

PHOENIX



QUARTERLY MAGAZINE OF THE
AUSTRALIAN HISTORICAL FLYING MUSEUM
HISTORICAL AIRCRAFT RESTORATION SOCIETY, INC.



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Editor's Message

Since producing the last edition of *Phoenix*, some of our aircraft have been very busy flying to various locations—Canberra, Avalon, Sydney, Temora, Coffs Harbour and Euchua. Not to forget that all our aircraft were on display for the *Wings over the Illawarra* open day on 24 February.

It is great to hear the experiences of members of the community in relation to our aircraft. We were fortunate to meet a gentleman at Temora over Easter who actually flew our Nepi as well as one of our Daks. I have included his story on page 10 of this edition.

Also, while standing at the bottom of the exit stairs of Connie on the same weekend helping an elderly couple navigate their way off the aircraft we struck up a conversation about HARS and our other aircraft on display. As it turned out the gentleman was a member of a Catalina ground maintenance crew stationed in Perth during WW2. He had travelled to Temora over Easter just to see our Cat fly. He was very excited as we watch her taxi off down the runway. I asked him where he was from and he told me Coffs Harbour. Well you can't imagine the look on his face when I was able to tell him that the Cat would be in Coffs Harbour the following weekend. I think he thought all his Christmases had come at once (not bad considering it was Easter).

While talking about past experiences, there must be some members of HARS out there who could send me some untold story or event to share with our readers. I am not the greatest of writers myself, but I am willing to help anyone who is prepared to come forward. Just email me and together we will see what we can achieve.

Members please log onto our website

www.hars.org.au

to catch up on all the latest information and activities.

Julie Hourigan



President's Report

I would firstly like to thank everybody who has put in a huge effort so far this year, from aircraft maintenance, operations, administration, public relations and tours, to the building program. As a voluntary organisation you can all be very proud of the contribution to our history and tourism opportunities.

Last weekend we were honoured by the Chief of Navy for our contribution over many years to the operation of the museum at Nowra which has now been rededicated as the Fleet Air Arm Museum. During the same function the Chief of Navy recognised the promotion during the week of our Catalina engineer Don Binskin's son Mark who has been promoted to Air Vice Marshall in the RAAF. We all offer Mark our congratulations.

The Museum building is finally a reality thanks to a super effort by Robert Greinert and his team and now the job of fitting it out gets into full swing. This will be an exciting part of our development and will help us manage our operation far more efficiently and with the restoration shop being installed will provide a superb opportunity for our tours and visitors to get a first hand view of some very significant historical aircraft under restoration.

Professor Michael Hough and his team in the Museum company are filtering through all of the exciting ideas to be evaluated and brought into the Museum building which will lead to a world class presentation of HARS.

I look forward to presenting to everyone at our next members' bi-monthly gathering scheduled for Saturday 23 June at 2 o'clock in Hangar 1 a full report on our exciting plans and activities together with project reports from all the project leaders.

Please mark in your diary also our next Church Parade which will be held on Saturday 14 July. Details will appear on the HARS website.

Thank you everyone.

MUSEUM BUILDING DEVELOPMENT

Robert Greinert

With the final bolt being inserted into the structural frame, the various subcontracting trades swung into action. Jay Lazarus Roofing led the charge and laid the roof and walls up with the precision of a military operation.

Watching the 32 meter long roofing sheets being craned up on to the southern end of the building made for an interesting stress period all of its own. Our special thanks to Boom Logistics for the use of their amazing crane and specialist crew.

Cladding complete, Keith Pool's carpentry crew swung into action, laying out the Structural Flooring System, quickly followed by the ground floor concrete. Keith's professionalism and expertise has saved us many dollars and significant time.

Various subcomponents of the project have been actioned in order to ensure a smooth continuous flow of work. Tony Pollard Electrical is dealing with the electrical supply which has to be brought in from the main road. The electrical upgrade will also allow the enhancement of functions within Hangar 1, including a new compressed air system.

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Some HARS members on ANZAC Day in Sydney

Left to right: Gavan Louis, Mike De La Hunty, Brett Louis and Neil Louis.

Mike De La Hunty served with 4/9 Battalion in Vietnam in 1969. His medals are: Australian Active Service Medal 1945-75 with Vietnam Clasp; Australian Vietnam Medal; and Republic of Vietnam Medal with Clasp.

FSGT Brett Louis is a C130J Loadmaster with 37SQN at RAAF Richmond. His medals are: Australian Active Service Medal with Clasps East Timor, Iraq and Afghanistan; INTERFET East Timor Campaign Medal; Iraq Campaign Medal; and Australian Defence Medal.

FAREWELL FLIGHT— A TRIBUTE TO GRAND JETS OF 1950s



Photograph courtesy of Robert Peel, Illawarra Mercury

With its landing wheels just metres above the Albion Park runway yesterday, one Australian aviation icon paid majestic tribute to another.

Dozens of people in and around the airport braved wet and cold weather conditions for up to an hour to catch a glimpse of the Boeing 707, *City of Canberra*, as she came out of rain clouds to make two low-level passes.

Resplendent in 1959 Qantas livery, the *City of Canberra* was the first commercial jet registered in Australia, the first to be sold outside the United States, and is probably the oldest 707 in the world still flying.

Yesterday's low-level spectacular was a farewell salute to the Illawarra and an opportunity to honour the former 1955 Qantas Super Constellation, fondly known as Connie, that the jet replaced in the Qantas fleet more than 40 years ago.

Ironically, Connie has the freedom of Australian skies thanks to the Historical Aircraft Restoration Society (HARS), now based at Illawarra Regional Airport.

But not the *City of Canberra*.

She will be flown to Qantas' museum at Longreach in Central Queensland on Sunday and permanently grounded because of a bizarre condition of sale

imposed by the Saudi royal family, the jet's former owners, that it may be used only as a static display.

"It's a real shame after all the work and effort from the Qantas Founders Museum to get her back in the air again" HARS president and chief pilot Bob De La Hunty said as he watched the fly-past.

"The Boeing 707 is a magnificent aircraft and I can still remember the day when my father took me to Sydney airport in 1958 to watch its arrival in Australia for the first time" he said.

After ushering in Australia's jet age and a decade of service on some of the world's longest air routes, the *City of Canberra* was sold off overseas and ended up as a VIP aircraft in Saudi Arabia.

Qantas museum experts found the jet languishing in an aviation graveyard in southern England waiting to be turned into scrap metal.

With the help of a \$1 million Commonwealth grant, the museum negotiated the sale and refurbishment of the aircraft that was flown finally to Sydney earlier this year.

Yesterday's farewell flight included an extended flyover of Canberra - the city whose name she still proudly bears.

This article from the *Illawarra Mercury* of Friday 8 June 2007, was written by Paul McInerney and has been reproduced with his kind permission.

Extract taken from Historical Aircraft Restoration Society Forums: General Discussion: **707 at Albion Park** by Frank Bowden

"I was on the flight (with Plukka and Paul Hockey) and took some photos but they were not good. The plane was a bit too fast and the swept wing was in the way. There seemed to be a good crowd on the ground and I hope you enjoyed it as much as we did. I don't know how close to the ground the wheels were but we were expecting them to touch. It will be interesting to see some photos taken from the ground.

Prior to the approaches at IRA we did eight touch and go's at Canberra. It was quite an experience to be doing circuits around the capital and I'm sure the crew had a great time also. The 707-138 is a pocket rocket and accelerates very quickly. In cruise the engines are very quiet and as an ex executive aircraft with plenty of sound proofing it is very comfortable.

On the weekend it will be taken to Longreach and it is not expected to fly again".

RETURN OF THE DROVER

Sandy Howard



"The groundspeed's only 68 knots!" is the cry from my GPS equipped colleagues in the cabin. "Thanks", I shout back over the noise of three Gipsy Majors at climb power while doing a mental gymnastic on what the wind must be if I have to put the electricity substation which marks the Northern departure route from Parafield airport in the quarter window to track correctly. A few spots of rain start appearing on the front windscreen and we're pleased that we can run east ahead of the front which has arrived several hours early.

This story tells of the return of the last production de Havilland Australia Drover, VH-DHM, from the Australian Aviation College at Parafield, South Australia to her owners and builders, Hawker de Havilland Pty Ltd, at Bankstown, NSW. With four pilots on board, a spot of crew resource management ["There are four of us. If we divide up the work, who flies first?" "You!" is the unanimous reply] sees me flying the first leg to Mildura on the NSW/Victoria border. Each leg must be not more than two hours to re-oil, but more anon.

Background

First flown in 1948, the genesis of the Drover was the need to replace the DH-84 Dragon as an Outback workhorse and the design of the parent company's DH-104 Dove. The Dragon was something of a pre-war icon, serving with the Royal Flying Doctor Service [RFDS] throughout Australia and the time had come for a homegrown replacement. DH Australia was winding down from extensive wartime production, the Mosquito

being its final run, and was thus suitably placed to produce a rugged aircraft to cope with the numerous unsurfaced airfields in the Australian bush. The biggest problem designers faced was the "new" requirement in Air Safety legislation to achieve a satisfactory rate of climb with one engine inoperative.

Using the Dove, which first flew in September 1945 as a basis for design, de Havilland Australia introduced various changes to make their aircraft more attuned to local conditions. The most obvious change was to install three Gipsy Major 10 Mk2 145hp engines in place of the Dove's more complex 330hp Gipsy Queens. The Gipsy Major was well known in the bush and thus seen to be more easily maintained. The adoption of a fixed undercarriage with a tailwheel would better cope with rough unsealed landing strips. The Redux bonding process was not available for the Drover so rivets were used. Seeing the wing for the first time, observers liken it to the construction of the Sydney Harbour Bridge, but it is certainly strong!

The employees of de Havilland Australia were invited to submit names for the aircraft and Sir Geoffrey de Havilland selected the name "Drover" as being most suitable.

On 23 January 1948 the prototype, appropriately registered VH-DHA, made its first flight. Although there were some similarities to the Dove, the Drover is a slower, lighter aircraft. Both had identical wingspans at 57 feet, but the Drover is 2ft 6 in shorter, and weighs 2,000lb less all up at 6,500lb.

Sadly, a series of unfortunate accidents were to occur which severely restricted

its acceptance among the airlines. The prototype Drover, then owned and operated by the Department of Civil Aviation [DCA], was lost in the Bismark Sea off New Guinea in 1952. Following other accidents, DCA were obliged to place restrictions on Drover operations. Ignominiously, Qantas' only post-war loss of life was in the crash of a Drover at the mouth of the Markham River at Lae, New Guinea. Only 20 Drovers had been built by the time production terminated in September 1953 [-DHM being the last.]

Nevertheless, a series of modifications were incorporated in the Drovers over the years which improved their performance. The most important change came in the Mk3 which was re-engined with the 180hp Lycoming O-360 and Hartzell constant speed feathering propellers. The first modified Drover was flown by the RFDS in 1960 and carried a pilot, two medical staff, and two stretcher cases. A total of seven Drovers were modified this way and gave valuable service to the RFDS.

History

With manufacturer's serial number 20, VH-DHM began life as a private aircraft registered VH-AHZ. In August 1965, she was sold to New Hebrides Airways at Port Vila as FQ-FAH and worked there until September 1967. She moved on to the then Hazair [now Hazelton Airlines; a very successful regional airline] at Orange, NSW and registered VH-PAB. No doubt as one of NSW's leading aerial agricultural operators at the time, they did the modification which saw her sold to Pastoral Aviation in Toowoomba,

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2007 AVALON AIRSHOW



Avalon this year was well attended by four of the HARS larger aircraft, making it the biggest contingent representing HARS at any airshow to date.

The Connie, Neptune, Catalina and C-47 blasted off from Albion Park on Thursday 22 April and arrived at Avalon within 20 minutes of each other, as planned. The Connie was positioned in the usual location next to the Shell refuelling depot, and had a RAAF C130 parked on one side, and the Neptune on the other. This situation changed later on when the Catalina was towed over and positioned next to the Connie, and the three HARS aircraft looked great on display together. The C-47 remained with the other 'tail-draggers'.

Our accommodation this year was at Ballarat, and after a one hour and ten minute coach ride, we arrived at The Miners Retreat. Our hosts Jan and Ed greeted us and provided all the comforts of home during our stay, including doing our laundry and organising transport to and from the pub each night.

In typical Victorian style, the weather was usual, and on arrival on Friday to set up the shop and display aircraft, we were greeted with 42 degree temperatures, 40 knot wind from the west and a dust storm. It was impossible to set up the shop outside, so a couple of tables were used inside the Connie, and our mission was underway. The public appeared around 2.00pm, prior to that was Trade Day passes only, and we tried desperately to usher visitors through our beloved Connie and Catalina. Towards 3.00pm it became impossible to stand at the foot of the stairs, the wind growing

stronger, and the stairs twice running over Jim Hayes' foot. The decision was made and we closed both aircraft, however, the shop netted around \$800 in that short time. Well done girls and boys. Tired and covered in dust, we retired to the coach and later that night enjoyed a well earned drink and a good meal. (To wash away the dust of course!)

The next morning greeted us with 17 degrees and rain! What a challenge, out came the coats and away we went. The crowd was enthusiastic and the weather certainly did not deter them. The Connie and Cat performed their airshow routines as did the C-47, and after each aircraft landed, the crowd swarmed around and willingly donated to see inside our 'old girls'. Particularly after the Connie performed the night before in the Night Fire Show, the crowd was keen to see and ask questions about that remarkable exhibition.

Tired and cold we retired to the coach and later that night enjoyed a well earned drink and a good meal. (To warm up of course!)

Sunday morning dawned and so did the crew (eventually), and we headed off to the airfield in near perfect weather. The crowd was consistent and again kept us busy with questions and most visited the shop and spent up big. A lot of people visiting the Connie indicated that they had seen her before, but were interested to go through again, just to see the various stages of restoration that had taken place. The Dak was also popular with a constant stream of people lined up to look on board, on both days. The donation box was rather heavy with lots of shrapnel, and Ross Warden did his best in transporting the booty to the Treasurer. Next time Ross can you please count it!!!

Totally exhausted we retired to the coach and later that night enjoyed a well earned drink and a good meal. (To celebrate a successful weekend of course!)

HARS departed Avalon on Monday morning, with all aircraft returning safely to AP in the afternoon.

Many thanks to all the crew who helped out and worked endlessly during the Airshow, to make the HARS visit a very successful one. A team effort resulted in around 5,500 people going through the Connie, Cat and Dak, and the shop staff worked tirelessly to nett around \$11,000.

Well done all!!!

Cheers, Maureen

QANTAS DC4'S — WHAT GREAT AEROPLANES

Dave Jeanes



I vividly recall one DC4 trip, which was the first horse charter for QANTAS. It started off from Mascot on 28 October 1957 with VH-EBP. We departed about noon from Sydney. There had been delays in getting the four horses onboard, as everyone was new to this procedure. The horses were contained in boxes made from a solid timber frame with tempered masonite sides. A young groom accompanied the animals.

About an hour out along the flight to Darwin we entered some turbulence and a dog that had been loaded in a small cage just behind the rear horse box started to bark. The rear horse became agitated and started to buck around and eventually the horse box buckled, making the horse kick wildly. The masonite cracked and its sharp edge cut the young horse between its front and hind legs. Bleeding was copious, with an oily substance running down the animals body. The groom was useless. The Captain shouted to the First Officer to get the gun and shoot the horse. (All aircraft carrying large animals had to carry a hand gun). The First Officer went down into the cabin leaving the cockpit door open. The Captain shouted, "Shut the bloody door or the horse will bolt up here". After awhile the horse calmed down, but shivered badly all the way to Darwin, where a vet was waiting to give it a tranquilliser. The poor animal was in such a bad state for the eight hour flight to Singapore that it had to be put down when we landed.

After a night stop we flew the empty aircraft up to New Delhi, via Calcutta. We stayed at the Ashoka Hotel, a magnificent palace of a place, for several days. Our cargo back to Melbourne was to be 1000 Rhesus monkeys, destined for the Commonwealth Serum Laboratory (CSL), where they would manufacture the Salk Vaccine to immunise people against polio.

The CSL had sent several animal handlers to Delhi a week before to become acquainted with the monkeys. The animals were vulnerable to pneumonia and had to be kept warm during the flight. This meant that the cabin heater had to be on all the time, and this combined with the stench of their urine, was overpowering. The monkeys were contained in 100 cages with ten animals in each. Staring at them through the window in the cockpit door made them angry and they would urinate towards you. We started out with 1000 monkeys, one died on the way to Melbourne, and one was born. So we landed with a full house.

Footnote on history of VH-EBP

VH-EBP was originally a National Airlines machine (N33681) which was sold in 1952 to non scheduled carrier Resort Airlines who converted it into an all freighter configuration. Qantas purchased it for their growing Air Cargo business in 1955. The above photograph shows it at Mascot in 1955. It passed to Zantop Air Transport as N601Z in 1959, to TMA (Trans Mediterranean Airways) as OD-AED in 1962 and to Omni Investment Corp as N480G in 1968. From there it was brokered by Carolina Aircraft Corp to Pan African Airlines and incredulously is listed as "lost in a Biafran bombing raid on Port Harcourt, Nigeria, November 1969". Whether it was fitted with bomb racks or whether they just chucked 'em out the door isn't recorded

<http://www.edcoatescollection.com/ac1/austcl/QantasFleet/VH-EBP>

WINGS OVER THE ILLAWARRA AND AWAY VISITS FOR HARS AIRCRAFT

HARS had a second successful public open day on 24 February in conjunction with Sports Aircraft Association of Australia (SAAA) who had originated the idea in 2006. The event was extremely successful, having the pleasure of the RAAF bring the BAe Hawk Advanced Trainer with two very youthful but very professional pilots who stayed with their aircraft throughout the day, talking to young and old about their aircraft and the RAAF. The Service can be proud of these young men in the way they presented themselves and the RAAF.

Our Sabre A94-901 was proudly parked next to the Hawk. A94-901 is painted representing 76 Squadron which is the same squadron that operates the Hawk.

The crowd was also entertained by the RAAF Roulette Aerobatic Team which did their usual magnificent display of aerobatics. They stayed overnight and gave locals who came back on Sunday a spectacular departure.

We were also able to welcome the Temora Aviation Museum on its first visit to our facility. Temora brought their Hudson and Meteor and it was a great opportunity for our two operations to jointly present to the public our historic aircraft.

Financially HARS received considerable community support with donations to

come onto the active tarmac to see Connie, Dakota, Neptune and Catalina all depart and return on the day.

People were very patient while waiting to enter the Tarmac and were able to see the Cleary vintage and current vehicle displays as well as other car and motor bike club displays. We plan a more sophisticated method of ticket collection next time so as to avoid long delays.

SAAA had an estimated 60 member aircraft of various makes and models fly in on the day and plan to make their aircraft more accessible to the public in the future. This will give the public more opportunities to spend time with the owners/builders so as to appreciate the high standard of the SAAA movement in Australia.

Shellharbour City Council are to be congratulated on their vision and support of this community event and its success can be measured by its reported 17,000 visitors on the day.

Plans are already in place and approved by the Shellharbour City Council to celebrate a similar event on 8 March 2008 and we expect it to attract even greater RAAF and Temora participation, together with other visiting aircraft.

We have had a number of other operations this year including seven

aircraft supporting the Shellharbour City Council and Wollongong ANZAC Day Committees with fly overs by Connie, Neptune, Catalina, Dakota, two Winjeels and the Tiger Moth.

We also visited Temora on 7 and 8 April taking with us the Neptune, Catalina, Dakota and Connie. It was a very successful weekend with well over 1000 visitors going through Connie. The Catalina departed early to fly over Lake Macquarie and Rathmines as part of the Toronto Heritage Fleet celebrations.

We also participated at the 2007 Avalon Airshow (see page 6 for more details of this event).

Our fleet of Drover, Winjeel, Catalina and Connie travelled to Coffs Harbour to support the Coffs Harbour Aero Club Airshow on 28 and 29 April. Again, it was a very successful event with large crowds going through both the Catalina and Connie.

The final major event before the aircraft headed into maintenance was to support the reconstituted Fleet Air Arm Naval Museum at Nowra on 6 and 7 May. We were particularly recognised by the Chief of Navy, Vice Admiral Russ Shalders for our support of the Museum at Nowra over many years and our contribution to aviation heritage.





A rare sight not to be seen anywhere else in the world. Four flying Lockheeds- a Super Constellation, a Neptune, a Hudson bomber and a Lockheed A12. This photograph was taken at the Nowra air show on 6 May 2007.



Gordon Glynn takes to the sky at the Temora Open Day on 7 April 2007 in his Cessna Birddog



The HARS way... 2 workers; 7 supervisors; 1 overseer (Maureen). The situation—While at Coffs Harbour on 15 April 2007, the Airport Authority gave HARS a set of steps. These were to be taken apart and stowed in the Catalina or Connie. The exercise took a great deal of time and Maureen (plus others) wanted to leave. Maureen suggested transport by truck and this is what eventually happened.

To reduce the costs on away visits compromises are sometimes required...



102 HOURS FLYING A89-273



While at Temora on the weekend of 7-8 April 2007, some HARS members had the pleasure to meet Bill Ankers who flew both our P2V7 Neptune A89-273 and C47 Dakota A65-95 while serving in the RAAF. Pictured above is Bill standing in front of A89-273 holding his RAAF log book which he brought along to show his recorded flying time in our aircraft.

Bill joined the RAAF on 4 July 1955 at RAAF Rathmines to serve the normal 6 months National Service. With his National Service completed, Bill decided to apply to join the RAAF as a Trainee Pilot. He was accepted for this and started at RAAF Uranquinty (No. 1 BFTS) in June 1956.

After graduation in 1957, Bill married and managed to squeeze in a three and a half day honeymoon before joining No. 1(B) Squadron RAAF FEAF 224 Group, RAAF Tengah, Singapore. He returned to Australia and his new wife on 3 July 1958 and joined No. 10(MR) Squadron, RAAF Garbutt, Townsville on 20 August 1958. Bill remained with this Squadron until 26 June 1961.

Bill records that there was a lot of time away from home in 10 Squadron with regular two week detachments from Townsville to Darwin for SAR standby as well as frequent trips to RAN Nowra for joint anti-submarine exercises with the RAN. As well there were constant call outs for local SAR missions as well as joint exercises with the US Navy in the Coral Sea and

Darwin areas. He also did a trip on an RAN O Class submarine during a joint exercise to see the opposite side of the anti-submarine work.

With 10 Squadron, Bill flew 234.50 hrs in the Lincoln Mk.30A and 1040.05 hrs in the Lincoln Mk.31 (of which 256.30 hrs were as 1st Pilot).

From 4 July 1961 to 19 September 1961 Bill was attached to No. 11(MR) P2V5F Conversion Squadron RAAF Richmond and flew 85.25 hrs on the Neptune P2V5F.

From 26 September 1961 to 11 March 1962 Bill was detached to RAAF P2V7 Detachment NAS, North Island USA where he flew the Neptune P2V5S, Neptune P2V7 and Marlin P5M2 with the USN.

On 19 April 1962 Bill rejoined No. 10(MR) Squadron, RAAF Garbutt, Townsville. Of the 12 P2V7s at 10 Squadron, Bill flew all with the exception of A89-271 and A89-282. He flew a total of 498.95 hrs (399.30 hrs as 1st Pilot) on P2V7s. Bill flew 102 hrs (96 as 1st Pilot) on P2V7 A89-273. Most of Bill's flying on the Neptunes with 10 Squadron was on exercises, displays and frequent trips to Amberley, Richmond, Fairbairn, Laverton and Avalon.

Bill joined ARDU at RAAF Laverton on 1 March 1963 and left the Airforce on 30 December 1963. During this period with ARDU Bill flew 119.15 hrs on the C47 Dakota, of which 21.25 hrs were on C47 A65-95, our very own 'hanger queen'.

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MUSEUM BUILDING DEVELOPMENT

Thanks to Michael Hough for securing government funding for an additional water tank and most importantly, support from Thomas and Coffey for labour assistance with the electrical installations in the building.

A very special thanks to John Lock who has bailed us out numerous times over the last couple of months with our short notice requests for various steel fabrications.

Without the support of HARS members like John, the project would be more costly and protracted in its undertaking. Members do a myriad of things that make the project run smoothly. The simplest of actions such as taking the construction rubbish to the tip or just being there to meet a truck delivery make a big difference in building this complex. My thanks to all of you.

Having overcome most of the immediate challenges we can now push on with our final fitout. This promises to be an interesting experience. Avalanches of suggestions have been put forward as to how to fit out the building. We are listening to everyone and anyone.

The HARS Management Committee has also decided that I do not have enough to do and has requested that I push on with the erection of Hangars 2 and 3. Lessons have been learnt from the past, funding has been organised and our buildings probably can be erected and clad by the end of September. More on this shortly.

The 28th AGM of the Society will be held in the 1st floor conference area of the Museum Building. Certainly a big improvement since the first inaugural meeting of the Society in a garage at St Ives, Sydney in 1979.

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THE RETURN OF THE DROVER



Qld with a hopper fitted in the cabin and used as a crop duster!

Sold in October 1972 to a Mr Dodge of King Island, Tasmania, then to a Mr Mitton of Mt Albert, Victoria, she was finally purchased in August 1981 by Hawker de Havilland [HdH] and registered VH-DHM [an old DHA Mosquito registration.]

HdH apprentices lovingly restored her to a seven-passenger configuration [8 was the normal passenger layout] with carpeted interior and wool-blend seat covers. In 1991, HdH owned the Australian Aviation College at Parafield, South Australia, and she moved down there for practical use with the College under the careful maintenance of their apprentices.

The sale of the College to BAe Systems meant HdH desired to have her return home to Bankstown [along with their DH-82A Tiger Moth, VH-DHV.] Both aircraft were housed at the Australian Aviation Museum, Bankstown and operated by the Historical Aircraft Restoration Society [HARS], flown as HdH desires. Today these aircraft are part of the HARS fleet located at Albion Park.

Endorsement

Ferrying the Drover to Sydney was seen as a good opportunity to endorse HARS pilots on the type. Members Peter Hanneman [who is a syndicated owner of VH-ADN, the only other flying Drover], Allan Brooker and Sandy Howard flew to Adelaide for the task. Of course, HARS never loses an opportunity, and the first day in Adelaide saw us carrying out preliminary work to recover C-47B A65-095, which had recently been sold by the RAAF.

Bruce Hartwig, a 'flying identity' in South Australia and then College lecturer, volunteered to do the instructing. While many readers will have flown single-seat aircraft whose characteristics had to be learned solo, it's a different kettle of fish with a single-control aircraft where the instructor stands/crouches behind the

pupil and tells him what to do! [Indeed, a friend of mine and contributor to *Aeroplane Monthly* who did the test flying of the last RAF Beaufighter TT's, pointedly refused to instruct the pilots who were to ferry them to Singapore.] Bruce's main concern was the depth of our tailwheel experience. Fortunately, both Allan and I learnt to fly on Chipmunks and we also fly the HARS Cessna 180, a notoriously challenging machine, so Bruce's worries were reduced to mere concern, while Peter was really only doing a familiarisation on DHM.

Solo, the pre-flight will take up to an hour. It's fairly routine so I'll only cover the items peculiar to the Drover. The three engines consume the majority of the time.

We commence in the cockpit removing the control lock. The engineer who designed this aviation version of an adult intelligence test must have had a very keen sense of humour, removal being the easy part. A check is made of the brake master cylinders in front of the control column [naturally, two different sized nuts on the caps] and the flap hydraulic reservoir under the pilot's seat. Operated by a hand pump and direction selector, the timber construction, fabric-covered flaps are pumped down for the walk-around inspection. You simply select the direction in which you want them to travel and then have infinitely variable positioning by operating the handpump by your right hip. Although fabric covered, the flaps are of very solid construction. Hinges and operating rods

are all robust in comparison to, say, the Piper Navajo which is of equivalent weight and capacity.

Readers familiar with Gypsy engines will know that oil quantity is a prime concern. The oil tank holds 3 Imp Gal and 2 is the minimum for flight. Thus, you can only burn one gallon before having to land and re-oil! The consumption is about 2 litres per hour, so two hour's flight is the present limit. Our centre engine has modified pistons which cut the consumption down to just under one litre per hour, allowing better use of the 4+ hours endurance [without the aux tanks.] So ensuring full oil tanks is a must!

The Fairy-Reed metal propeller has a requirement to have its hub carefully inspected daily and you pull the engine through to check the compression. The propellers were a source of concern during type development.

As a single-control aircraft, the cockpit is relatively spacious, on the right-hand side at least. However, the location of various controls means changing hands while flying, so the traditions of that design era are well preserved! The carby heat controls are in a John Denver like location on the cabin wall beside your left shoulder. I'm the only one of our team who can operate them without loosening the seatbelt! With only the fly-off handbrake lever down by your left hip to provide braking [a differential system like the Chipmunk; a bit of

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Sandy at the controls

RAINBOW OVER CONNIE

Brian Van de Water

The design of the Lockheed 1049 Super Constellation can be traced back to 1938 when, encouraged by Howard Hughes and Trans World Airlines, Lockheed embarked on development of an aircraft intended to fly non-stop across the USA at unprecedented speeds. The Constellation design was finalised in about 1940, and first flew in 1943 as the military C69 transport

While the Constellation did incorporate some innovations such as pressurisation and powered controls, it was a 1930's design and aerodynamically no more advanced than it's contemporary, the Douglas DC4, which first flew in 1942. The Constellation and Douglas DC6 (an improved DC4) entered airline service in 1946 and 1947 respectively and these two basic designs (with extended fuselages and upgrading of their piston engines) dominated long distance air travel for an amazing thirteen years until the 707 and Comet 4 jet transports appeared in 1959.

Yet there were major advances in piston engine aircraft designs during WW2 and, by 1945, higher engine power plus refinements in wing design and engine cooling systems had opened the door to new aircraft potentially superior to the Constellation and DC6. Why did new designs not emerge? The answer lies more with economics than technology, and this can clearly be seen in the story of a superb aircraft known as the Republic Rainbow which came within a whisker of supplanting the Constellation.

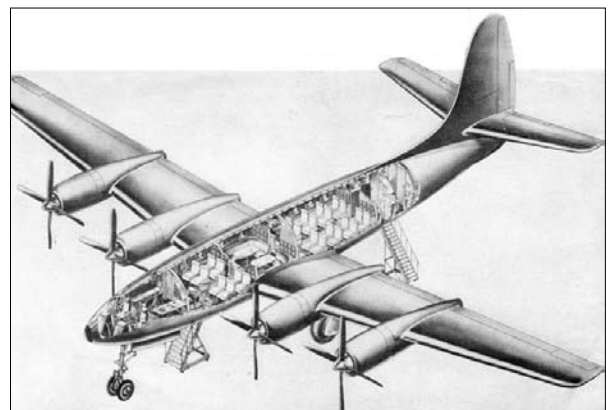
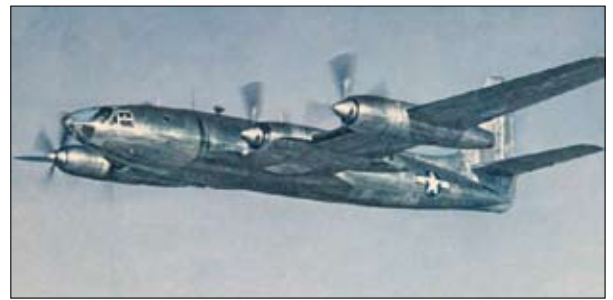
The 1946 Constellation was powered by 54 litre Wright Cyclone R3350 engines giving 2200 hp each and the DC6 by Pratt & Whitney R2800 engines with similar power. Both engines originated in the late 1930's, but by 1946 there was another piston engine type developing 3000 hp—the Pratt & Whitney R4360, a 71 litre radial engine with 28 cylinders in 4 rows of 7 each. The R4360 went into production in 1944, too late for WW2, but it was used extensively in the late 1940's before turbine engines took over. It's best known applications being the B50 Superfortress and the giant 6 engine B36 bomber. It's only commercial application was in the

Boeing Stratocruiser, a B29 with double deck fuselage, used by Pan American and BOAC and others in small numbers.

As WW2 progressed, the role of photo-reconnaissance aircraft became increasingly important. At first, fighter aircraft such as the Spitfire and Lockheed Lightning were adapted for this purpose, but later in the war, the US Air Force called for design of larger, specialised aircraft, and two companies responded. One was Hughes Aircraft which designed the H-12 as featured in the movie "The Aviator" and the other was Republic which had only ever built fighter aircraft, the best known being the P47 Thunderbolt. Republic took up the challenge of integrating the R4360 engine with advanced aerodynamics to produce a large, four engine aircraft with on-board processing equipment to develop photos during return to base.

Design started in January 1944 and the aircraft which emerged in December 1945 was undoubtedly the most revolutionary large aircraft in the piston engine era and made the Constellation look like an antique! Designated the XF-12, it was an aerodynamicists dream, featuring a windscreen which was faired for high speed but with retractable panels for T-O and landing and a wing employing the latest aerofoil sections developed during WW2. But the most revolutionary feature was the power plant. Each engine was housed in a tightly cowled nacelle cooled by a two-speed fan positioned behind the intake and boosted by a pair of GE exhaust driven turbo-superchargers housed in the rear of the nacelle. A jet exhaust adding additional thrust equivalent to 200 hp.

Republic's chief designer, Alex Kartveli, recognised that the aircraft had potential as an airliner, and this was taken into account during design. The transport version was designated the RC-2 "Rainbow" and was predicted to fly the Atlantic in 9 hours at a cruising



speed approaching 400 mph with 50 passengers. This performance substantially exceeded that of the Constellation and DC6/7, and was greeted with enthusiasm by the airlines. Orders for 18 were placed by Pan American, and for 20 by American Airlines, at a unit price of \$1.25million. If these had gone ahead, there is little doubt that the Super Constellation would never have come into existence.

Two prototypes of the XF-12/RC-2 were built and flown—the first flying on 4 February 1946, and the second on 12 August 1947. Republic claimed that all performance predictions were realised, with a maximum level flight speed well over 400 mph at 35000 feet, and the Constellation appeared to be doomed. However, the unit price of \$1.25 million was big money for an aircraft in 1947, being well in excess of the unit price of a Constellation. Furthermore, surplus DC4/C54's were available at around \$100,000 each and, being unpressurised,

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THE RETURN OF THE DROVER



handbrake and then rudder gives you braking on that side alone], the ratchet catch has a nasty habit of reversing, thus locking the brakes as you pull the handle. A feel for the correct position on downwind is a must!! Taxiing is quite entertaining as you use your left hand on the handbrake, hold the stick back with your forearm, and control the throttles on the left sidewall with your right hand.

Starting is relatively straightforward provided the engines are primed with the boostpump immediately beforehand. The oil pressure in the outboard engines takes ages to show [never mind the standard 30 seconds], but the centre is instant.

Braking aside, you need to carefully watch wingtip clearance as the Drover is a bit wider than most light aircraft these days and taxiway design can be a bit thin. Preflight checks are routine, with the flaps being set at 15° for takeoff.

Flying

The Drover exhibits little swing on takeoff and should it ever do so, I will always have Bruce's admonition ringing in my ears, "You bl**dy jet jockeys think your feet are only for walking out to the aircraft! Keep the thing straight!!" Liftoff even at gross weight occurs at about 60kt, with Vmca of 65kt passing quickly. Best rate of climb and the engine-out climb speed of 80kt provide a comfortable climb and raising the flaps [moving the selector to UP and pumping] provides little trim change.

Possibly the most entertaining activity after takeoff is setting climb power. 2,200rpm provides a good climb setting. However, the centre engine has a finer prop than the outboards [research has not yet disclosed why], thus while it may be doing 2,400+, the outboards are only around 2,200+. Reducing power thus requires the centre throttle to come back well behind the others, then setting the others to give 2,200rpm according to a combination of age and linkage

adjustment. Equally, having not flown a fixed pitch prop for some time, change any condition and the RPM must be adjusted, hence the entertainment.

While the Vno is 128kt, I can't imagine anything short of a wingover and vertical dive which would get the Drover anywhere NEAR this speed. After establishing cruise flight, we do some turns [very tight radius on the steep turns with classic aileron drag, climb power as the speed reduces about 15kt] and look at stalling. The stall warning is aerodynamic and starts about 55kt clean. The buffet is so strong that you'd have to be extremely insensitive not to pick it in all configurations. There is a tendency to drop a wing, but it's easily corrected with rudder and also easy to over-correct.

Asymmetrics are different. You get to 'fail' your own engines! Since the throttles are on the left sidewall and the fuel selectors and firewall shutoffs on the front of the pilot's seat behind your left calf, no instructor leaning through the cockpit door can touch them. Approach to Vmca demonstrates a very hefty push on the rudder to stay straight, but in cruise flight close to gross weight, the Drover will settle at about 85kt with 2,200rpm on the 'good' engines. Performance with a failure on takeoff can only be described as 'pedestrian'.

Circuit work is also pretty straightforward. Using around 1,900rpm on downwind to keep below the 90kt flap speed, you enter base with flap 15° at 80kt, increasing flap and reducing speed to arrive 'over the fence' with full flap at 65kt. A fair amount of power is needed at this stage as the drag is high; it's easy to lose speed if it's not watched. Wheel landings are used to preserve the tailwheel, but a tail down wheeler at 60kt gives good short field performance if the tail is lowered immediately after touchdown so the brakes can be applied.

One aspect of the Drover's handling which Bruce emphasised is the degree of control movement. Pilots used to Pipers and Cessnas tend to underestimate the control movement required, especially in takeoff and landing. You need to be ready to put in whatever degree of movement does the job, not stick in a little bit and wait to see what happens!

The Ferry

Weight and balance was one of the Drover's challenges. Allan is a bit of a wiz at it and he prepared a loadsheet showing that with full mains and optional auxiliary tanks, a pilot and 3 passengers [Bruce came with us as part of the endorsement program], luggage and some parts, we were at the 6,500lb max gross weight for takeoff.

We had chosen to fill the aux tanks as their use is quite interesting and does need to be thought through by the pilot. Transfer of their 21 imp gal to the adjacent main is by pressure from the exhaust side of one of the vacuum pumps driven by the centre and right-hand engines. The procedure is to wait until at least 21 gal have been used from the adjacent main [there is no crossfeed capability], turn off the fuel cock for that tank, then move the transfer selector to utilise the vacuum pump NOT being used for the flight instruments [selectable by an adjacent lever.] Transfer rate is 1 gal/min and every last drop is transferred. Once you have your head around this, it's OK, but well worth the practice and demonstration.

While DHM carries a VHF/NAV and transponder, the rest is compass, watch and map. An aid to all this is a map table on the right-hand sidewall, which turns the cockpit into a an office. At a leisurely 100kt TAS, navigation is relatively easy, but there are things to catch you out. Like carby ice!

Operating jets and fuel-injected engines tends to mask this little horror. The Gypsy engines on the Tiger and Chipmunk don't adequately prepare you as they have carby heat automatically tied to the throttle setting. And brother, do these things pick up ice?! Fortunately, if one watches for the tell-tale sign of increasing throttle to keep the rpm [or, conversely, the drop at same throttle setting], application of heat [over-the-shoulder] gives the classic 50rpm drop then a whoosh of 150rpm increase as the ice clears. Should you let it build up, there's a spectacular cough when it clears at cruise power.

Apart from adding oil every two hours and running out of daylight at Bathurst in central western NSW, the run home

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RAINBOW OVER CONNIE

were relatively cheap to operate—an attractive proposition despite modest performance.

In the XF-12/RC-2 Republic faced the total development costs of a highly sophisticated and complex aircraft. The airlines were willing to pay the \$1.25 million, but this price depended on receiving orders from the military as well as the airlines. The USAF faced savage expenditure cuts at the end of WW2 (restored when the Korean War started), and the XF-12 programme was cancelled in favour of using converted B29 or B50 bombers for photo reconnaissance.

To recover development costs, Republic needed to increase unit price beyond the \$1.25 million and, for this reason, coupled with the airlines being unwilling to operate a radically new and complex aircraft without military backup, airline orders were cancelled despite cancellation penalties. The Rainbow program was then terminated, and the final indignity for Republic was that American Airlines purchased 50 war surplus DC4/C54 aircraft for domestic routes and the company that received the contract to reconfigure and refurbish the aircraft was none other than Republic Aviation.

However, it can be said that airline maintenance engineers probably had a lucky escape! The Wright R3350 Cyclone engine in the Super Constellation was (is) one of the most complex pieces of machinery ever to fly and, as a young Qantas engineer in the 1950's, I well remember the major reliability and maintenance problems with this engine (the Constellation was known in Qantas as "the best three engine airliner in the World"). But the R4360 engine in the Rainbow was a level of complexity beyond the R3350, having 28 cylinders (and 56 spark plugs), compounded by the cooling fan and turbo compressors encased tightly within the nacelle. Perhaps fate intended that the next major step in long distance transportation would be powered by the relatively simple turbojet and not the problematical R4360 installation in the Rainbow.

Maintenance Problems?

After every flight, Qantas pilots fill out a form called a gripe sheet, which conveys to the mechanics problems encountered with the aircraft during the flight that need repair or correction. After correcting the problems the mechanics will record what remedial action was taken on the lower half of the form for the pilot to review before the next flight. Never let it be said that ground crews and engineers lack a sense of humor.

Here are some supposedly actual logged maintenance complaints by pilots and the solution as recorded by engineers.

(P: Problem logged by the pilot.)
(S: Solution taken by the engineers.)

- P: Left inside main tyre almost needs replacement.**
- S: Almost replaced left inside main tyre.**
- P: Test flight OK, except auto-land very rough.**
- S: Auto-land not installed on this aircraft.**
- P: Dead bugs on windshield.**
- S: Live bugs on back-order.**
- P: Autopilot in altitude-hold mode produces a 200 feet per minute descent.**
- S: Cannot reproduce problem on ground.**
- P: Evidence of leak on right main landing gear.**
- S: Evidence removed.**
- P: DME volume unbelievably loud.**
- S: DME volume set to more believable level.**
- P: Friction locks cause throttle levers to stick.**
- S: That's what they're there for.**
- P: IFF inoperative.**
- S: IFF always inoperative in OFF mode.**
- P: Number 3 engine missing.**
- S: Engine found on right wing after brief search.**
- P: Aircraft handles funny.**
- S: Aircraft warned to straighten up, fly right, and be serious.**
- P: Target radar hums.**
- S: Reprogrammed target radar with lyrics.**

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THE RETURN OF THE DROVER



was fairly uneventful. One comfort drawback we discovered is that the cabin airflow to the large [!] eyeball outlets cannot be controlled. As the sun drew lower in the west, the temperature rapidly dropped and we started to really feel the cold. A potential limitation on future winter excursions; it's not always warm and barmy in the Antipodes!

In conclusion, what's she like to fly? Provided you accept the momentum of the higher weight, like a big Chipmunk. HARS are humble that HdH would select us to operate their "corporate fleet" and we look forward to many more years of showing this piece of Australian heritage to the public.

I guess the last word should go to Allan Brooker. We had just passed Mildura in the Connie on the way back to Adelaide with a team of engineers to work on A65-095. Cruising happily at 6,000ft over the countryside we'd traversed only a few days before in the Drover, he queried, "Notice anything different?" Paranoia coming to the fore, I said, "No. What's wrong?"

"Look outside, we're actually moving!" was the reply. I guess it was speed that eventually was the demise of the Drover.

This article was written in 2000. Since then our Drover has had many other adventures, some of which we will write about in future editions of Phoenix.

HARS WEBSITE

www.hars.org.au

for all current information

Porsche Club Kids Drive Day

John Martin

Once a year the Porsche Club of NSW sponsors a drive day for the children from the Childrens Hospital at Randwick and CanTeen. This year the drive picked up at the Childrens Hospital and at Central Station and arrived at the Illawarra Regional Airport at 11.30am in 70 Porsche sports cars.

Until they left at about 2.30pm the group inspected the HARS facility, ate their way through a bumper BBQ cooked by the Porsche Club, and each child received a gift.

This group of 220 people comprised roughly 40 children from hospital, 30 from CanTeen, 70 Porsche drivers and the balance in parents, siblings, and carers. Judging by the grins on the visitors' faces, they all had a great time and went away with happy memories of their visit. The same could be said of the HARS volunteers in attendance who all seemed to be uplifted by the occasion.

Many HARS volunteers contributed to the success of this day, by preparing the hangar and aircraft in advance for the visit, by participating in the welcome and the day itself generally, and also by returning the hangar to it's customary usage afterwards.

HARS had on static display in our hangar the C47 under maintenance, (which Ross Warden and crew prepared for visitors), Neptune 566, Drover, 180, 310, Vampires, Winjeel, Tracker and Tiger. C47 VH EAF arrived back from Nowra mid way through the visit to provide added interest for the visitors. An Austalian Navy Sea Hawk helicopter also arrived after its Nowra display slot and was opened up for the children to inspect.

Also on display were HARS member Peter Finlay's racing car, a Fire Engine from NSW Fire Brigade at Albion Park, the Aerial Patrol's Partenavia rescue aircraft, and a motorcycle belonging to HARS member Don Payne.

Special thanks must go to Arthur Webster for his work both in helping to plan the day and also for assisting on the day itself.

All in all, a most successful and rewarding day.

Many thanks to all who participated.



A young visitor in the cockpit of C47 VH-EAE



Porsche cars taking pride of place with our Dak



John Martin being presented with a plaque thanking HARS for supporting the day



Tony Duggan checking out Peter Finlay's racing car



A Navy Sea Hawk helicopter dropped in for a visit

How to stay safe in the world today

1. Avoid riding in cars because they are responsible for 20% of all fatal accidents.
2. Do not stay at home because 17% of all accidents occur in the home.
3. Avoid walking on streets or footpaths because 14% of all accidents occur to pedestrians.
4. Avoid travelling by air, rail or water because 10% of all accidents involve these forms of transport.
5. Of the remaining 33%, 32% of all deaths occur in hospitals. Above all else, avoid hospitals.

You will be pleased to know that only .001% of all deaths occur in worship services in church, and these are usually related to previous physical disorders.

Therefore logic tells us that the safest place for us to be at any given time is at church. Bible study is safe also. The percentage of deaths during Bible study is even less.

For safety sake attend church and read your Bible...it could save your life.



May the face of God smile upon you

Grahame and Fran Abrahams

This years **Church Parade** will be

Saturday 14 July at 2.30pm

Shellharbour Uniting Church

Smile...



Having a paramedic around can help make you smile, especially when you're feeling a bit deflated



Hey look, we're smiling...



... but I'm not sure if Mike is smiling or not!



I think Dick might have the beginnings of a smile



It's a smile, no doubt about it!



If you promise not to take any more photos I'll smile!



The Costigan family are all smiles...



Hey Gordo, I caught you smiling, but you blinked at the wrong time!



We three were quite prepared to smile for the photographer!