

QF32

RICHARD DE CRESPIGNY

Melbourne born and educated, Richard Champion de Crespigny got his first taste of a future flying career as a fourteen year old when his father took him on a tour of the Royal Australian Air Force (RAAF) Academy at Point Cook in Victoria.

In 1975, aged seventeen, he joined the RAAF. One year later, he started flying. During his eleven years with the RAAF, he was seconded as Aide-de-Camp to two Australian Governors-General – Sir Zelman Cowen and Sir Ninian Stephen. Richard remained with the RAAF until 1986 when he joined Qantas.

Richard and his wife, Coral, have two children, Alexander and Sophia.

For more information, please visit <http://QF32.Aero>.

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*This book is for everyone who played a role in QF32.
To all of you, I am proud of you.
Thank you.*

*To wonderful Coral.
You are the wind beneath my wings.*

To my son, Alexander, and daughter, Sophia, who keep my feet firmly on the ground!

To Dad – thank you for the RAAF Academy tour!

*With thanks to Mark Abernethy,
my collaborator, who was integral
to this story being told.*

Contents

General Declaration

- Chapter 1 First Flight
- Chapter 2 Planes, Balloons and Duels
- Chapter 3 With Wings as Eagles
- Chapter 4 Wombat Airlines
- Chapter 5 Aide-de-Camp
- Chapter 6 The Road to Cairo
- Chapter 7 Twenty Minutes of Fame
- Chapter 8 Steam Power
- Chapter 9 747–400
- Chapter 10 The Far Side
- Chapter 11 ‘Embrace’
- Chapter 12 A380
- Chapter 13 Pre-flight
- Chapter 14 Boom! . . . BOOM!
- Chapter 15 The Armstrong Spiral (HAC)
- Chapter 16 QF32 Down!
- Chapter 17 ECAM Armageddon
- Chapter 18 Apollo 13
- Chapter 19 If You Can’t Trim, You Can’t Fly
- Chapter 20 Housekeeping
- Chapter 21 It Won’t Do It!
- Chapter 22 Through the Looking Glass
- Chapter 23 It’s Now or Never
- Chapter 24 Threading the Eye of a Needle
- Chapter 25 Round (Phase) 11
- Chapter 26 Evacuate!
- Chapter 27 Qantas is Not Going to Like This!
- Chapter 28 Deja Vu
- Chapter 29 Stub Pipe
- Chapter 30 Wash-up

Appendices

Appendix 1 Letters and Emails Richard received from Passengers on QF32

Appendix 2 A380 Specifications

Acknowledgements

For More Information

A Note from the Author

Images

GENERAL DECLARATION

The Pilot-in-Command is responsible for completing the General Declaration. The General Declaration that I completed for QF32 is reproduced below. This document is necessary for international flights, and includes details of the crew, aircraft registration and itinerary. Copies are provided for airport authorities and customs at the departure and destination airports.

Owner of Operator: Qantas Airways Limited

Registration: VH-OQA Marks: 'Nancy-Bird Walton'

Flight number: QF32 Date: 04 November 2010

Departure from: Singapore Arrival at: Sydney, Australia

I declare that the following crew operated the QF32 Flight from Singapore to Sydney on 04 November 2010.

CPT Champion de Crespigny	Richard	CFA Zemek	Sarah
F/O Hicks	Matthew	CFA de Mario Henry	Simone
S/O Johnson	Mark	CFA Hayward	Jay
		CFA Bax	Craig
S/N CPT Evans	David	CFA Jasaragic	Vahid
S/N CPT Wubben	Harry	A/C Bergnofer	Deborah
		A/C Beynon	Claire
CSM Von Reth	Klaus	A/C Lee	Jordan
C/S Hyland	Mark	A/C Lawler	Patrick
CFA Morton	Paul	A/C Lam	Sandy
CFA Hart	Julie Ann	A/C Murray	Simon
CFA Monte	Alfred	A/C Spowart	Michelle
CFA Madison	Ian	A/C Sireilles	Nicole
CFA Teres	Emma	A/C Jurkans	Trentan
CFA Calleja	Aldo	S/N Jostsons	Annie
		S/N Wason	Paul

Signature

Richard Champion de Crespigny

Pilot-in-Command

CSM – Customer Service Manager A/C – Air Chef

C/S – Cabin Supervisor S/N – Supernumerary

CFA – Chief Flight Attendant

CHAPTER 1

First Flight

4 February 1976. It was a rare day over southern Victoria, with the sky so clear you could look upwards and see blue receding forever into white. I remember it well because I was at the controls of a Royal Australian Air Force (RAAF) A-85 Winjeel and beside me, in the instructor's seat, was a legend of the Air Force, Flight Lieutenant Bill Evans.

It is the mark of a small air force that the best of the best are called on to teach the novices, and Bill Evans was spending time away from flying Mirage III fighters to instruct new RAAF trainee pilots on the propeller-driven Winjeel. An aircraft first designed in 1949, the Winjeel was a bit like a Caterpillar D6 bulldozer with wings – it didn't look like it belonged in the air.

The nine-cylinder, 13-litre Pratt & Whitney radial engine produced a deafening roar as we chugged away from the Point Cook Air Force Base to our cruising altitude of 5000 feet. The heavy Winjeel's performance was not helped by the fact its tail fin had been moved significantly forward along the airframe for the sole purpose of making the aircraft less stable and easier to 'flick' into a violent spin.

Trimming the aircraft to fly 'hands-off' at cruise altitude and heading across the Bellarine Peninsula aiming for Tasmania, I was happy the engine had lost its coughing roar and found its comfort level, more like a sleeping alsatian than an angry attacking bear. This was my first instructional flight and it seemed pretty straightforward. Responding to Evans's tour of the flight controls and his instructions to 'feel' the stick in my hands and the rudder pedals at my feet, I gave the thumbs-up.

I relaxed as we settled in, cruising at around 140 knots. The sky seemed to sparkle with sugar crystals and the green of Victoria gleamed like a jewel. It was a beautiful day to fly, a great day to be alive. As I was starting to enjoy myself, Evans's voice crackled in my ears: 'Throttle back – let her slow down, hold your height and give her some left rudder.'

I eased the throttle back. As the speed slowed I felt the stick pull forward as the heavy nose wanted to drop. I pulled back to maintain the altitude, pushed slightly on the left rudder pedal to twist or yaw the aircraft to the left, then put a bit of right stick to stop the aircraft rolling left wing down.

'Back off some more,' Evans said, 'and give me some more left rudder.'

I did as I was told, feeling the big engine in front of me quietening. Even at full throttle the Pratt & Whitney radials only turn at around 3000 RPM, and backing off the throttle at 5000 feet sounded like the whole engine was about to shut down. The Winjeel didn't just look like something that shouldn't fly, it also felt like it, and I worried that too much pulling back on the throttle would put us into a stall. As the speed slowed I had to pull back harder, and adding rudder meant I needed even more right stick to stop the aircraft rolling left.

We must have slowed to about 70 knots by the time Bill Evans's voice jumped into my head again. 'Take more off the throttle – and give it more rudder!'

Less throttle, more rudder, more back stick, more crossed aileron input – suddenly the Winjeel

flipped right wing over the left. The nose dived for the ground – it must have looked like the footage you see of aircraft breaking away from a formation, except we were flying at about 60 knots and corkscrewing straight down to the ground in a tight spiral.

Every one of my senses was in overload. I remember my mouth hung open in a mask of terror as the aeroplane spun downwards with continuous roll, yaw and pitch forces I had never felt before. I knew the theory of an aircraft spinning, but never imagined it to be so physically stressful. Sitting on my parachute and held in tight by my harness, I turned towards the fighter ace for guidance.

Flight Lieutenant Bill Evans was sitting back, looking at me with a smile on his face and his arms crossed smugly over his chest. He winked and pointed at me: here I was frozen with terror and the instructor wasn't going to help! It was my plane. I turned back to face the fast-approaching farmland and gripped my hands around the joystick.

I was eighteen years old and I was in a full and potentially deadly spin. It was terrifying. It isn't just the terror of racing towards the ground that fills your mind with panic, but the physical spinning that pushes your head sideways against the canopy, disorienting you, making it hard to think and even harder to make good decisions.

I gathered my senses and pushed the stick forward – which is counterintuitive – gave full opposite rudder and set the throttle to idle. When the plane stopped spinning and stabilised I was able to throttle up, pull the plane out of its dive and fly the aircraft again under my control. None of it thanks to Bill Evans who didn't touch a thing. He let me handle the whole emergency on my own and made me realise I should *never* permit myself to be too relaxed while flying. *Ever!*

Thirty-four years later, on 4 November 2010, four minutes after a routine take-off from Changi Airport in Singapore, the Qantas 'QF32' A380 that I was in command of, climbing out at 7400 feet, bound for Sydney with 469 people on board, experienced a massive explosion in Engine 2. This engine was mounted closest to the fuselage (and passengers), and projected 6 metres proud from the leading edge of the left wing.

The huge Rolls-Royce Trent 900 engine was destroyed. The extent of damage was unprecedented in Airbus's history. Two heavy chunks tore through the wing, travelling at approximately two times the speed of sound. The fan blades and chunks acted like the explosive core of a hand grenade, ripping wing panels into shrapnel that sprayed like missile fragments over the fuselage as far as the massive tail sections. One chunk also ripped through the aircraft's belly, severing hundreds of wires. Over 600 wires were cut causing almost every aircraft system to become degraded. I think one of the aircraft's two backbone networks failed, confusing both flight warning computers. The hydraulics, electrical brakes, fuel, flight controls and landing gear systems were all compromised. No Airbus aircraft has ever suffered so much damage to so many systems.

I am proud of the impeccable performance of the other four pilots on the flight deck and the 20 Qantas cabin crew who managed to bring QF32 back into Changi after the catastrophic engine explosion, with no deaths or injuries. I also appreciate the enormous and critical support provided by Singapore's air traffic controllers, as well as the firefighters, police and Qantas ground and crisis management staff who assisted us. Then there were the 440 passengers. Their contribution was priceless, helping to ensure a safe outcome. Following the accident, many passengers became evangelists for Qantas and their kind words are humbling. It's not every day a crew is praised by strangers for simply doing their job.

The decisions I made on QF32 were influenced by my earliest flying lessons, beginning at the RAAF Academy with my first flight in that Winjeel, through 35 years of training in aviation to the day before our fateful flight. Every lesson is valuable.

When Bill Evans directed me into the spin at the controls of the Winjeel, back in 1976, he was forcing me to confront some of the raw physical forces that act on all aircraft at all times. In a few

terrifying seconds he shook me out of a contented world of stable flight and the romance of air travel and brought me face to face with gravity, velocity, weight and catastrophic forces that, if not handled correctly, result in death.

In that first flight, I learned two lessons about flying that I would never forget.

The first is that the overriding job of any pilot is to *fly* the plane – to *aviate*! There is no computer manual, autopilot or carefully crafted standard operating procedure that will ever replace that key responsibility: to keep the aircraft in the air in one piece. As the pilot-in-command in the flight deck you can delegate the navigation and you can ask someone else to work the radio, but you can never delegate your responsibility to *aviate*.

The second lesson is to never, ever become complacent about aviation. The pilot-in-command has absolute and final authority over the crew and passengers. From the simplest act of signing for the amount of fuel loaded into the aircraft to the most complex reaction to a mid-air catastrophe, the captain carries this responsibility on his own shoulders: legally, professionally and personally. If he is lucky he gets to spread the load by delegating tasks to competent pilots, but he can never outsource the fact the passengers he signs for are the passengers he is expected to return safely to ground. He always signs for the aircraft – but that is of secondary importance. Evans taught me that when something happens up there, you're on your own and you had better fix it – fast.

I must have learned that lesson quickly because when I encountered Bill Evans again in 2011 he reminded me of that first flight and then burst into uncontrolled laughter. When I asked what was so funny, he said, 'The look on your face when we started spinning.'

Indeed, that was my wake-up call – a lesson I would carry with me for the rest of my life.

CHAPTER 2

Planes, Balloons and Duels

Flying was always going to exert an influence on my life.

My great-uncle, Air Vice Marshal H.V. 'Vivian' Champion de Crespigny, was a Melbourne boy who volunteered for service in the First World War when just eighteen years old. He enlisted in the British Army as a flying officer in the Special Reserve and became the commanding officer of 29 Squadron in Belgium at Poperinge and La Lovie. Under his command 29 Squadron flew reconnaissance over, and conducted raids on, the German lines around the battlegrounds known as Passchendaele.

Vivian was awarded a Military Cross and many other honours. The citation in the *London Gazette* on 3 December 1918 for his Distinguished Flying Cross reads:

A brilliant and gallant officer who displays high initiative in night flying . . . flying a machine unsuitable for night duty, and in the face of adverse weather conditions, he reached, and successfully bombed, his objective. A fine performance, calling for courage and determination.

Years later, Vivian was promoted to the rank of air vice marshal when he was the air officer commanding the Allied headquarters in Iraq and Persia. He was among the first and only generation of pilots who carried out air-to-air combat with pistols and hand-held guns.

Another great-uncle, Air Commodore Claude Champion de Crespigny, followed his brother Vivian to England during the First World War and joined the Royal Air Force (RAF). Claude would then command Blenheim bomber raids over Europe during the Second World War before becoming commanding officer of RAF operations in Singapore.

My uncle, Squadron Leader Humphrey Champion de Crespigny, joined the RAAF during the Second World War, flying Wirraways out of Darwin to defend Australia's front line from attack by Japanese fighters and bombers. He was discharged in 1945 and continued flying. He owned a Cessna 210 and then a twin-engine Cessna 310, but stopped flying in 1974 when his aircraft was destroyed in a fatal accident. (A pilot chartered Humphrey's aircraft on 2 April, became disoriented in thunderstorms then lost control. The tail plane separated from the fuselage and was later found over 550 metres from the main wreckage.)

My father, Peter Champion de Crespigny, always harboured an obsession for flying. He was a boarder at Geelong Grammar and would craft Spitfire fighters from blocks of wood. He used to play truant from the dorms at night and ride his bicycle across the paddocks to Lara Airport where the RAAF conducted night-flying training. When the aircraft stopped at the end of the runway to do the pre-take-off checks, Dad would open the rear door and climb in. He'd then move forward, taking his 'seat' behind the two pilots – sitting on the bare wing spar and holding onto the fuselage with both hands. The pilots knew it was wrong to take Dad flying but they had never seen a boy so keen, so they would go, bouncing down the grass runway then spearing into the black sky as they flew around Victoria.

Dad would sneak back into school early in the morning, but eventually he was busted and m

grandfather, Frank Champion de Crespigny, a well-respected doctor from the country town of Arara received a letter from the headmaster of Geelong Grammar informing him of Dad's aberrant behaviour. Dad was also skipping classes during the day to test-fly Airspeed Oxfords from the International Harvester Works at Corio, but the headmaster thought that passion expressed by a young man should be encouraged, not beaten out of him, and suggested that, if Frank approved of Dad flying, the school would not interfere. My grandfather agreed and Dad continued to fly.

When he was just out of school, Dad joined the Royal Australian Air Force (RAAF) for wartime service, on his eighteenth birthday in May 1944. He commenced the pilots' course, but when the Japanese surrendered in 1945 Dad was discharged along with about 15,000 other Australian pilots who were now surplus to the RAAF's needs. He wanted to continue as a pilot in the aviation industry but lacked sufficient experience to compete with all the pilots coming home from the war, so he joined Australian National Airways (ANA) on the administration side.

Under the leadership of one of its founders, Sir Ivan Holyman, ANA was growing rapidly. Sir Ivan formed a management course to groom future leaders and Dad was one of the first chosen. Travelling the world visiting major cities and socialising with royalty, politicians and the foreign service at cocktail parties and the opera, Dad learned to appreciate how aviation would cross oceans, flatten borders and unite economies. After two years, he returned home and introduced an innovative ticketing system that was used Australia-wide.

After eleven years, Dad's time at ANA came to a voluntary end after a disagreement with Sir Ivan. Dad had suspended Sir Ivan's nephew for being absent from work when an incident occurred at Perth Airport. Dad had a lot of power and influence at ANA, but it didn't extend to being able to suspend Sir Ivan Holyman. To his extraordinary credit, and as a measure of his integrity, Dad refused to have his decision overruled and so resigned from the job he loved dearly.

ANA would make other mistakes. The Australian Government approached Sir Ivan about nationalising ANA and making it Australia's sole domestic airline. Sir Ivan, a staunch believer in private enterprise, refused the offer. Another offer was made to a smaller airline – Queensland and Northern Territory Aerial Services – an offer that was accepted by its founder Sir Hudson Fysh. Qantas was turbo-charged into the form we know today and ANA would find itself 'kneecapped' by the government, which set up a domestic competitor (TAA) and restricted the aircraft ANA could purchase. After Sir Ivan Holyman's death, ANA's steady demise continued until it was sold to Sir Reginald Ansett, who then rebadged the airline as Ansett-ANA.

As for Dad, he went to work for his father-in-law at his newsagency for a time and then started a furniture business called StyleCraft, which became successful.

Dad finally got to fly. When I started pilot training in the RAAF, Dad bought a Piper Turbo Arrow aircraft (registration VH-SOI) and started his flying lessons again on the same day that I started my flying in the RAAF.

Patricia Champion de Crespigny, my wonderful mother, died unexpectedly when I was in my final year at school. Mum had dedicated her life to bringing up four over-energetic sons and forwent many of life's pleasures – she never travelled overseas. I left home to join the RAAF and Dad later married Mariea, another wonderful woman 22 years his junior who has been a loving wife to Dad and a wonderful mentor to me. Although Mariea is only nine years older than I am, I introduce her to my friends as my 'Wicked Stepmother'. Recipients show surprise at this introduction, but I figure, as stories with stepmothers present them being wicked and feeding poisoned apples to their children – why should my stepmother be any different? I enjoy the process as everyone who meets Mariea quickly comes to love her and appreciate the wonderful partner she is to Dad. I call her my WSM and she proudly signs her letters to me just the same.

Dad is still a legend and inspiration to us all. He's 86 years young now, runs an Alpaca farm, keeps

his flying licence current, flying his Piper Turbo Arrow aircraft every few days and swims a kilometre three times a week. My wife Coral and I spend ten days every year to go powder skiing in America with him and Mariea.

Finally, the Champion de Crespigny surname needs an explanation.

The Champion family were good Roman Catholics in Normandy, France, until 1617, when Richard Champion changed his religion in order to marry Marguerite, the daughter of a wealthy Huguenot. From her father they acquired the property called Crespigny near Vire.

Their son Claude did even better. Claude took the more aristocratic name of Champion de Crespigny and he persuaded the government that he had noble ancestry and so did not have to pay the *Taille* tax which was levied on commoners. He then married the Countess of Vierville and they lived in his wife's manor at Vierville-sur-Mer, on the coast near Caen. Their fine family chateau survives today. It was at the centre for the D-Day landings of 1944, yet survived the bombardment. It can be seen today at the top of the peaceful winding road that climbs away from Omaha Beach, and a plaque on the front gate explains that the house was spared so it could serve as Allied headquarters after the invasion.

Unfortunately, however, King Louis XIV took a dislike to Huguenots. In 1685 he revoked the 'Edict of Nantes' which had granted them tolerance, and Claude and his family were forced to flee to England. They were at first very poor there, but they adapted remarkably well and became respectable citizens. The gravestone of Claude and Marie is still preserved and displayed in the churchyard at Marylebone in the centre of London.

Our formal surname 'Champion de Crespigny' is often shortened to 'de Crespigny'. However, both names are synonymous and history abounds with interesting tales from my ancestors and relatives who gained notoriety from living outside the square.

In 1805, the grandson of Claude and Marie, also called Claude, was appointed a Baronet, a hereditary title.

The Baronet's grandson, the Reverend Heaton de Crespigny was one of the last Englishmen to take part in a duel. The scene was set in 1828 on the beach at Calais after Mr Long Wellesley (a failed politician and nephew of the Duke of Wellington) had publicly insulted Sir William de Crespigny (Heaton's paralysed father). Wellesley refused Heaton's demand for a retraction, so Heaton 'called out' Wellesley to a duel: 'You think I have only got a black coat,' he said to Wellesley, 'you are wrong: I've a shooting one as well.' Soon afterwards, facing each other on the French sands, both men faced off at ten paces, then fired at each other. Both missed. (Heaton was a clergyman, hence the 'black coat'. He was later defrocked and died in the Australian goldfields.)

In 1847, the great-great-grandson of Claude and Marie (and great-nephew of Heaton) was born and as you probably would have guessed now, was also called Claude. On the death of his father in 1866 he assumed the title to become the fourth Baronet, Sir Claude Champion de Crespigny.

Sir Claude led a remarkable and eccentric life, full of adventure and danger. His escapades are encapsulated in his book, *Forty Years of a Sportsman's Life*. He spent time in the Royal Navy (in India) and the British Army with the Limerick Artillery in Ireland. He still believed that duelling fulfilled a method to restore a savaged dignity, writing 'should a man be challenged, he is bound, if a gentleman, to go out.' Nevertheless, Sir Claude was more a sportsman than a fighter.

Sir Claude lived to experience the genesis of electrical power and was the first member of the family to have a passion for aviation, though this period was well before the advent of hand-cranked communication devices such as the radio. He took a keen interest in ballooning and is remembered for many epic flights. During one short flight he unfortunately launched into a strong wind that drove him and his basket into a brick wall – breaking his leg. Being more adventurous, he broke another leg on 11 June 1882, when attempting to cross the English Channel from France to Maldon, England.

Unperturbed by injuries, our intrepid Sir Claude tried the opposite direction. So at noon on a mild and sunny English day in June 1883, Sir Claude set off in a balloon made of 'India rubber and bird lime' in an attempt to cross the English Channel from England to France. Meteorology was not the science it is today, and so Sir Claude soon found himself above cloud and after rising in a thermal to an altitude of 17,000 feet, wisely decided to descend before nightfall. He and his fellow balloonist crash landed in Holland, and that is how they accidentally become the first people to cross the North Sea in a balloon. Sir Claude won the Ballooning Society's Gold Medal for this achievement. Sir Claude's eccentricities had no bounds. In 1886, much to his wife's chagrin, he became the assistant executioner in Essex under the 'nom de noose' of Charles Maldon. He remarkably died of natural causes in 1935 but his name persisted through all five sons whom he called 'Claude'!

Another interesting relation was Colonel David de Crespigny Smiley, the son of Valerie de Crespigny (and Sir Claude's grandson). David was a British Special Forces and Intelligence Officer in Europe and Persia during the Second World War. It's thought that the author John le Carré moulded David's character into 'George Smiley' in his 1974 spy novel 'Tinker Tailor Soldier Spy' (now a movie). David was also a noted sportsman, holding the record for the most broken bones accrued in a season of skeleton sledding at the famous Cresta Run at the St Moritz Tobogganing Club. My son Alexander completed his first Cresta Run in Saint Moritz in 2008 and he's been accorded the honour of being the Tower Boy at the Cresta at the end of 2012. I hope he's not targeting Smiley's record!

The 'flying bug' gene will probably continue through the de Crespigny line. I have the 'flying bug' gene, and Coral inherited the same courtesy of her father, Roy Ford who was also a RAAF pilot flying Avro Ansons at 15 Squadron SFTS, Canada during the Second World War. This answers Alexander's curiosity as to why his dreams are replete with the touch of a wing, the taste of an oxygen mask, the sound of the radial, the smell of kerosene and the sight of women in uniform.

*

Even though flying was in my blood, it wasn't really an obsession for me before my teen years. My first love was engineering and motorbikes. Growing up in Melbourne's inner-city Toorak and going to a school like Melbourne Grammar was always a bit stifling for my three very active brothers and me. It was a case of too much testosterone and no place to burn it off. We were often in trouble around the neighbourhood – not for any criminal reasons but just because we were always getting bored and would easily fall into making mischief.

My father was aware his four sons were a handful and that we needed room to let off steam, so he bought 5 hectares of wild bushland fronting the King Parrot Creek near Flowerdale, 70 kilometres north of Melbourne, with 400 square miles of national park surrounding it. We called the property 'The Ponderosa', after the American TV show *Bonanza*, and Dad commissioned the builder of the Australian Alpine Club ski lodges to build a very basic timber house on the property. There was no electricity, so we plumbed our own gas lights, heating and water.

From when I was about nine years old until my early twenties, this bushland was where we spent most weekends. I was the second youngest son, and it was a classic role-play: the oldest, Michael, was sensible; the middle son, Simon, was a rascal; and the third – me – was spoiled. Christopher, the youngest, was a very cute toddler.

One day Simon found an old motorbike in a ditch beside a road – the original owner had nearly died in an accident and had left the bike at the scene. The 1930 model Ariel Red Hunter is a large, very heavy British motorbike with a 'live tail' (no rear suspension) and a dry clutch. It had the hallmark of everything British-made at that time – it leaked oil and broke down. To start the 500 cc single cylinder motor, you had to move a lever to retard the ignition, another lever to engage the decompression

valve, then slowly press down on the kick-starter to position the piston up to TDC (top dead centre) after the compression stroke. Finally, you closed the choke butterfly valve then kick-started the bike into action. Miss any of these steps and you risked a kick-back that would either bruise your leg or eject you over the bike. But no one told any of us this. Michael and Simon had to discover how to fix the bike then get it back into working condition. For me, it was the first motorbike I knew, so I assumed they were all heavy, loud, unmuffled and had leg-breaking torque.

We used to ride the bike up into the forest. On one occasion, the clutch sprang apart, disgorging the rotating clutch plates onto the ground – they then found traction and accelerated away in front of us! We were stranded 10 kilometres away from home on a rough dirt road in a quiet forest with a broken-down bike. We could have panicked, but there was no point – there was no one else to help. I remember fumbling around, finding the springs, screws and clutch plates, reassembling the mess and then riding home. It was a confidence-building experience.

I was ten years old by the time I could ride the Ariel, but I was not tall enough to touch the ground so to get it going we would rotate the bike back up onto its rear stand so the rear wheel was off the ground, start the bike, put it into gear, get the wheel spinning in second gear, then rev the engine slightly. Simon would then slowly ease the 150-kilogram bike forward off the stand. I can still clearly remember the sound of the thumping engine dropping a few revs as the enormous knobby tyre engaged with the sodden grass, throwing a thick rooster tail of mud 6 metres into the air as we slowly accelerated away – leaving behind a snaking 3 inch-deep trench – magic!

But four kids can't ride one bike. So I scraped together \$15 and bought an old broken Lambretta motor scooter. We would go screaming through the forests exploring, jumping creeks and having a ball. I owned four motorbikes during my teen years.

There were so many injuries then, and today I still feel guilt and remorse for the anguish I caused my mother. Before I left home I broke my leg four times – once skiing, and the other three times on motorbikes. The time I broke it skiing I was six and Mum had just given birth to Christopher. Dad had been planning a family skiing holiday, and after Chris was born we left Mum behind in the hospital and travelled to Falls Creek. Unfortunately I broke my leg on the first day, so Dad drove for five hours to take me back to Richmond hospital – the same hospital where Mum was staying with Christopher. I remember Dad having to ask the staff not to tell Mum her son was in the next ward having his leg set in plaster.

I've got a few scars to show for the spills, but not as many as my brothers. Michael broke his leg a few times and lost half his calf muscle when his leg scraped up against the cooling fan on a lawnmower's engine's fly wheel. Christopher had a particularly nasty compound fracture deep in the bush (we needed a bulldozer to access the site and extract him), and he required plastic surgery to stitch up his abdomen when it was punctured by a set of handlebars.

But Mum was stoic and met all our misdemeanours with extraordinary resilience. I remember one time, when I was fourteen, I took my motorbike to my friend's parents' property. Although the property stretched over 100 hectares, it was clearly too small to hold our interest when compared to the Ponderosa's forests, so we rode into Bendigo to get a milkshake. The police were not amused. We spent a few hours in the police station and I faced five charges: underage riding; riding without a licence; no registration; stealing; and displaying false plates. (I'd taken them off a wrecked bike I found in the bush.) Fortunately for me, my friend's father invited the police officers to the farm for a picnic and all charges were eventually dropped. When Mum found out she just laughed – there wasn't anything else to say.

Not all of my injuries were sustained in the bush or on the slopes. When I was eleven, I was riding my bicycle to school one morning and was going very fast down Glenferrie Road, a busy street in Melbourne, when a woman opened her car door without looking behind. I collided headfirst with the

door then fell to the street in front of the busy peak-hour traffic. I lost some front teeth and there was blood everywhere. My father was summoned, and he took one look and rushed me to the dentist. 'Where's his teeth?' the dentist asked. Dad returned to the scene and found my teeth lying at the bottom of the tram tracks in the middle of the road. The teeth were re-planted, and I was told I would have to wear a denture if the teeth were knocked out again. So that was it for football and other contact sports. For the rest of my schooling I rowed and played tennis.

Our family's numerous injuries came at great financial cost, and the suspicions of the medical insurance company were eventually aroused. The tipping point came when Dad and three of his four boys were all laid up in bed at the same time claiming for different injuries – the insurance agent visited us personally to verify the claims were legitimate.

School didn't really excite me in my middle years and I was an average academic performer and not too naughty, perhaps having one detention per year. But to the great surprise of my friends, I joined the St John's Church choir, not because of my singing abilities or religious fervour, but because my brother Michael had joined, found a beautiful girlfriend and announced that that's where the pretty girls were. My other brother Simon had quickly joined too, and also found a girlfriend. So I joined and found a girlfriend too. Michael was right – that's where the pretty girls were hiding.

While I wasn't bad academically, I just wasn't fully motivated. My interests were motorbike engineering and electrics. I had extensively reworked the 240-volt wiring in my room with automatic timers for fans and lights. I now appreciate that I owe my survival to the excellent retention properties of the electrical tape that held the wiring mess together and saved me from electrocution most of the time. I loved the mechanics class that met once a week, where we rebuilt a VW beetle – tuning the engine by ear only. I could strip down and rebuild a bike or a car engine and get it working again. That wasn't such an extraordinary skill back in the early 1970s; if you wanted to ride bikes you had to understand every part of the machine to build, fix and maintain it – all on your own and on a tight budget.

The time bashing around on those bikes and fixing them gave me a respect for machinery that I took into my aviation career. Years later, my bottom-up approach would frustrate my instructors and peers when I would try to learn how each plane I flew actually worked. I believe the foundation for safety is an appreciation of the limitations of your environment, the machinery you're operating and yourself, so you can recognise when you are inside those limits and feel confident to operate there.

My background often put me into situations where I had to come to grips physically with power, velocity, mass and gravity, and most of the confidence I later had with large planes originated from riding motorbikes in the bush behind the Ponderosa.

As I got to the end of my schooling at Melbourne Grammar, I could easily have settled down into a career as an (electrical) engineer. However, by the time I was seventeen I realised enough about myself to know I needed a robust physical challenge to go with the mental. I would not waste my life behind a desk. I needed fast machinery in my life, but I also wanted intellectual stimulation.

If you need a fast ride and lots of homework, there's only one way to go: the RAAF.

CHAPTER 3

With Wings as Eagles

The idea to join the Royal Australian Air Force (RAAF) Academy didn't come out of nowhere. In 1972, three years before the end of school, we went to our bush property for the weekend. When we arrived at the Ponderosa we found the property had been carved up: huge bulldozer tracks cut deep into the soft soil, fences had been flattened, trees toppled, and there were charcoal burns on the grass from campfires. It appeared to be a wanton act of vandalism, although whoever did it had left our house alone.

Dad asked around. It turned out the destruction was the result of the RAAF conducting a local bivouac. While looking for their training site, the group had become lost and camped on the wrong property.

Dad tracked the guilty parties down and had a chat with the base commander responsible. The Air Force was highly apologetic and offered to pay for any damages. Dad still had great memories of the RAAF in 1944, so he suggested that, instead of financial compensation, the RAAF could make amends by taking two of his sons (Simon and me) on a tour of the RAAF Academy at Point Cook Air Force Base (now combined with Laverton and called RAAF Williams). Dad knew I was interested in flying because my uncle Humphrey had recently taken me for a flight over Melbourne in his Cessna and I came home raving about it. The base commander agreed to Dad's request, and I remember that tour very clearly.

The RAAF Academy had extraordinarily manicured grounds, a modern overarching graduation hall and mess halls, and spectacular lecture theatres and labs for chemistry, computers, electronic engineering and aerodynamics. Jet engines, subsonic and supersonic wind tunnels – you name it, there was leading-edge aviation technology in Australia you'd find it at the Academy. There was even a full-size aircraft hangar fitted out with tools, spray painters, welders, presses and sheet iron for the Academy cadets' exclusive use. There was also a strong sense of history about Point Cook. It was the site of the original Australian Flying Corps – before it became the Royal Australian Air Force after the First World War – and its aerodrome is still the longest continuously operating military aerodrome in the world.

The Academy was the most remarkable institution I had ever seen – and I immediately wanted to be a part of it. This would be the career that combined my love of technology with my need for physical challenge. I would gain an education, learn extraordinary skills and be pushed to my limits. I decided there and then I had to go flying – I had to join the Academy. But there was a problem. I needed to graduate in the top 5 per cent of the state to be accepted. At that stage I was probably in the top 40 per cent. I now had a new target.

My dogged determination to excel at school increased another notch in 1974, my last year of school. Back in 1973 Mum became sick, a sickness that would persist for two years and see her in hospital many times. Both of her kidneys had failed. In late 1973, after six months on the waiting list, she was finally put on dialysis. She'd visit hospital two times a week for the procedure and would

beginning to feel well again. It was great to have her back with us, relatively healthy and happy, and wanting only for a kidney transplant. Our lives were returning to normal.

Three months later, in February of 1974, Mum visited hospital for her dialysis session, but there was a problem. The dialysis machine's thermostat malfunctioned and failed to regulate her blood temperature. Her cleansed blood was too hot when it re-entered her body. The dialysis machine had a warning system, which would emit an aural warning and illuminate a warning light when an overheating is detected, but the nurse tasked to monitor the machines was absent. Mum effectively died on the dialysis machine that day.

The grey matter in Mum's brain had been overheated and destroyed. All that remained were the autonomic reflexes of breathing, heart rate and the semblance of an intellect no more advanced than that of a newborn child. The mother we knew and loved was gone. I would go and see her in hospital, hold her hand and talk to her, hoping the way her eyes followed me around the room was a sign there was awareness within. But for visit after visit there was no improvement, and we began to realise her reactions were no more than basal reactions – like a baby's eyes following a moving object above its cot. Mum would never recover.

On 22 May 1974 – the middle of the school holidays – my best friends and I were riding our motorbikes at the Ponderosa when Dad turned up unexpectedly to tell us Mum had died. It seemed so unfair for Mum, especially when I thought of how tough we, her sons, had been on her. She had sacrificed and endured so much, and now – just when her quality of life should have been improving – she was gone. Dad, my brothers and I suffered for a long time – we never properly grieved her loss and it took me more than 30 years to revisit those memories and confront the pain.

When Mum died, I was in the middle of my last year at school. I was not a bright student, but I could work hard. I remember thinking to myself that I could not bring Mum back and nor could I make up for all the grief I had caused her. But I could do something that would have made her proud. I would work day and night to get into the top 5 per cent of the state, to get accepted to the RAAF Academy. Nothing would stop me now.

In order to apply for the RAAF Academy I had to matriculate in English, chemistry, physics, and the tougher pure mathematics and applied mathematics. The maths courses ran over two years; for the first year (fourth form) I had been in the lower class of general mathematics and so Melbourne Grammar wouldn't let me switch across because they said I wasn't smart enough. The school thought I should follow a career with my hands, like watch-making. But if I was to join the RAAF I had to do pure and applied maths, so I gave the school no option: 'I'm turning up for pure and applied maths, so you'd better schedule my classes.' Dad received a letter warning there could be adverse effects from my taking on subjects beyond my ability, but the school later relaxed and put me into the lowest of the three graded pure and applied maths classes.

I was bottom of the class in maths when I started fifth form, but it's amazing the difference ambition and motivation can make. Four thousand would apply for the 28th RAAF Academy course and only 44 would be accepted, so I didn't just have to pass my subjects, I had to excel. Through grit, determination and the help of my extraordinary teachers, I did so well in the final year that I could have been accepted into medicine at Melbourne University. It was an extraordinary time in my life and I was very proud of what I achieved.

My advice for all young, aspiring students is simple. Find your passion; develop and work hard at it, and you will be rewarded. Better still, if your work is your passion, you'll never have to 'go to work'. John Bartels, the captain of the QF30 aircraft in July 2008 that suffered an explosive decompression after an oxygen bottle exploded, expressed these thoughts even better: 'The harder you work the luckier I get.'

These days I look back on myself during those intermediate years at Melbourne Grammar and

can clearly see a directionless kid who just needed to find motivation. I thank Dad who, when faced with a bad event (the RAAF damaging the Ponderosa), turned the problem into an opportunity (the RAAF Academy tour) that changed my life. We all face situations like this and we should always strive to think outside the box to get the best results.

When I applied for the RAAF, after evaluating me they said there were few openings in the RAAF for pilots but plenty for engineers and navigators. They offered to accept me immediately for the engineering and navigation courses, and advised that if I passed up those opportunities I might later miss out on the pilots' course and therefore lose my chance at a career with the RAAF altogether. My decision was easy: 'It's the Academy and flying – or nothing.' They then told me they could accept me as a direct-entry pilot, which meant they'd throw me straight into pilot training. But there is little security in being a pilot. I wanted a backstop, a safeguard in case I failed the pilots' course or lost my aircrew medical. So I said, 'No, I want the science degree from the Academy and then training to be a pilot.'

On 22 January 1975 I joined number 28 Academy course with 43 other cadets. My earlier interest in electrics morphed into a passion for electronics, and I particularly enjoyed the engineering and electronics-related studies. I built a 'music chaser' – a device for pulsing coloured lights in synchrony to musical sounds. The three-channel lights used triacs (electronic switches) that were designed to have their 'base' at the active (240 volts) potential. Most people find this hard to understand, and so did I because one day I accidentally touched a triac with one hand and the kit chassis with the other. I remember the scorching pain running up my arms and meeting at my chest – I could hear and feel the hum of my chest vibrating at 50 hertz. My legs kicked hard and I found myself thrown 2 metres back, lying on the floor. Like anyone who has suffered a severe electric shock or been injured, I ran through a checklist of my body to see if anything had been damaged: toes, feet, chest, arms, fingers, neck – all okay. I was lucky I had learned a valuable lesson without being hurt.

I made life-long friends at the Academy. When joining the RAAF, the orientation course had simple ambitions: to shred every recruit down to their basic being, then rebuild them with the standard military substrate. We lost all our personal rights; we were challenged as a group and we discovered we would only survive if we functioned as a team. Over four years you end up knowing many intimate details about each other, and you develop a close friendship and trust. By the time you graduate you share an esprit de corps with your course mates, and many become part of your extended family for the rest of your life.

*

Even though I was now at the RAAF I still had very little flying experience. Commercial flying was a very privileged and expensive activity. When my mother died at the age of 43 she had never travelled overseas. I was eighteen years old when I first left my home state of Victoria. I fitted earplugs, then walked up the ramp into the back of a very noisy 'A' model RAAF Hercules that would transport me from Laverton, Victoria, to the Richmond Air Force Base outside of Sydney, New South Wales.

The Hercules is a transport aircraft devoid of passenger comforts. I can still remember the cocktail of screeching noises: hydraulics, pneumatics and engines. The noisy propellers generated a high-pitched scream and a painful 'beat'. The 'beat' is a cyclic noise, created when the propellers rotated at slightly different RPMs, enough to make the pressure on your ears ramp up and down every few seconds. Having no other experience, I assumed all large aircraft were just as noisy.

A year later, I was nineteen and on my first commercial aircraft flight, a DC9 from Melbourne to Sydney. As we taxied towards the runway, I noticed the low hum that indicated the auxiliary power unit (APU) was running. I wondered when the pilots were going to start the engines prior to take-off.

It was only after we charged down the runway and launched into the sky that I realised what I thought had been the APU's noise was actually the sound of the engines, the engines had been running for the last fifteen minutes, and I wasn't even wearing earplugs! It might seem naïve to have expected that commercial jets were as noisy as Hercules, but in the 1970s air travel wasn't as common as it is now.

For the four years I spent at the Academy I often looked across the road to the airfield where the direct-entry cadets were learning to fly – and I was envious. Conversely, the direct-entry pilots looked down at us in our lecture rooms and thought we were nerds. At the start of the second year we flew twenty hours in Winjeels, which was provided to boost our motivation and morale.

In the fourth year of the course each of us spent one month visiting the squadron of our choice, participate in their operations and lifestyle. I wanted to experience the latest and best technology, so there was only one choice – F-111s. The F-111 was a strategic long-range bomber capable of delivering conventional or nuclear weapons with pinpoint accuracy in bad weather, day or night. I spent one month at 6 Squadron attending briefings, researching the aircraft and mixing with the pilots. It was a remarkable time – I had one three-hour flight where I experienced my first supersonic cruise and then low flying with terrain following radar (TFR). TFR was unique to the F-111, permitting it to fly at high speed under the radar detection heights. The pilot selected the ground clearance (down to 100 feet) and the ride (soft, medium or hard), and the computers did the rest. A typical mission profile was a high-altitude transit followed by low-level interdiction at 480 knots (890 kph), just 100 feet above the ground and under the radar – and the F-111 could do all of this in cloud or at night. It was remarkable to fly through a valley at night and see nothing except the short flash of ground illuminated by the wingtip strobe lights. After this experience I was convinced about my flying career – I had to fly F-111s!

The Academy years were difficult but rewarding. I graduated in December 1978 with a Bachelor of Science (majoring in physics and maths) and a Graduate Diploma in Military Aviation. I also graduated as an RAAF commissioned officer – presented by His Excellency Sir Zelman Cowen, the governor-general. I had become a flying officer yet I had very little flying experience.

The RAAF Academy trained many more officers than would ever get their wings. Like most armed forces around the world, the majority of Academy cadets are ultimately destined for management positions, liaison and diplomatic postings – they're more likely to be sponsored through officer promotion and executive MBA courses than through multiple expensive aircraft conversions. The reality was the Academy did not want to invest four years of education in a young man so he could get killed in a damn plane. It was a dreadful irony that those who duxed RAAF Academy – being the best – won a poisoned chalice. For it was the dux pilots who disproportionately lost their lives in aircraft accidents.

I nearly considered resigning from the RAAF one week before my graduation day. If I graduated from the Academy and accepted a commission I would become bonded to the Air Force for another five years. But only 25 to 35 per cent of pilots pass the one-year pilots' course. The odds were against me. I told my father I was thinking of resigning because I couldn't stand the thought of being stuck in the RAAF at a desk job. He said, 'Rich, flying is your dream. Nothing's easy, and taking risks brings rewards, so take a risk and try your hardest.' My great friend Adrian Wischer was more direct: 'Security is a swear word; there is never security, you make your own luck.'

I graduated from the RAAF Academy, then entered number 107 Pilots' Course flying CT4 (piston aircraft and Macchi jets). This twelve-month course was exciting – the risks were high but the rewards were breathtaking. I joined a strict training path where every flight had goals and requirements, and I was generally too busy concentrating to enjoy myself. We were always only three fail rides away from being scrubbed – the first flight, the retry flight and then a scrub ride with the chief instructor. Our training covered a diverse range of skills, from navigation, aerobatics and low flying through

formation and instrument flying. Instrument flying tripped up the most pilots. I think all those years of manhandling and fixing motorbikes at the Ponderosa helped me through my pilot training. Being unafraid to aggressively manoeuvre aircraft was an asset when chasing my instructor around the skies trying to stay on his tail. Appreciating machinery and knowing my body's capabilities also helped me to stay relaxed and fly smoothly in stressful situations.

The basic flying techniques drilled into me during formation flying helped me 30 years later when converting to Airbus aircraft with Qantas. Aircraft fly in formations to maximise the number of aircraft that can manoeuvre in a limited airspace, and air controllers treat a formation of aircraft the same as they treat a single aircraft. So aircraft in formation must fly very close to each other – close enough that the wingman never loses sight of his leader. The wingtip-to-wingtip separation reduces to getting down below 2 metres when penetrating the thickest cloud.

It's hard learning to fly in formation. Just when you think you have nudged up close enough to your wingman your instructor berates you for being too distant and out of position. You respond by pushing in closer to your wingman, but your primitive survival instinct takes over and your hands move subconsciously to fly you apart. You consciously push in closer; your body subconsciously pulls away – in, out, in, out, in, out. It's very frustrating – your conscious and subconscious minds are at war with each other. Learning to fly in formation is the classic tracking exercise where pilots often over-control and, in the worst case, enter an oscillating (in-out) behaviour called a pilot-induced oscillation (PIO). It was 'Stork' who had a wonderful remedy that corrected my PIO tendencies.

All RAAF pilots are given an alias name that sticks for their entire career. I had two – 'Dick' and 'Gino'. Most pilots take animal names for aliases – such as 'Dog', 'Rat', 'Snake', 'Beetle' – and 'Stork' was no exception. At 6 foot 3 inches tall and wafer thin, 'Stork' was an exceptional instructor who guided me through my Macchi pilots' course. During one formation flight, I was trying to keep close-in beside my manoeuvring leader. I was becoming tired and tense – my hand was squeezing the top out of the joystick – and I was starting to get the wobbles. I knew I was tense, but I couldn't relax and I was tending towards another PIO. Stork's suggestion broke through my concentration and fixed my problem.

'Dick,' he said, 'you're too tense on the joystick – you're grabbing it too firmly. Imagine the aircraft is your girlfriend and the joystick is your girlfriend's nipple. Don't grab it with a clenched fist! Hold it gently between your thumb and finger. Now fly the aircraft by bending the nipple, gently – just as she would like it. Fly the nipple!'

I've never forgotten Stork's remarks. My formation flying improved, and this technique works like a dream on the A380!

I finished close to the top in my course, so I could have my first preference for the squadron I'd be assigned to. There were no vacancies at 6 Squadron on F-111s, so I planned to make my next bid to go to Mirage fighters instead.

I had struck up a great friendship with Stork. When he discovered my second preference was to fly the Mirage fighters – another elite aircraft in the RAAF – he warned me against it. He said, given my personality, I'd get bored in the fighters because all they do is shoot bullets and drop bombs. Also, the waiting list to get a command on a C-130 Hercules – the planes that do most of the interesting foreign assignments – was too long. He said I should apply for 38 Squadron, flying Caribous.

The Caribou is a medium-sized, twin radial engine, propeller-driven STOL transport aircraft (STOL means 'short take-off and landing'.) They can carry a large load and they have remarkably complex flight controls enabling them to take off and land on 300 metre-long runways – very short in aviation terms. The Caribou's large tyres can be deflated to 20 psi, which means that if a four-wheel drive vehicle can drive over a surface the Caribou can land on it! It's for all these reasons that the Caribou was the Australian Army aircraft of choice for the front lines of Vietnam and for the untamed

jungles of New Guinea.

Stork said, ~~‘Caribous are exciting – you’ll work the aircraft to its limits. The flying is diverse and fascinating, and you’ll have your command within six months.’~~

I applied for F-111s but there were still no slots. So I said, ‘I’ll take Caribous.’

CHAPTER 4

Wombat Airlines

The de Havilland Canada DHC-4 Caribou is a Canadian ‘tactical’ transport plane that first saw service in the Australian military in 1964, in Vietnam. Its 4-tonne payload permitted these aircraft to carry two large Army Land Rovers or an equivalent weight of artillery pieces, but, during my time, the Caribou was mostly used in tactical roles such as carrying supplies to remote villages in New Guinea and supporting Australia’s Special Forces.

The Australian armed forces loved the Caribous; they were strong and enjoyed a dignified career. When I undertook my Caribou conversion course in 1980, there were plans back then to retire the aircraft and find a replacement, but a capable replacement was never found and the aircraft served for another 30 years. Of the initial 29 Caribous that entered RAAF service during the Vietnam War, eleven were still in service when they were decommissioned in 2010.

The Caribou was powered by two 1450-horsepower Pratt & Whitney radial piston engines. They were classic engines that proved to be powerful, reliable and simple to maintain. But like all supercharged engines, they needed to be treated with great respect. So the Caribou conversion course included lots of theory about engine design and operation – radial engines contain many heavy rotating parts that could be damaged by under-boosting just as much as over-boosting. The engine start was just as critical. Three long-stemmed switches needed to be ‘tickled’ in the correct timing sequence to start the cranking, fuel pump and ignition – get it wrong and everyone within 200 metres would hear the explosion and see the flames. I have very fond memories of the P&W engines, and I think I am wiser for the experience because the principles we learned then can be applied to any engine, even jet engines.

The Caribou had remarkably impressive performance. The high wing allowed for operation on narrow and makeshift runways while the high tail section meant an easy-access cargo door could be lowered at the rear of the aircraft, whether on the ground or airborne. This 15,400-kilogram aircraft could take off and land on 300 metres of unprepared strip (a standard Boeing 737 or Airbus A320 requires a minimum take-off and landing distance of 1700 and 1400 metres respectively). Some of the places I operated into during my years with 38 Squadron tested this famous STOL capacity to its limits. We were trained to operate into these runways at night using only six runway lights: two at each threshold and two along the left side of the runway. In reality there were few runways we operated into that were 300 metres short, but we were trained for the worst case so we never felt stressed when operating into limiting airfields.

Unlike most aircraft, the propellers on the Caribou’s engines could be put into reverse. This feature is used to reverse the aircraft on the tarmac, but its main benefit is to reduce stopping distances. It also reduced airflow and lift on the main wing. You might engage the propellers into reverse during landing if you find yourself ‘floating’ down the runway and unable to put it down on the ground quickly – but you have to be mindful of the effects: you would drop like a brick if the wheels were higher than two feet above the ground.

For such a basic plane, the Caribou had very complex flight controls. But once you were airborne it had an effective operational ceiling of just 10,000 feet because the cabin wasn't pressurised. The super-charged engines could have powered us higher, but on those occasions where we did 'push the envelope' and climbed up to 20,000 feet, the cold limited our enthusiasm – our fingers and feet froze and everyone needed oxygen masks.

The Caribou was a fabulous machine to develop 'hands-on' flying skills. It had no radar, so we couldn't see embedded thunderstorms in front of us, and it had no autopilot to fly us through turbulence. We 'rigged for rough running' – disconnecting the HF aerial from the receiver and tying everything down for the ensuing roller coaster ride – whenever we thought we might be about to enter the 'twilight zone' in a thunderstorm. We also had primitive navigation equipment. When outside the range of our radio navigational aids, we navigated over water by flying at 100 feet and used the Beaufort scale to calculate wind speed. Over the desert, we calculated our drift angle by pressing a soft pencil to the window to track an object abeam us on the horizon. It doesn't get any simpler than that!

New Guinea was the theatre in which the Caribou and its pilots' skills were proved. Many of our landings were onto short, soft runways carved out of the jungle and the hillside. We could land and take off from any runway, but if we suffered an engine failure the remaining engine provided insufficient performance to climb out of the valleys and over the 14,000 foot-high mountains. The safety height to clear all obstacles was up to 15,000 feet, well above our single-engine performance ceiling. So for most of our flying in New Guinea, we had to stay under the cloud – and therein lay the challenge. Anyone who's lived in Papua New Guinea will tell you that to fly under cloud in the interior of that mountainous country means flying through narrowing valleys and finding saddles that you can either leap over or you have to evade. We had to know our aircraft's evasive 180-degree turn potential – get this wrong and you'd be dead.

Our navigation in New Guinea was completely visual, the co-pilot thumbing his way along a topographical strip map as we traversed valleys, always below the cloud base. To enter cloud would be to enter a no-man's land of zero visibility, and those who did would have sweated, knowing that sighting a tree in the fog would be an ominous warning that you had seconds to live before slamming into the side of a mountain.

One of the most challenging and rewarding runways we operated into was Tapini. Located in the Owen Stanley Ranges in New Guinea at 3100 feet above sea level, Tapini was a native village with no access roads and no telephone or electricity. It's just an isolated village with an undulating boggy grass runway cut out of the jungle into the side of a sticky red clay mountain.

We operated Caribous in Tapini using performance standards and procedures that would never be permitted by civil regulators. The mixture of high altitude, low performance, short runways and high temperatures meant we had to operate with extreme rules if we were to operate at all. At 2000 feet (660 metres), Tapini's runway was long enough, but the Caribou's engine performance in the tropics at 8000 feet, particularly on one engine, was appalling.

We created our own flight plans, maps and instructions to get to Tapini. These were surprisingly simple, just showing Tapini as a cross on a hillside. To land at Tapini we navigated under the cloud along the valleys, over the saddles to the 'entry point' where we met, then followed, a descending goat track along an escarpment off our right wing. At the point where the goat track diverged, we'd bank hard left, fly around a ridge, and only then would we expect to see Tapini a short distance ahead. Descending with the goat track put us at the right height; turning at the goat track marker put us on the runway centreline. No radios, no electronic guidance, no air traffic control clearances. The challenge didn't end when we touched down – the runway dipped down initially then climbed at a 15 per cent gradient up to the far end of the runway. So after touchdown we had to put on a lot of power to drive

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