to Cobar for some follow-up work on specific anomalies located on the earlier surveys."

Later in May with the Australian survey finished, the DC-3 was ferried to Melbourne where the annual British CofA renewal inspection was carried out by Australian National Airways at Essendon. On completion Captain Flett made a test flight on 6 June and accepted the aircraft. G-AIRH then made the long ferry flight back to Johannesburg, where on 23 July 1949 it took up South African registration as ZS-DDC.

#### **Silver City Airways (Australia) Pty Ltd ceases operations.**

Continuing low demand for the DC-3s, which had allowed their lease to Qantas for periods, resulted in the decision to advertise two for sale. VH-BHB was sold to MacRobertson-Miller Aviation Co, Perth and collected on 21 July 1949 by an MMA crew, to become VH-MMK "Kimberley". Two months later ANA purchased VH-BHD to become VH-INM "Irrigana".



British Silver City Airways DC-3 G-AIRH which was based at Broken Hill in 1949 on Australia's first magnetometer aerial mineral survey. This picture as taken in Pakistan. .



The two Dragons had been retired at Broken Hill, replaced by the two Norsemen. In January 1949 VH-AQW was sold to Qantas Empire Airways for their New Guinea services. VH-ALL was advertised for sale in August 1949, the sale including the spare parts holding which included a spare airframe. VH-ALL was purchased by TAA for its Queensland outback services. It was handed over at Broken Hill on 22 April 1950 to TAA Operations Manager Captain John Chapman, who departed on a two day delivery flight to Brisbane.

A Zinc Corporation review of the reduced pace of Silver City Airways (Australia) operations in late 1949 come to the conclusion that it no longer warranted a separate airline organization. Accordingly, effective 1 January 1950 the company ceased operations and its assets, staff and DCA Operating Licences were transferred back to The Zinc Corporation, Melbourne. The change would have had little impact apart from the airline name being painted over on the Broken Hill hangar. The remaining DC-3 VH-BHE and two Norsemen continued providing support to exploration camps and mining ventures in Australia's northern areas.

In retrospect it appears that the Zinc Corporations in Australia and Britain wildly overestimated the extent of Australian mineral and oil exploration and the amount of air support it would require. The purchase of the DC-4 "Discoverer" seems to be part of unbridled optimism in a post-war mining boom in Africa and Australia. Both the DC-4 and the corporate DC-3 G-ALFO were quietly sold in late 1950, the DC-4 to Australian National Airways to become VH-IX.

The ANA crew who delivered the DC-4 to Melbourne departed Blackbushe on 6 February 1951. Navigation Officer Bill Eneberg later wrote: "We were concerned that the aircraft was not performing according to the book, which was highlighted by our departure from Kemajoran Airport at Djakarta. In the hot tropical weather conditions we managed to scramble off the runway only because the skipper dropped some flap at the last moment and bounced us off. When we got to Melbourne and the aircraft documentation was more closely examined it was discovered it was fitted with an armored floor for the carriage of gold bullion and the empty weight was some 2000 pounds higher than standard."

#### **Business as usual at Broken Hill.**

The Zinc Corporation aviation activities continued at Broken Hill. The last DC-3 VH-BHE was retired during 1950 and leased to TAA as a freighter effective 16 October 1950. Prior to handover to TAA, the cabin fittings of 21 passenger seats, buffet and hat racks were removed. TAA flew it for two months from Essendon prior to its sale in December to the Australian Government Bureau of Mineral Resources for magnetometer geophysical survey as VH-BUR. It and a second DC-3 VH-MIN continued the work pioneered by Oscar Weiss with G-AIRH. These two DC-3s were maintained and crewed on contract by TAA over the following decade, with BMR geophysicists and technicians operating the magnetometer sensing equipment.

Norseman VH-BHF was destroyed by fire at Mainoru airfield, Arnhem Land NT on 17 September 1952 while transporting workers to zinc silver deposits near Mainoru Station, 300 miles South East of Darwin. The aircraft caught fire on the ground due to an electric fault in the HF radio installation. Zinc Corp pilots Lloyd Millar and Alan Polkinghorne were not injured. The burnt fuselage frame was still on the airfield in the 1980s.

A month after the loss of the Norseman, a Lockheed 12A VH-BHH entered service. It had been transferred to Australia from the Zinc Corp, London, which had used it as an executive transport in Britain and Europe as G-AGWN. The sleek Lockheed was named "Silver Star" and was mostly

based at Melbourne, operated in conjunction with Associated Airlines.

Norseman VH-BHG was sold in July 1953 to Gibbes Sepik Airways in New Guinea. Founder Bobby Gibbes had earlier acquired the spare RAAF Norseman A71-3 held in reserve in the hangar at Broken Hill. He had collected it in 1950, departing for Bankstown Aerodrome, Sydney where Kingsford Smith Aviation Service were to carry out an overhaul for civil operation. The Norseman was still in its RAAF fabric with wartime markings. During the ferry flight, sections of fabric tore off the wings, causing Gibbes to make a precautionary landing at Parkes NSW. KSAS sent out a fabric repair team and he continued the flight to Bankstown. The Norseman completed the overhaul in October 1950 resplendent in all silver scheme as VH-BNT and flown to Wewak, New Guinea by Gibbes.

Significant changes were happening at The Zinc Corporation, Melbourne. It had merged with Imperial Smelting Corporation to become Consolidated Zinc. Unable to find large scale mining projects, it merged in the 1960s with the Rio Tinto Company to form the Rio Tinto - Zinc Corporation, and its main subsidiary, Conzinc Riotinto of Australia (CRA), and later the Rio Tinto Group. During 1951 the Zinc Corporation Ltd, London sold its investment in the British Silver City Airways, which was now an established and successful business. However the name Silver City Airways continued in British skies for the following decade as a scheduled passenger airline with a fleet of DC-3s, Hermes, Viscounts as well as the popular Bristol Freighter cross-Channel car and passenger air ferry. Silver City Airways Ltd was merged into British United Airways in 1962.

By 1959 the Zinc Corporation aviation division had only the aging Lockheed 12 VH-BHH and a Scottish Aviation Twin Pioneer VH-BHJ, which was based at the Rum Jungle uranium mine in NT. The Twin Pioneer was also used to support the Conzinc Rio Tinto group's mining projects at Bulman, Weipa and Mary Kathleen. The division now came under the umbrella of the mining companies' air service Associated Airlines at Essendon, and the two Zinc Corp Lockheed pilots Lloyd Miller and Alan Polkinghorne were transferred to Associated Airlines

#### **Author's notes:**

- the terms C-47, C-47A, Dakota and DC-3 are military and civil designations of the same aircraft type
- my thanks to Roger McDonald, Ron Cuskelly, Barrie Colledge, David Vincent and Editor Neil Follett for their willing assistance in the preparation of this article.

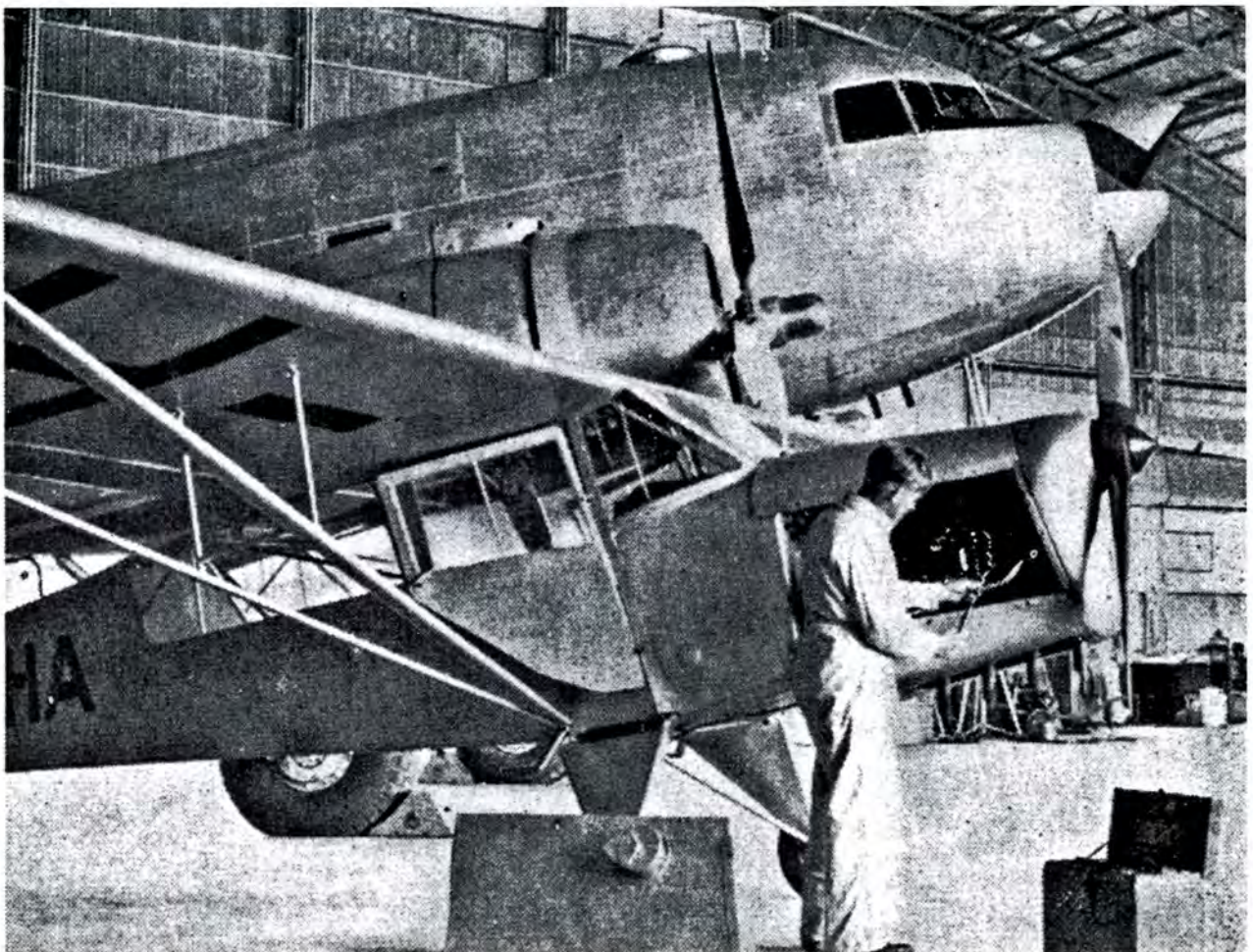
#### **Sources:**

- DCA aircraft files, National Archives of Australia, Melbourne
- Customs files, Sydney arriving aircraft 1947-1949, NAA Sydney, extracted and researched by AHSA member Chris O'Neill
- Immigration arrival records, NAA on-line
- Trove newspaper search website: National Library of Australia
- Bob Wiseman, Adelaide: Broken Hill aviation research project
- Roy Day, Silver City Airways Lancastrian Captain, pilot log book, via Bob Wiseman
- Doug Morrison, Sydney: geophysical survey historian
- Bill Eneberg: memories of delivery flight G-ALEP: Letter to Editor Flightpath magazine
- The Conveyor - various issues 1947/51: Australian staff magazine of The Zinc Corp
- Man and Aerial Machines Issue No.72 & No.73: Douglas DC-4
- Clive Caldwell Air Ace: Kristen Alexander, Allen & Unwin 2006
- Killer Caldwell - Australia's Greatest Fighter Pilot: Jeffrey Watson, Hodder, 2005
- British Civil Register News, 1948-1951, Air Britain monthly journal
- Hyderabad Airlift, Donald Hannah, Flypast magazine, May 1983
- Civil Aviation in Australia 1949-1950, DCA publication: Channel Country flooding
- A History of Blackbushe, Trevor Harvey, Air Britain Digest, March-April 1987





Magnetometer operator's console in the cabin of Bureau of Mineral Resources DC-3 VH-BUR (the former VH-BHE) soon after it commenced survey work in 1952. The operator is BMR specialist John Newman, who had adapted a wartime aerial anti-submarine Magnetic Anomaly Detection (MAD) system. (Ted McCarthy via Doug Morrison .)



Auster 3 VH-BHA having engine maintenance in the Broken Hill hangar (The Conveyor)





VH-FNR in Ansett marking landing at Melbourne Airport 27 September 1975. Photo: Robert Zweck



VH-FNG in Ansett Airlines of Papua New Guinea markings at Melbourne Airport 14 October 1979. Photo: Robert Zweck.



VH-FNP in Ansett Airlines of South Australia markings at Adelaide Airport 31 August 1980. Photo: Robert Zweck.