Recollections from my years of living in Carnarvon and working at the Carnarvon NASA Space Tracking Station

December 1970 - July 1974, David Johns

Canoeing at Dwyer's Leap, Carnarvon. David Johns with Frank and Paula Vinton's children on board. Circa 1972.

INTRODUCTION

When the American Government made the decision that the National Aeronautics and Space Administration (NASA) would land a man on the moon and bring him safely back to earth by 1970, NASA needed to develop a web of 23 tracking stations around the world. Some of the stations were small, just a hut and a couple of tracking aerials, but NASA placed its largest land based tracking station outside of mainland America at Carnarvon, West Australia. Carnarvon was chosen because its geographic position was the nearest land based site approximately opposite to the Cape Canaveral launch site and Carnarvon would have a line of sight to the first earth orbits of the Apollo spacecraft prior to their departure to the moon. The Carnarvon Tracking Station became a critical site for many space tracking functions, particularly trajectory coordinate adjustments for Apollo moon missions returning to earth.

I worked at the Carnarvon NASA Space Tracking Station. It was during the period when America sent manned missions to the moon (Jul 1969 to Dec 1972). Initially, the American public was excited and supportive of the manned moon flights but as time went on the public began to question the need for and the cost of the flights. NASA ceased its lunar manned flight program after nine manned missions around the moon of which six of the flights had landed and twelve Americans had walked on the surface of the moon.

Many years after the tracking station closed, I realised the uniqueness of those years so I wrote some of my recollections, partly for myself and partly so other people may gain some insight into the life of a 1970s Carnarvon tracker. I wrote most of the recollections in about 1985 but where later relevant events occurred, those recollections have since been added. Where possible, I checked my memory against written records but much of what follows is from memory alone. But there is one thing of which I am certain and that is that there is absolutely no exaggeration in any of the described events. All of them occurred as they are told. I wrote of events as they came to my mind, not necessarily in the order that they occurred. Read it for its ideas and story and please ignore the errors.

David Johns
June 2012

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SOME LATER EVENTS, RELEVANT TO MY TIME AT CARNARVON

1 The Path to Carnarvon

In 1970 I was a maths and science teacher at a High School at Maclean, NSW. I liked the work and was not necessarily looking for a change.

One weekend in June, while on holidays, I was sitting in a friend's kitchen in Sydney, idly flicking through a paper when my eye was caught by an employment advertisement seeking a physicist. I was used to flicking through the employment columns and seeing numerous advertisements for accountants, engineers or other common professions but rarely for a physicist. So I read the advertisement with only casual attention until I read the bottom paragraph where it said *"the successful applicant must agree to travel to America for training at National Aeronautics and Space Administration (NASA) facilities".* Suddenly, the advertisement looked more interesting so I re-read it with greater attention.

The advertisement was seeking a physicist to train in solar physics and then work at the NASA Space Tracking Station at Carnarvon WA. I had majored in physics in my degree, I considered that I would enjoy a trip to America and although I knew little about solar physics, I applied.

It turned out that they were seeking two physicists to replace two physicists who were due to leave Carnarvon soon. One of the new physicists had to have research experience but the more junior position did not. There were a lot of applicants and there were two series of interviews. Although the interview committee asked predictable questions about physics and electronics, the committee seemed very interested in my general rural background and were impressed when I was able to casually mention that I had a semi-trailer truck driver's licence and had previously worked as a truck driver in the Port Hedland and Carnarvon areas of WA.

Carnarvon was a remote town and I learned later that the committee was wary of employing a person who may not have adapted to the life there. When I said I had driven trucks in the north-west summer heat and liked Carnarvon the committee thought "he's our man" and so I was offered the more junior of the two positions. Actually, it was a bit of a fudge because although I had worked as a truckie in the Port Hedland area, which was hotter and more remote than Carnarvon, my truck driving had not ventured as far south as Carnarvon and my comment that I knew Carnarvon and thought it to be a nice town was, to put the matter simply, a big fib. But fate had spoken and I was offered a physicist position because I was a happy ex-truckie.

The plan was that I would work for a month in Sydney at the Ionospheric Prediction Service (IPS) - which was at that time part of the Commonwealth Department of the Interior - and then go to America for two months of training and then to Carnarvon for two years.

I started work in Sydney in early September 1970. Initially I had little idea of what IPS did but I soon learned that its role was to issues prediction forecasts about High Frequency radio propagation. (Lower frequency radio transmits in straight lines and is thus suitable for communications over short lengths. HF radio, 3 – 30 Megahertz range, reflects of the underside of the earth's ionosphere and thus HF radio is suitable for communication over thousands of kilometres.) Solar activity causes predictable changes in the earth's ionosphere; so there was the link with solar physics. This was closely linked to what my work would be in Carnarvon.

A few days later I met Leo, the physicist who had been recruited for the more senior of the two Carnarvon positions. Leo had a PhD in physics and we enthusiastically discussed our forth-coming trip to USA. He had sold his house and ordered furniture to take to Carnarvon where he would be joined by his wife when he arrived back from America in three months time.

But all was not plain sailing for Leo. It turned out that because NASA and the United States Air Force (USAF) shared solar data, Leo and I needed security passes to enter USAF sites in America. When our details had been sent to the authorities in Canberra, there was glitch on Leo's record.

In the late 1960s and 1970s America was fighting a stupid war in Vietnam to which the Australian government was sending Australian conscripts. The community was divided and there had been violent street demonstrations in Australia against the war and the Government.

The security weasels in Canberra denied Leo a security clearance because it was alleged that Leo had previously attended an anti Vietnam war demonstration and had knocked a policeman's cap off his head. Leo told me that he remembered the incident when he was at a demonstration and a student from Leo's university *did* knock a policeman's cap off his head but the policeman wrongly arrested Leo.

Charges were laid but later dropped when it was realised that the policeman really had no idea who had knocked his cap off. The Director of IPS, Clarrie McCue, protested at a high level in Canberra that Leo was a patriotic Australian citizen and should be given a security clearance, but the weasels would not relent and Leo would not be going to USA after all. So much for being innocent until proven guilty! The IPS Director was embarrassed because Leo had made

financial commitments based on the Director's verbal assurances that Leo would be going to Carnarvon but Leo was later given a secure job in the Sydney IPS office.

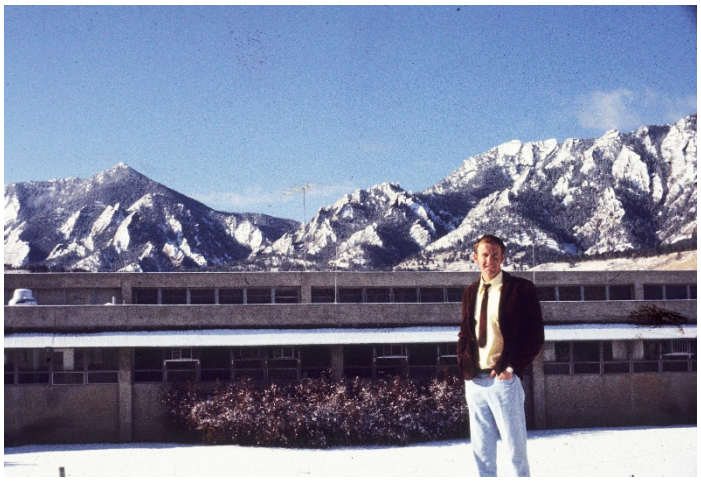
Don Plumb had worked in the Antarctic for IPS for a year as an ionospheric physicist. Don had recently returned from the Antarctic and was at a loose end so the IPS hired him to replace Leo. The Director figured that if Don could put up with the solitude and cold of Antarctic for a year, he could stand the Carnarvon heat for two years! Our security passes came through and it was all arranged. Don and I would go to the USA for eight weeks and then to Carnarvon.

We left for the USA in early October 1970. I had a General Aviation pilot's license and was very interested in aeroplanes. It was the first time I had been on a jet plane, a Qantas Boeing 707, and was, I will admit, quite excited. In those days Commonwealth public servants flew first class on international flights (there were only two classes then - first class and economy class). All my previous flying, brief as it was, had been at my cost and I was used to travelling as cheaply as possible. I felt out of place sitting there like royalty in first class.

A jovial Qantas steward with a champagne bottle permanently in one hand and a white cloth over his other arm floated up and down the first class aisle constantly topping up peoples' glasses and smiling and laughing at unfunny jokes. His job seemed to be solely to make people feel important and relaxed and there were a few people on board who didn't need much help to feel important. All that pretentious consumption was a new world to me and I was happy to just sit and watch. At the time Qantas was giving a small bottle of vintage port to all first class passengers to celebrate 50 years since Qantas had formed. I still have my little bottle of port, unopened.

In 1970 the route to USA involved a refuelling stop in Fiji, and then stopping again at Honolulu for fuel and customs and then on to San Francisco. Don and I scheduled ourselves a day in Fiji, just to see some of the place. I well recall that day because there was much fuss on the radio about the first ever Boeing 747 going to Australia and I was sitting on the beach at Nadi and saw the blue Pan Am 747 climb out overhead and track south-west on its way to Australia.

We did most of our training at Boulder Colorado. Don and I worked hard familiarising ourselves with the requirements of our new work. NASA, the USAF and the National Oceanographic and Atmospheric Administration of America (NOAA) all had an interest in knowing what the sun was doing and issuing radio propagation forecasts. There was a lot of data sharing and cooperation between those agencies. Most of our time we worked in the NOAA building at Boulder, making solar observations and studying solar theory with some of the NOAA scientists.



At the NOAA building, Boulder, Colorado
The snow-covered Flat-Irons of the Rocky Mountains are in the background.

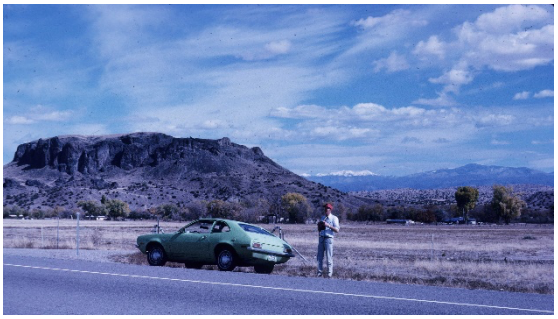
At one stage we visited the North American Aerospace Defence Command (NORAD) centre at Cheyenne Mountain, Colorado Springs. The NORAD centre is where the US government tunnelled horizontally over 600 metres into the hard rock of the Rocky Mountains and built a command centre for America's nuclear defence and attack systems. The centre consisted of several free-standing buildings, up to three stories high, mounted only on hundreds of steel springs for blast shock protection and all located within an excavated "cave" of about 250,000 cubic metres. The access tunnel had two steel blast proof doors (built so that only one door at a time could ever be open) and the buildings contained support facilities and giant Star Wars type control rooms from which a nuclear war could be directed. Because the site had rapid communications with USAF sites all over the world, the USAF housed its solar monitoring and forecasting facilities there to enable rapid collection and dissemination of solar data. Because NASA and the USAF shared solar data, we visited the USAF solar forecasting centre that was based inside the NORAD Cheyenne Mountain Complex for technical discussions. While in the mountain, for security reasons, we had to be escorted at all time by a USAF officer. On one occasion I went to the men's toilet, and was as always accompanied by my security escort. As we left the room he commented with a smile "well that might get you in all of the papers back home". When I looked puzzled, he grinned and said, "you've just been a party to a security leak".

Don and I enjoyed our time in America. Boulder was on the eastern side of the Rocky Mountains, with the Great Plains to the east and the high snow-capped mountains to the west. We were on a limited budget and we arranged to hire a small dull green Ford Pinto but when we went to collect the Pinto the renting company was very apologetic because it had made a double booking and the Pinto was gone. The attendant said "would you mind taking a Mustang at the

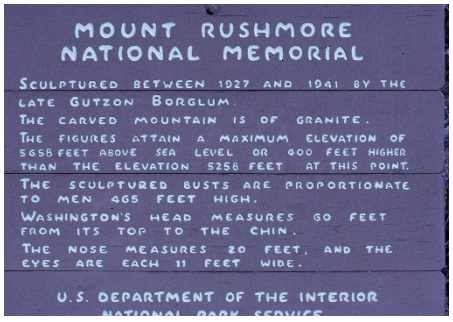
same price" so we had a bright red Mustang for four weeks before the Pinto came back. I loved driving the Mustang; we covered a lot of miles in it.

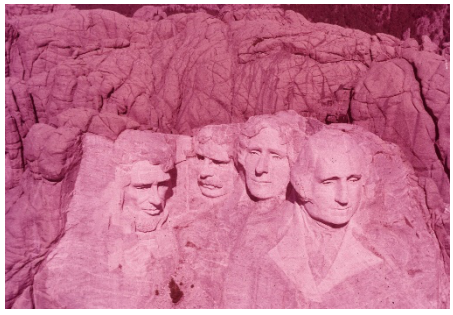
Regrettably, this is our only photo of the Ford Mustang. This photo was taken during one of the several snow storms that occurred while we were at Boulder

Every week-end we would tour long distances north, south, east or west and in six week ends we managed to see more of USA than many of the locals had seen.



More touring





More touring, Mt Rushmore, South Dakota

And more touring, Rocky Mountains, Colorado, approaching 14,115 ft high Pikes Peak.

In the Rocky Mountains, we saw areas where beavers had been falling trees, up to 30 cm in diameter, then cutting the trees into sections weighting up to 50 kg and then pushing/rolling the sections 50 metres across a bitumen road to firm up the walls of their beaver dam.

Though the local Colorado wood is much softer than wood from Australian eucalypt trees, the strength and sharpness of the beaver's teeth is evident from the marks on the stump.

On one occasion we outsmarted ourselves. We were heading to North Dakota and un-screwed the odometer cable so as to not record all the miles we covered. That also meant that the speedometer clock face was showing a constant zero miles per hour so I had to guess my driving speeds. I obviously misjudged my speed because next day we were flagged down by a policeman with a radar gun and booked for exceeding the local 80 miles per hour speed limit. We received an on the spot fine of US$20 and were instructed to pay forthwith at the town that was a few miles up the road. When we arrived in the town, we looked in vain for the police station where we could pay the fine and then a local pointed us to a building in the main street with a large “Sheriff’s Office” sign. That amused us because the only Sherriff’s Offices that we had previously seen were in cowboy movies. We paid the fine, reconnected the speedo cable and moved on.

When it came time to leave America, Don returned as originally scheduled but I found a friendly travel agent and converted my first class return via the Pacific ticket into an economy return fare via London, Canary Islands, Greece, Iran, Hong Kong and back to Sydney.

I spent two days in London, including taking my mother to dinner at the Post Office Tower Restaurant, Dec 1970

Joe Hirman and Pipi at Canary Islands NASA Space Tracking Station. The aerial in the background is a USB dish. It is in its parked position indicating that the moon was below the horizon when I took this photo.

On the way home, I visited my mother (who was Australian but was at the time living in London) and NASA and USAF facilities at Canary Islands, Athens and Tehran. I arrived back in Sydney about ten days after I was due back on the original ticket. The Director, Clarrie McCue, was furious and carpeted me because I had, as he put it, “gone on a world tour”. I tried to explain that it hadn’t cost the Government any additional money and the detour had benefited me because of the visits to solar observatories in Spain, Athens and Tehran. Unswayed, he shouted over the top of my protests.

Half way through his tirade I realised I had the upper hand because I knew that if he sacked me, his Division would have to bear the cost of sending someone else to America for training. Months later an administrator more familiar with the intrigues of the public service told me that Clarrie’s main concern was not that I had detoured around the world and arrived back late (in fact he respected me for that) but that I had travelled economy class! Clarrie said it set a “dangerous precedent” for the public service. Clarrie enjoyed his first-class travel and he did not want me messing it up.

Tehran, mobile fuel station, fuel hawker with donkey

To get to Carnarvon I was scheduled to fly out of Sydney but decided instead to drive my car across Australia, at the same time giving a friend a lift to Perth. In 1970 the road between Port Augusta and the WA border was corrugated, pot-holed and unmade. By contrast, the Perth to Carnarvon road was relatively new bitumen.

Crossing the Nullarbor, Dec 1970

There is no water on the Nullarbor Plain, people have perished. At several points across the Nullarbor the Govt had erected roofs, about the area of two tennis courts, to drain the occasional rain water into tanks for emergency use by the public. The road has since been realigned and bitumen surfaced and the tanks have deteriorated and are no longer in use.

The Perth to Carnarvon road was bitumen and was a pleasure to drive on after the grind of the Nullarbor.

As I drove the last kilometre into Carnarvon, I had mixed feelings. I had been attracted to the job because it offered a trip to America. Now that the travel and training were behind me, I had to start delivering on the job. I wondered if I was going to like life in Carnarvon. But NASA, via the Australian Government, had invested a lot of time and money in me and I intended to give it my best effort for at least two years.

2 Arriving at Carnarvon

It was late on a Saturday evening when I drove into Carnarvon. I had been told in Sydney that I was booked into Carnarvon's Port Hotel but when I arrived there the receptionist, Peggy Gunn, said that I was not booked in, that they had never heard of me and that there was no room at the hotel.

I was puzzled but when I said I would be working at the NASA Space Tracking Station, she said, "Oh that's all OK then, you're a tracker," and she directed me to one of 18 units that were at the back of the Hotel. The 18 units were permanently hired by the Tracking Station as single staff accommodation. The term "tracker" was a generic term that the locals applied to anyone who worked at the local NASA Space Tracking Station. So that was that, for the next few years I would be a "tracker".

I later learned that just about every single tracker had initially lived in the units at the back of the Port Hotel – a sort of single tracker's obligatory initiation into life at Carnarvon. There were several loose socio-economic groupings in the town. People who worked on the sheep and cattle properties were "station people", those from the fishing industry were "prawners", those from the tropical fruit and vegetable farms along the river were "plantation people" and those who worked for NASA or OTC (Overseas Telecommunications Commission) were "trackers".

I spent Sunday walking around Carnarvon. There were some brick houses but mostly the houses were constructed of low-cost materials and there was a working-class pragmatism about most of the town. It was a couple of weeks before Christmas, the weather was hot, the seasonal south west wind was strong and there was a haze of lethargy in the air. Initial impressions can create lasting memories and I particularly remember noticing that though many of the Carnarvon streets were wide, the bitumen was mostly a narrow strip in the centre of the road with wide red sandy road edges. The result was that cars often drove on the red sandy edges and the wind would lift the dust resulting in a red haze frequently hanging over the town. I learned later that at that time of the year, a clean white shirt would usually have a reddish collar by midday.

In the 1950s and '60s the nearby Gascoyne River had flooded through the streets of Carnarvon and so levy banks were constructed around the town. Once the levy banks were completed it enabled the town to expand and a new suburb, "Morgantown", was in the process of being built to accommodate a growing Carnarvon workforce, mostly trackers and their families.

Over the next few years I visited the homes of many of the trackers at Carnarvon. It was noticeable that while most of them were happy to be at Carnarvon, they tended to see it as a temporary chapter in their lives and few of the trackers put down permanent roots. Very few of the trackers had nice lawns and gardens or planted anything for the future. They tended to put most of their spare time into recreational interests. The party goers tended to have more parties, the fishers did more fishing, the parents spent time at sports events with their children, the drinkers did more drinking, but few people watered their lawn.

On the Monday, I went to the Tracking Station. There was a boom gate with a gateman controlling access to the site. The main administration and operations building, or the T&C (Telemetry & Control) building, was on top of the hill with about 100 operational and administrative staff and there were five other work areas at other parts of the site with about 80 more staff: Q6 Radar, Range and Range Rate, Facilities, Stores, the Powerhouse and SPAN.

The SPAN site was to be my work site for at least the next two years. As it turned out I was there for three and a half years.

Looking south east, from the top of a USB calibration tower toward the main tracking station building, the Telemetry and Control building, T&C.

View of the T&C building from SPAN, USB antenna on right

3 SPAN work and its equipment

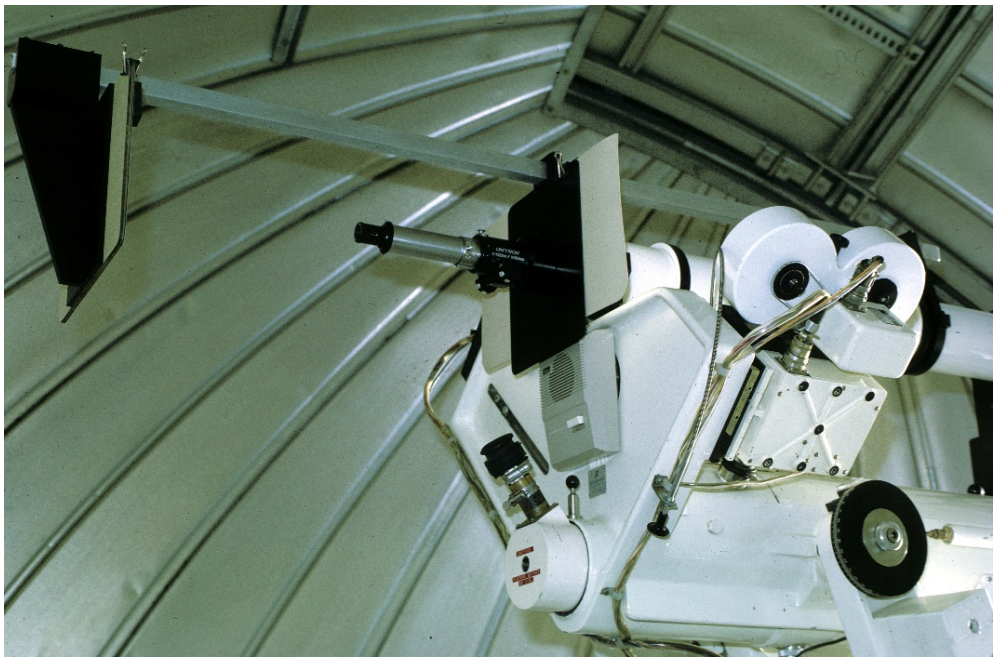
SPAN is an acronym for the *Solar Particle Alert Network***.** The Carnarvon SPAN site was located about half a kilometre west of the T&C building or about a hundred metres west of the entry boom gate. NASA built three SPAN stations, one at each of, Carnarvon WA, Canary Islands Spain, and at Boulder USA, so that the sun could be monitored 24 hours a day. Each of the SPAN sites monitored the sun while ever it was above that site's horizon, so that the overlap of the sites meant that the sun was being monitored all of the time, except on the odd occasions when there was simultaneously bad weather at more than one site.

The SPAN building was a brick and cement building about 16 metres by 7 metres which contained office and storage space, racks of electronics equipment and a well-equipped photographic dark room. There was a solar telescope located in a circular shaped building with a rotating astronomical dome on the upper floor at the northern end of the building.

The main equipment at SPAN was a 125 millimetre diameter refracting telescope with a special narrow band optical filter set at the primary Hydrogen spectrum emission line.

The telescope had been made by an inventive scientist, Dr Razdow, so was known as "the Razdow telescope". The telescope was mounted on an hour angle/declination mount which means that it was on an axle exactly parallel to the earth's axis and as the earth rotated forward, the telescope would rotate backwards at the same speed so that it would stay pointing at the same spot in space, that is, at the sun.

SPAN building in the foreground, parts of Carnarvon township in the background.



The works end of the Razdow telescope in the main SPAN dome.

If it was set pointing at the sun at the beginning of the day, it would point at the sun all day. A small tracking telescope with internal light sensors was mounted on the side of the main telescope and sent tracking corrections to the main telescope drives so that they automatically compensated for small tracking errors and changes in declination. At sunset, the telescope would be reversed back to the eastern horizon ready for the next day.

In simple terms, the sun is a giant thermo nuclear furnace. It has a centre temperature of about 13 million °C and a surface temperature of about 6,000 °C. Heat rising from the sun's interior creates localised hot spots that flare and spit off X-rays and electron and proton radiation which spray out through the solar system.

Some of the solar spray that passes near the earth becomes trapped in the earth's magnetic field and spirals down the field towards the poles and is absorbed in the upper polar atmosphere which causes visible polar auroras. Some of the incoming radiation is absorbed in the upper atmosphere and causes fluctuations in the earth's ionosphere. Almost none of the solar radiation (except the visible light spectrum) penetrates down to ground level so terrestrial humans are protected from solar radiation. However, if there is a very large solar flare and humans on their way to the moon or walking on the surface of the moon (all outside the protection of the earth's magnetic field and atmosphere), the humans could be fatally radiated.

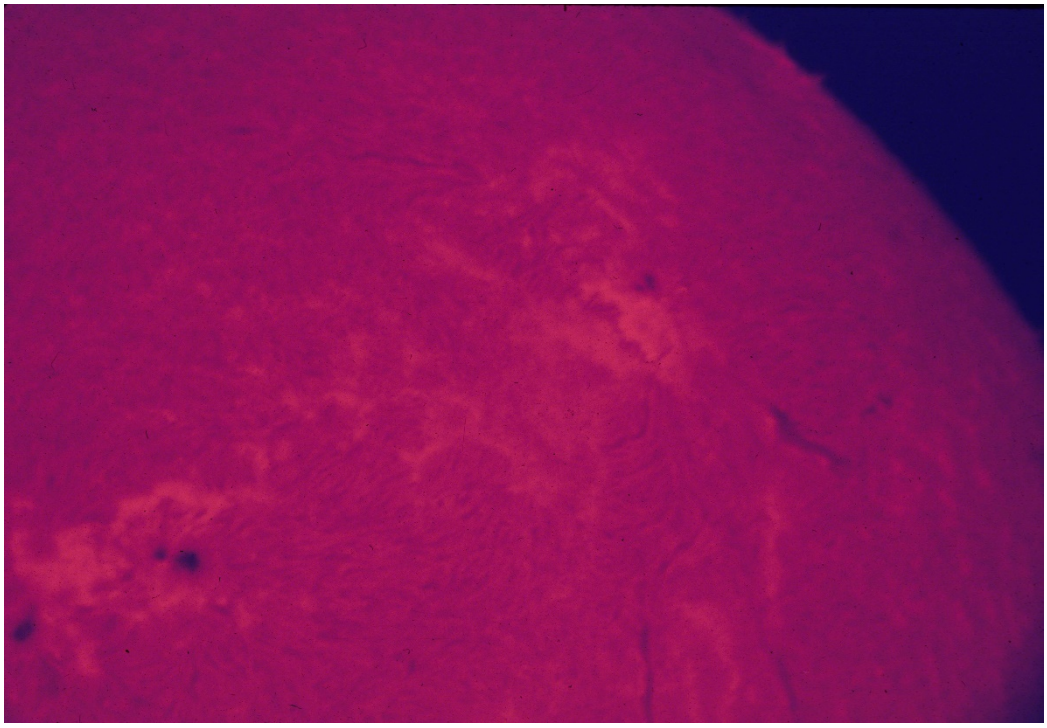
NASA did not have long term data on the intensity or frequency of solar flares and solar radiation. Accordingly, NASA built its three solar observatories around the world to monitor the sun from dawn to dark every day and build up a 24 hour per day, every day, data base of the frequency and intensity of solar flares, thus hoping to learn what the precursors were and so be able to predict solar flares that might injure the Apollo astronauts. Monitoring the sun was to be my work for the next two years.

When viewed through the telescope eyepiece the sun has a mottled surface like a navel orange with bright areas (plages) and darker areas where gas clouds suspended above the solar surface block the light that is being emitted from the surface below the gas clouds and thus the gas clouds look black. Plages were first named by French scientists who thought the bright areas looked like hot sand beaches and thus the name "plage". Plages are areas of elevated temperature on the surface of the sun and there are often dark roundish sun spots embedded in the plages. Part of our work was to regularly look through the telescope eyepiece and record growth or decline of plages which is an approximate indicator of flare probability.

A camera was mounted to the telescope and set to automatically take a photo of the sun every thirty seconds. The film was sent to Boulder for developing and was later scanned for flares and then stored by NASA.

About 40 metres north of the SPAN building there was a fibreglass dome about 6 metres in diameter with a parabolic tracking aerial at the centre of the dome. The aerial was hour angle /

declination mounted and tracked the sun all day. The aerial fed into receivers that detected solar emitted radio waves and the receiver outputs were displayed on chart recorders in the SPAN building.



This is a photo of what we would see with our eye when we looked through the Razdow Telescope eye-piece. The black roundish spots are sun spots and the dark waffly looking lines are where clouds of gas are suspended in the solar atmosphere and block the light that is being emitted from the surface. The sun is rotating (approx. one rev per 28 days) and the surface bright areas (plages) are in a state of constant change so the view through the telescope eyepiece is very different from day to day, or even from hour to hour.

The SPAN radio telescope was tuned to monitor solar radio frequency emission at approximately 1.5, 2.9 and 4.9 GHz because it was considered that there was an approximate correlation between solar RF emission at those frequencies and flare induced particle showers.

Another instrument we used on a daily basis was a 150 millimetre Newtonian reflector telescope to project a an unfiltered (white light) image of the sun onto a screen.

When a white light image of the sun is projected onto a screen the sun shows as a bright disk with dark spots on its surface: sun spots. Sun spots are areas where strong magnetic fields enter or exit the sun's surface. At those areas the solar surface is a couple of hundred degrees cooler than the surrounding solar surface causing the spot areas emit less light, thus making them look black in comparison the rest of the solar surface.

One of our daily tasks was to use a sharp pencil to draw the sun spots as they existed at that time. By comparing the day to day drawings, we were able to see which areas were growing and may become an area of solar flare induced radiation.

With the three instruments, the Razdow telescope, the radio telescope and the white light telescope we were able to monitor the sun and detect solar flares when they occurred and make approximate forecasts of solar activity.

Plages would come and go. They may be small and only last a few hours or they may be complex and grow over several weeks in area to as much as 50 solar square degrees or more and then decline at about the same rate.

Flares would occur in the plages. Flares would consist of a part of the plage heating to a very bright intensity with an explosive beginning and a tapering return to normal plage intensity. Flares were quantified by their size and intensity. Small flares may last only a couple of minutes, with very big flares taking up to about six hours to decline to normal plage intensity.

Flares are complex but can be thought of simplistically as a volume of intensely heated material from below the sun's surface rising due to convection and breaking through the surface of the sun. Just as a boiling pan of fat in the kitchen spits hot fat, the heated material breaks through the surface of the sun and emits a flood of particle and electromagnetic radiation.

Flares emit everything from short wave length x-rays to long wave length radio emissions and electrons and proton particles. Most of the radiation goes harmlessly into space but NASA was

concerned that if a big flare occurred while the astronauts were outside of the protection of the earth's atmosphere and magnetic field, the astronauts could be fatally radiated.

Although x-rays and gamma radiation were a concern, NASA was mostly anxious about particle radiation; that is fast protons and electrons hitting the exposed astronauts. Thus the word "*particle*" in the name Solar *Particle* Alert Network (SPAN).

The sun has its own magnetic field and as the sun rotates at a rate of about one revolution per 28 days, its magnetic field spirals out from the sun, past earth and out to the outer reaches of the solar system. If there is a large flare on the surface of the sun, particle radiation may be emitted and will be ducted out along the solar magnetic field. A particle shower from the sun may hit the earth square on and have a major effect on terrestrial radio propagation and terrestrial auroras or the particle shower may totally miss the earth and have no terrestrial effects

Thus, it was possible to see big flares resulting in substantial auroras and other terrestrial effects yet on other occasions there could be equally large flares with little effect on earth.

I could write pages about observing the sun and its flares but suffice it to say that Don and I had the job of using the SPAN instruments to observe the sun and send three written teletype messages per day to NASA Mission Control in Houston Texas and to SPAN control at Boulder, USA..

Information copies of our solar messages also went to the Goddard Space Flight Centre in Washington DC, the SPAN site at the Canary Islands NASA Tracking Station, the US Air Force (USAF) early warning centre under Cheyenne Mountain in Colorado, to other USAF solar observatories and to the Australian Ionospheric Prediction Service in Sydney.

NASA Mission Control used the data from SPAN and data from other sources to make assessments about astronaut safety leading up to and during the Apollo moon missions.

4 SPAN history.

In the early 1960s when NASA sought to have tracking stations in Australia, the Australian Government agreed but did not want the stations to become "little Americas" – so the Government required that the stations were to be staffed by Australians but operated to tight NASA technical requirements. Consequently, NASA paid the then Commonwealth Department

of Supply to build and operate the tracking stations. The Department of Supply used contractors to build the tracking stations; the main tracking stations being at Carnarvon WA, and at Orroral Valley, Honeysuckle Creek and Tidbinbilla, the last three being in the ACT.

After the Second World War the Australian Bureau of Meteorology, whose main work was to issue weather forecasts, became involved by default in issuing HF radio propagation forecasts. In time the Bureau developed a separate Division, the Ionospheric Prediction Service (IPS).

In the 1960s the Bureau of Meteorology was part of the Commonwealth Department of the Interior, therefore IPS was also a part of the Department of the Interior. By the mid 1960s, IPS was sharing solar data with other countries around the world and had also developed strong data sharing links with the USAF (for decades the USAF had been using HF radio communications all over the world and had developed a string of its own solar observatories so that it could monitor flares and predict terrestrial radio propagation characteristics).

When NASA began to plan the Apollo flights to the moon NASA recognised the need to develop a capacity to forecast solar radiation particle showers in space. NASA began to share solar Data with the USAF and when NASA wanted to put a solar monitoring station in Australia, NASA talked to the USAF solar contacts in Australia – the IPS – which was by then a part of the Commonwealth Department of the Interior. Out of those discussions came the decision to place a SPAN observatory at the NASA space tracking station at Carnarvon and staff it with IPS physicists.

The Carnarvon Tracking Station had a Station Director, a Deputy Director and an Administration Officer who were employees of the Commonwealth Department of Supply.

Amalgamated Wireless of Australasia (AWA) had the contract to operate the Carnarvon Tracking Station and answered to the Station Director.

Don and I were employees of the Department of Interior Ionospheric Prediction Service (IPS) and we answered to IPS for administrative matters, we answered to NASA in America for the quality of our work, and we answered to the Carnarvon Station Director for matters relevant to the equipment that we were using.

This meant that Don and I had to operate through a complicated hierarchical path whenever we wanted changes to procedures or equipment. It could have been an administrative disaster but was generally an efficient process, due mostly to the good will of all of the parties involved.

5 SPAN staff

Don and I were replacing two physicists who had been at Carnarvon for the previous two years. Don was replacing Peter Davies who was the Senior Solar Observer and Officer in Charge at SPAN, and I was replacing Hans Britz. Hans had already left Carnarvon so I didn't get to meet him, but Peter stayed on for a few weeks and helped Don and I learn the details of our day to day work.

Peter and his wife, Jean, were very helpful to Don and I and had us to dinner at their home several times and introduced us to many local people. By the time Peter and Jean left Carnarvon they had significantly contributed to making Don and me feel at home, work wise and socially.

At SPAN, AWA had three electronics technicians whose job it was to maintain the equipment in top working order. There were also three operators who took photos, did darkroom work and performed other data collection tasks. Don's and my work was to use the equipment to conduct the solar observations, analyse the data and write the solar reports.

Work at SPAN would start about half an hour before sun rise and finish about half an hour after sunset. During the week Don and I would alternate morning and afternoon shifts and we would each fully work every second weekend. In summer a weekend could be two 14 hour shifts. Our hours were long but we had the flexibility of being able to swap shifts so we could each have time off when we wanted it. Because of the hours we worked, we were well paid and I was happy to work long hours and bank the money.

At SPAN there was a silly demarcation issue. While Don and I were expected to use the equipment for observations, we were requested to not do maintenance work but report all faults to the technicians who would correct the faults. This would have been OK except that there were problems with the telescope and the senior technician, who was OK with electronics, but knew little about optics blustered and pretended that he was an optics expert. Don and I had worked in optics labs and we could see that the telescope was not performing to its specifications. Don, although senior to me, was of a more accommodating nature than I was but I had many clashes with the senior technician. Eventually he left the Tracking Station and was replaced by an engineer, Roger Glass. Roger was very competent and had a cooperative nature and we set about addressing the problems and the telescope results improved significantly.

The other SPAN technicians were Russell Swarger and Hans Lemons, who were capable and easy to work with. Russell had recently returned from army service in Vietnam and told worrying stories about the progress, or lack of progress, in the Vietnam War.

Hans had worked for Telstra (or the PMG as it was previously named) and found the NASA work to be a breath of fresh air. Other technicians who worked at SPAN from time to time included Jim Cleary, Jim Gregg, Doug Beany and Brian Renshaw. Some of the SPAN operators also operated equipment in other parts of the Tracking Station. The longer-term operators during the years that I was at SPAN were Anne Green, Rosemary Williams, Lyn Rosser, Ruth Cates, Cathy Frannin and Elizabeth Beckett.

Looking back, with the benefit of hindsight and by today's standards, I would say we were overstaffed at SPAN. NASA seemed to have a philosophy of having enough staff to cope with crises if they occurred. At SPAN we often worked at a relaxed pace and although we were conscientious and our work was of a high standard, there was usually time for a joke and a laugh and sometimes the place was more like a beach party than a work area.

Hans Lemons, Russell Schwarger, Anne Green, Rosemary Williams, Lyn Rosser, David Johns, Don Plumb, Reg Truelove sitting

SPAN staff

6 The end of SPAN

America's series of Apollo moon missions finished on 14 December 1972 when the crew of Apollo 17 returned to Earth, but by that stage NASA was well advanced with plans to place a staffed scientific laboratory, SKYLAB, into earth orbit and so NASA kept the SPAN system operating until after the third and last Skylab crew returned to Earth on 8 February 1974.

Don left Carnarvon in 1973 and a new ex-Antarctic physicist, Brian Clifford, replaced Don.

Brian was Irish and had a good sense of Irish humour and fitted in well to life at Carnarvon. Brian left at the end of the Skylab series and I continued to operate the Span equipment and supply data to IPS in Sydney until late June 1974. In 1974 the SPAN equipment was dismantled, packed in boxes and sent to temporary storage. Later it was sent to the CSIRO Division of Radio Physics Radio Heliograph site at Culgoora (near Narrabri) NSW.

In September 1974 I moved to Culgoora to operate a temporary solar observatory (with a staff of five). In 1977 the Ionospheric Prediction Service built a permanent solar observatory on CSIRO land at Culgoora and we installed the ex-Carnarvon Razdow telescope. I worked there until 1986 when I left and went to work in Canberra on other matters.

I visited the Culgoora solar observatory in 2005. The Culgoora CSIRO site was by then the home of The Australia Telescope, a set of six 22 metre moveable interferometer aerials on a 5 km rail track.

The Razdow telescope was still being operated but the big change had been that the equipment had been automated and the data had been digitised so that the observatory now had a staff of one but was producing a better quality of output than we did at SPAN Carnarvon with a staff of eight.

That is the way technology has gone. As an example of how technology has changed the work, at Carnarvon an operator would go to the dome about every fifteen minutes and manually operate a switch to rotate the dome by a few degrees to keep the opened dome shutter aligned with the sun. At Culgoora automatic sensors and computers now control the dome so that it opens and closes and rotates automatically (and closes if it rains) without any human intervention. The telescope also operates automatically and the sole Culgoora worker works from 8:30 am to 5:00 pm, week days only, but the solar observations and data recording continue from dawn to dusk, every day of the year.

I enjoyed my time at Carnarvon. They were mostly good times with the inevitable ups and downs. I have recorded some of my recollections below, not listed in any particular order.

7 Living conditions

I lived in Unit 6 at the back of the Port Hotel with other trackers occupying the other 17 units. There was a common room in which we sometimes socialised and an open area of Kikuyu lawn beside the units which had as its centrepiece the septic tank. The tank's top was elevated about 300 millimetres above the ground. A rose vine grew over the top of the tank and somewhat disguised the tanks purpose. The septic tank was always politely referred to as "the rose bowl". I well recall how on some hot summer evenings, when the air hung dense and still that there was no mistaking true function of the rose bowl.

Life at the Port Hotel was interesting. The hotel was owned and managed by Wilson Tuckey. Wilson was in his thirties. He was energetic, ambitious, loud, the town mayor, and had several business interests around the town. Some people found Wilson over-bearing but I liked him and

I particularly respected his can-do attitude. While I was living at the Port Hotel, Wilson bought a big run-down empty shop in the main street, gutted it and built it into an arcade of classy shops. He supervised the construction work in a hands-on sense and I used to see him there at dawn, working the machinery and getting in an hour or two before his men came to work. He would often still be at it after his men went home – Wilson exuded energy and was a really hard worker.

There were three drinking bars at the Port Hotel. There was the Fish Bar, so named because there was a large fish tank along one wall. The Fish Bar had a carpet floor, dress standards, soft music, air conditioning and was a nice place to pass the time of day if you were the socialising type, particularly on hot summer days and evenings.

The Front Bar had open doors to the main street, no dress standards and was popular with manual workers who wanted to do some serious drinking.

The Side Bar opened onto a side street. It was mostly frequented by aboriginal people and was as rough and as coarse and as grubby as a bar can be.

There was no segregation between the bars, it is just that people drank where they wanted to be and that is the way it was.

Wilson managed his hotel with a firm grip, which sometimes meant he found himself in the middle of other people's brawls. There was a noted occasion in about 1970 that I did not witness but I heard a lot about it, when Wilson and his brother are alleged to have struck a patron with an iron bar while breaking up a fight. The story is only half correct. Wilson actually kept a polyethene hose with metal pellets inside it behind the bar which he used as a persuader when unruly customers failed to see reason. On the referred to occasion Wilson and his brother, Steve, used the hose, not an iron bar. Somehow the media decided that Wilson had used an iron bar and the story will stay with Wilson for his life, even though it is incorrect. Even today the press will sometimes refer to him as Iron Bar Tuckey. Wilson is a tough character and I don't think he cared then, or now, what the media say about the incident. Wilson was elected to the Federal parliament of Australia in 1980 and served for thirty years as the Member for O'Connor.

There was a beer garden at the hotel and bands often played there until late. I was an infrequent drinker and worked long hours so I rarely visited the bars or the beer garden. Mostly I thought the beer garden bands were more noisy than musical, but I managed to sleep through most of it.

The Tracking Station rented residential property all around the town for its staff. Many of the married staff with families were allocated conventional houses on normal town blocks with some of the smaller properties being occupied by couples or groups of single trackers. My guess, and it is only a guess, is that the Tracking Station managed more than a hundred residences in Carnarvon for its staff as well as the units at the Port Hotel.

8 Leaving the Port Hotel

Bob Houghton and Stuart Wattison shared a unit at 29A Babbage Island Road. They were both tracking station engineers. In August 1971, Stuart was leaving and going to a job over east. By then I wanted to get away from the loud music at the Port Hotel and I got on well with Bob so I arranged to move out of the Port Hotel and live at 29A Babbage Island Road. Peter Roberts and Dave Gardiner, fellow trackers, occupied the unit at 29B Babbage Island Road. Bob was a fine fellow and an excellent house mate. He was later best man at my wedding and we have remained good friends ever since.

Typically, the single trackers were well educated and well travelled, and I expected them to socialise with other like groups in the town such as the single teachers, but it tended not to happen that way.

The work hours of the single trackers tended to impede social interactions with other town people. Although there was often some heavy partying, most of the partying was with other trackers and so the social horizons for a single tracker were noticeably finite. Although there were often parties, my interests were in touring about the country and when I had spare time, I liked to put my kayak on top of the car and go off searching for places to kayak. Sometimes I would go with friends and sometimes when others were working, I would go alone.

There was a natural staff attrition at the Tracking Station which was usually replaced, because of the skills required, by staff recruited by AWA in Perth or other capital cities. Sometimes when a new single female tracker arrived there would be some jockeying among the single males to be the first to meet and impress the new arrival.

On the day when I was to leave my unit at the Port Hotel, I packed my belongings into the car in preparation to vacate the room. A friend in the administration section of the Tracking Station had told me that my room would be occupied by a new employee; an ex-Wran from the Navy. She was due to arrive in about a week’s time.

Because space was limited in my unit at the Port Hotel, I had stored my kayak by hanging it in the ceiling, corner to corner. I was about to remove it and take it to my new residence when I got a better idea. I would leave my kayak in the room and retrieve it after the new girl moved in. That would give me an excuse to introduce myself to her and if I was not impressed then nothing lost. A day or two after she arrived, I went to collect the kayak.

I went through the act of apologising that I had left the kayak hanging in the unit because I wasn't sure where I could put the kayak at my new residence (there was actually plenty of room in the garage out the back) and she assured me that being in the ceiling, it wasn't a problem for her and so I stayed for an hour chatting. I was obviously favourably impressed by her because we married a couple of years later!

Bob Houghton left in 1973. After Bob departed, John Rudkin, who had previously worked at Carnarvon Tracking station and returned to England for a while, returned to the Carnarvon Tracking Station and shared 29A Babbage Island Road with me. John was fine company and we got on very well. I lived at 29A Babbage Island Road until I left Carnarvon in July 1974.

29 A Babbage Island Road, Carnarvon. My Holden panel van is visible in the garage

9 Technology shock

NASA had good communication links to all parts of the world and it was possible when there was a need, for Carnarvon staff to talk to staff on any of the other tracking stations.

The communication links were known as nets or the "SCAMA phone". SCAMA was an acronym for 'Switching, Conferencing and Monitoring Arrangement', and anyone with a valid reason could

turn on the *net* and have conversations with other tracking stations. Indeed, it was possible to simultaneously hear people from multiple sites.

The discussions were usually technical and full of jargon, acronyms and not very meaningful unless you had a working knowledge of what was being discussed. At that stage of my life, I had only ever made one hurried overseas telephone call and I thought that was a big deal. In those days long distance calls within Australia or overseas were connected by operators in manually operated exchanges and overseas telephone calls were complicated to arrange, expensive and not a common consumer item.

In July 1969, Apollo 11 had gone to the moon and had been a huge success. It was followed by Apollo 12 in November 1969 which was likewise a success. In April 1970, there was an explosion in an oxygen tank on Apollo 13 and for several days it was touch and go whether the crew would get back to earth alive, but they did.

I arrived at Carnarvon about six weeks before Apollo 14 was due to go to the moon. NASA was anxious that there be no problems with Apollo 14.

One day, only a few weeks after I arrived at Carnarvon, I was doing my work at SPAN and could hear discussions on the net. I did not at first take much notice but then I realised I was hearing a conference discussion between the various Operations Managers at about ten different NASA tracking stations located all around the world. They were discussing procedures and readiness for Apollo 14. It was task focused but quite informal as they all participated and discussed various scenarios. It went on for about 40 minutes.

I was gobsmacked that so many people from different parts of the world could have a discussion as if they were all in the one room. These days, we can watch real time replays of a tennis serve at Wimbledon or a replay of a missile exploding in Iraq and think nothing of it. But back in 1970 the existence of that technology was very new and impressed me greatly.

Another piece of technology that blew me away was what I think of as a fax machine. I believe SPAN had the first ever facsimile machine in Australia though that name was not around at the time. At SPAN we had the capacity to take a photo of the sun, develop the film and make a black and white print all within about ten minutes, which was by the standards of the time, very fast. We would describe features on the photos in our thrice daily written solar reports, or we could talk directly to Boulder USA on the SCAMA phone about what we could see on the photos and where there were interesting solar surface features.

NASA's main solar forecasting centre was at Boulder. Boulder decided it wanted Carnarvon to have the capacity to send to Boulder a solar photo taken as close to real time as possible. Boulder sent us a new state of the art photo transmitter. The all metal machine was about 60 cm square and about 250 cm high. There was a folding glass door that opened and gave access to a roller about 30 cm long and 9 cm in diameter. A clip ran the length of the roller and we would clip the photo on the roller, wrap it around the drum and then fold a special clear plastic covering around the drum and secure it with special magnetic clips.

We would then talk on the SCAMA phone handpiece to the operator at Boulder who had a specially built photo receiver and, when we were both ready, we would place our phone handset into a special recess in our photo transmitter and back in Boulder the operator would place his phone handset into his photo receiving machine. We would then turn on our transmitter and a slow scanning head would track along beside the rotating drum and the photo scans would be converted to analogue signal and picked up by our SCAMA 'phone and then transmitted as audio to the receiver at Boulder.

The rotating drum would spin at about 100 RPM and there would be an irritating high pitched audio signal on the SCAMA 'phone for the approximately eight minutes that it took to send one 20 cm by 20 cm photo to Boulder. Notwithstanding the acoustic couplers at the transmitting and receiving sites, the quality of the received photo was surprisingly good because Boulder would occasionally post one back to us as a quality check.

These days I can take a colour digital photo and immediately e-mail or text it without quality loss to friends on the other side of the world at almost no cost but in 1971 I thought that our SPAN photo transmitter was the ultimate.

Video recorder/players and videos tapes did not arrive in the domestic market until after the mid 1970s. I recall being in the telemetry room at the T & C building one day when Colin Foster showed me a new and very expensive device that could record TV pictures. It was a big complex machine but the feature that sticks in my mind most is that it had a reel to reel magnetic tape that was about 100 millimetres wide. In those days, the idea of recording a video signal was very cutting edge. Indeed the only common consumer tapes that I recall seeing in those days was the common audio tape cassette about 100 millimetres by 65 millimetres which first appeared in the late 1960s but are superseded now.

Kim Gates was an engineer in the Telemetry Section of the Carnarvon Tracking Station. He told me a story once that I thought very funny.

Kim was working in the Telemetry room one day during one of the Apollo moon missions, not sure but possibly Apollo 16. The Lunar Module had landed and the astronauts were preparing to descend and walk on the moon's surface. As was usual work practice, the net was turned on at normal volume in the Telemetry room and everyone present, and probably hundreds of workers in other tracking stations all around the world, could hear the astronauts talking and going through their checks.

During the Apollo missions there were hundreds of hours when workers at the tracking stations had the net on and could hear the astronaut conversations. The workers developed a familiarity with the process and only listened for what they needed to hear, disregarding the rest of the astronaut babble as they went through their procedures reading back check jargon to Mission Control in Houston.

On this occasion the astronauts had descended the ladder. The first task for one of them was to walk away from the Lunar Module and erect a TV camera and transmitter on a tripod to film all of their actions while they worked on other experiments, thus transmitting pictures of their activities directly to Mission Control at Houston.

The camera was soon rigged up and turned on but something was wrong. Houston was not receiving a picture. Houston had experts at hand and the controller consulted with them and made suggestions to the astronaut who read back meters and twisted dials at Houston's direction.

The TV picture was not a part of the Carnarvon Station's work and the Carnarvon workers' attention drifted to other matters as Houston and the astronaut exchanged ideas about what might be wrong with the camera and how it could be corrected. Like background music in the supermarket, the technical babble droned on and on for maybe five minutes as Houston and the astronaut worked on the problem. By then Kim and the other Australian staff were not listening at all.

Suddenly there was excitement in the Houston controller's voice as he announced that he was receiving a "bootiful, bootiful picture". The excited voice attracted Kim and the other staff's attention and their concentration became focused on the exchange between Houston and the astronaut.

Houston was exclaiming satisfaction that its diagnosis had been successful and was thus seeking the astronaut's confirmation that he had indeed achieved the good picture by implementing Houston's last suggested adjustment.

Radio waves travel at 300,000 km per second and it was normal that every time Houston spoke to the moon there would be a nearly three second delay before the astronaut's voice began to reply. Everyone waited the customary three seconds for the astronaut's reply. There was no reply. After a ten second wait Houston repeated the question. Still no reply. By now everyone was 100% focused on the exchange of comments and wondering why the astronaut was silent. There was still no response from the astronaut.

After another Houston query and a long delay the astronaut was finally back on air. With a typical laconic drawl, he said,

"Well Hooston, ah was walkin' around the tripod and was about to apply yer last suggestion when ah accidentally hit the leg of the tripod with my boot and the picture came real, real good".

So that was that! NASA with its infinite budget and the best equipment and advice that money could buy had been stumped by a problem that was eventually solved by an old fashioned kick. Murphy's first law of technology.

In 1970 home-sized computers had not been developed. Computers were large main frame computers in cabinets about six feet tall. NASA was beginning to record some data on computers but a lot was still recorded on chart recorders. While I was at Carnarvon, I recall being in the Telemetry control room one day with Kim Gates when he showed me chart recordings from Apollo 13. I cannot recall all the details now but I think the two charts he showed me were of available oxygen reserves and of the temperature inside the spacecraft.

The charts displayed an approximate six hour period from about three days before they were due to splashdown and it was apparent that if they did get back, their temperature would be down to only a few degrees. The oxygen situation was more alarming because the rate of decline showed they would actually run out of oxygen days before they got back.

It's history now but NASA was able to have the crew implement emergency plumbing that salvaged enough oxygen to enable the Apollo 13 crew to get back to earth alive.

10 ALSEP and odd work hours

Commencing with Apollo11, the astronauts left scientific experiments on the moon. NASA referred to the packages as Apollo Lunar Scientific Experiment Packages, which in good NASA fashion was shortened to the acronym ALSEP. With Apollo 12 and subsequent moon landings there was a rapid growth in the number of experiments left on the moon. The experiments covered a wide range of fields, temperature, light intensity, solar radiation, seismic etc etc. The experiments would release their data on specific frequencies to be received on earth at NASA tracking stations that had special purpose aerials and receivers to collect the data. Some of the lunar experiments released their data continuously and some released the data as discrete data packages at pre-programmed times or on command from a tracking station.

The Carnarvon tracking station had a special receiving aerial, the USB (Unified Short Band, operated in the 2.2 – 2.3 GHz range) dish that was located about 70 metres south of the main building. The dish was a bit over 9 metres in diameter and was mounted on variable X Y axes which could track the moon, horizon to horizon, with continuous precision. The dish and receivers were specifically designed for receiving ALSEP data which would be received at the tracking stations and stored on chart recorders or computer tape for later transmission back to Houston where the data would be combined with data from other tracking stations to allow a 24 hour per day analysis of particular lunar experiments. There were at least two other USB ALSEP receiving aerials at other NASA tracking stations around the world, and possibly more.

The proliferation of ALSEP packages on the moon meant that from 1969 onwards, the Carnarvon USB site was actively receiving data for most of the time that moon was visible from Carnarvon. Since a lunar day is approximately 25 hours, it meant that the staff operating the USB system and its support staff worked shifts which slipped backwards by one hour a day. While staff at STADAN and Q6 radar were not usually tied to a moon related schedule, those staff had to be on site, day or night, whenever there were passes of the particular satellites that they were taking data from. Thus, unlike factory shift workers whose shifts are predictably consistent, tracking station workers worked irregular shifts dictated by the position of the moon or by satellites.

The tracking station had a kitchen and dining area that provided lunch meals for all of the administrative and technical staff. When shift staff were on site the kitchen stayed open so that meals were available while shift work was in progress. Thus on some days the kitchen would only operate day shift hours only but on other occasions the kitchen would operate through the night. In addition to the irregular shift hours worked by some trackers, there were day staff who

worked regular 8:30 to 5pm hours. The staff in the kitchen varied from one to four persons, depending on how many workers were on site, and the kitchen staff to a person were, as much as time permitted, always helpful and willing to accommodate people's requests.

Part of the STADAN site at Carnarvon Tracking Station

Carnarvon Q6 radar

11 Fishing

Most of the NASA tracking stations around the world had social clubs and there was a level of communication between the clubs, mostly by teletype and sometimes on the SCAMA 'phone.

Some of the stations were near the coast and their clubs would arrange inter-tracking station fishing competitions.

There were good fishing conditions off the coast at Carnarvon and Max Garth, a USB technician, was a fanatical fisherman. Max held various national fishing records and contributed to fishing magazines and would talk fishing all day.

I recall one occasion when Max had arranged an inter tracking station fishing competition. There were strict rules and each club was allowed to have a certain number of people fish for a specified time and points were allocated based on the size of the fish caught and the breaking strain of the line used. Max considered the Hawaii and Canary Islands tracking station fishing clubs were the hottest competition and he spared no effort in his planning for the great competition.

When the day arrived one of Max's fishing buddies was sick so another tracker, John Rudkin, was invited into the boat at short notice. John was an occasional fisherman and was pleased to be invited into the group. He was looking forward to a relaxing day of social fishing. John left early in the morning, the sea was rough and he was sick but the fishing was relentless. They caught a lot of fish and by the time John returned he was exhausted and feeling very down. Carnarvon easily won the competition but after that if you ever talked to John about a quiet day of fishing, he would look at you like you were mad.

I didn't mind a bit of fishing myself. On one occasion about ten trackers hired a local fishing charter boat to do a day of handline fishing. None of us were fanatical about fishing so it was going to be relaxing day. The boat owner seemed to be experienced and we headed straight to the northern tip of Bernier Island, about 50 kilometres off-shore from Carnarvon. At about one hundred metres north of the tip of the island, the boat owner cruised slowly around in random circles while he watched the depth sounder. He said he was looking for fish but I wondered if he was just trying to impress us.

After a while he found a secondary reflection which he said was a stationary school of snapper at about 120 ft deep, and about 20 ft above the bottom. His theory was that the turbulence where two currents met at the tip of the island produced oxygen and the fish congregated there because of the oxygen. I hoped he knew more about fishing than he knew about marine chemistry. He stopped the boat above the echoes and in no time, we were pulling up big snapper.

The hand lines were heavy nylon of about 80 lb wt breaking strain with three hooks and a heavy sinker. All three hooks would be baited and then the line would be fed over the side. It took quite a while to feed out 120 ft and as the baited hooks passed through the school of snapper there would be a flurry of snaps at the baits, jags on the line and if you were lucky you had a fish. Often the bait would be gone and you would have to haul the line all of the way back up, bait the hooks and do it all over again. It was not a case of the skilful hunter out-foxing the prey. It was more a case of random luck.

The boatman supplied gloves to most of the party but there were not enough gloves for everyone. I thought my hands would be OK so I was happy to forgo gloves. We were all catching good fish and it was heavy work hauling the snapper up from 100 feet down and my hands became very sore. To have a rest, I would after losing all of my bait, pretend that I was still fishing while leaving the line on the ocean floor for ten or fifteen minutes to give my sore hands a much needed rest. But the boat owner could tell by the feel of a line whether it was baited or not and a couple of times he interrupted my rests, felt my line and insisted I immediately pull the line up and bait it again. I would fake a surprised look when I saw that it had no bait and he would busy himself by getting more bait for me. He would not rest until I had the now baited line out again. He meant well, but I would have preferred to be left in peace.

We were going to stay out fishing all day but by midday we had more fish than we needed and some people were getting queasy from the rocking of the boat. We packed up and went home and spent the rest of the day cleaning fish.

A good day of fishing

12 The flybys

When an Apollo mission went to the moon it was not just a matter of firing off a rocket and waiting ten days for the crew to come home. Long before the rocket entered its first earth orbit, telemetry information was pouring back into the earth stations and command information was going up from the earth stations to the spacecraft and crew. It was essential that the personnel in the ground stations knew their job and did not make mistakes, which was a tall order because the only really true practice that could be had was during a real mission.

NASA addressed the issue of live practice for the tracking stations by having aircraft which would visit each tracking station and fly circuits near the station, while transmitting recorded telemetry to the station.

The transmissions were programmed to simulate the same issues that the ground stations would have to cope with if there were emergencies during a real flight to the moon. Thus, the ground stations acquired their practice for the actual missions.

The flights by the simulation aircraft were generically referred to as the “flyby” flights.

NASA had three planes that it used for flyby flights, all being 4 engined propeller driven Lockheed Super Constellation aircraft. The Super Constellation, with its giant triple rudders and cigar shaped curved body, was one of the classic planes of its era. It was big and could carry tonnes of computers and other equipment and still had comfortable seating for about 20 personnel. (The Lockheed Super Constellation was the main aircraft of the Qantas fleet up until about 1958 when Qantas commenced replacing its Super Constellation aircraft with Boeing 707 jet aircraft).

The flyby plane would leave America and go to an overseas NASA tracking station. Some of the technical crew would go into the station as advisers and some of the crew would remain on the plane to operate the computers, receivers and transmitters. The plane would fly circuits near the tracking station for three or four days and transmit and receive telemetry that simulated situations that would occur during an actual moon mission. When the work was completed at that station, there would be a few rest days and then the plane would move on to another NASA tracking station and repeat the training mission. This would occur over the many weeks at many different tracking stations prior to each Apollo flight. I cannot remember for sure, but I think there were flyby flights at Carnarvon prior to each of the manned Apollo flights.

A visit by a flyby crew was one of the big events on the Carnarvon Tracking Station's social calendar. During the visit people would work hard and party hard.

The weight of the Super Constellation exceeded the allowable weight for the Carnarvon airport runways. Therefore the plane would leave Perth very early in the morning to be over Carnarvon by 7:00 - 8:00 am, fly circuits all day at Carnarvon and then go back to Perth in the late afternoon and land. Half of the flyby technical crew would be on the plane all day operating the equipment and the other half of the crew would have flown commercially from Perth to Carnarvon and be working in the tracking station. We at Carnarvon therefore usually saw only about half of the flyby personnel.

It seemed to me that the flyby personnel had a good life. Travel in a lovely comfortable old aeroplane, accommodated at good hotels, interesting work and being wined and dined by the staff at each tracking station as the plane moved its way around the world – an almost glamorous existence. Some of the younger flyby personnel certainly saw it that way. They played the part and partied hard, but some saw it as just a job to be done and nothing more.

I particularly remember having an in-depth discussion with one of the older flyby personnel at a loud party. He was in about his mid-fifties and had spent all of his working life as aircrew with the USAF and then NASA. In his working life he had been in more countries than he could remember and had been on the flyby work since before the moon missions commenced. He was bored with it all and was counting the days until he could retire and go back to the little farm he had grown up on. He said something that I have never forgotten.

He said he had no interest to visit any new country anymore and in all of the many countries that he had visited, they all had one thing in common. They all boasted that they had a good society and a lot of freedom. He said that even people who live in oppressed societies grow to believe that the oppression is just the Government exercising a justifiable restraint for everyone's benefit. To me it seemed like a crazy statement; but he had been in more countries than I will ever be in so how could I argue? It did make me ask myself if our society is as free as we think it is.

It chanced one evening in November 1972, a few days before a flyby crew was due to arrive at Carnarvon, that I was sitting at home watching the ABC TV news. It featured the flyby Super Constellation aircraft taxiing into its parking bay at Perth airport, having just arrived from a distant overseas NASA tracking station (Mauritius I think, but not sure).

The news reader commented on the special work that the aircraft was doing for NASA and that the flyby crews and their families were looking forward to a few days of rest in Perth. The camera panned in on an attractive young lady in tropical dress who was jaunting down the stairs of the aircraft with a happy bouncing six year old child in tow. I did not know they were allowed to carry friends and family on the plane and I got to thinking that if friends and family could ride on the plane, then maybe I could too.

I had a General Aviation pilot licence but was only endorsed for very small planes. I would have given my right arm for a ride in the Super Constellation. A couple of days later some of the flyby personnel arrived at Carnarvon. The next morning the plane was up above us droning away as it settled in for a long day of pretending it was an Apollo space craft on track to the moon.

The Commander of the flybys was Evan Gull. During the Carnarvon flybys Evan was mostly in the Carnarvon Operations Room, wearing a headset and talking to people in the plane, talking to people at Houston and talking to people in the various work centres around the Carnarvon Tracking Station.

I rehearsed my best arguments and went to see Evan to ask if I could ride in the plane. When I arrived at the Communications Room, I could see that Evan was busy, very busy. I sat outside the room and watched him through a glass partition. I could hear him on the net.

Among other things he was explaining to some of the Carnarvon staff that some of their procedures needed changing but he was talking in such a way that there was no inferred criticism and there were a lot of compliments.

Evan was impressive. He was in his mid thirties, tall, good looking, confident, articulate and right on top of his job. When he had a quiet moment I introduced myself and after some very brief pleasantries I got to the point and asked him if I could ride on the plane. I was ready for an interrogation but he did not answer me. Instead he was quickly onto the net and talking to the captain of the plane. “Say Charlie, you’re going to have company on the plane, there’s a guy here who’s going to drive to Perth tomorrow and he will be on the plane with you the next day.”

The Captain’s response was quick, “Great, I haven’t met a Carnarvon tracker, he can tell us what it’s like down there”.

So that was that. It only took ten seconds and I would be on the plane in two days’ time.

Evan asked about the thousand km road trip to Perth. I think he would have enjoyed a road trip to see the country but it was not an option for him. He thought it was a long way to drive and said if it was him, he would be looking for a co-driver to Perth.

He said, “Why not get a co-driver who can go on the plane too”.

I knew I would have no problem selling that to another tracker so I agreed. Evan told the Captain that there would be two of us on the plane. The Captain gave me directions to a gate in the fence at Perth airport where I was to meet the crew at 3:30 am. I chatted a little more with Evan and then he got busy so I left.

Evan’s efficiency and pleasantness left a lasting impression on me. Ten years later my wife and I called our first son Evan. We both liked the name in its own right but we had both met Evan Gull and were impressed and I think that too had something to do with it.

Roger Glass, a Q6 Radar engineer, leapt at the chance to come on the plane and we left for Perth next day. Early the next morning we met the pilots (Charlie and Bob) at the gate at the appointed time and walked with them to the plane (I might add that the gate was unlocked, but that was 1972). Other crew members were already busy getting the plane ready and Roger and I were made very welcome on board. The full flyby crew was five air crew (two pilots, engineer, navigator and a load master) and about twelve NASA telemetry/computer/communications specialists, about half of whom were already at Carnarvon and the remainder were on the plane. The loadmaster was very friendly and introduced us to everyone on the plane, showed us our seats and then showed us a chest refrigerator at the back of the plane that contained countless cans of drink, cold chickens, salads, ice-creams and other nice food. The loadmaster then left the aircraft because he had things, he needed to do in Perth that day, but not before he assured us to, “Eat as much as you can because I’ve got more food ordered for tomorrow”.

I stood behind the Captain and co-pilot to watch their pre-flight procedures. They were soon running up the engines. The engineer was fiddling with a panel of oscilloscopes and he was worried about a misfiring in number three engine. There was some discussion to the effect that the engine would probably settle and we commenced taxiing.

I knew that aviation regulations required that I should by then have been in a passenger seat with the seat belt fastened, but I wanted to stay on the flight deck as long as possible. I told the Captain I would like to watch their procedures but that I would go to my seat as soon as he gave

me the signal. As I hoped, he never did give me the signal and Roger and I were standing behind the pilots for all of the engine run-ups and take-off and for most of the next two hours.

Modern planes take off by gaining speed and then rotating the nose upward and climbing quickly away from the ground. The Super Constellation was heavy with fuel for a long day and came from an era of less powerful engines and did not have the power for a steep take off. It had a long take-off roll and gained speed slowly until it was at flying speed and then it gradually just flew away from the ground, without rotation. The take-off and initial climb was so gradual that I was not able to tell the actual moment that the plane actually left the ground. We departed at about 4:30 am local time.

It was still dark and a few minutes after take-off the Captain asked the navigator for a heading to steer. There was a half sphere perspex dome in the roof of the plane and the navigator sat on an elevated seat and took sextant readings on some stars. He did some quick calculations and gave the Captain a heading to steer. We climbed slowly to 13,000 ft and tracked for Carnarvon at about 190 knots.

As light broke over the land navigation became as simple as just keeping the ocean on our left. The navigator had little to do until we returned to Perth later in the day. The pilots were in their late fifties and joked about having been too old to convert to jets; both intended to finish their careers in the Super Constellation. They were a jovial pair and told some very crude jokes. We talked about aircraft performance, life at Carnarvon, their life on the flyby circuit and they told us the history of the aircraft we were on.

The plane was manufactured in the late 1940's for the USAF and was assigned to be General McArthur's personal aircraft. It was fitted out especially for him and he and his entourage travelled in it wherever they went.

After McArthur was dismissed, the plane was returned to the Air Force and it was used for general work until the 1960s when it and two other Super Constellations were assigned to the Bendix Co to be fitted out for flyby work for the Apollo series of flights.

[I now think I may have misunderstood what the pilots said. NASA had three Super Constellation aircraft fitted out for flyby work, aircraft N420, N421 and N422. We were on aircraft N421 but it was aircraft N422 that had previously been General McArthur's aircraft]

The plane's current configuration was toilets and storage at the back, next came a well appointed galley near the back door, then the old First Class area with about 20 roomy comfortable seats and a few small reading tables which finished with a partition about half way along the aircraft. (The First Class areas were always at the back in the big piston-engine planes, less noise and vibration than at the front or across the main wing spar).

The mid area was about eight metres long with a row of NASA computers and communication consoles along starboard side of the isle. Next was another partition. Forward of the partition there was an exit door, more storage space, then four flight crew bunks (an upper and lower bunk on each side of the aircraft) and then a seat and console on each side, one for the navigator and one for the flight engineer. The engineer's desk was reasonably large and faced the right side of the aircraft with a whole wall of dials, controls and oscilloscopes. The two pilots sat at the front, just ahead of the navigator/engineer's area. By today's standards, the entire plane, particularly in the flight crew area, had an old fashioned roominess about it. The navigator and engineer work spaces, crew storage and flight crew bunks took up most of the first five metres behind the pilots, space that would be more efficiently used on today's aircraft.

In the computer area of the plane, NASA technical personnel were already plugged into their communication consoles and were preparing their equipment for the day's work.

During the flight to Carnarvon I commented to the Captain that it must have been satisfying to be able to bring friends and family on the plane. He looked baffled. I told him about seeing the young mother and child alight from the plane on the TV news and the newsreader's comment that family and friends were enjoying the trip. He did not know a TV crew had been at the airport to see the plane arrive, and he was very annoyed to hear that the mother and child had been on the news. He asked me to give him a full recount of the news item. He was not pleased.

As Captain of the plane he was under very strict instructions to only carry air crew and assigned flyby personnel, or other NASA personnel if there was a legitimate work need. He said Roger and I should not really be on the plane but if he had to, he would argue that he wanted us there to tell him about the workings of the Carnarvon Tracking Station.

As for the woman and child seen on the TV news; the Captain told us why they had been on board. When in transit to Australia, they had stopped for refuelling (I cannot now remember but it may have been Cocos Island) where the local Police Commissioner came to the plane and asked them to carry a sick four year old girl (with an accompanying doctor) to Australia for medical treatment.

At first the Captain declined but the Commissioner said the girl was desperately ill and may die. The Captain agreed subject to the Commissioner supplying a letter stating it was a matter of life or death for the girl to get to Australia. The letter was quickly written and handed over. But then the Commissioner added that the child's mother would have to go too as there would be a long convalescence period for the little girl and she would need her mother with her. The Captain felt he had been tricked but agreed, and the mother's name was added to the letter. The sick girl and her doctor arrived and were made comfortable on the plane. At the last moment the mother arrived with another daughter about six years old. The Commissioner said that the other daughter had to go too because there was no one to look after her if she stayed behind. Charlie was angry about that but he did not have time to argue anymore and the plane was already late for departure so he put the mother and the other daughter on board and departed.

During the flight to Perth, he specifically briefed the mother that he did not want her making a show of herself arriving on a NASA plane. He instructed her to go discreetly with the ambulance when it came to the plane to collect her sick child. Charlie did not know until I told him that the TV news had panned in on the mother and daughter alighting from the plane. Charlie was very annoyed that the mother had given the impression of being a tourist and allowed herself to be filmed. Charlie expected to get a please explain letter from his employers back in the USA.

When we reached Carnarvon, we took up a position flying a long loop circuit with parallel sides. The eastern end of the loop was roughly over the Carnarvon Jetty and the western end was about over the northern end of Bernier Island. We droned on for hours, flying the same loop while data and communications flashed up and down between the plane and the Carnarvon Tracking Station. Roger and I were both tired from the driving and I lay down behind the computers and had a thirty minute nap.

From 13,000 ft the scenery was very different from what I had seen when on small planes in the Carnarvon area. The continuous loop gave a lot of opportunities to take photos of different features on the ground and in the ocean. I was intrigued to see that off the coast and extending for many kilometres out to sea, particularly south of Carnarvon, there is a definite pattern of deeper channels on an otherwise flat sea floor.

At lunch time there was a lull in activities at the station so at my suggestion the pilots flew the plane up the coast so I could get some photos of the blow holes area and Cape Couvier. I wondered how many other amateur photographers had the privilege of directing a Super Constellation around the sky to enable preferred photo angles.

NASA Super-Constellation flyby aircraft at Perth airport. My yellow VW is in the background.

Carnarvon Tracking Station Staff on the lawn to see the aircraft go past

The second pass was low, less than 200 ft above terrain

The Flyby pass as seen from the Tracking Station. USB ALSEP aerial in foreground

Gascoyne River mouth and Carnarvon coastline as seen from the fly-by aircraft in Nov 1972

About mid afternoon we finished the work for the day and Charlie said he would like to give everyone on the plane a close look at the tracking station. He advised the tracking station that he intended to make a low pass on the southern side of the USB antenna. When he called the air traffic controllers at Carnarvon airport for a clearance to descend and fly past the tracking station (Carnarvon airport was then still staffed by Department of Civil Aviation tower personnel), Carnarvon replied, “No traffic, cleared to descend, and we want a look at you too so make sure you come over us as well as the tracking station”.

With just that little bit of encouragement from officialdom, Charlie turned his low pass into an old fashioned beat-up.

He brought the plane down in a giant spiral descent above the salt flats about five kilometres south of the town and then we levelled off and zoomed east, straight for the tracking station.

I was standing behind Charlie and I could see the tracking station almost horizontally ahead. We rolled slightly to the right and then straightened up and made a low pass just south of the USB antenna. We were not much higher than the top of the dish itself.

All the tracking station staff were out on the southern lawn taking photos of the plane as it roared by at low altitude, and we on the plane were taking photos of the tracking station and the people on the ground.

As we passed USB, Charlie rolled the plane into a wide left turn around the eastern side of the big OTC dish, and then we followed the main road at low altitude all the way into Carnarvon and up the main street! I regret not looking at the altimeter as we went over the town but my best estimate today is that our altitude was about 200 ft.

Charlie took the plane into a shallow 180^0 turn and then made a second low run at the tracking station, again just south of the USB dish and then back towards the town, right over the airport and the southern part of the town and then another run past the tracking station. On our third and last run past the tracking station we were starting to climb and passed the tracking station at about 400 ft altitude and then commenced a slow climbing 270 degree turn and set track for Perth.

The trip back to Perth was uneventful. By then I had used all of my film and I spent most of my time talking to the pilots and listening to their stories about the places they had flown to. We touched down at about 4:30 pm, with Roger and me again standing behind the pilots.

The approach and touch down were interesting. Unlike modern aircraft where pilots wear headsets and communicate at normal voice volume and where pilots also control the engine throttles, on the Super Constellation flight deck communication was by talking loudly and on some occasions by shouting.

Because the four big radial engines needed careful monitoring, any changes to the throttles was done by the engineer who would change the throttles and then monitor and change other engine settings to accommodate the effects of the throttle change. Thus the descent and landing was a team effort with the Captain controlling the plane by yoke and pedals but calling the power settings to the engineer.

On descent Charlie was controlling speed with nose attitude and he would shout throttle instructions back over his right shoulder, like “give me fifty” (50% power). The engineer would make some adjustments and shout a reply “you have fifty”, then after a while “give me forty” and the reply would soon be, “you have forty”. After more throttle reductions we were flying above the runway but without enough power to sustain level flight. There was a gentle shallow flare and the plane was running on the runway without the Captain having touched the throttles.

After we landed, the four aircrew obliged with a group photo in front of the nose wheel of the plane. To me that photo was a priceless memento of a wonderful day and when I later I discovered I had not focused the camera correctly and the photo was a bit blurred, I was very annoyed with myself. Roger and I drove back to Carnarvon the next day, well pleased with our trip.

A few days later I was talking to a local school teacher Greg Kerr. Greg told me that he had been in class looking forward to a quiet end to the day when the Super Constellation flew right over his class room. He said the noise was shattering and intensely loud. He said they all went outside to watch the second and third passes. Over the following months, many town people commented to me about the low passes. The most common comment was about the awesome noise of the engines.

My ride on the Super Constellation was one of the highlights of my years at Carnarvon. Many of my friends at the tracking station were envious and said they wished they had thought of riding on the plane.

There are probably locals still living in Carnarvon who remember that day in November 1972, when NASA's Super Constellation aircraft flew up the main street of their town.

NASA Lockheed Super Constellation aircraft N 421, Perth airport 1972

NASA Lockheed Super Constellation aircraft N 421, Perth airport 1972

The flyby flight crew, captain (Charlie), navigator, engineer & co-pilot (Bob)

Carnarvon as viewed from the Super Constellation in Nov 1972.

13 More Flybys

There were more flyby visits during the Skylab series of flights.

In about October 1973 another flyby visit was due and I arranged again to ride on the plane. I think that Ray Jacomb, Tracking Station Director, was uneasy about my joy-flights and he scowled when I said I was going again. His scowl was an effective deterrent and no one else asked to go.

This time the plane was a DC6B aircraft, a large four engine aircraft but not as heavy as the Super Constellation. The plane was under the command of Captain W T Morgan, but everyone called him Bill. I still have his card today.

Bill was a very friendly fellow and we chatted away for much of the trip. On the way to Carnarvon he told me they needed to collect some equipment and he had been given permission to land at Carnarvon. This was a surprise to me. He expected to be on the ground

for about two hours and asked a lot of questions about the tracking station. I offered to take him there while we were on the ground.

Bill said he would like to see the station but as he was due back in America in about a week and there was a lot of bookwork that he had been putting off and putting off and he had made an unbreakable commitment to himself that he would do the book work - no matter what - while he was on the ground at Carnarvon. I understood his position and left it at that.

We had been on the ground at Carnarvon for only ten minutes when I noticed the local kindergarten teacher with her class looking at the plane from behind the airport fence. I knew the teacher, Elly Nichols, from when she had worked temporarily in the Stores Section of the Tracking Station. I went to the fence to talk to her. She explained that if anything interesting came to town, she would always take the children out for a look. The children were excited and some of them asked if they could have a closer look. I went to ask Bill if it was OK for the children to come closer and walk around the plane. I knew Bill would say yes but it was good etiquette to ask anyway.

Bill was sitting in the left pilot seat and had just started his bookwork when I boarded the plane and asked him if it was OK for the children to come for a closer look. He looked out of the window and saw the children and immediately pushed the bookwork aside. He went down the stairs and waved the children over to the plane. Bill could not help himself – he just loved children. Bill, who had told me he was a grand father, was in his element as he showed the children all over the plane, even taking them up to the flight deck where he had some of them sit in the captain's seat. Bill spent a long time with the children and then a truck arrived with equipment. Bill then got busy supervising the loading of the equipment. Once loaded we flew back to Perth. Bill's best plans about doing book work had come to naught.

One of the NASA personnel on the DC6B flyby plane, Bob Burns, had also been attached to the Super Constellation when I rode in it the previous year. I gave Bob some photos of the Super Constellation plane and its crew and asked him to give the photos to the old crew when he got back. He said they would be very pleased to get the photos because they did not have any and it was now all too late. I asked what he meant by "all too late".

He told me that after the Apollo flight series finished, the Bendix Co returned the Super Constellation to the USAF for general duties. However, because the plane had been significantly modified for NASA, the plane needed its own special USAF crews which did not suit the USAF's requirement for crew interchange ability. So the USAF stripped the plane, flew it up

to a base in Montana, took the engines out and then used the plane as a target for gunnery practice. He said that everyone who had worked on the Super Constellation loved the old plane and they were very sad when they heard of its fate. I too felt empty and very sad when Bob told me that. (I have since been told, privately and reliably, that the hull was put into storage, not shot up)

Ellie Nichols and Capt Bill Morgan with 1973 Carnarvon Kindergarten children.

Captain Morgan abandoned his bookwork and invited the children onto the plane.

14 Q6 Radar

The Q6 Radar was located about a kilometre north of the T&C building. Q6 was a classic skin tracking radar in that it radiated a signal at a moving satellite and then used the time interval that elapsed before a reflected signal was received to compute the distance to the satellite.

The Q6 radar was a hydraulically driven tracking parabolic dish 9.2 metres in diameter, but its special feature was that it had powerful high speed hydraulic controls which enabled it to move quickly and accurately. This feature was important when tracking low orbit overhead satellites. Another feature of the Q6 radar was that it had a 2050 millimetre focal length telescope aligned on its radar beam axis that fed into a video tube which displayed a visual image on a TV screen inside the Q6 control room.

Once the radar locked onto a low satellite, if the satellite was in sunlight, it was possible to see the orbiting satellite on the TV monitor. Although the optical telescope was an interesting augmentation, Q6's main use was as a very accurate fast moving skin tracking radar.

The Carnarvon Tracking Station was on a local hill, Browns Range. The top of the range was no more than 60 metres above sea level but it had a commanding view in all directions. All the country to the north, east and south was flat and used for sheep and cattle grazing. Most of the land was sandy with sparse grasses, frequent acacia and other small trees. Wedge tailed eagles inhabited the flat land and it was not uncommon to look out from Browns Range and see eagles orbiting in their territories. In the early years of Australia's rural development, many

graziers believed that wedge tailed eagles killed and ate young lambs. In sheep grazing areas it was common to see shot wedge tailed eagles strung out on farmers' fences.

Sometimes Q6 was very active and sometimes there were quiet times between missions. Dave Gardiner, a Q6 technician, told me an interesting story.

The CSIRO had an open mind about the eagles and some CSIRO scientists arranged to do experiments with the Q6 radar during one of its quiet times between missions. It was known that eagle pairs had defined territories and they also had preferred roosting trees. The scientists used the cover of darkness and nets to snare some eagles and put a metallic reflecting band on each bird's leg. Next day the Q6 technicians would scan with the radar and find the eagle by the reflection from the leg band. The radar would lock onto the eagle and automatically follow it all day and inside the Q6 control room there would be a very precise three dimensional print out of the eagles' every move.

When the atmosphere was not too hot and shimmery the telescope could display an indication of what the eagle ate or carried back to its nest. As the experiments proceeded the technicians found that the Q6 radar was so sensitive that it could detect reflections from the eagles' bodies without the need for a metallic band. The power of the radar pulse had to be turned up a bit to get a reasonable reflection from the eagle's body and there was concern that if it was turned up too high, it may damage the eagle. As a result of the work that the CSIRO did at Carnarvon and other sites, the CSIRO established that eagles only occasionally ate sick lambs and that their main diet was rabbits, which was a plus for the graziers.

While tracking eagles, the Scientists would sometimes follow a single eagle's every move for several days. They observed that all of the tracked eagles were early to bed and late to rise. It was inconsistent with the saying that "the early bird gets the worm". At first it seemed that eagles were lazy but then it was remembered that thermals do not start until the sun has been above the horizon for a couple of hours and the thermals cease before sunset. Thus if an eagle got up too early, it would have to flap and flap to gain height – much better to rest a bit longer and then rise effortlessly on the thermals.

The CSIRO scientists commented that on heavily overcast days when there were no thermals, an eagle had to go hungry or flap for height. If there was a week of overcast weather, old or sick eagles could sometimes die from a combination of exhaustion and starvation.

Another story about the Q6 radar was told to me by Tony Green, who was a technician at Q6 and witnessed this event. It occurred during one of the later Apollo missions, possibly Apollo 16 or Apollo 17.

It was normal for the Apollo rocket to enter into earth orbit and stay in orbit while everything was checked. If everything was OK the crew would then fire the main engines for many minutes and the spacecraft would accelerate off onto a trajectory that would take it to the moon.

On this particular occasion it was night time in Australia and the spacecraft was in earth orbit, an orbit that brought the spacecraft roughly over Perth and then over Kalgoorlie. At about Kalgoorlie, if all was well, the crew would be instructed to fire the engines to go onto a lunar trajectory. NASA had an acronym for everything, the firing of the main engines to enter the lunar trajectory was called a TLI (Trans Lunar Injection).

Carnarvon's Q6 radar had picked up the Apollo spacecraft west of Perth, low in the south western sky and was tracking it towards the east. Coincidentally, the Q6 radar optical telescope was uncovered and the TV receiver was on. It was not planned to be on because it was dark and the spacecraft would not be visible over such a distance. The orbit was low and the Q6 radar was pointing only fractionally above the southern horizon when the engines were ignited for the TLI.

During the TLI, Tony Green was attracted by something on the TV screen and then he realised that though the spacecraft could not be seen, the telescope was picking up the flames from the main engines and a distinct rocket flame plume was clearly visible on the TV Screen for most of the duration of the TLI burn. Given that Kalgoorlie is about 1000 kilometres south east of Carnarvon and that the Q6 radar was pointing almost on the horizon, the light from the flame plume would have travelled through nearly 1000 kilometres of atmosphere before it was detected by the Q6 telescope and video camera. To many people that may be a ho-hum event, but to me, who had experienced the frustrations battling atmospheric "seeing" through telescopes, I believe it was remarkable to see a human made flame through about 1000 kilometres of atmosphere.

15 Ignition spikes on the data.

There were two steerable antenna arrays close to the northern side of the T&C building at Carnarvon. The aerials were used to acquire telemetry from satellites. If the incoming signal was weak, interference such as radiation from a car's ignition could invalidate the recorded signal. Sometimes if a satellite with a known weak signal was due to pass, the net would be used to advise all Carnarvon Tracking Station staff that ALL vehicle use was prohibited until further notice, usually no more than 30 minutes, until the satellite disappeared over the horizon. Vehicle prohibitions did not bother me much but they were an inconvenience for people who had to travel around the site to do their work, people such as the air conditioning technicians or Daphne Brindal on her mail rounds.

I recall an occasion when the net advised all staff that a vehicle prohibition would start in five minutes' time. I was due to soon drive to the T&C building for lunch so I jumped in the SPAN site car and drove up to the T&C building where I parked near the aerials on the northern side of the building. I went inside for lunch, all before the vehicle use prohibition started.

While I was eating lunch, the site Operations Manager was on the net advising that there was a vehicle in use somewhere on the site and the ignition spikes were invalidating the received satellite signal and the vehicle use had to cease immediately. Over the next ten minutes he repeated the demand five more times, each time sounding more annoyed and serious. I remember thinking it was unheard of for trackers to ignore such a direction, but obviously someone on the site was ignoring it. After about 20 minutes, the vehicle restriction was lifted.

I stayed talking to someone at T&C for ten minutes and then went out to get in the car to drive back to SPAN. As I was getting into the car, my foot bumped the throttle and I heard the engine give a quick rev up and down. Within a milli-second I knew exactly what had happened. I had, and still have, a habit of leaving vehicles idling instead of turning them off. It comes from my truck and heavy tractor driving days when it is better to idle a heavy diesel engine rather than turn it off. I was appalled to realise that I had left the car idling, right under the aerials, all the time that the vehicle prohibition period applied. Though it is no excuse, there was a large bank of air conditioning heat exchangers with unusually loud fans on the northern side of the T&C building and they had completely blocked out the sound of the idling engine when I had parked the car and gone inside for lunch.

Not wanting to drive away and draw attention to the situation, I casually turned off the engine and went back into the T&C building, through the building and out another door and then walked back to SPAN. I knew the telemetry crew went off shift at 3:00 pm so I waited until about 4:00 pm and then walked back and retrieved the car. Over the next few days there was a witch hunt and the site safety officer was detailed to sleuth around the site and try to find who had been operating a vehicle during the vehicle usage prohibition period. I felt very foolish about what I had done but I was never suspected. I suppose I should have told the telemetry people what I had done so they would not waste time fault hunting their equipment; but I wimped out and did not ever tell anyone.

16 Poor Management

I grew up on a farm in the Hastings Valley of New South Wales. It was a good farm, two kilometres of river frontage, some good alluvial river flats and about 300 acres of hill country with mostly original timber.

At the time there were 24 timber mills in the Hastings Valley and timber was the valley's main industry. The local town, Wauchope, called itself "Wauchope the timber town" and at school we boasted (ignorantly, I now know) that our district had the biggest trees in Australia.

We sometimes cut timber on our property for the mills or for fence posts and I spent a lot of my time in the bush, sometimes working with my dad, sometimes with the contract axemen (there were no chain saws then) and often with our neighbours who were original settlers in the valley (they still had a bullock team) and accordingly I knew a lot about the practical side of the timber industry.

When living in Carnarvon, Sharon and I would often visit her parents who lived at Rockingham (about 50 km south of Perth) and I first went to Kings Park, Perth, in 1971. I was impressed by the views and the beauty of the park but because of my interest in timber, I was drawn like a magnet to a huge Karri log that was on prominent display in a central part of the park. It was a huge log and I had to admit that it was much bigger than any of the east coast mill logs. Every time I went to Kings Park, I would marvel at that Karri log.

David standing on the Kings Park Karri log, July 1974

In about 2014 I visited Kings Park with my family and was disappointed to see that the Karri log was not there anymore. I do not know the official reason that the log has gone but one of the groundsmen told me that after decades of being out in the weather, the log was beginning to rot so the management took it away.

Having grown up in the Hastings Valley and having worked with timber, I knew from experience that even the hardest timber, such as a dry ironbark log, will eventually rot if left out in the weather indefinitely and Karri, being a softer timber than ironbark, would certainly rot if left out in the weather. It saddens me that the management of Kings Park did not have the foresight to erect a weather-proof roof above the full length of the log, because if that had been done when the log was first put there, we would have had that log for ever. The Kings Park log was an irreplaceable log and now that it has gone, it has gone for ever. There were other big logs in the south west of WA but the timber industry (which boasts that it is a sustainable industry, but it is not) has since cut them all out and for at least the next thousand years, there will never be another Karri log like the one that was in Kings Park.

Sharon standing at the Kings Park Karri log July 1974

17 Canoeing near the Tracking Station

Since I was 9 years old, I have always owned a canoe or a kayak. My first canoe was made from a second hand sheet of roofing iron with the holes plugged with tar that I heat salvaged from broken bits of road bitumen. I had progressed to fibreglass kayaks by the late 1960s. .I was unsure if I could use a kayak at Carnarvon but I took one with me anyway when I went there.

I had been at Carnarvon for a few months when a lot of local rain fell close to the coast, though not enough fell inland to set the river running. Within a day or two of the rain falling, a huge lake of water gathered on the eastern side of the Tracking Station. The water extended north almost as far as the main road out to the bridge, and south almost to the usually dry creek on the southern side of Brown's Range. The lake area was known as Tickle Belly Flats but this time it was Tickle Belly Lake. On my next day off work I went kayaking there.

By pushing my paddle down to feel the bottom I could assess the depth and its deepest part was roughly north east of Q6 radar where I estimated it was about 2 metres deep. The tall grass and weeds in the eastern side of the lake restricted paddling but there was good deep paddling along the western side of the water where some substantial white barked river gums grew. These are common on water courses throughout Australia. The presence of the trees suggested the water often congregated along the eastern side of Brown's range, though on this occasion there appeared to be significantly more water in the lake than was usual after normal rain.

I kayaked on the lake a few more times but within a couple of weeks the water level had fallen significantly and had all but disappeared within three months. Over the next three years there were several periods of heavy rain and some big rivers came down, but I never again saw so much water on Tickle Belly flats. It had to be substantial local rain to flood that lake.

Canoeing on Tickle Belly lake.

18 A big fright

When a student I canoed and kayaked on some of the country's big rivers; the Nymboida, the Clarence, the Macleay and many others. I took my kayak when I went to Carnarvon, though I did not expect to get much use for it. On my second weekend I went and had a close look at the Gascoyne River. It was very disappointing. It was just a flat bed of sand about 300 metres wide, no channels, no water, just flat dry sand. I decided that the Gascoyne River was a flop.

I had not previously Kayaked on salt water. I found kayaking on the channels through the mangroves was more interesting than I had expected. Sometimes others and I would explore around the mangroves. On several occasions I went with Paul Dench, who had a three-person canoe, to a place north of the river mouth where there was a group of mangrove channels in the dunes behind the beach. We had some good kayaking times there. The area was storm

exposed and sometimes when we went there the sea had opened new breaks to the sea and closed old ones.

In the spring of 1971 there was a lot of rain in the headwaters of the Gascoyne River. A week or more later a reasonable flood came down the river. I had been waiting for a chance to do some real kayaking and so myself and some friends drove about 50 kilometres up the Gascoyne Junction road and then carried the kayak across and put it in the river.

Gascoyne river bed, no main channel, no water, just flat dry sand

A then Bell Brothers road train taking pipes for the Tom Price water supply

Gascoyne River in flood at the Carnarvon bridge (my Holden panel van on the bridge)

I started my trip with all of the confidence that comes from ignorance

I had no doubts about my plan. The Gascoyne River would be a pushover, it was in flood like a big red slug, there was a reasonable current and I would just kayak back to Carnarvon.

I started on a channel about 50 metres wide and it seemed rather dull. I stroked along thinking unkind comparisons about the Gascoyne River and the east coast rivers that I had explored. But very soon I joined a much larger channel and I realised that I was then on the main river.

It was about 200 metres wide but because it was all moving along with a uniform speed, it had a deceptive look of calm about it. When I passed a big white-barked gum tree in the centre of the river I saw how the current was roaring and building up high on the top side and caveating on the lower side of the tree and I knew then that I was on really fast water, maybe the fastest water I had ever been on.

Up ahead there were a few more trees and I could already hear the water roaring around them. As a safety precaution, I moved over to within 25 metres of the left bank where the water was a little slower. Soon I had trees on both sides but the channels were still easy to pick and on I sped.

But the trees came on thicker and thicker and there was an increasing roar of the current tearing at the trees. I lost sight of the banks altogether as I fought to twist and turn and keep from getting caught in trees. Current will take a kayak around a solid obstacle such as a big rock but current goes through tree heads and I was aware that one false stroke, one misreading of the current and I could be caught in a tree like a fish in a net. If that happened the current would jam me into the tree and skewer me with branches. The trees became even more numerous as I fought with turns and twists and backstrokes; ducking under limbs, zooming across currents to look for a better path and never knowing what lay ahead. I was at full power every stroke and I had to be careful because one bad decision and I would be history.

And so on we went, man and river locked in a contest – sometimes the water was rough, sometimes smooth but always very fast and accompanied by an intimidating roar. When I could, though I rarely had a choice, I would veer to the left hoping that I could find slower water nearer to the bank but then a vein of trees, as thick as a hedge, would send me zig zaging back to the right to lose what I'd gained. I had not bothered to bring a life jacket and I was tiring. I knew I was in trouble.

As I ducked under a branch I saw there was a very thick run of trees right across my path but there seemed to be more light to the right so I angled in that direction and crashed through some leaves, hoping I would not collide with a big tree but suddenly and unexpectedly I was free of the trees and could see it was all open water for at least the next kilometre. The roar was receding behind me and I looked to both sides and could see that I was in the middle of a wide very fast river.

It was peaceful, the noise had gone, the water, though fast, was smooth. I could see more trees a long way ahead so I started to move towards the left bank. I noticed that my friends on their return trip to Carnarvon had stopped and come over to the river to see me go by so I paddled over to them and abandoned the trip. I put my kayak back on the roof racks and we all went home. I had chanced my luck and got away with it but it was folly to keep going when I did not know what lay ahead.

When I think back on it, it was all a bit like Mulga Bill's bicycle. Mulga Bill thought he knew a lot about riding bicycles but he came unstuck. I thought the Gascoyne River was a wimp of a river for kayaking, but how wrong I was.

Checking the roads in flood time.

19 An incredible but true story

Bill Day worked in the administration area of the Carnarvon Tracking station. I estimate that he would have then been in his mid fifties. Bill had been a policeman in South Australia before retiring and coming to work at the tracking station.

Bill was one of nature's gentlemen, friendly, quiet and very sincere. One day we were sitting at lunch and the radio was blaring about a Perth policeman who had pulled his pistol and shot a man in the leg. The radio announcer was hitting the moral high ground and saying how the policeman should not have used his gun.
Bill said, "It's tough on police these days when they can't use their gun. I used to use mine all the time."

I was very surprised and asked Bill how many people he had shot.

He replied, "None. But whenever you have to apprehend someone at a burglary, they'll always run if they can. If you're a fit young copper you run them down, but as you get older it's not so easy. If you shout "*Halt, Police*" they run faster. If you shout "*Halt Police*" and fire a bullet over their head, they freeze and you can just walk up to them and put the handcuffs on them – worked every time".

I thought about that. It made sense to me.

One day I collected my lunch tray in the canteen and sat down. Bill sat opposite me. He looked unusually weary. I commented that he looked tired and asked if he was OK. He said he was OK, but I noticed that he had scratches, like he had been in a fight.

I asked, “What happened to you Bill? You look like you have been roughed up”.

He smiled and replied, “Well I was roughed up. I fell in the ocean”.

Bill then told me a story that left me speechless. I will narrate it here as accurately as I can remember.

On the previous weekend Bill and his wife were visited by their daughter and son in-law. It was nice weather so they went for a drive up to the Blow Holes on the coast, about 50 km north of Carnarvon. The Blow Holes is a hole in a rock shelf, about 30 metres inland from the water-line where the incoming waves compress the air under a rock shelf and a mixture of pressurised air and spray blow vertically through the hole and upwards. On a good day, depending on the sea that is running, the spray will consistently blow 30 metres into the air.

In the area of the blow holes, the coast line consists of a rocky shelf about 30 metres wide at sea level, then a cliff about 3 metres in height, and then smoothish rock running back to coastal dunes. Being at sea level, the waves crash across the shelf and cover it with a mass of angry foaming water. The waves recede and expose a surface that has been cut and abraded by a million years of waves. The waves have sculptured the rock surface to be like the cutting face of a giant rasp with a million sharp edges and rocks that could cut to the bone.

For about the next twenty kilometres north from the Blows, the coast line has the same character with the ledge varying erratically from 20 metres wide to 80 metres wide. The cliff height varies from as little as 2 metres up to ten metres in height, but always the shelf is a formidable mass of sharp and cutting rocks at wave level. At times when the tide was out, and if you were wearing heavy boots, you could go down onto the rock shelf and grab a few oysters; but it was a dangerous place to linger and one never stayed there for long.

On this particular day Bill and his family were at the Blow Holes for a while and then drove north for about ten kilometres to where a pastoralist’s fence met the sea. Bill and his family were walking along the rocks above the cliff edge. There was an average sea running with waves breaking across the shelf. There was no sign of what was to come.

Bill must have been on a lower piece of cliff than the others for suddenly he found the water was rising around him. It was a big wave, not an angry crashing wave, more like a localised rise in the sea level than a wave. The entire lower cliff area was covered with deep water and it swirled around Bill. As the water receded Bill tried to stand firm but it was all over in a few seconds. He was knocked off his feet and washed across the rock shelf out into deep water.

Bill did not know what to do. He thought of trying to catch a wave back to the cliff but even if he did that, it would carry him back out over the sharp rasp like rock ledge again and he had been lucky to survive that once. He might not be as lucky next time.

Oliver and Evan on coast near the Carnarvon Blowholes

Carnarvon coastline near the Blowholes during an average sea, photos 30 seconds apart

Evan and Oliver near Carnarvon Blowholes

Carnarvon coastline near the Blowholes area

Waves crashing onto the shore in the Blowholes area
(*Photoshop* was used to remove spot blemishes from the above Images but the height and volume of the spray was not photoshopped and is accurate)

Bill's wife and daughter and son in-law wanted to help but what could they do? They remembered that back at the Blow Holes there was a lifebuoy on a post for such occasions and so Bill's son in-law jumped in the car and raced back to get the lifebuoy. When he returned, he made signs to Bill that he was going to throw the lifebuoy out with a rope so he could pull Bill back. Bill swam a bit closer to the ledge and his son in-law waited on the cliff edge. He was waiting for the right wave to throw the lifebuoy onto the wave and have it drawn back out to Bill as the wave receded.

But the sea was in a deceptive mood and although normal waves would crash across the ledge, about every five or ten minutes there would be a big wave where the whole sea would rise and deep water would flow across the shelf. When Bill's son in law saw the right wave coming, he got as close to the cliff edge as he dared and prepared to throw the lifebuoy. Suddenly, he too was surrounded by swirling water, knocked over and washed out to where Bill was.

Bill's wife and daughter were distraught. A very serious situation had become twice as serious. By now Bill had been in the water an hour. How long could he last? The two women drove back to the Blows where there were some fishing shacks. A man there had a small boat but it was too small to go out into the ocean.

About twenty kilometres away there was a mine where Texada Co pumped brine out of the water table under Lake McLeod and evaporated the water in big bays. The resultant salt was exported by the ship load from Cape Couvier.

Texada employed about 60 people, most of whom lived in Carnarvon. Bill's wife and daughter drove to the mine to seek help. It was a Sunday and they were lucky to find anyone. A Texada employee was located and they told him they needed help. He used the radio to summon assistance and soon there were men coming from all directions, but what could they do? How could they get two people back across the rock shelf and onto dry land? They jumped in vehicles and headed back to the coast, hoping that Bill and his son in-law would still be alive. They were alive, but cold and fatiguing.

The men from the mine realised they needed a plan and some of them raced back to the mine to look for things that could help. They hatched a plan and scrounged up the equipment and headed back to the coast. One man dressed in several sets of overalls, put on heavy boots and put an inflated car tube around his waist. They also had a second inflated rubber tube, a bigger tube from a mining tuck.

Ropes were tied to both tubes and the large tube was placed on the cliff top where it was to be washed out by the next monster wave. The heavily clad man sat in the big tube, waiting for the ride of his life. By now more men were arriving from the mine and other places, all eager to help.

Normal sized waves were crashing on the rock shelf but once every five or ten minutes a monster wave would come right over the top of the cliff. When the right wave came, the men on the shore played out the ropes. The big tube and its passenger were washed out to where Bill and his son in-law were. They made a decision that Bill would hang onto the car tube and the men on the coast would pull it in on the next big wave. When the right wave came, the men on the coast hauled on the rope and brought Bill and the car tube right in across the rock shelf and up to the cliff edge where Bill's arms were grabbed by the many eager hands of men who were anchored by ropes tied around their waists which in turn led back to more men.

But the now receding water was very strong and despite the men's best efforts, Bill was dragged out of their grip. He was dragged back across the rock shelf and into the deep again.

The car tube was sent out again on the next big wave and this time the Texada man put the car tube around Bill's waist and tied Bill into the tube. Bill was hauled in on the next big wave and this time when the men grabbed him, they also had the rope tied onto the car tube. They held Bill until all the water receded. Bill was safe at last.

By the time he had come ashore, Bill had been in the water for four hours. He was exhausted, had accrued some cuts and abrasions and was close to hypothermia from the cold water; but he was otherwise OK. They brought Bill's son in-law in on the next big wave and the Texada man came in on the following big wave.

Bill was surprisingly unfazed as he told me the story. I was amazed and in awe of the man who had the nouse to work out a solution and the guts to go through with it.

Bill said that when he got ashore he was so exhausted that he hardly knew what was going on and his son in law was in a similar state and also their wives had been so distraught that when it was all over none of the four were thinking clearly and after they got back to Carnarvon they realised that they had not adequately acknowledged and thanked the men from Texada. Indeed Bill said he could not remember much about them but he intended to go back next weekend and find them and thank them. A couple of days later there was a small article in the Carnarvon paper that reported that two men had been washed into the Ocean near Quobba and were later

rescued. It is regrettable that the reporter was not given more details because there was a good news story there and it could have been written up in detail. I also saw a notice in the paper from Bill and his family expressing their thanks to all of the people who had helped.

When Bill finished his story at the lunch table, I said that it must have been terrible to be out there for four hours, not knowing if you would get back and thinking all the time about sharks. Bill said “I don’t remember thinking about sharks at all, after a while I was so bitterly bitterly cold that I don’t remember thinking about anything except the cold”.

Of all of the events that I recall from my time at Carnarvon, none made a bigger impact on me than listening to Bill tell of his being washed into the ocean and then being rescued. Sometimes a minor act of courage will be built up by the media and a person may receive an undeserved award. Other times a very brave action will go unreported and forgotten. There was minimal publicity about this incident and little acknowledgement for the man who rode the tube. If the world was a fair place, he would have received a bravery award.

[When I wrote the above, I was unsure of the date of the rescue. Some years later I searched Newspaper records at the Australian National Library in Canberra for a newspaper article that I recalled seeing at the time of the rescue. The Northern Times of Thursday 1 November 1973 contained a thank you advertisement from Bill thanking those involved in the rescue and a small front page article briefly describing the event and recording that they had been in the water for four hours before they were rescued and that the rescue had had occurred on 28 October 1973.

FRONT PAGE OF NORTHERN TIMES, THURSDAY 1 NOVEMBER 1973

NORTHERN TIMES

Established 1905 CARNARVON, W.A., THURSDAY, NOVEMBER 1, 1973 Price 5c

GASCOYNE RACING ASSOCIATION IS FORMED

Delegates from Onslow, Gascoyne Junction and Carnarvon flew into Exmouth on October 21 to meet and form the Gascoyne Racing Association.

FOUND DEAD

Washed off rocks

Tracking station houses

Tracking station houses received considerable attention at the October meeting of the Carnarvon Shire Council, following two letters from the Department of Supply.

Vince Parsham winning the Edward Holding Cup at the final meeting of the Carnarvon hot rod season on October 28.

EQUALLED THE CLUB RECORD

Barrie Bazalic equalled the Carnarvon Pistol Club record on October 25, and his own highest score, when he shot air pistol.

HIGHWAY STOP SIGNS

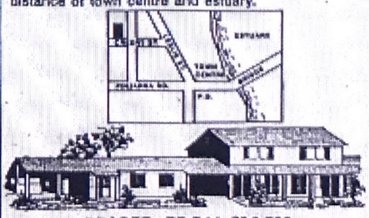
Proving very popular

Scholarship established

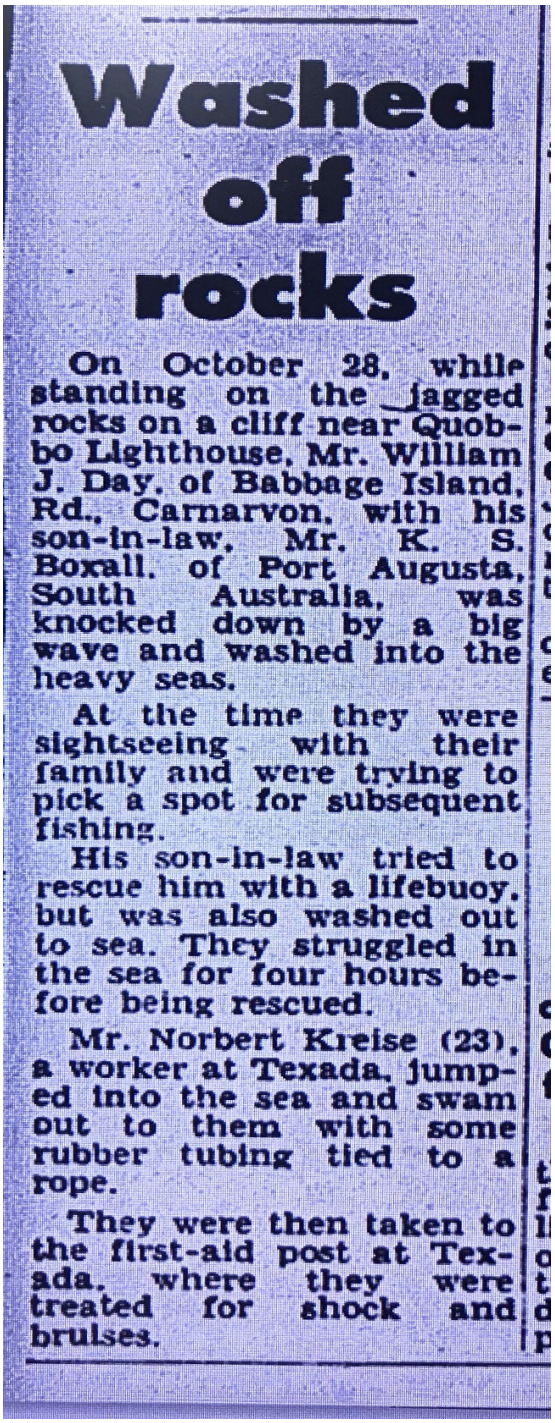
TO BE ORDAINED

MAN SHOT DEAD

APEX OPENS THE APPEAL



TEXT EXTRACTS FROM NORTHERN TIMES, THURSDAY 1 NOVEMBER 1973



Washed off rocks

On October 28, while standing on the jagged rocks on a cliff near Quobba Lighthouse, Mr. William J. Day, of Babbage Island, Rd., Carnarvon, with his son-in-law, Mr. K. S. Boxall, of Port Augusta, South Australia, was knocked down by a big wave and washed into the heavy seas.

At the time they were sightseeing with their family and were trying to pick a spot for subsequent fishing.

His son-in-law tried to rescue him with a lifebuoy, but was also washed out to sea. They struggled in the sea for four hours before being rescued.

Mr. Norbert Kreise (23), a worker at Texada, jumped into the sea and swam out to them with some rubber tubing tied to a rope.

They were then taken to the first-aid post at Texada, where they were treated for shock and bruises.

Sincere friend of Neville, Violet, Eric, Fawn, Lola and Kirk.

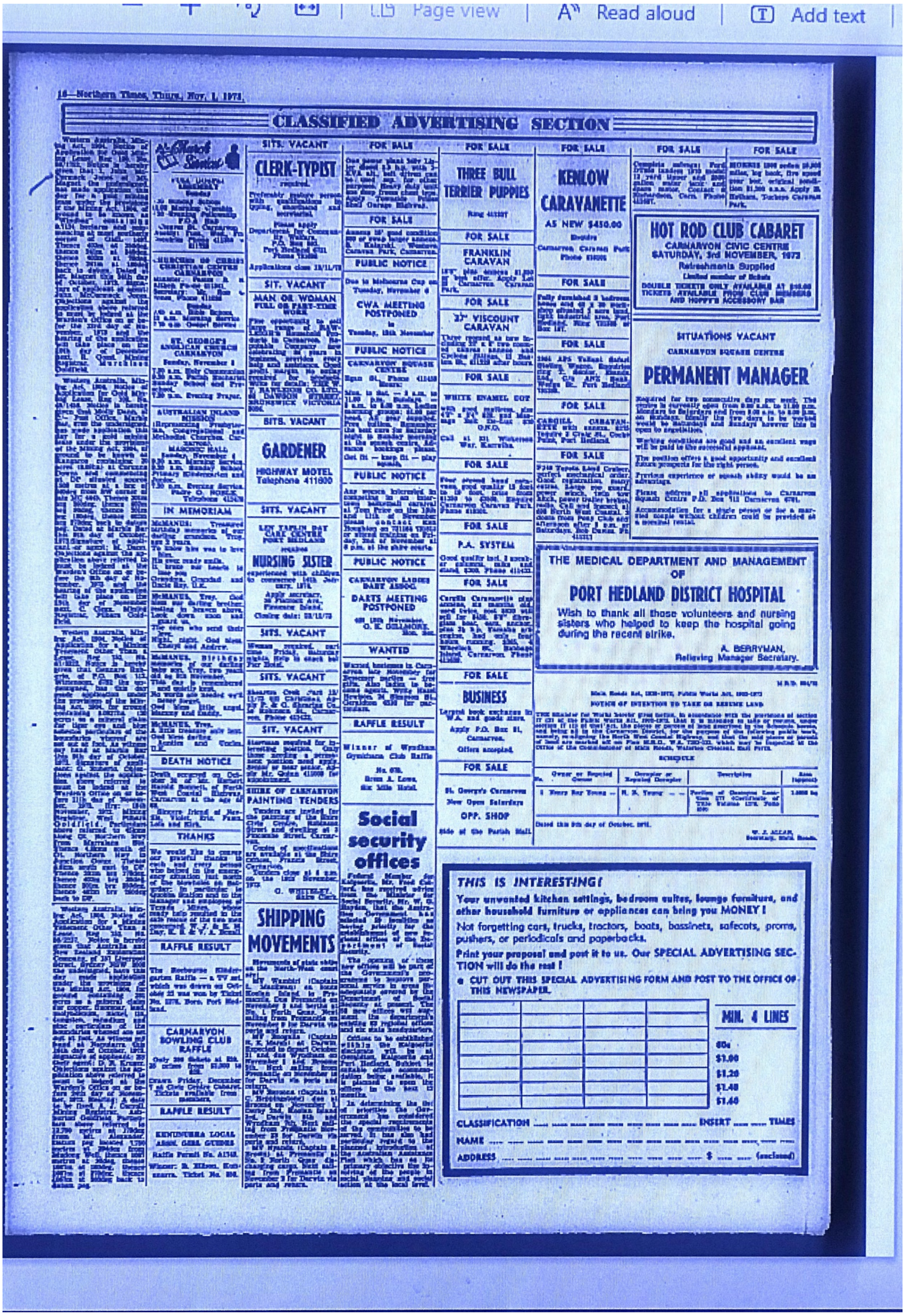
THANKS

We would like to convey our grateful thanks to each and every person who helped in the emergency situation just north of the blowholes on Saturday; in particular to Quobba Station and to the manager and employees of Texada Mines, whose ready help resulted in the safe rescue of the two men concerned. W. J. & E. M. Day. K. S. & V. A. Boxall.

RAFFLE RESULT

The Roebourne Kinder-

CLASSIFIED ADVERTISMENTS PAGE OF NORTHERN TIMES, 1 NOVEMBER 1973



16—Northern Times, Thurs., Nov. 1, 1973

CLASSIFIED ADVERTISING SECTION

SITS. VACANT

CLERK-TYPIST

SITS. VACANT

GARDENER

HIGHWAY MOTEL
Telephone 411800

SITS. VACANT

NURSING SISTER

IN MEMORIAM

DEATH NOTICE

THANKS

RAFFLE RESULT

CARNARVON BOWLING CLUB RAFFLE

FOR SALE

PUBLIC NOTICE

CWA MEETING POSTPONED

DARTS MEETING POSTPONED

WANTED

RAFFLE RESULT

SHIRE OF CARNARVON
PAINTING TENDERS

SHIPPING MOVEMENTS

Social security offices

FOR SALE

THREE BULL TERRIER PUPPIES

FRANKLIN CARAVAN

22' VISCOUNT CARAVAN

P.A. SYSTEM

BUSINESS

St. George's Carnarvon
New Open Saturdays
OPP. SHOP
Side of the Parish Hall

FOR SALE

KENLOW CARAVANETTE

AS NEW $450.00

HOT ROD CLUB CABARET
CARNARVON CIVIC CENTRE
SATURDAY, 3rd NOVEMBER, 1973
Refreshments Supplied

SITUATIONS VACANT
CARNARVON SQUARE CENTRE

PERMANENT MANAGER

THE MEDICAL DEPARTMENT AND MANAGEMENT OF
PORT HEDLAND DISTRICT HOSPITAL
Wish to thank all those volunteers and nursing sisters who helped to keep the hospital going during the recent strike.

A. BERRYMAN,
Relieving Manager Secretary.

NOTICE OF INTENTION TO TAKE OR RESUME LAND

SCHEDULE

THIS IS INTERESTING!

Your unwanted kitchen settings, bedroom suites, lounge furniture, and other household furniture or appliances can bring you MONEY!

Not forgetting cars, trucks, tractors, boats, bassinets, safecots, prams, pushers, or periodicals and paperbacks.

Print your proposal and post it to us. Our SPECIAL ADVERTISING SECTION will do the rest!

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20 Influence - real influence!

Ian Mitchell had trained in the Royal Navy and worked in the Carnarvon office of McRobertson Miller Airlines (MMA) and he later worked at the tracking station. MMA operated air services all over WA including a daily Fokker F28 jet service from Carnarvon to Perth. The plane would normally arrive in Carnarvon about noon and depart about half an hour later. I knew Ian well through the local Repertory Club, of which we were both members.

One day, while working for MMA, Ian came to rehearsals still shaking his head about an event that had occurred that day. Ian had been at the airport and had dispatched the plane to Perth and he had then gone back to work in the MMA office in the main street of Carnarvon. About 3 pm, a gentleman of Japanese appearance entered the office and sat in one of the waiting room chairs, calmly sorting his papers. Ian continued with his work and after a while the gentleman approached the counter and asked to buy a ticket for the next plane to Perth. Ian sold him a ticket and assured the man that he was booked on tomorrow's plane.

The gentleman looked troubled and said he needed to catch the very next plane to Perth and there must be one before tomorrow. Ian assured him that there was no plane until the next day. With that, the gentleman asked if he could make a telephone call. Ian could have let him use the MMA telephone but instead referred him to the public telephones at the post office. The man thanked Ian and headed towards the post office.

Ten minutes later the man was back, sitting in the waiting room, sorting his papers again. Ian found the man's presence irritating because the he could not stay in the waiting room until tomorrow's plane so Ian continued with his work and made a conscious effort to ignore the man.

About ten minutes later Ian received a telephone call from a senior MMA official in Perth who asked Ian if there was anyone sitting in the waiting room. Ian confirmed there was and the manager continued,

"We have diverted the Derby non-stop to Perth plane to Carnarvon to pick up the gentleman in the waiting room and the plane will arrive at Carnarvon in about half an hour. Please take the gentleman to the airport and give him all possible assistance to catch the diverted plane with as little inconvenience to him as possible".

Ian did exactly that. His last contact with the man was when the man thanked Ian as Ian was closing the plane door. Ian never knew who the man was or how come he was so influential. We speculated that he may have been an iron ore buyer from Japan but we never did know.

The daily MMA flight departing Carnarvon, OTC dish in the background, Circa 1973.

21 Tourists

Tourists would sometimes visit the Tracking Station. They would often take a tour of the T&C building first and then come to SPAN, frequently arriving in a fact-saturated haze. They would brighten up though when they were able to look through the Razdow telescope and actually see the sun with their own eyes.

The sun was something they could identify with and it meant much more to them than all of the flashing lights and whirring computers that had bewildered them at the T&C building.

I evolved a standard spiel I would deliver to the tourists but I learned to watch their eyes and cut it short if their eyes began to wander. Wandering eyes was the first sign that people were saturating. Conversely, some tourists would have a technical background and would want to talk on and on. If there were farmers among the tourist groups they would always ask the same question, “When will all this science and computers allow you to predict the rain? I don’t care about going to the moon, I just want to know when it will rain”.

Of the hundreds, possibly thousands, of people that came through SPAN there is one group that I particularly remember. One quiet Sunday afternoon I was telephoned by a RAAF Officer from the Carnarvon airport. He was travelling with a DC3 aeroplane with about 15 trainee pilots on a familiarisation trip to Learmonth. He knew of the SPAN site and its relevance to radio propagation and he wanted the trainees to visit the site.

I was aware that the RAAF received so many applications for pilot training that it could be very selective and would only select the best of the best for pilot training. I therefore anticipated the trainees would be a sharp lot and I was pleased to agree for them to visit SPAN. When they arrived, I showed them the sun through the telescope and then I gave a very detailed spiel about the sun, the ionosphere, NASA and the Apollo missions. Not one eye wandered; there was not a hint of a lapse of concentration. A few of the trainees took notes and there were a few questions, but not many - mostly they were sharp enough to see the connections and not have to ask questions. They just stood there and absorbed the facts and data like a black hole. After an hour of my talking it was me that was losing concentration.

I was pleased to see them go. I liked them but I needed a rest.

22 Spooked, very spooked

On one occasion we were visited at SPAN by two American officers from the joint Aust/US Navy Communications Station at North West Cape.

They had driven to Carnarvon to look at the Tracking Station. One of them suggested I visit him and he would show me over the US base at North West Cape. I liked the sound of that so about a month later, Sharon and I coordinated three days off work and we visited the American officer and his family at their home in Exmouth.

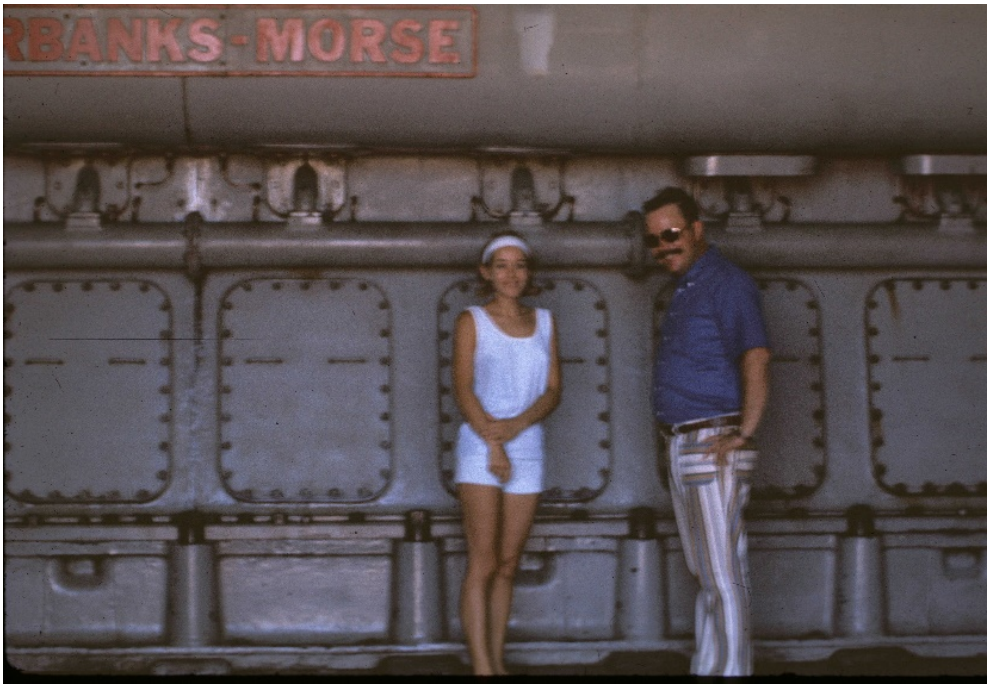
They were wonderfully hospitable and made us very welcome. The officer took us all over the base, including into the transmission room with all of its wooden insulators at the base of tower zero and into the powerhouse with its huge generators. I forget the power that they were generating but he told me the total output and the percentage that went into the low frequency transmitter and I came away shaking my head.

It was a typically hot January weekend when we visited North West Cape and we left in mid-afternoon to drive back to Carnarvon. The road was dirt and gravel road for about 200 kilometres to Minilya on the North West Costal Highway; and then about 140 kilometres of bitumen to Carnarvon. Since on our trips away we could not rely on being near food shops, we usually carried our food stores in an esky and would cook our meals over a fire by the roadside.

Sharon at the entry to the US / Aust Navy base at Exmouth

The Transmission aerials at Exmouth

Sharon talking to our host at Exmouth, a US Navy Officer



The main transmitter engine at Exmouth

At about dusk, we stopped by the road to boil the billy and cook some sausages. Back then, few cars travelled on the Minilya – Exmouth road. We had not seen a car since leaving Exmouth, and we didn't expect to see any that evening.

After eating we were sitting by the coals of the fire. It was by then a dark and moonless night. I was sitting near the dying fire when my eye caught the movement of a small but distant light. I peered into the darkness and was surprised to recognise that at about 300 metres distant there appeared to be a man walking along the road towards us with a swinging lantern by his side. I couldn't see the man but I had grown up on a farm with no electricity and I knew the rhythmic movement of a lantern being carried in the dark - I had seen my father carrying a lantern and coming up the track from the dairy hundreds of times and there was no mistaking it. But why out here in the middle of nowhere, why was the person walking down the road towards us?

When the light had come about half way towards us it seemed to falter a little and then disappeared. I was uneasy about what I had seen so I flicked sand onto the few hot coals that were left from our fire. I told Sharon what I'd just observed and we both sat there peering into the darkness and straining our ears for the sound of boots crunching on gravel; but no, the night was still and soundless.

We looked and waited for the man with the light but he didn't arrive. Just when we were beginning to wonder if I'd imagined it all, there he was again. But he was back up where I'd first

seen him and the light was coming down the road towards us again! I watched the light approach and started to feel very uneasy. He seemed to have passed where he'd previously faltered but then the light hesitated and it went out again.

I was starting to feel spooked and made a snap decision that we would leave so within about a minute we had packed everything back into the car and were leaving. I immediately put the vehicle lights on high beam and began driving a slow zig zag path, weaving the lights from side to side while we looked for the man with the light but despite our intense looking, we didn't see the light again.

When we arrived at the Minilya roadhouse I noticed that they had a security light on a high pole that illuminated all of the ground around the roadhouse and I wondered if they too had problems with weirdos wandering around at night with lanterns. We bought some petrol and a cold drink and I asked the attendant if they ever saw people wandering around at night with lanterns. He looked at me with that "have you been drinking ?" look.

As we drove back to Carnarvon the man with the lantern was heavily on our minds. I knew it was real because I'd seen it, not once, but twice and for several minutes and Sharon had seen it too, yet when we raked the flat open land with our vehicle lights we did not see any sign of the man with the lantern.

The man with the lantern dominated my thinking for the next week. I discussed it with a few people but mostly I just agonised over it in silence.

Every day at SPAN we would go to the T&C building for our lunch. Often, before I entered the T&C building I would gaze to the west and make a mental note of the atmospheric seeing conditions.

Sometimes the seeing was poor and the junction between the sea and the horizon would be lost in a shimmering haze. Sometimes there would be a clear and distinct junction where a sharp ocean horizon joined with a very blue sky. On days when it was scorching hot and breezeless the ocean would become very calm and an atmospheric temperature inversion would form above the ocean. (A temperature inversion occurs when there is no air movement to mix the air and the air near the water cools so that the air temperature increases with increasing altitude, for maybe about a thousand feet, from where the temperature lapse rate normalises and the air temperature decreases with further increases in height.)

About sixty kilometres west of the tracking station, over the ocean horizon and out of sight were Dorre and Bernier Islands. Light rays travel faster through hot air than they do through cool air. So the effect of a strong inversion over the ocean west of Carnarvon was to refract the light rays from the offshore islands downwards so that the islands could be seen during the hotter part of the day from elevated sites like the T&C building.

I recall that there would be atmospheric temperature inversions over the ocean on maybe 15 - 20 days a year. On those occasions I could easily see the over horizon islands from the T&C building at lunch time. Mostly the islands would be shimmery and fuzzy but on some occasions they would be reasonably clear and still. I particularly remember a few occasions when the inversion was so stable that I could see individual sand areas and the shore line rock cliffs on the southern end of Bernier Island.

A couple of weeks after the spooky episode on the Exmouth – Minilya road there was a strong inversion and a reasonably well resolved image of the islands. That got me thinking and as soon as I got home I rushed to get out my maps of the area where we'd seen the mysterious person with the lantern. I immediately saw the explanation.

The road that we'd stopped on was survey straight for many kilometres ahead of us and it pointed exactly at the Manilya roadhouse but well before the then road reached the roadhouse, the then road veered to the left so that it met the North West Highway at right angles. (Road has since been rebuilt to meet the highway about seven km north of the Minilya road house.) The section between where the road veered to the left and the Minilya roadhouse was densely wooded with acacias and other bushes so that with the curve of the earth and the dense bushes, you could not see the road-house or its elevated light from where we had stopped by the road.

However on the evening that we had stopped and had tea, though I did not think about it at the time, there was obviously an atmospheric temperature inversion over the land between us and the roadhouse. Thus the light rays from the security light at the Minilya roadhouse followed a curved path over the bushes and along the road to where we had been sitting, with variations in the air stability of the inversion giving the light a random variation in position.

So that was it. There had never been an axe murderer carrying a lamp, it was just an atmospheric temperature inversion allowing us to see the security light at the Minilya roadhouse!

I felt rather silly when I realised what had spooked us.

I remember when I was a student and drove tractors all night on big irrigation farms in the Wee Waa area of NSW and occasionally after a still night there would be a temperature inversion and just before the sun came up, I could sometimes see the Bellatta wheat silos which were normally over the horizon and out of sight. For a long time I have thought the mysterious min-min lights of Queensland are really over- the-horizon lights made visible by temperature inversions.

(Years later when Google became available, I learned that sighting of over the horizon features was known to, though not understood by, early mariners who would see over the horizon islands and wrongly believe them to be close. The phenomena is known as “Fata Morgana”, for “Morgan the Fairy”, a sorceress of medieval legends.)

But there was still one unanswered question, why did the light have a rhythmic up and down movement that had caused me to believe it was a lantern being carried by a walking person. I have since made some observations and believe I now know the answer. If you go outside on a dark night, when there are only a few points of light visible in the distance, if you focus hard on one of the light sources, your brain uses the other light sources as position reference points and the light source that you are focusing on appears to be stable in position. However, if it is a dark night and there is only one visible light source, and you focus hard on that one light source, although the source is stable in position, it appears to move up and down in synchronism with your own heart pulse. This is because even when you stand as still as you can, your pulse actually causes your head to have a slight bobbing movement which causes the light rays to enter the eye from slightly different angles as the head bobs up and down. The brain assumes that the head is stable in position and wrongly interprets the light source to be moving up and down.

Thus it seems likely that when I was focusing hard on the inversion image of the Minilya light, there were no other light sources within my vision and I wrongly believed the light to be rhythmically moving up and down when the light was probably relatively stable and my head was moving in synchronism with my own pulse which caused me to wrongly believe that the light was a lantern being carried by a walking person.

23 Cape Range oil

Cape range is a rugged mostly limestone plateau, up to nearly a thousand feet high, on the Exmouth peninsula of West Australia. The range forms most of the area of the Cape Range National Park. The plateau is very rugged and is intersected by numerous small gorges on its east and west sides and in most places the land surface is too rough and rocky for a vehicle except on made tracks and roads.

A friend, Trevor Edhouse, worked for a geophysical survey company and he told me about some oil well drilling that had occurred in the Cape Range area

In the 1960s an oil company bulldozed some roads and tracks in the area and conducted a geophysical survey, searching for indications of oil. The company identified the most likely site for an exploratory oil well and arranged for a trucking company to take the necessary drilling equipment to the site. The trucks could not negotiate the twisty rocky tracks that the survey company had left and despite the drivers' best efforts, the trucks could not get closer than about two kilometres from the proposed drilling site. It was before the days of mobile phones and the drivers did the only thing that they could do. They unloaded all of the equipment and returned to Perth and advised the oil company that it would need to have a bulldozer cut a track before the equipment could be delivered to the correct site. There was a lack of communication within the oil company and a different part of to the company, knowing that the equipment had been delivered, sent a drilling team to the area.

The remains of a dry oil well and goofing around at Potshot Canyon, Cape Range National Park

The drillers arrived and not knowing that the equipment was in the wrong place, assembled the equipment and commenced drilling. It was some time before the oil company realised its error, but by then the drilling was at more than half of full depth and was yielding “promising indications” so the company made a decision to drill the well to full depth and the company obtained even more “very promising indications”. There was optimism within the company and at more expense a track was bulldozed to the correct site and drilling commenced on a second hole, this time at the correct site. The drill hole went to full depth and yielded zero indication of oil. Soon after that, the oil company abandoned the search and left the area.

24 Stealing the flag

The series of flights to the moon were generically referred to as the Apollo series.

When I arrived at Carnarvon the Station was gearing up for Apollo 14. When Apollo 14 lifted off, I was very excited. While I had previously been an interested observer and sat in my living room awed by Armstrong and others walking on the moon, this time I was inside the tent! Though I was a very small cog in a very big machine, I was at least a part of it and was pleased to be so.

Other people took it equally seriously. I do not know whether it was a NASA imposed edict or just a Carnarvon custom but whenever there was a moon mission in progress, NASA’s Apollo flag flew on the flagpole outside of the main entrance to the T&C building at the tracking station for all of the ten or twelve days that the astronauts were away. The flag stayed there until the astronauts splashed down. The flag would then be taken down and not put up again until the next Apollo launch.

Apollo 17 was the last of the moon missions, being launched at 721207/0533 GMT and splashing down about 721219/2000 GMT. Being the last of the Apollo missions, I spent some time eying off the Apollo flag. I would love to have had the flag as a souvenir. Don or I, depending on who was on shift, would usually arrive at work in the dark and first go to the T&C building to get the solar observation teletype messages that had come in from the other SPAN sites during our night.

On early mornings during Apollo 17, I took particular notice and realised that although the flag area was well illuminated by the light that flooded out of the windows of the T&C building, the many night shift workers inside the building would not see out at night because the strong lights inside the building reflected back at them from the inner surfaces of their windows, thus

preventing them from seeing things that were less illuminated outside of the window. So if I wanted that flag, all I had to do was get it in the pre-dawn darkness when I went to get the early morning teletype messages.

I decided that on the last day of Apollo 17, I would souvenir the Apollo flag. I really wanted that flag. I had a few days to wait but the more I thought about it, the more I realised it was a dumb idea. If someone else took it, I would be outraged so what gave me the right to cause outrage for other people. So when the big day came, the last ever day of the Apollo series, I took my camera to work and took photos of myself and my friends sitting on the bench at the base of the flag pole, the pole that was for the last ever time flying NASA's Apollo flag. I still have the photos, though I do not know what became of the flag.

Sharon, Bob Houghton and Beverleen Robertson under the Apollo flag

Sharon, David and Beverleen Robertson under the Apollo Flag, 19 December 1972

25 What a fizzer

In February 1973, a Czech astronomer, Lubos Kohoutek, photographed a new comet. There was nothing unusual about seeing a new comet but when other astronomers managed to confirm its existence and identify its trajectory, they realised that it was still a very long way out in the solar system.

For a comet to be visible at such a great distance meant that it was an incredibly big and bright comet. Further calculations by the world's big observatories established that by the time that the comet was due to pass close to earth (perihelion was due on 26 December 1973) the comet would be brighter than two full moons in the night sky.

All over the world scientists and the general public were excited about the forthcoming event. NASA took comet Kohoutek so seriously that the launching of the third Skylab crew, which had been scheduled for October, was deferred until 16 November so that the astronauts could conduct Kohoutek focused experiments around the time of perihelion.

I recall that in about August 1973, a cook at the Tracking Station, Shirley McGloughlin, was planning to leave her employment and start a restaurant in Carnarvon. She was unsure what to name the restaurant and discussed it with Brian Renshaw and me. We suggested that she name it "The Kohoutek Restaurant" because she planned to open it about the time that Kohoutek

would be noticeably growing in brightness. We told her that everyone would be talking about Kohoutek and she couldn't get a bigger and better and cheaper advertisement than that. Shirley considered our advice but in the end she named it Rendezvous Restaurant. Maybe she knew more than we did.

In October NASA asked SPAN Carnarvon to commence photographing the comet and send daily photos to Boulder. We had a white light system on the side of our Razdow telescope and we made some modifications to it to enable us to attach a camera. We would start our shift an hour earlier so we could photograph the comet while the sky was still dark.

Our Razdow was not well equipped for night time tracking by coordinates and it was the first time that I'd worked with celestial coordinates so it took us a few days to be able to point into the darkness and know we were pointing at the comet. Also, when viewed from SPAN, Kohoutek was above the eastern horizon in the direction of the T&C building and our telescope was picking up scattered light from the outside lights at the T&C building as well as the red safety lights on the USB Antenna. Initially the Station Director would not let us turn off the lights, due to safety concerns, but eventually he agreed and we were able to increase our film exposures to about 30 seconds. The quality of our Kohoutek photos improved significantly.

By November Kohoutek should have been getting noticeably brighter but it was not happening. Scientists were beginning to question why Kohoutek was not getting brighter and we too could see from our photos that it was not brightening up in the way everyone expected. It now appears that for no known reason Kohoutek, which had been incredibly bright when it was first observed, lost its brightness as it came closer to earth. Scientists were then and are still baffled by the decline of Kohutek' brightness. In December 1973, when Kohoutek was at its closest to earth, you could only just see Kohoutek with the naked eye if you knew where to look.

And so that was the end of that. Kohoutek, the comet that was going to set the world abuzz and be the biggest, brightest ever comet, is better known as the comet which promised so much and delivered so little.

26 Wild flowers and kangaroos

Some people say WA has a wild flower season such as July or September. Having worked at Carnarvon and other WA towns, I say there is no best season for wild flowers. The flowers have evolved, not in tune to the calendar but in tune to the weather. Rain in the Carnarvon area of

WA is mostly intermittent and not calendar predictable. When it does rain, you get some wild flowers and the more it rains, the more wild flowers you get. Lot of rain, lot of flowers. No rain, no flowers. That axiom certainly held true in the Carnarvon area. I recall some occasions when there was very substantial rain and the wild flowers were prolific. Most of the tracking station was then a sea of yellow, orange and pink flowers. Sometimes, again depending on the weather, the flowers would stay vivid for weeks. Other times, if rained on, the flowers would droop and disappear quickly.

Another consequence of the weather, which was probably a lot more noticeable in the 1970s when the country was less fenced than it is now, was the mobility of the kangaroos.

For most of the year the west coast of WA experiences a constant onshore air movement from the south west. In summer moist ocean air would move eastwards over the warm land and be driven up by thermals to develop scattered cumulous storm heads. The storm heads would usually dissipate before they matured but a few would go on and develop into substantial thunder and lightning storms. Most of the storms were dry but some would drop rain. Rain from a thunder storm cell is usually very localised and may only be one or at best two kilometres in diameter

As the storm moves across the country it may lay a trail of rain a kilometre wide and maybe ten kilometres long before the storm is all rained out and dissipates. In a normal summer, the rained on land may be less than one per cent of the overall land area but somehow the kangaroos knew where it had rained and caused green shoots to appear and the kangaroos would turn up and graze on the green pick.

I recall driving from Exmouth to Carnarvon one night through an area where there had been rain in the previous few days, as evidenced by the table drains having signs of recent water and green shoots of grass. There was a section of road about three kilometres long where I saw more than a hundred kangaroos. I saw none at all for all of the rest of the trip. I was back there about a week later and I advised a friend to expect to see many kangaroos when we passed the area where I had previously seen so many.

This time we did not see one kangaroo. They had grazed out the area and gone to who knows where. No doubt to a new patch of freshly rained on earth.

SPAN site, surrounded by a sea of wild flowers.

More wild flowers.

Wild flowers, Carnarvon area.

Wild flowers in Gascoyne Junction area.

Wild flowers, Carnarvon area.

Wild flowers, Carnarvon area.

Wild flowers near a soak at the base of the Kennedy Ranges near Gascoyne Junction.

27 Tringa

Sharon Scarff and Bev Robertson shared a unit in Morgantown, Carnarvon. Bev's family knew some of the fishermen in the Geraldton area and one day Bev bumped into one of them, Andy Cassidy, in the Carnarvon Post Office and she brought him and his crew of three home for a coffee and a chat.

We sat up late talking to Andy and his crew. Andy owned Tringa, a 70 ft wooden fishing and turtle boat. Tringa had a mostly open deck with a below deck freezer and it was free of all the poles and rigging of the steel hulled trawling boats that were common in the Carnarvon area. Andy was licensed for line and trap fishing (mostly snapper), and turtle hunting. He was leaving next day to work his way up to the Ningaloo Reef and then he intended to put into Coral Bay in a few days' time. He invited me to join the boat for a few days. Andy had an old utility at Coral Bay that he wanted it driven back to Carnarvon and he suggested I go on the boat to Coral Bay and then drive his vehicle back to Carnarvon. I was curious to see the turtle hunting and was very pleased to accept Andy's invitation.

Don agreed to do my work until I returned and I met Andy at the wharf at the Carnarvon prawning factory next day. We left about four in the afternoon and commenced travelling north.

I sat in the wheel house and talked with Andy. Andy was friendly to his crew but he was very much in control and they clearly looked to him for direction. He explained to me that there was a good market for turtle meat and shell, mostly in France, and he was licensed to harvest one thousand turtles a year. There had previously been a lot of turtle hunting licenses but the Government was cutting back and now only Andy and one other person had turtle licenses and they had both been advised that the licenses would be withdrawn within a couple of years.

Andy had owned Tringa for many years and it had at one stage been damaged on a reef but he had had it repaired and it was now, he assured me, in good condition. Andy was in his mid-thirties. He was tall and strong and I noticed him move heavy things around on the deck with one hand like they were weightless. He was friendly and chatty and told me stories of interesting things that had happened to him at sea. He wore only fisherman's boots, shorts and a skimpy shirt, had a full crop of fair hair, he laughed a lot, he moved quickly and decisively and projected the image of a polite buccaneer. Andy was a capable charismatic fellow and I liked him.

We travelled through the night with both of us alternately steering the boat and napping or chatting in the wheel house and by dawn next day we were about 20 km north of Coral Bay. The Ningaloo Reef runs from about 25 km south of Coral Bay for nearly 200 km north to the tip of North West Cape. The Reef is mostly continuous and varies from about half a km to three km offshore. There are numerous gaps in the reef and Andy piloted Tringa in through one of the gaps and anchored about one kilometre from the shore.

When we had anchored, I had a good look around the boat. Its exuded pragmatism, items that related to fishing like winches and engines were in good condition but items not specific to the work of the boat looked a bit tired and needed a clean. There was a flush toilet on the boat but the cistern did not work so there was a bucket on a rope tied to the toilet door so you could haul up a bucket of sea water and pour it into the toilet bowl whenever you needed to flush the toilet. The galley looked very unloved. There was plenty of food on board but individuals seemed to just cook something easy to feed themselves whenever they were hungry and then walk out of the galley without cleaning anything. The next person to use the galley would just wash or scrape off the few utensils that he needed to use and as soon as he had eaten, he would walk out and go back to work on the deck. But I had come to learn about and participate in the turtle hunting, not worry about housekeeping.

The water inside the Ningaloo Reef was calm and sheltered from the waves outside that broke onto the reef. There were a few patches of sea weed near where we anchored but the bottom

was mostly flat clear sand, all of the way from the shore out to the reef and about four to eight metres deep, depending on the state of the tide. The water was very clear and when there was no breeze to ruffle the surface, you could easily see every minor detail on the bottom. It was indeed a beautiful and peaceful scene, but all that was about to change.

There were two 4 metre run-about boats with about 15 kW outboard motors tied on the back deck. A winch and derrick were used to launch one of the boats. Two of the crew got into the boat and set off to hunt for turtles.

The procedure for hunting was that one man would sit at the back and drive the boat while the other man stood in the bow with a harpoon held above his head. The harpoon was a steel tod, about 1.6 m long and 25 mm in diameter with a welded loop on one end and about 15 metres of rope tied back to the boat. The other end of the harpoon was sharpened to a point and had a hinged spur so that it could penetrate a turtle's shell but not easily be pulled back out. There was an intermittent light breeze that caused some light chop on the water surface so it was not always possible to see good detail below the surface but it was easy to identify turtles because if a dark patch in the water was stationary, it was sea grass on the ocean floor, but if the dark patch was moving through the water, it was a turtle. If the dark patch moved the man at the front would use hand signals to direct the boat to give chase and the boat would very quickly catch up behind the turtle and the man in the bow would make a throw or no throw decision based on the size of the turtle. Small turtles were left but adult sized turtles were harpooned and hand pulled into the boat. The man driving the boat would use the back of an axe to give the turtle a quick whack on the head and there would be a dead turtle on the floor of the boat. The man in the bow would give the harpoon a powerful yank and break it out of the turtle's shell and then the crew would commence looking for their next turtle. There were numerous turtles in the area and the boat crew could be selective and only give chase to the bigger turtles. It was a quick operation and from the time that a turtle was sited to the time that it was pulled on board and killed was usually only about 15-20 seconds. It was a gory end for the turtle but at least the end came quickly.

While two of the crewmen hunted turtles, Andy and the other crewman and myself sharpened knives and prepared the freezer for the catch. In a bit over half an hour the runabout boat had returned with a dozen dead turtles. They were individually winched up and dumped on the front deck and Andy and a crewman set about gutting each turtle and stacking it in the freezer.

I went out on the hunting boat later in the morning. For a while I drove the boat which allowed the usual boat driver to stand and act as a second look out for turtles. I also did some

harpooning but I found that you needed a lot of strength and coordination. You had to hold the harpoon high while maintaining balance as the boat weaved after a turtle. As you caught up behind the turtle you had to make a quick throw or no throw decision and if you threw you had to throw with all your strength and be accurate at the same time. I harpooned a few turtles but I also had some misses and I did not like the thought of injuring a turtle and having it escape so I handed the harpoon back to the experienced hunter who was very practised and never missed. We settled into a routine where I steered the boat and the other two did the hunting. After harpooning about a dozen turtles, the boat was low in the water and we returned to Tringa and unloaded the catch.

It was in some ways exciting to be a part of the chase but in other ways I found it a sickening experience. I had come to look and learn, not moralise, so I kept my mouth shut and just got on with the job. Like so many people who work in industries that involve discomfort or cruelty to animals, the two hunters had been doing the job for so long that they had become oblivious of the pain that they were inflicting. If a particular turtle weaved about and prolonged the chase by a few seconds, the crew would exhibit extra glee as they dragged it on board and dumped it in the boat. They gave a low priority to killing the turtles with the axe and some turtles were just left to flap around in their agony in the bottom of the boat until they died of their harpoon injuries. I was offended by the unnecessary cruelty and I made it my business to kill each turtle with the axe as soon as it was brought on board. The dead turtles bled profusely from their back and head injuries and as the hunt progressed there would be dead turtles and gallons and gallons of blood and water all sloshing around in the bottom of the boat as it weaved about chasing turtles. It was indeed a gory business.

About lunch time I felt hungry and went into the dreaded galley to prepare some food. There was not an inch of bench space that was not double stacked with used utensils and the more I looked at the mess, the less hungry I felt so I went back to work without eating anything. Later I felt famished and went into the galley and the same thing happened again, the sight of the mess dissolved my hunger. Later still I found some biscuits in a cupboard and pigged out on a full packet of biscuits

The turtle hunting continued while Andy and the other crewman and myself busied ourselves gutting the turtles and stacking them into the freezer. By about mid-afternoon there was a big pile of turtles on the deck so the hunting stopped for the day and all hands worked at gutting and stacking the turtles. The tally for the day was 90 turtles and we finished the cleaning and stacking and hosing the blood off the deck about an hour before sunset.

It was a beautiful evening and I had observed during the day that there were many snapper just loitering on the sea floor and easily visible from the boat. It was possible to stand on the bow and see up to a dozen good sized snapper just randomly lazing about on the sea floor. There was a very slight northerly current (coming from the north) and all of the snapper were facing north and swimming ever so slightly to just hold their position above the sandy bottom. Someone said we would have fish for dinner and hand fishing lines were produced and we commenced fishing. The fishing required a different skill from what I imagined. It required the skill of accurate throwing. As well as the snapper, there were numerous small skinny sharks, about 50-80 cm long, that the crew called gummy sharks but whereas the snapper were lethargic and relatively stationary in position, the gummy sharks were quick and constantly moving and foraging. The gummy sharks were not good eating and we did not want to catch any of them. To catch a snapper, it was necessary to stand on the bow or the side rail and select which snapper you wanted to catch. You then lobbed the line and baited hook so that it would fall to the bottom within 30 cm of the snapper's nose. The snapper would move slowly to the bait and bite at it and you would have a snapper hooked but if the bait was more than 50 cm from the snapper's nose, a cruising gummy shark was likely to find the bait before the snapper got there. It was possible to watch the bait sinking towards a snapper and if you saw that an approaching gummy shark was going to find the bait before the snapper got there, which was likely to happen, you would quickly pull the bait up and have another try to lob it even closer to the snapper.

In less than ten minutes we had about eight nice sized snapper. One of the crew said he would cook up a group meal of fish and while some of us cleaned fish he cleared a bit of room in the galley and he did a good job and we enjoyed a fine meal of snapper.

Next morning we motored about ten km north, anchored and continued hunting for turtles.

At one stage in the morning I bit the bullet and gave the kitchen a major clean-up and washed everything and stacked all the items in the cupboards and finished with a clean uncluttered bench. No one commented and I did not ever know whether they thought I did a good job or whether they thought I was interfering in the system that worked well for them. Their lack of comment was more likely to have been because they did not even notice.

The turtle tally for the second day of hunting was about 100.

On the third day we caught about 50 turtles and Andy called a halt early and we commenced motoring back to Coral Bay while still gutting and storing the last of the turtles.

Cruising, looking for a turtle.

Andy about to make a throw.

Returning to Tringa with turtles, note mix of water and blood in the boat and Turtles on deck for gutting and storing in the freezer.

By then I had been on board long enough to know the crew a bit better. One of the crew was in his mid 40s. As far as I could tell, he was unpaid and liked coming to sea just for the sea life. Also, he said he had a drinking problem and that fishing with Andy kept him away from the pubs. He was not very fit and always stayed on Tringa during the turtle hunting and helped Andy with the gutting and storing. The crewman who usually drove the runabout boat was a likeable but very quiet fellow, in his twenties. He had left school at 13 years of age and had been working on fishing boats ever since. He asked a few questions about the tracking station and satellites. He was puzzled by my assurance that the satellites just kept going around and around nearly indefinitely. He found that hard to accept. The third crewman, Alan, was a lean muscly man in his mid-twenties with fair hair. He was usually the harpooner, except when Andy sometimes swapped jobs to give Alan a rest. There was not much that Alan did not know and he implied that anything he didn't know wasn't worth knowing. His greatest joy in life seemed to be harpooning turtles. There is no doubt that Alan was very good at his job but in other matters, I thought he was shallow. Alan had boxes of beer on board and from mid-afternoon onwards he frequently had a bottle of beer in one hand. As he finished a bottle, he would stand on the side rail and throw the bottle as far as he could in any random direction. I asked him why he didn't keep the bottles on board and take them ashore and dispose of them in a tip. He said if he just

tipped the bottles over the side there would be a heap of bottles on the bottom and that would be litter. But if he threw them and spread them at random, then you would only ever see one at a time and you could hardly call that litter. I'm still trying to understand that.

We anchored inside the reef at Coral bay and we all went ashore in one of the runabout boats. In 1973, Coral Bay was just a ram-shackle pub and a few fishing shacks. There was no marine reserve and Coral Bay's main commerce was occasional fishing boats unloading into freezer trucks for the Perth fish market and the locals drinking at the pub. The entire Coral Bay district would have then had a population of less than a hundred people.

For days, Alan had been saying he was looking forward to going ashore at Coral Bay so that he could "catch up with my bird". I wondered how classy his "bird" would be. I couldn't think of any "bird" that could put up with him, unless it was a deaf emu. We went to the pub and Andy bought a round of drinks. Alan disappeared and was back five minutes later with his "bird". She was an attractive young school teacher from Perth, on her first posting after training, to Coral Bay. I had a chat with her during the evening and she seemed pretty smart except that her whole life seemed to be just running the local one teacher school and pining for Alan to occasionally come ashore.

For the three days that I had been on the boat I had been inconvenienced by dry salt spray on my glasses. It made me feel that I was constantly looking through a haze. I asked the publican for a glass of fresh water to wash my glasses but he said they had no fresh water. Fresh water was a rare commodity at Coral Bay and they even washed their beer glasses with salty water. Eventually he gave me a glass with about an inch of fresh water from his secret supply and I was able to get rid of most of the haze.

I wanted to get going so Andy helped me start his vehicle and I left, but not before I profusely thanked Andy. Andy's vehicle was a classic fishermen's working vehicle. It had some rust holes in the body, the exhaust was noisy, one headlight was intermittent in tune with the road corrugations and the windows were hard to wind up or down but I enjoyed the drive. I arrived back in Carnarvon about 3:00 am.

Notwithstanding my squeamishness about the harpooning, it had been a fascinating three days for me. My life on land and my work at the tracking station was very different from life on the boat and I felt privileged to have been invited to be one of the crew. I had enjoyed the work, I had enjoyed observing the different personalities in the crew and I had particularly enjoyed meeting Andy. Life at sea can be hard, it can make ordinary people hard, normal people

develop hard personalities to cope with the work but Andy seemed different. He could be as hard as he needed to be to get the job done but he also displayed a thoughtful and caring side to his personality and he was articulate – not common attributes among fishermen.

I saw Andy on the street a few times and we agreed I would do another trip with him but Don was away at the time and I was working long shifts and then Andy moved Tringa back to Geraldton and to my regret, I did not ever go on another trip with Andy. I sometimes wondered what became of the young school teacher but I did not ever hear of her again.

28 Photo failure

Jim Wilcox was an engineer in the computing section of the tracking station. He had a way with words and sometimes wrote a column for the local newspaper. He was usually a pleasant fellow but sometimes he could be needlessly scathing. I remember an occasion when there were six or seven of us at a table in the tracking station dining room, having our lunch, and for some unknown reason Jim started asking unnecessarily intrusive and sarcastic questions of Marilyn, one of the young secretaries at our table. I could see she was not enjoying it one bit but Jim kept it up. I was uncomfortable with what was happening and I was about to verbally go to her aide but I hesitated for just a bit because Jim could be a difficult character but I hesitated too long because there was a new young fellow at our table, he had only started at the tracking station that week and was still feeling his way, but he turned on Jim with a withering barrage of sarcasm that shut Jim up and left him feeling rather stupid. The table went very quiet after that.

The entry to the Carnarvon Post Office consisted of doorway about one and a half metres wide and two inward swinging doors that met in the middle. The doorway was wide enough so you need only push one door open to enter. I remember an occasion when I went to the post office and pushed the left door but only the right door was unlatched and I hurt my wrist when the left door did not budge. I did not think it was a big deal but I commented on it at lunch one day when Jim must have been present. I thought no more about it but about a week later I saw a Jim Wilcox article in the local paper (Carnarvon had a local paper then). Jim had gone to the post office one lunch time and counted how many people pushed at the fixed left door before they then pushed the right door and entered. It was a good humorous article, he mentioned me by name, did not criticise the Post Office, but commented that most users must have been local and knew to push the right door but even so about 20% of people first pushed at the left door. I noticed that after that article, during business hours, the Post Office always had both doors unlatched.

Jim had contacts in the local prawning industry. He wanted to write an article for the Woman's Weekly about life on a prawning boat. Jim knew I did a bit of photography and he asked me if I would go to sea for three days on a prawning boat and take photos for his article. I didn't need to be asked twice. At the time Carnarvon did not have a sheltered harbour and all of the fifteen odd local prawning boats would tie up at a small wharf near the prawning factory, about 1 kilometre south of the then mile long jetty. I joined the boat, MV Ord, (all of the fishing fleet had names from the rivers of north west Australia. The one I was on was definitely "something Ord", I think it was "MV Ord" – don't know what "MV" meant) and we headed south west into Shark Bay. There was a crew of three men in their twenties and the Captain, Dave, who was mid forties. Dave was big and strong, opinionated, arrogant and I didn't like the way he shouted at his crew, who were clearly intimidated by him. Dave was chatty with me and as we travelled south west toward the prawning area, he commented how he had spent many years at sea but he was married now and he talked about his life now that he was married. We were both in an expansive mood as we exchanged some personal thoughts and comments and then he said something that hit me like a bullet. We were standing in the wheelhouse, he was holding the wheel firm by just leaning lightly against it and looking pensively ahead at the ocean and he said "yes it's good to be married, good to get home and relax and feel comfortable with the wife and the kids, yes it's good to be married – but not as good as getting back to sea". I glanced at him, thinking he was joking but he was deadly serious – he meant every word. He would not have noticed my surprise, to him his comment was just a statement of fact. A minute later he may not have remembered what he had said but I have never forgotten it. He was a sea-dog first and a husband second.

The net was run out about dusk. The procedure was that baffle boards at the edges spread the net to about a 40 metres front and the net was dragged along on the floor of the ocean for an hour or more and then winched back on board. As the net was winched up most of the catch accumulated into a bulb shape in the centre of the net and then the winches held the bulb above the sorting table. A noose was released on the net bulb and up to a ton of catch flopped onto the sorting table that was positioned in the centre of the back of the boat. The noose was retied and the net was lowered back into the ocean and the trawling continued while the catch was sorted. Two crewmen wearing gloves stood at opposite sides of the sorting table and hand shuffled the bycatch down a waste chute back into the ocean while they also flicked prawns into a plastic tray for storing into the freezer.

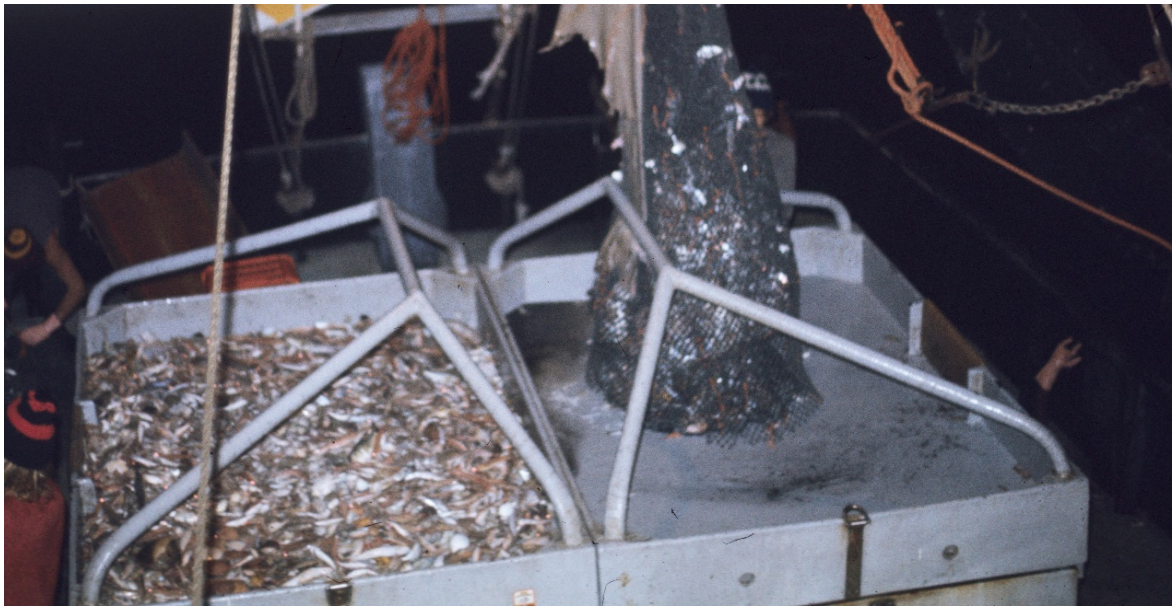
Being new to the prawning, I expected the catch to be mostly prawns but the catch consisted of every conceivable sea life that you could imagine, including at best about 5% by weight of prawns. Most of the bycatch had been dragged in the nets for long enough to be dead but some

was still active and may have lived after being directed down the chute into the water. Mostly the bycatch consisted of small sea life but occasionally a larger item would spill onto the sorting table. One of the catches later in the night included a very active five foot tiger shark that was thrashing around and scattering prawns off the sorting table. The shark was thrashing so much that it was difficult to get it into the waste chute. One of the catches included a big turtle. It was very groggy and had probably been dragged for a long time but with luck it may have recovered once it was back in the water. The public might not buy prawns if the public saw how much bycatch is killed just to get a kilogram of prawns.

I had a good Pentax camera and took about eight rolls of film (36 exposures per roll) over the next two days. Photography then was not as immediate as it is now. With chemical film one had to compose all photos carefully because each click of the camera cost about thirty cents for the film and the processing. Each exposed roll had to mailed to Kodak for processing and then Kodak would mail it back so you did not see the results until about two weeks after the photo had been taken. If you had an issue with under or over exposure, it would be about two weeks before you could adjust exposures to correct an error. When I viewed the photos two weeks later, I was disappointed. The day time photos were OK but the night phots were poor. Most of the action photos, winching in the nets, dumping the nets onto the sorting table, getting the shark off the table, sorting etc etc were night shots and they were very disappointing. After viewing the processed film, I realised that when photographing at night, with just the empty sky as a background, the flash over illuminates the close matter and under illuminates non close matter because there is no background to reflect light back onto the subject.

I gave the photos to Jim but he and I agreed they were not good enough for publication. Jim said he would arrange for me to have another go but we did not ever get around to it.

Prawn trawler MV Ord at anchor in Shark Bay. The trawlers mostly work at night when the prawns are active and then the trawlers rest up during the day.



Only about 5 % by weight of the catch is prawns, with the bycatch being sorted down the waste chutes back into the ocean. Much of the bycatch will have been dragged in the net for more than an hour and would be dead though a small amount may survive.

29 Dolphins at Monkey Mia

One day in 1971, Bev Robertson, Bob Houghton, Sharon Scarff and I went for a camping weekend in the Shark Bay area. We spent a whole day at Monkey Mia.

At the time there was nothing there except a small very dilapidated wooden jetty and a few fisherman's shacks. There were a few other campers, most of whom were present for the fishing. We spent some time walking around in the water and were soon being escorted by three friendly dolphins. By friendly, I mean they swam in close and were eyeing off anything that we had in our hands in case it was food and they could entice us to give it to them.

There were some people cleaning fish and the dolphins would check them out too and wait for fish scraps. One of the fishermen was joking about how fussy the dolphins were. He threw a fish head to a dolphin and it hesitated to accept it but the dolphin was quick to devour a small whole fish when it was thrown to it. The people said that they often visited the area and the dolphins were usually there every day – sometimes the numbers varied a bit but mostly it was about three. I watched the dolphins for a long time and all of their responses indicated that their interest in us was merely to hang around and hope for a free food handout. While I thought they were nice interesting animals, I saw their behaviour as no more sophisticated than that of the seagulls that badger you for a crust if you eat your lunch in a seaside park.

Twenty years later I visited Monkey Mia again, this time with Sharon and our two boys. I was amazed to see that government officials and the private sector had turned it into a resort town, hotels and all, and dolphin watching is now an industry. People now come from all over the world to have deep and meaningful communications with the supposedly intelligent dolphins. People write PhDs about the allegedly intelligent dolphins. It is the emperor's clothes all over again; it's an industry built on its own hype.

There is hardly a wild animal in the world that will not develop a relationship with humans if the animal realises that it will get free food and not be hurt. It seems to me that our relationship with the dolphins is on no higher level than our relationship with the seagulls at the sea side - and I don't see anyone writing PhDs about brilliant seagulls.

30 You never know who may be listening

When I lived at 29A Babbage Island Road, Carnarvon, I could stand at our front door and have a direct line of sight to the Carnarvon swimming pool, which was a bit more than half a kilometre away.

One Saturday morning I was sitting in the sun outside our front door, not particularly doing anything when I heard voices over the public address system at the swimming pool. This was unexpected because it was winter and the pool was closed.

I didn't take a lot of notice until I heard some very crude language. I paid more attention then and listened. It took me a while to work out what was going on but I realised that although the pool was deserted, there must have been a radio receiver turned on and it was somehow leaking into the public address system because the voices that I could hear were communications between the crews of different trawler boats that were fishing out at sea, west of Carnarvon.

The crews were talking about their catch, about the manager of the processing factory at Carnarvon, about their girlfriends and anything else that crossed their mind. Their expressions and language were very crude and it was all at an amplified level so that hundreds of the towns' people could hear every word. After a while I saw a car drive to the pool gates and a man hurried inside. The public address system went quiet.

Although I knew a few of the people who worked on the trawler boats, I did not recognise any of the voices or names so it all went over my head. But I am sure that some of the towns people would have recognised voices and I wondered what the crews - who were talking so freely - would have thought if they knew that hundreds of people could hear their every word

31 Chess at SPAN

At SPAN, we were usually diligent about our work but sometimes we slacked off a bit. I recall a period when we played a lot of chess. A game might start at lunch time and we would all stand and watch, and sometimes comment, until the game finished which may have taken hours.

Harry Whitworth was the site safety officer. Harry was always happy and bouncy and every week day, about midday, Harry would come to SPAN and flick a few switches and check that the

fire alarms still worked. Harry was always welcome at SPAN. No matter what may have occurred to mess up your day, Harry would arrive smiling and laughing and would brighten up the place. Harry would sometimes stop for a chat and a cup of coffee and occasionally for a game of chess. Harry fancied his skills as a chess player.

Liz Beckett was an equipment operator at SPAN and she had never played chess in her life. Harry offered to teach her and he showed her the moves on the board. They then played a game where Harry did his own moves and also helped Liz with hers. A few days later Harry offered to give Liz another chess lesson but Liz said in jest,

“I can remember all the moves Harry so I could beat you now.”

So, Harry set up the board and said, “Ok, let’s see you beat me”.

They were both sitting on stools in the observing dome and commenced their game. Liz was out of her depth and lost a pawn immediately. I was standing behind Liz and by then several other people were standing behind Harry, watching the game. Liz picked up another chess piece and commenced another dangerous move and I felt sorry for her. I was standing right behind her and without any planning or thinking I pushed my thumb into her back which I hoped would make her reconsider the move. Her hand stopped, poised above the board and so I moved my thumb lightly to the upper left.

Her hand followed and stopped when I stopped and she then placed the piece on the board. She remembered enough about the moves so that once she had her hand in the right place, she could see where to place the chess piece. And so the game proceeded, with me secretly directing Liz from behind her.

To Harry and the others it looked like Liz was playing a slow and ponderous game but by then, although Liz and I had not planned anything, she and I knew exactly what we were doing.

After about an hour Harry had lost – apparently outplayed by a complete novice. Harry was not used to losing and he went away, very cranky with himself.

As soon as Harry was out of range Liz and I burst out laughing and the others laughed too when we told them what we had done. When Harry came next day to check the alarms, someone told him how Liz had beaten him because they thought Harry would enjoy the joke but he didn’t. He went away, very cranky with all of us. The next day, Harry was his normal happy self and

everything was forgiven. I liked Harry a lot; he always brought an air of happiness, well nearly always.

32 Ye reap what ye sow

Most of the staff at the Carnarvon tracking station were competent and committed to their work, but there were a few duds. There was one technician that I thought was a particular waste of space. I will call him Reg. There wasn't anything that Reg didn't know and no matter what anyone else had done, Reg had always done something bigger and better. I tired of his stories about his flying planes in Franco's Spanish civil war. I never really knew which side he flew for, nor much cared, but predictably his stories usually centred around the critical role that he played and his narrow escapes.

As 1972 drew to a close the Apollo program was winding down and it was apparent to all that NASA would not require the Carnarvon tracking station for many more years. Developments in satellite tracking technology meant there was a declining need for remote tracking stations and there was a tendency for NASA to centralise its work into a fewer number of stations at special purpose sites, eg the Tidbinbilla deep space tracking station near Canberra.

By 1973 many Carnarvon Tracking Station employees were looking for jobs elsewhere and one day I noticed that Reg had advertised many small domestic items in the local paper as being for sale and I wondered if, and hoped that, he was on the move. A couple of weeks later Reg told me he was leaving to manage a roadhouse at Kambalda. His family had already left and he would be leaving soon. Of course Reg's version was that he was going to be the manager – but I suspect he was going to be one of the workers. He was aware of my disrespect for him and when he told me that he was leaving I thanked him for the advice but offered no other comment.

Sometimes when people left the tracking station, there would be a small gathering at afternoon tea and one of the site managers would say some nice words, people would reminisce about past times, hands would be shaken, well wishes would flow and then everyone would get back to work. When Reg announced that he was leaving a few of the women equipment operators decided to collect for a small present to be presented to Reg at afternoon tea on his last day of work. When one of them told me what they were doing, I was surprised because I knew that she too, like me, did not respect Reg. When she asked me for a contribution I declined to give any money. She badgered me for a contribution and urged me to let bygones be bygones and she said that it would not look good if I was the only person to not contribute and sign a card. I said

that I could not care less about that and she gave up on me and collected from other people at SPAN and from staff at many other parts of the site.

People can act strangely when asked to contribute towards a gift. Some people, when asked to contribute for a person whom they do not respect, or have clashed with, will feel uncomfortable about admitting their true thoughts and will contribute more generously than they otherwise would as a way of pretending that they had got on well with the person.

And so it was with contributions for Reg because some people made larger than normal contributions and when it was all added up there was more money in the kitty than expected. Bolstered by the larger than normal number of donations, the organising women turned it into a bigger event than usual and arranged for the most senior person at the station (Ray Jacomb, Station Director) to make the presentation to Reg. Reg was unaware of the plan but it was arranged that the Station Director would present Reg with a nice set of crystal wine glasses at afternoon tea at the T&C building on Reg's last day of work. I was disgusted that such an undeserving person was going to leave in such a blaze of glory and I deliberately took little interest in the event preparations.

Reg's last day came and went. I had no intention of going to the presentation and just went on with my work. After the presentation, I did not ask anyone how it had gone.

A few days later, late in the day when most people had gone home, Bob Davies, one of the site air conditioning technicians came to make some minor repairs to the SPAN air conditioners. When he had finished the job, he stayed for a cup of coffee and a yarn and said he was still laughing about Reg's presentation. I asked what he meant and he said,

"You must have heard about it?' to which I replied, "No," So he told me what had happened.

Reg's resignation had been timed to take effect at the close of business at the end of a pay week (It was then common for most industries to pay with cash in an envelope unlike today when most pays go direct to the employee's bank). Reg had gone to the administration office shortly after lunch and received his pay envelope. There was nothing unusual about that but the unexpected occurred when Reg, unaware of the planned presentation, immediately left site and departed Carnarvon. In other words, he took his pay and shot through!

At afternoon tea, the Director was left holding the crystal glasses with no one to present them to. Technically, Reg had departed early and thus stolen a few hours of pay from his employers but

more significantly, he had publicly displayed his level of personal integrity by taking his pay and running. I made no comment but I struggled hard to suppress a grin. I felt some satisfaction in knowing that with respect to departing presents, Reg had got what he deserved.

33 Correct SCAMA procedure

One of the daily tasks at SPAN was to take a photo of the sun's surface and transmit the photo via our photo transmitter to NASA's solar forecasting centre at Boulder, USA. The usual procedure was that we would first open a SCAMA line to Boulder, spend a brief time verbally discussing any significant solar changes that we had observed and then commence the photo transmission on the SCAMA line. Sometimes, about 5% of occasions, the photo transmitter and the receiver would not synchronise and the received photo would be garbled and we would have to make the transmission again. Sometimes the forecaster would tell us that there was a snow blizzard at Boulder or we may comment that it was very hot at Carnarvon, but usually we only discussed solar features.

Not long after Don and I commenced work at Carnarvon, Paul Oats, deputy station director, was concerned that Don and I were not always using correct NASA SCAMA procedures and terminology. He agreed that although it was necessary to use English conversational terms when discussing the sun, he said that we should be more professional and use standard NASA terminology as much as possible. Paul said it could give the Carnarvon tracking station an unprofessional image if we used incorrect procedures and terminology. Paul had a point because although Don and I had picked up many SCAMA procedures, we had not received formal training on the matter.

Paul arranged for John Fletcher to give us a forty minute seminar on correct SCAMA procedures and terminology. Paul sat in the room, listening to John and occasionally Paul added his bit to the discussion. Paul was an OK guy but he often took himself way too seriously. John timed the seminar to be prior to our daily photo transmission and at the end of the seminar we opened a SCAMA line to Boulder for a routine photo transmission. This was where Don and I were going to demonstrate our new efficiency on the SCAMA line. I recognised from the voice of the Boulder forecaster that it was Karl, one of the more chatty and less formal of the Boulder personnel. John and Paul were watching and listening so I was on my best behaviour as I gave a very concise and professional summary of the solar features of interest and I advised "ready for transmission" which was the signal for Karl to acknowledge and start his photo receiver and advise us by saying "start transmission". But Karl, unaware of the tense and formal atmosphere

at our end of the line, went into a rambling explanation about some inconsequential solar features and finished by saying “and you can start the photo sender now because if God’s willing and the river don’t rise, we should get a good transmission”. I was very amused by Karl’s laconic and unprofessional response but I saw a scowling frown on Paul Oat’s face so I finished the transmission and got out of there as quickly as I could because I couldn’t suppress my laugh any longer.

34 Car log books

The tracking station owned a fleet of cars and one of them was assigned to Don and me for driving to and from work and for general transport on site. All of the site cars were maintained and managed by the station contractor, AWA. Don and I each owned a private car and there was never any abuse of our privileges with the site car. There was a log book in the site car that we did not bother to fill in.

One day Lorraine Rooney, who was in charge of the AWA vehicle fleet, checked our car and log book and expressed shock that our log book did not tally with the car odometer reading. She advised that henceforth we had to enter the kilometres driven and the reason for using the car on every occasion that we used the car. I argued that it was pointless but Lorraine said “rules is rules, everyone else does it and you have to do it too”. She added that she expected the odometer and the log book to agree in future and from time to time she would come back and check.

Lorraine was a nice person and she was only doing her job but I resented having to comply with such bureaucratic nonsense and I decided I would comply in my own way.

Next Monday morning I calculated and entered how many kilometres the car had been driven since the last log book entry. It was about 1820 kilometres so I entered 1820 km into the log book and in the purpose column I wrote “went ‘roo shooting on Saturday night after the pubs closed”. I made sure that the odometer and the log book reconciled and I couldn’t wait for Lorraine to come and look at the log book. She did not come that week so I did the same again next Monday morning, and I made the same entry every Monday morning for about a month and then I got sick of it all and didn’t fill in the log book any more. But the joke was on me because as far as I know, Lorraine did not ever come back and look at the log book.

35 I call that real stress

I had my share of ups and downs in my first year at SPAN. The problem was that the Razdow telescope was performing below specification and the SPAN supervising technician argued that everything was OK. There were some very heated clashes between him and me and often a smouldering background tension.

One afternoon after the technicians had gone home, I was sitting at my desk at SPAN when Brian Gray came in and sat down for a chat. Brian was a diesel engineer from the powerhouse. He was very good at his job, was always happy and smiling and was respected by everyone on site. He had come to fix some SPAN equipment but on this occasion he seemed more interested in sitting and talking. After a while he said, “I’ve been watching you and I think you need a rest”.

I hardly seemed to notice and continued to chat about what we’d been talking about but he held up his hand to stop me and pointed a finger straight at me and said, “I’ve spent a lifetime watching the people I work with and I think you need a rest”.

That caught me by surprise. Don had been off work and I had been doing very long shifts but I enjoyed the work and didn’t think I was stressed so I was surprised at the seriousness with which Brian stated his view. We had a long talk about work stress and how you recognised it in yourself and in other people and what to do about it. In the end, if I was stressed, I did nothing about it and continued to work long shifts for no other reason than because there was no option.

In our discussion about stress, I asked Brian why he had such an interest in stress and he told me a story that left me speechless.

Brian had trained in the Royal Navy and spent many years in submarines. He said that for submarine work you needed the right type of person, someone who could work for long periods in confined quarters with other people and not break under stress. He said that during the fifties and early sixties, when the cold war was at its hottest, he had worked in Royal Navy submarines and their instructions were to go to the Barents Sea, north of the Russian sea ports, and take details of all ships going in and out of the Russian ports, particularly Russian navy ships.

Brian recounted how they would sneak to within a few kilometres of the harbour mouth and lie on the bottom of the ocean for weeks and just collect data, surfacing only occasionally for air. They were in Russian territorial waters and if anything went wrong, there was no one to ask for

help. He said it needed a special sort of person to take the stress of such a job and so he had acquired the skills of an amateur psychologist by watching other people.

Brian retold how, on several occasions, their submarine had got stuck in the mud on the bottom for days at a time. They would have to work out a strategy of waiting for the right tide and then using their engines to break free, knowing that they had only finite reserves of air and power. Brian said that was real stress.

I thought about that and decided that in comparison to being stuck in the Russian mud, my job at SPAN was a bed of flowers.

36 What might have been

Shirley McGlaughlin was a cook in the tracking station kitchen. Her husband, Ken, had a semi-trailer truck and regularly carted from Perth to the mining operations in the Pilbara and backloads when he could get them. I had a semi-trailer truck driver's license and an ongoing interest in trucks. On one occasion I accompanied Ken when he was taking a load of pipes to a mining site east of Port Hedland. Ken was bored with driving and was happy for me to do a lot of the driving. We left Carnarvon about midday and drove mostly through the night and arrived at the mine next morning. When we arrived at the site no one knew we were coming and it was a couple of wasted hours before a crane arrived to unload us. We were about to get unloaded when another truck arrived, driven by one of Ken's mates. The truck was severely overloaded with steel beams that the driver had collected at the Port Hedland wharf and the driver wanted to be unloaded first because he was nervous that the road authorities may come by and fine him for overloading. Ken agreed and we lost another hour. We had a late breakfast at the mine dining hall and Ken eventually got a small backload from the mine and we headed south. We stopped at a roadhouse for a feed and Ken met another truckie mate and they started yarning. It was before the days of CB radio and driving a truck was a lonely business and Ken enjoyed a yarn so he asked me to drive ahead and wait for them at the Ashburton River crossing. At that time all of the roads north of Carnarvon were unsealed, some roads had deep corrugations and none of the major rivers had been bridged. The Ashburton is a big river when it rains. It originates in the hills of the Pilbra and unlike the Gascoyne which is dry for all of the time except after rain, the Ashburton maintains a small flow even in prolonged dry periods. At the Ashburton River the road descended an earth cutting in the bank and then crossed about 50 metres of gravel and then crossed an old concrete causeway and then climbed up a shallow cutting and proceeded on its way. I pulled off the road just before the causeway and waited for the others to

arrive. As I sat there in the silence of the night, the stars were intensely bright and then a three quarter moon rose up and illuminated the river and the surrounding hills. The scene had a magic of its own and though it is a long time ago I have never forgotten the quiet and the beauty of that night. Ken and his mate arrived about an hour later and we started a fire and boiled the billy and sat around drinking mugs of tea. There seemed to be no urgency and we were there for about two hours as Ken and his mate reminisced by the light of the fire about the “good old days” in the early sixties when mining was just developing in the Pilbara and the law had not yet started to enforce the truck load weight limits. The other driver decided to sleep at the river that night so Ken and I moved on and were back in Carnarvon next day.

It had been a good trip for me but I had been disappointed by some of Ken’s attitudes. He was in his late fifties, was not well and unfit and not very businesslike in his dealings. I wondered if he was in trucking to make money or just to drift along with a truckie’s lifestyle. Anyway, Ken was good jovial company and he had been generous in letting me drive the truck, which I enjoyed, and I was genuinely appreciative for all of that.

A couple of months after I had been to Port Hedland with Ken in his truck I walked into the dining room at the tracking station and Shirley was there. She looked at me tiredly and then said with heavy emphasis, “Oh David, why didn’t I think of you, why didn’t I think of you?”. I was puzzled by that and asked her what she was talking about.

She said Ken had picked up a load of wool near Port Hedland that was to go straight to Freemantle but when he got as far as Carnarvon, he felt unwell. His illness developed into a bad flu and he was bed ridden for more than a week. The company that owned the wool was threatening legal action because the wool should have been in Freemantle by then but it was still on the truck at Carnarvon. Ken had a lot of trucking mates and Shirley rang them all trying to find one who could drive Ken’s truck to Perth but they were all either away or committed on other jobs. Eventually Shirley paid a Perth based truck driver to fly to Carnarvon and drive the truck to Perth. She said that if she had thought of me she would have asked me to drive the truck to Perth. I was doubly disappointed because I would have jumped at the chance to take the wool to Perth, and I was very sorry for Shirly. She looked tired and worn and the whole thing had taken a toll on her. It cost her a lot of money and I would have done it all for nothing.

I have many times thought about that load of wool. Don and I often swapped our shifts so he could have done my work and I could have taken the wool to Perth. I would have really enjoyed the driving and there would have been challenges navigating the truck to the warehouses at Freemantle where the load had to go. It came at a time when I knew my work at Carnarvon was

coming to an end because NASA had announced that it would be closing the Carnarvon tracking station in mid 1974 and would make the Carnarvon SPAN equipment available to the Australian Government. Accordingly, the Ionospheric Prediction Service (IPS) had offered me a job at Culgoora (near Narrabri NSW) using the Carnarvon SPAN equipment to start a new solar observatory at Culgoora and continue supplying data to IPS in Sydney. It was a good offer and although I had accepted it, I was not really sure that it was what I wanted to do. Ken had driven for so long that he had lost interest in the driving and was not managing his business well from a commercial perspective. There is every possibility that if I had taken the load of wool to Perth and came back on a high, I may have offered to take over the truck payments from Ken and I would have become a truck owner driver and not gone to Culgoora. Had I done that, I would not have been content to muddle along like Ken and I would have grown it as a business, not just as a way of life. That Shirley did not think of me means that I went to Culgoora and my life has followed the path that it has, but sometimes when I see a clean and modern B-double cruising down the highway I wonder how it may have all turned out and I wonder what might have been.

David Johns
June 1985

SOME LATER EVENTS, RELAVENT TO MY TIME AT CARNARVON

37 A revisit to Carnarvon

In approx 1977 the USAF built a solar observatory at Learmonth, North West Cape. The observatory was built and operated at USAF cost to supply solar data to its world wide communications network. The observatory was staffed by about ten American servicemen and two Australian civilians. The Australian staff was there to collect data to feed it back to the Australian Ionospheric Prediction Service. For political reasons, the observatory was “jointly managed’ by the Australian and American governments but in reality, the Americans paid the bills and managed the facility and the main Australian requirements were that the site not be used for any classified purposes and that the collected solar data be available for Australian use. That arrangement worked well and I understand that it is still in operation today. In about Jan 1982 there was a period when neither of the Australian staff was able to be present due to leave and family issues and in order to maintain the political image of a jointly managed site, I was seconded to work at the observatory as acting joint OIC for about six weeks.

While I was working at the Learmonth observatory, I lived in the town of Exmouth. I enjoyed my time back in the west and I used my weekends and off days to get around and see as much of the country as I could.

I managed to visit Carnarvon several times. By then all of the tracking station buildings and structures had been removed except the main T&C building. The ex-tracking station site was then operated by Radio Australia which had built several large transmission aerials and used the T&C building as office and store space.

Carnarvon had changed. Despite the gloom that existed when the tracking station closed, the town appeared to be prospering. There were many new houses, built to a higher standard than previous Carnarvon houses, and several new streets had been constructed for further developments. The Shire Council had planted many new street trees and there seemed to be a higher level of civic care than had existed when I had previously lived in the town. A major change was that a harbour had been dredged into the mangroves on the southern side of the town which gave safe anchorage for the many trawling boats that had previously had to anchor offshore in unsheltered waters.

While at Carnarvon, I met up with Brian Milne, an ex-tracking station engineer, who still lived in the town and we sailed his 40 ft catamaran to Bernier and Dorre Islands for a pleasant weekend.

While working at the Learmonth observatory, I noticed that the Australian Customs Service had a daily flight along the coast to look for drug boats or anything out of the ordinary. The crews sometimes over-nighted at the Exmouth hotel so I made it my business to meet their manager and offered my services as a volunteer observer on the flights. He could not accept my offer for insurance reasons but he agreed to employ me as an observer on my off work days and I did several low-level costal patrols in the plane, a twin engined Aerocommander, mostly the Geraldton to Exmouth leg. I really enjoyed flying over all that coast that I had got to know during the time that I had lived at Carnarvon. If we saw something out of the ordinary we would swoop down low and photograph it and if it was a boat we would write down its registration. We would send a telex report to Canberra at the end of each flight. It was before digital photography had arrived so we would send the photographs as undeveloped 35 mm film rolls. Mostly we did not see much out of the ordinary but on one occasion we saw a double masted sail boat anchored in one of the lonely inlets of Shark Bay. It was not there the day before and it was gone the day after we first saw it. Our role was to only see and report and Canberra, which received data from all along the coast, may have been watching that boat from before it got into our territory. People who had been on the customs flights for years developed superior observational skills. At one stage we were cruising right on the coast line and the pilot commented that he could see a white fishing trawler about five km out to sea. I looked, it was a windy day, and all I could see was a thousand white caps on the ocean. I said “how can you see a white trawler in amongst all of those moving white caps?”. He said it was easy, “you just focus on any white feature that is not moving.” He was not joking, he had been flying the customs flights for years and had developed that skill.

At that time the US Navy communications base at North West Cape was manned by many US servicemen who lived in the town of Exmouth. There were also some Australian Navy officers on the site. I met an Australian Navy Officer who advised me that the big transmitter was turned off for a couple of hours once a week for servicing and I could accompany him to the top of tower zero for some minor servicing that he had to do next Tuesday morning if I was interested. I certainly was interested so next Tuesday Ken Eise (then USAF joint OIC of the solar observatory) and the Aust Navy Officer and I stood in the lift cage in the centre of tower zero and commenced our trip to the top. The lift cage was small, with only just enough room for the three of us to stand and it travelled rather slowly and we seemed to take about five minutes to creak our way to the top. We stood on the top deck, 1,270 feet above the ground and had a spectacular all around view. There were just a few fluffy cumulous clouds at about the 900 ft level stretching towards the southern end of the gulf and I remember noticing just how flat and linear the cloud base was when we were descending the tower.

At top of tower zero with Aust Navy Officer and Ken Eis, OIC of the Learmonth Solar Observatory

While working at the Learmonth observatory, we had a clear view of the aeroplane traffic that came and went from the Learmonth airport. Once a week a USAF C141 transport plane would fly the route America, Hawaii, Christchurch, Richmond, Alice Springs, Learmonth and return and transport equipment and personnel to and from the US facilities. A feature of the plane's stay at Learmonth was the speed and efficiency of the turnaround operation. As soon as the plane came onto the parking apron and slowed a crewman wearing a radio headset jumped from a small door near the front of the plane and jogged in front of the plane and directed the pilot to the exact parking point. While passengers alighted from the small front door, the back door was dropped open and a truck of the correct height backed up to the plane and pre-packed equipment containers on small roller wheels were pushed off and on the aircraft. Passengers were called to queue near the small front door and a crewman quickly checked their papers as they entered. Soon the back door was closed, the engines were started and the crewman wearing a communications headset was jogging in front of the aircraft and directing the pilot towards the taxi way. The crewman then entered the small door at the front of the plane and it made a normal departure. The time from arrival to departure would have been about 30 minutes and apart from the truck, no local support services were used.

On one occasion when the plane was due, Ken Eise, who had the rank of Captain in the USAF, came with me so that he could take me on board for a look at the plane. We went up to the flight deck and I expected to see moustached flying veterans like what was depicted in British movies of that time but I was surprised just how young and youthful the crew members were. They looked to be just out of school, in their early twenties at most. There were four people on the

flight deck, they had not left their seats and were doing post landing and pre take off checks and apart from a quick acknowledgement to Ken, they just got on with their work. We watched for a few minutes and then we left them to it. The crew projected a very business-like and professional image.

C141 Starlifter at Learmonth airport, Circa 1980

Sometimes I would go to the airfield just to watch the big starlifter plane come and go. On one occasion, in addition to the usual group of US Navy passengers waiting to depart, a group of five young American sailors were celebrating, with much alcohol induced merriment, that one of the group was departing and going home. From their exuberance and loud comments, it was obvious that the sailor was very much looking forward to leaving hot and arid Exmouth. The sailor joined the queue to the plane and as he approached the door, the plane's load master placed his hand behind the sailor's head and quickly pulled it forward so he could get a quick sniff of the sailor's breath. I can still remember the loadmaster's words as he said quickly and politely "I'm sorry sir, you've been drinking, you will not be boarding the aircraft". The sailor just stood there, shattered, until the last passenger had entered and then the loadmaster directed the sailor to leave the parking apron. He wandered back to his now sombre friends, he was devastated and I noticed tears were streaming down his face. A hard but fair call.

While I was living in Exmouth, I met Bob Davies, the ranger at the local Cape Range National Park. Bob would periodically do an all-day patrol in which he attempted to inspect the main

areas of the park. I went with him on one of those patrols. I was on a National Parks advisory committee back at Narrabri NSW and I welcomed the opportunity to take a first hand look at management of an arid area park. We talked about many issues of common interest and it was clear that Bob was very committed to his work. Bob explained that there was an expanding population of feral goats in the park and they were degrading a lot of the local vegetation so he carried a high powered rifle and shot the goats whenever he could. By lunchtime, he had seen and shot four goats. It was a hot January day and as we were driving along the top of the range, he stopped the vehicle and said he had sometimes seen goats entering a hole in the ground at a point about 300 metres from the track so we would go and investigate. Bob explained that Cape Range was limestone country with many caves and on hot days the goats would shelter in the shade of caves. We walked over rather level but very rocky ground to where he suspected that there may have been a cave and we came to a three metre wide hole in the ground. There was an earth floor to the hole and the floor tilted away at about 20 degrees of slope to a bigger area of cave, not visible to us but we could hear goats moving around down there. Bob gave me a torch and asked me to go down and flush out the goats. He said they would try to rush out as a mob and he would only get a few shots at them but my job was to control them so they came out in ones and twos so he could get a clear kill shot at each goat.

I went down into the cave and was surprised to see a big mob of goats. The floor of the main cave would have been about the size of half a tennis court with smaller caves branching off into the darkness. Agitated by my presence, the goats wanted to get out of the cave and they milled around and then rushed the entry point but I turned them back and then allowed them to exit in ones and twos. I felt like a murderer as I controlled their exit and I could hear the shots from above. Bob had several loaded magazines which he could quickly change but sometimes he would shout for me to stop the flow while he reloaded magazines. We continued with the process until the last goat had gone and I shouted that the next exit would be me, not a goat. I didn't want to be mistaken for a goat and be shot. When we counted the tally, there were 53 dead goats. Bob was very pleased with that result but when I looked around at all the carnage that I had been a party to, I did feel uncomfortable.

38 Something to one day tell my grandchildren.

During the Gemini series of flights, March 1965 to November 1966, real time voice communication technology had not developed sufficiently to allow the mission controller at Houston to always have voice contact with astronauts in orbit. Accordingly, prior to each flight, Houston based communications personnel would come to Carnarvon to act as flight controllers

as the Gemini crews passed through Carnarvon's tracking space. The flight controllers were usually fellow astronauts, all known to the Gemini crews. Thus Carnarvon was visited by many astronauts during the Gemini series of flights. Some of the Gemini astronauts went on to later become astronauts in the Apollo moon series of flights. By the time of the Apollo flights, communication improvements had occurred such that the flight controller could sit in Houston and have his voice communications relayed via the tracking station network to the Apollo crews at all times and thus there were no more astronaut visits to Carnarvon after 1966.

It is interesting to note that of the twelve Apollo astronauts who walked on the moon, three of them, astronauts Alan Shepard, Charles Conrad, and David Scott had previously visited Carnarvon Tracking Station for a week, walked on the streets of Carnarvon, jogged on the town beach and fished off the then mile long jetty. Walter Schirra, Apollo 7, 10 days in earth orbit but not to the moon, also did a stint at Carnarvon as a flight controller. It was always a regret to me that the astronaut visits to Carnarvon had finished before I commenced my work there. I would really like to have met an Apollo astronaut – it would have been something to one day tell my grandchildren.

Decades after I left Carnarvon, myself and three friends jointly owned a Cessna 172 aeroplane that we used for recreation flying and we kept our plane at Canberra airport.

Saturday, 1 October 2005, started like any other weekend day and on a whim, I decided to go to the airport and wash the aeroplane and fly a few practice circuits. Coincidentally, one of the other co-owners, Graham, came out to the airport at the same time and we agreed that we would both wash the plane and then fly some practice circuits. But before we could make a start another friend, Chris, a second hand car dealer, arrived and said he had bought three cars at Tamworth over the net and he wanted to use his Mooney aeroplane to fly three people to Tamworth to drive the cars back. Graham and I thought that would be more interesting than washing our plane so we agreed on a whim to go and we found another driver and within ten minutes the four of us were airborne and on our way to Tamworth.

Chris was flying his plane from the front left seat and I was in the front right seat and wearing a radio headset and I was puzzled by the large amount of air traffic that I could hear inbound to Narromine, NSW. Narromine is a small country town, about thirty miles west of Dubbo. Chris heard it too and he said "what's going on at Narromine?" None of us had any idea so Chris altered course by about ten degrees to take us over Narromine so we could have a look from the air and then we would continue on to Tamworth.

As we overflew the Narromine airfield we were amazed to see that there were two DC3s, and several old warbirds on the parking apron and more than a hundred general aviation (GA) planes parked on the parking grass and a huge crowd of people near the aero club. Clearly there was something very big happening down there so we joined the circuit and landed and agreed that we would have a quick look and meet back at Chris's plane in 30 minutes and depart for Tamworth.

With so many people around, I did not want to leave my flying bag in Chris's plane so I took my bag with me and hurried across to see what was going on at the big crowd. As I approached the back of the crowd I could see someone on a stand addressing the crowd and I knew there was something familiar about the person and I looked very hard and listened to the voice and then realised that it was Buzz Aldrin, the second man to walk on the moon. He was older and greyer than the photos of him that I remembered from my Carnarvon days, but clearly it was him. Buzz was talking about the challenges of flight and the progress that had occurred in his lifetime. I picked up a pamphlet that was on the ground and I read it and got the gist of what was happening.

Two local farmers had spent the last seven years building an exact replica of the Wright brother's Wright Flyer and when it was nearing completion, the Narromine Shire Council had decided to make a big event out of the first flight and bring an aviation icon to witness the first flight and draw the crowds and promote Narromine. The first flight had been flown about an hour before we arrived by the well-known Australian pilot Collin Pay and the flight had been witnessed by Buzz Aldrin.

I really wanted to get to the front of the crowd and try to meet Buzz but he finished his speech and he and his wife and a group of about six officials and about the same number of security people moved out onto the main aircraft parking apron and stood in the shade of a DC3 wing. There were security people stationed all along the apron fence and I knew they would not let me cross the apron to the official group. So I draped my flying radio headset around my neck, held the ERSA in one hand and my flying bag in the other hand and vaulted over the apron fence and walked briskly, not to where the official group was but to the nose wheel of the DC3. I hoped I looked like a DC3 pilot. It worked because the security people ignored me.

I looked hard up into the wheel well of the DC3 and ran my finger along an oily strut and frowned at the colour of the oil. I then noticed Buzz leave the official group and he was driven about two hundred metres away to have a close look at the Wright Flyer. I then went to the main wheel under the wing opposite the official group and made another mock inspection and then moved to

the wheel which was close to where the official group was and made an inspection of that wheel well too. By then a security man had positioned himself between me and the official group and whether I was a DC3 pilot or not, he clearly wasn't going to let me any closer to the group. So I introduced myself to the security man and said I had worked at the NASA Carnarvon Tracking Station during the Apollo missions and that I would like to meet Mr Aldrin. He looked unimpressed and I realised he was too young to know what the Apollo series was and he had probably never heard of Carnarvon so I kept talking and prattled out a string of NASA acronyms that made no sense to me but it rattled him and he told me to stay put and he moved closer to the group and had a whispered discussion with an older security man who must have been in charge because he came and asked me what I wanted and I repeated my request, without the NASA acronym babble.

The second security man looked at me suspiciously but he seemed to half believe me and he said that I could wait near the official group and maybe, if he decided it was OK, I could meet Mr Aldrin when he came back to the group. I stood close to the group and Mrs Aldrin was talking about the time in San Francisco when Buzz had punched a man in the face when the man had confronted Buzz and alleged that the moon missions were a sham and that Buzz had never been to the moon. I could tell by the blank looks that no one in the official group knew what she was talking about but I had followed the case and I remembered the details and I was able to say that I agreed with the judge who threw the case out when the man had later tried to sue Buzz for assault. I quoted the judge's words that the man "had invaded Buzz's personal space" and though the judge said that though Buzz should not have hit the man, it was very understandable that he had. Mrs Aldrin seemed pleased that someone knew what she was talking about and she seemed to focus her comments more towards me than the others in the group and I seemed to be accepted into the group and I joined in the discussion. The group was the local shire mayor, two other local dignitaries and their wives. Mrs Aldrin did most of the talking. She was a petite charming person and she was telling us all how much Buzz enjoyed travelling about to aviation related gatherings and talking about the moon and related issues to other interested people.

When Buzz came back to the official group he saw me as a new face and came straight towards me with his hand extended. I introduced myself and said I had worked at Carnarvon tracking station during the Apollo missions. He was enthusiastic as he told me that Carnarvon was one of the best stations in the network and that "we always got great support from Carnarvon". We chatted briefly about Carnarvon's role in the network but I did not want to overplay my hand so I wished him a happy visit to Australia, shook his hand again and then I left.

I hurried back to Chris's plane and we were soon airborne and on our way to Tamworth. My three friends were a bit miffed that I was ten minutes late getting back to the plane but I didn't care about that because I now had something to one day tell to my grandchildren.

39 Epilogue

NASA considered that the real time transmission of live TV from the Apollo space craft back to earth was an important way of keeping the public informed and thus ensuring congressional budget support. The early Apollo crews resisted performing for the camera, maintaining they were pilot/engineers, not actors, and that they had more important work to do during the flights, but by the time of Apollo 11 real time TV transmissions from the space craft back to earth for public viewing was a regular thing.

NASA was aware that there would be enormous world wide public interest when the first man stepped onto the moon so NASA had a special TV camera mounted on the outside of the Lunar Landing Module to capture Neil Armstrong descending the ladder and making man's first step onto the surface of the moon. The first moon walk would occur when the moon was visible from the giant 70 metre diameter radio telescope at Goldstone California and a special team trained at Goldstone to be ready to capture the best possible picture of man's first step on the moon.

To be absolutely certain of capturing TV coverage of man's first step and walk on the moon, NASAA also equipped the 64 metre diameter radio telescope at Parkes NSW with special receivers just in case there were unexpected problems with the Goldstone telescope.

All of the astronaut tasks were set to a pre assigned time schedule that allowed a four hour gap after landing on the moon to do pre-takeoff checks, address any unexpected issues that may have arisen during the landing and then rest until the appointed time to walk on the moon. As it happened there were no unexpected issues that needed addressing and Armstrong considered the crew was too keyed up to rest and at his request, Mission Control agreed to defer the rest period and bring the moon walk forward by two hours. Thus the astronauts were ready to walk about two hours earlier than originally scheduled and when Armstrong exited the landing module the Goldstone TV team that had rehearsed all week were not yet at the Goldstone site. Staff at Goldstone, who had not been trained for the event, did their best but were unable to provide a satisfactory TV image to Mission Control. Mission Control would have then switched to Parkes for a TV picture but because the moon walk had been brought forward, the moon, although just visible from Parkes, was not yet sufficiently above the horizon to be into the receiving beam of

the Parkes telescope and thus Parkes could not provide a good TV image. Without their planned backup, Mission Control would have switched to the Tidbinbilla Tracking Station in the hope of getting a good image at short notice but there had been a fire in the Tidbinbilla receiver in the previous days so Tidbinbilla also could not provide a picture to Mission control and as a last resort Mission Control turned to Honeysuckle Creek Tracking Station (50 km south-south-west of Canberra) to try to get a TV picture of the moon walk. The Honeysuckle Creek staff were working on other necessary support tasks and had not been scheduled to receive the moon walk TV but they worked with initiative and at a feverish pace and by the time that Armstrong walked down the ladder, Honeysuckle Creek was providing the TV image which went to Sydney and then to the Moree OTC ground station and then up to a satellite over the Pacific and then down to Houston Mission Control and then to the entire world.

As the moon continued to rise it came into the beam of the Parkes telescope and the Parkes TV image improved and by eight minutes into Armstrong's walk, the Parkes image had become as good and was getting better than the Honeysuckle Creek TV image and so Mission Control switched to the Parkes TV for the rest of the moon walk.

It is an historic fact that Armstrong's first step on to the surface of the moon, and the next eight minutes of the astronaut's moon walk were captured by the Honeysuckle Creek tracking station. That silly film "The Dish" created a falsehood that Armstrong's famous first step was captured by the Parkes telescope but that is a myth. It was the Honeysuckle Creek tracking station that captured man's first step onto the moon.

Many years later the Honeysuckle Creek tracking station closed and some of its equipment, including the antenna used to receive the moon walk TV was moved to the Tidbinbilla tracking station.

In July 2009, staff that had worked at the Honeysuckle Creek tracking station held a four day reunion to celebrate the 40th anniversary of the first moon landing and moon walk. Anyone who had worked on any aspect of the Apollo series was invited. Many ex-Apollo staff and Apollo enthusiasts attended. I attended.

The organising committee did a wonderful job and during those four days we visited Tidbinbilla and the old Honeysuckle Creek site, buried a time capsule, attended a formal dinner, saw historic footage of interesting events and heard addresses by people who were at the heart of the action in 1969. I and five other ex-Carnarvon trackers attended the Canberra reunion (Trevor Mosel, Dave Rodda, John Swannie, Kevyn Westbrook and Milton Turner). We were

made very welcome and enjoyed reminiscing with many other people who had also been part of the great Apollo experience.

There were people at the reunion from past and present tracking stations, from Goldstone, from the ARIRA airborne mobile tracking stations (the squadron of eight Boeing 707s with antenna containing bulbs on their noses), from OTC, from the PMG and other agencies that I had not even heard of - but who all played important roles in the Apollo series.

At the reunion we also viewed unreleased film footage and comments of some of the astronauts who had been to the moon, discussing what it all meant to them from a personal perspective 40 years later. Of the twelve men who walked on the moon, three were deceased, two declined to be interviewed and seven of them talked frankly to the interviewer.

Their views were as diverse as the views of any group of seven people and different listeners may pick up on different aspects of their comments but a theme that seemed to come across to me was that their mind sets had not much changed in forty years. Those that were seeking a deeper meaning in life when they went to the moon haven't found it but are still looking for it. Those who saw their trip to the moon as routine and just one extra step in man's technological development, still tend to see it that way.

A feature that struck me was how much they have changed physically. During my years at Carnarvon I saw many films and pictures of the astronauts and I have clear memories of them at the time as young and clean cut, radiating health and vigour, athletic, dynamic, articulate - the very image of immortality. Now they look old. Some are wearing bifocal glasses, the flowing locks of hair have gone, some are a bit overweight with pod tummies, bags under their eyes and they are generally aging ungracefully like the rest of us. It is a sobering reminder of reality.

Another realisation that came to me during the reunion is that history is not a given. History is a concept that only becomes a reality if someone records it. Millions of persons may have fought bravely in battles and died anonymously and there is no history of it but if their fight or death was observed and recorded, they may now be the subject of a book or even receive a Victoria Cross.

It is the same with tracking stations. If someone does not record their achievements, the achievements are forgotten and become unknown to future generations. During the Apollo series the Carnarvon Tracking Station was NASA's biggest land based tracking station outside

of mainland America. The Carnarvon Tracking Station closed in 1975 and it is now only a memory that is fading with time.

At the reunion ceremonies there were speeches by many officials (US Embassy Chargé d'Affaires representing the US Government, the Director of the Tidbinbilla Tracking Station representing NASA, the Australian Minister for Innovation, Industry, Science and Research representing the Commonwealth Government and others). While the speakers spoke of NASA's plans for the future and lauded the great work done by the current Tidbinbilla station and the past Honeysuckle Creek station when it was prime station for Armstrong's first step on the moon, it is a sad fact that Carnarvon was not even mentioned in the speeches.

In October 2005 I had a chance meeting with Buzz Aldrin (second man to walk on the moon) at Narromine airport, NSW. He told me that the Apollo crews had always had "great support" from Carnarvon Tracking Station and that he considered Carnarvon to be one of the best of the 23 tracking stations that then made up the world wide tracking network. Buzz had clear memories of the role played by the Carnarvon tracking station but the current generation of NASA managers have now forgotten, if they ever knew, the role played by Carnarvon.

Paul Dench worked at the Carnarvon Tracking Station from its beginning to its close. In about 2004 Paul and Alison Gregg wrote a book, **Carnarvon and Apollo: One giant leap for a small Australian town**, which detailed the work of the Tracking Station and its interaction with the town, but the book remained unpublished due to a lack of publishing funds.

While I acknowledge the good work done by the 40th anniversary celebrations committee, I was very angered that the Carnarvon Tracking Station was not even mentioned. I could see that unless someone published a written record of the work of the Carnarvon Tracking Station, all memory of it would fade away.

I was aware that for several years Paul sought funding from the Carnarvon Shire Council to publish the book but though the council applauded the idea of publishing the book, year after year the Council deferred the decision to allocate funds to publish the book. After the Tidbinbilla/Honeysuckle Creek celebration of the 40th anniversary of the first moon landing, I wrote to the Carnarvon Shire Council and advised it that unless it provided funds for the publishing of Paul's book, Carnarvon tracking station would fade from history and be forgotten…

letter to Carnarvon Shire Council

Mr Dudley Maslen
Shire President
Carnarvon Shire
PO Box 56
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Cc	*Mr Karl Brandenburg,*	*PO Box 568*	*Carnarvon WA 6701*
	Ms Rebecca Burt	*PO Box 543*	*Carnarvon WA 6701*
	Mr Neil Ganzer	*PO Box 323*	*Carnarvon WA 6701*
	Mr Eddie Smith	*PO Box 595*	*Carnarvon WA 6701*
	Mr Saxon Boston	*PO Box 818*	*Carnarvon WA 6701*
	Mr Graham Murphy	*Robinson Road Coral Bay WA 6701*	
	Mr Bill Hopkinson	*Hill Springs Station Carnarvon WA 6701*	

Dear Dudley

You will be aware that there is currently no publicly available written history of the Carnarvon NASA Space Tracking Station. I recently attended a function at Canberra to celebrate the 40th anniversary of man's landing on the moon and I was shocked to discover that the achievements of the Carnarvon Tracking Station have almost faded from history. We face a situation where future generations of Australians may never know of the important role played by the Carnarvon Tracking Station and the town of Carnarvon in man's early space exploration and particularly in man's walking on the moon.

I understand that Paul Dench and Alison Gregg have written a book ***Carnarvon and Apollo, one giant leap for a small Australian town*** *that details the activities of the Carnarvon Tracking Station and its interface with and support by the town of Carnarvon. The book not only details tracking station activities, it describes changes that occurred in the town as the tracking station developed, such as the innovative role that the town council played in constructing more than 100 new houses in the town to accommodate the tracking station workers. I understand that Paul and Alison have been unable to publish the book due to a lack of publishing funds. I also understand that your council has many times applauded the idea of the book but deferred funding it for yet another year. I urge the council to approve those funds forthwith so that the good work done by the Carnarvon Tracking Station and the town of Carnarvon will not be lost from history.*

I will explain the basis for my concerns in detail.

I worked at the Carnarvon tracking station from 1970 to 1974. I enjoyed the work and I enjoyed living in Carnarvon. I recall the good relations and support that existed between the tracking station and the people of Carnarvon.

It is not well known but during the period of the Apollo flights, 1968 to 1973, the Carnarvon Tracking Station was NASA's largest tracking station outside of mainland America. In the year prior to its close, the Carnarvon Tracking Station had a staff of more than 220 people and it performed more tracking functions than all of Australia's east coast tracking stations combined (Tidbinbilla, Orroral Valley and Honeysuckle Creek Tracking Stations). The Carnarvon Tracking Station performed critical tracking functions, without which the Apollo moon missions would not have been possible.

This year there was a reunion of ex-Carnarvon Tracking Station workers in Perth to celebrate the 40th anniversary of man's walking on the moon. There was also a similar celebration in Canberra. My loyalties were with the Perth celebration but because I currently live in Canberra, I attended the Canberra celebration.

The Canberra celebration was a big affair, with functions occurring over four consecutive days, including a formal dinner. There were people at the reunion from past and present tracking stations in America and Australia, including six ex-Carnarvon Tracking Station workers.

At the reunion ceremonies there were speeches by many officials. While the speakers lauded the good work done by the current Tidbinbilla station and the past Honeysuckle Creek station, it is a sad fact that Carnarvon was not even mentioned.

I was amazed that Carnarvon was not even mentioned and later during the social activities I quizzed people about their knowledge of the role played by the Carnarvon Tracking Station. Apart from some of the now retired technicians who well remember transferring data to and from Carnarvon, there was an abysmal ignorance that the Carnarvon Tracking Station had even existed. Some of the up and coming NASA managers and officials (people now in their forties) had heard of the Carnarvon Tracking Station but wrongly thought that it was just a couple of tracking aerials at some one-horse town somewhere in the west.

I asked myself why the Carnarvon Tracking Station has almost disappeared from history when other stations like the long since closed Honeysuckle Creek station (which was smaller than the Carnarvon station) get all of the credits. The answer is clear. There has never been a book about the Carnarvon station.

In 2001 Hamish Lindsay, a technician at Honeysuckle Creek Tracking Station, wrote a book ***Tracking Apollo to the Moon*** *that details US and Soviet space developments from the beginning through to the end of the Apollo era. The book has become a reference point for many people. ABC journalists quote from it. School teachers use it as a history text, space enthusiasts and members of the public read it. In short, Hamish's book has ensured that the now closed Honeysuckle Creek Tracking Station will be remembered for ever. History only becomes a reality if someone records and publishes it.*

Given the above, it seems inevitable that unless Paul and Alison's book ***Carnarvon and Apollo: One giant leap for a small Australian town*** *is published, future generations of Australians will never know of the important role played by the Carnarvon Tracking Station and the town of Carnarvon.*

Accordingly, I urge you to have the Council approve as soon as possible the funds that will enable Paul and Alison to publish the book.

Please contact me if you have any questions.

Yours sincerely
David Johns
7 August 2009

40 Published

The above letter jolted the Carnarvon Council into action and at its next meeting it voted to fund the publishing of Paul and Alison's book. The book was published and was in the bookshops by mid 2010.

Paul had worked hard on that book and it gave me great satisfaction to see it published and in the public domain. The book will ensure that the good work done by the Carnarvon Tracking

Station and the people of Carnarvon will be known to future generations of Australians, and not be forgotten.

41 A late surprise and a good result.

In early August 2011, I saw a newspaper article advising that the Certified Practicing Accountants Association of Aust (CPA) was bringing Neil Armstrong to Sydney to talk the members of the association and a limited number of tickets would be available to the public to attend at $550 per ticket. Armstrong was due to speak at a CPA function called “An audience with Neil Armstrong” at the Parkside Ballroom, Sydney Convention and Exhibition Centre, Darling Harbour, Sydney on the evening of Wednesday 24 August 2011.

Given that my years at Carnarvon were an important part of my life and given my respect for Armstrong, I knew immediately that I would go, no matter the cost and I bought a ticket the next day

I contacted Paul Dench in Perth and suggested that he come to Armstrong’s address and bring a copy of his book **Carnarvon and Apollo, one giant leap for a small Australian Town** in case he got an opportunity to present the book to Armstrong. Paul replied that he had a 55th wedding anniversary that week and he would not be able to attend. He sent me a copy of his book and suggested that I give it to Armstrong if possible, or at least give it to an official to give to Armstrong.

I talked to a few of the ex Apollo workers that I thought may attend and they all agreed that we should try to get a table of our own for ex-trackers. Next day I called the CPA and after getting the run around and talking to people who did not know what I was talking about, I was finally able to talk to Ms Carolyn Curnow who was the event organizer, and I asked her if we ex-Apollo workers could have a table of our own, near the front. At first she was resistant but from her questions I quickly realised that she would not have been born when Armstrong walked on the moon and she had absolutely no idea what a tracking station was and what role it played or what an ex-Apollo worker was. I explained these things as best I could and she seemed interested but asked me to put my request to her in an e-mail. Accordingly, I sent her a detailed e-mail advising the details of Honeysuckle Creek recording Armstrong’s first steps on the moon and asked that a table for ex-Apollo workers be allocated as near to the front as possible.

Ms Curnow replied the following day and advised we could have a table near the front but we could not have table signage because the corporate tables were paying $750 per head which included signage privileges. Ms Curnow commented that the story about the first moon step TV being recorded through the Honeysuckle Creek Tracking Station was new to her and it was a “wonderful story” and she now understood the significance of the tracking stations. Accordingly, she offered me two complimentary tickets for two ”ex-Apollo” workers.

I used one of the free tickets to try to lure Paul Dench to come to the Armstrong speech but Paul was committed to his family function so I gave the free tickets to Hamish Lindsay (an ex-tracker form Carnarvon and then Honeysuckle Creek) and Eric Sirel (an ex-tracker from Carnarvon and now living in Canberra, and now in his eighties). Each of them said that their attendance would be a wonderful closure to all their years of commitment to the Apollo series.

Over the next few days Ms Curnow telephoned me several times to get data about the tracking stations and ex-Apollo workers.

At the beginning of the function I met Ms Curnow and she advised me that at functions such as this it was normal that as soon as the formal part of the evening finished, people from the audience would swarm around the guest of honour and want to ask questions all night. The procedure proposed for this evening was that as soon as Armstrong had finished his speaking, officials would whisk him to a private function room where a few priority people would be introduced to him. She said nothing was definite and it would depend on how the evening went but she would try to get the ex-Apollo workers from our table included in the group who could go to the function room to meet Armstrong.

The evening was advertised to be “An audience with Neil Armstrong”. I had assumed there would be a dinner but there was no dinner, just a few very light refreshments on each table, and that was all that there was in the way of food. Given that there was no need for waiters to walk between the tables and deliver food, the tables were packed rather closely. There were ten (sometimes more) people per table and the numbers on the tables suggested that there were more than one hundred tables, or one thousand plus people in the room. It was a sell-out, there was not an empty seat in the house.

The evening opened with the president of CPA giving a brief but dull speech. His argument was that accountants are at the front of the business management curve. If they make good and innovative management decisions, the benefits of greater productivity flow to the entire community. He asserted that there is a need for accountants to provide innovative leadership

and go into new and unknown management territory, just as Armstrong had ventured into the unknown which had led to great achievements. Thus, Armstrong was the man to inspire the CPA members to bigger and better things. The chairman then introduced Armstrong to the room.

Armstrong spoke for about an hour. It was a well crafted speech, some humour, some jokes about accountants but mostly a theme that achievement comes from consistent and relentless effort more than from bursts of genius. The whole Apollo program had started on limited knowledge but progress had come by building and testing and learning until bit by bit solutions were found for all of the problems. To make his point he quoted a phrase from one of President Coolidge's (30th President of USA) speeches, "Nothing in the world can take the place of persistence. Talent will not. Nothing is more common than unsuccessful people with talent. Genius will not. The world is full of educated derelicts. Perseverance and determination are omnipotent".

Towards the end of his speech Armstrong praised the work of "the Australian teams from the Parkes, Tidbinbilla and Honeysuckle Creek tracking stations that were involved in the Apollo missions to the moon" I was disappointed that he forgot to name Carnarvon. He said "I can't say enough good things about the skills and dedication of the teams in Australia, they did extraordinary work". He went on to say that there were four ex Apollo trackers in the room tonight and he named the four of us, John Saxon, Hamish Lindsay, Eric Sirel and David Johns, and asked us to stand which we did briefly and received acknowledgement from him and the entire room. At the end of Armstrong's speech, he received a long lasting standing ovation.

After the speech there was a thirty minute period for questions from the floor. The procedure was that a question would be asked and then the CPA chairman would summarise the question to Armstrong. (I noticed that Armstrong, then 82 years old, wore hearing aids so I guess he had asked that the chairman summarise the questions to him). Some of the questions were technical and the chairman was unable to effectively summarise them. One question was about the viability of travelling to Mars. Armstrong went through a list of the difficulties, mainly that the round trip would take years and the longer you are out there, the longer time you have for something to go wrong.

I presented Neil Armstrong with copy of Paul Dench and Alison Gregg's book
Carnarvon and Apollo, one giant leap for a small Australian town

The formal part of the evening finished with another standing ovation for Armstrong and then he was whisked away to a private reception room. An attendant came and invited our table of ex-trackers to the function room. There were also about ten other people at the function room that Carolyn had identified, mostly accountants. The meeting with Armstrong was unstructured and lasted about 30 minutes with everyone having a good opportunity for an informal chat with Neil. I used the occasion to present Neil with a copy of Paul and Alison's book. Neil said he was pleased to receive the book and would read it with interest. We chatted very briefly about Carnarvon.

Everyone from our table agreed it had been a wonderful evening. My original plan was to just attend and get a table as near to the front as possible. That we all ended up meeting and talking with the man who has been a hero to us all for more than forty years was a unique and valued honour.

42 Newspaper Article for 50th Anniversary

In early July, 2019, Peter Sweeney, a journalist with the Geraldton North West Times, asked me to write an article of about 800 words that summarised the work of the Carnarvon Tracking Station. I did that and also supplied Peter with some of my photos. Peter also wrote two small articles about the tracking station. The articles were published in the Geraldton North West Times on 17 July 2019.

Article written by David Johns for the Geraldton North West Times of 17 July 2019

In the early 1960s when the US Government commissioned NASA to go to the moon, NASA required to build a space tracking station approximately opposite its launch site at Cape Canaveral USA. Carnarvon was chosen as the site for the new tracking station and construction commenced in 1962. The administrative structure applied was that NASA contracted to the Australian Government to build, staff with Australians and manage the station to tight NASA technical requirements. Carnarvon was at the time a small pastoral, plantation and fishing town and there was concern as to how the town would socially and physically accommodate a hundred new workers and their families arriving to operate the new station. The station management and particularly the Carnarvon Shire Council initiated new and innovative procedures to finance and build nearly a hundred new houses in the town and mostly town people were employed in the physical construction of the tracking station. Tracking station staff, locally referred to as “trackers”, joined the local clubs and there followed more than fifteen years of harmonious and constructive work as the town and the station worked together (See Paul Dench’s book, Carnarvon and Apollo, one giant leap for a small Australian Town).

In the simplest of terms, the role of the station was to receive telemetry data from NASA in the US and transmit that data up to orbiting spacecraft while ever the spacecraft was in line of sight from Carnarvon and similarly to receive downlink data from the spacecraft and transmit that data back to NASA in USA. Secure communication transmissions between Carnarvon and the US were essential and in 1966 Australia’s Overseas Telecommunications Commission (OTC) completed construction of Carnarvon’s big parabolic dish (still standing today) that transmitted data to and from the US via a stationary satellite above the north Pacific. Hundreds of unmanned satellites were tracked and supported by the Carnarvon tracking station but when the manned Gemini missions flew, NASA would send personnel who were familiar with astronaut tasks to act as voice communicators between Carnarvon and the manned spacecraft. Usually the

communicators were fellow astronauts and they would stay for about a week and be invited into all of the social activities of the town. It is a fact that of the twelve Americans who later walked on the moon, three of them, astronauts Pete Conrad, Alan Shepard, and David Scott, had previously walked on the streets of Carnarvon, jogged on the town beach and fished off the then mile long jetty like any other Carnarvonite.

Carnarvon gave critical support to all of the Apollo moon missions. When Apollo moon missions were returning to earth, if the spacecraft re-entered earth's atmosphere at too shallow an angle, it would zip through the top of the atmosphere and go out again and not come back. If it re-entered at too steep an angle, it would deaccelerate too quickly and burn up. Of all of NASA's tracking stations, Carnarvon's geographic position allowed it the longest period of line of sight during the few hours prior to earth re-entry and thus Carnarvon's reliable transmission of trajectory coordinate corrections was a critical factor in achieving a safe return of all of the lunar astronauts.

NASA had aircraft that overflew its tracking stations and transmitted telemetry data that simulated emergency situations as a training procedure for the stations. The aircraft (Lockheed Super Constellation) was too heavy for the Carnarvon airfield and would leave Perth at about 4 am and orbit over Carnarvon at about 13,000 ft for a day, transmitting and receiving telemetry from the station, and be back in Perth at about 5 in the evening. This would go on for three or four days and then the aircraft would fly off to repeat the exercise at another tracking Station. .On the last day of the last overflight prior to the last Apollo mission the pilots sought clearance to do a low pass to give the tracking station staff a close view of the plane. In 1972 there was a manned DCA control tower at the Carnarvon airport and tower gave its clearance but added "and come over us too because we also want a look at you". With that little encourage from officialdom, the plane descended over the salt flats south of Carnarvon to an altitude of about 200 ft and then flew close around the southern side of the tracking station and turned to the left and followed the main road into Carnarvon and over the town and then turned left and did the same circuit twice more and then set course for Perth. There will be locals in Carnarvon today who remember the thunderous noise of those low passes.

With more satellites and Skylab, the work of the Carnarvon station increased and by 1973 the station had a staff in excess of 200 people.

NASA's worldwide network of ground based tracking stations had always been a high cost matter and as new satellite to satellite communications developed, NASA began to close

its ground based stations. Carnarvon closed in 1975, tracking Stations at Honeysuckle Creek and Orroral Valley in the ACT also closed and NASA centralised its Australian operations to one site, the Deep Space Station at Tidbinbilla, ACT.

The NASA Carnarvon Tracking Station is now just a memory. Where once many people worked long hours to make the missions successful, now only the concrete bases of the buildings can be seen in the long grass on the old site. But all is not forgotten. Many energetic people, have come together and created a space museum near the old OTC dish and people who were not born when Armstrong walked on the moon can visit the museum and feel some of the excitement that the early Carnarvon trackers knew.

Tracking station played

EYES FOR THE WORLD

David Johns, an employee of the NASA Carnarvon Space Tracking Station between 1962 and 1975, recalls some activities at the station.

Cocktail party to celebrate historic walk

important role for NASA

After the above was published in the paper, I was very disappointed. In one of the articles that Sweeny had written, he displayed a photo of my presenting the book (**Carnarvon and Apollo**, **one giant leap for a small Australian town**) to Armstrong with a caption that said “David Johns presents Neil Armstrong with a copy of his book on Carnarvon”. I was very embarrassed because readers of the paper who know that Paul wrote the book may think I was trying to steal

Paul's glory. I have had experience with journalists before. They are always in such a rush to meet publishing deadlines that they don't have time to properly check their work. Had Sweeney had me proof read his articles I could have corrected that error and several others. I am not critical of Sweeney, though he could have done better, he has to work with the time limits of his trade.

43 Passing of Paul Dench

Paul Dench arrived at the Carnarvon Tracking Station in 1963, when the site was little more than a grassy sand ridge. Though his title was "Telemetry Engineer" he and the other new staff set about doing everything and anything that was necessary to turn the site into a functioning tracking station. As the station grew in staff and functions tracking work commenced and Paul rose through the ranks and was the Company Manager for the last five years of the station's life and he was one of the last to leave when the Station closed in 1975. No other individual did more to effect the success of the station than Paul Dench.

Paul passed away in 2020. I was honoured when his family asked me to write his obituary. The below obituary, with some minor edits by his family, was published in several West Australian news papers.

OBITUARY PAUL DENCH 1934– 2020 (FULL TEXT)

A quiet man, but a man of achievement, Paul Dench, passed away peacefully at Juniper Annesley on 26 June 2020. He was 86 years old. He is survived by Joan, his wife of 64 years, and his children, Alan, Alison, Phil, Jo and David, and their children.

From a modest upbringing in England, Paul went on to manage NASA's (National Aeronautics and Space Administration's) then biggest space tracking station outside of mainland America. He had a tremendous impact on many people through his varied careers and life, most of all his family. He will be sadly missed.

Paul lost his father in World War II but his mother raised him with love and encouragement and gave him the good principles which stood him well for the rest of his life. His first work was as a scientific assistant in the British Meteorological Office where he gained a ticket as a meteorological observer. He then worked with an array of meteorological instruments at several

RAF sites on tasks as varied as climbing 350-foot-high towers to attach weather sensors and studying precipitation in clouds by flying in aeroplanes through turbulent thunder storms.

It was at that stage of his life that he met Joan and decided that he did not want to keep moving locations. He could see met devices becoming more electronically sophisticated so he transferred to the guided weapons branch at Farnborough and undertook telemetry engineering courses and worked on the Blue Streak Missile Program.

Paul and Joan married at Petworth, Sussex, England in August 1956

Paul was troubled by the idea of working on a weapon of war and he was noticing that promotions came slowly in the civil service if you had not attended the right school so he began looking for opportunities in the private sector. For a while he worked for a company as a telemetry engineer and always remembered the day in 1957 when the factory at which he worked picked up the beep, beep, beeps of Sputnik. Paul says he just stood there, captivated and entranced, not then aware that he would later play a role in equally significant events.

About that time, he received an offer of employment in Sydney by AWA (Australian Wireless Australasia). Paul and Joan travelled to Sydney on the P&O ship Canberra but while in transit Paul was advised that AWA wanted him to work at Carnarvon West AUSTRALIA (900 km north of Perth) on the yet to be built NASA Space Tracking Station. Paul and Joan were unsure about going to Carnarvon but Paul could see many challenges in the job so true to their adventurous nature, they decided to give it a go.

They settled temporarily in Sydney and Paul was dispatched to USA for a month of intense training which left Joan to cope in a new country with two toddlers, (Alan, 5 and Alison, 3).

The Dench family arrived in Carnarvon in mid 1963 and while Joan settled the family into a new and strange environment Paul threw himself into his new work.

Paul's official position was "Telemetry Engineer", a formal title indeed, but like all the new staff at Carnarvon, his tasks involved any mental or physical work that was necessary to change a sandy grassy ridge into a functioning tracking station.

In the simplest of terms, the role of the station was to receive telemetry data from NASA in the US and transmit that data up to orbiting spacecraft while ever the spacecraft were in line of sight

from Carnarvon and similarly to receive downlink data from the spacecraft and relay that data back to America.

As the station took shape its first major task was to support the manned Gemini missions. NASA would send personnel who were familiar with astronaut tasks to Carnarvon to act as voice communicators between Carnarvon and the manned Gemini spacecraft. Usually the communicators were fellow astronauts and they would stay for about a week and be invited into all of the social activities of the town. Of the twelve Americans who later walked on the moon, three of them, astronauts Pete Conrad, Alan Shepard, and David Scott, had visited Carnarvon tracking station and worked closely with Paul.

Paul was a problem solver, he liked venturing outside his trained discipline and unscrambling other technical issues. When one of the new lunar tracking aerials was ready for trials, its direction controlling computers were months late in arriving. Paul managed a project with his team where they devised a model to give them pointing data for the new aerial so they could continue shakedown trials. When the new computers arrived, they confirmed the high accuracy of the procedure that Paul had developed.

When NASA commenced its Apollo program, sending men to the moon, the spacecraft would enter earth orbit and if all was well Carnarvon transmitted the 'Trans Lunar Injection ' command that sent the space craft on a course to the moon. Also, Carnarvon's geographic position allowed it the longest period of line of sight during the few hours prior to the return to earth of an Apollo spacecraft and thus Carnarvon's reliable transmission of trajectory coordinates was a critical matter. Paul had a supervisory role when these Apollo command tasks were performed.

When reminiscing about his years at Carnarvon Paul would comment that there was much hard work but there were many rewards. He said that some of the unforgettable moments for him were the first time he was responsible for the receipt of downlinked biomedical data from a real breathing human in space, of watching the first lunar lander probe wake up from a freezing fourteen day lunar night and begin transmitting the first close up views of the moon's surface, pixel by pixel, and of course the big one, receiving the voice and seeing a speckly TV image of Neil Armstrong stepping onto the moon. There were also worrying times too like when Carnarvon was receiving down linked data from the crippled Apollo 13 spacecraft and everyone on the station could see the evidence that three fellow humans were up there running out of oxygen and battery power and they might die in space. Carnarvon played a critical role during the return of Apollo 13 and Paul spoke of the feeling of utter relief that he and everyone on the station felt when the astronauts returned safely to earth.

Paul always spoke with pride about the achievements of the Carnarvon tracking station and he attributed it to the quality of the staff that he worked with and typically he always understated the significance of his own contribution. His capacity to solve a wide array of technical and management issues did not go unnoticed by AWA and in 1968 he was appointed Chief Engineer of the tracking station and in 1970 he was appointed Company Manager of the whole site.

But Paul was more than just an engineer and a manager. He took an active interest in social issues in Carnarvon. He was passionate about the need for a high school in the town and he was instrumental in getting the Government to build one. He was invited to become a Justice of the Peace (which amused and flattered him because of his English working-class background) and on many occasions he functioned as an acting magistrate, deliberating on minor offences in the town. He and his family were active in many of the towns clubs and he was encouraging to other tracking station staff who participated in town activities.

As new satellite to satellite communications developed, NASA began to close many of its ground-based tracking stations. Carnarvon was in a better geographic position for a tracking station than Australia's east coast tracking stations and Paul argued vigorously that Carnarvon should not close but politics and accountants overruled him. The Carnarvon tracking Station, then with a staff of about 200 people, closed in 1975 with most of its tracking functions being transferred to Australia's east coast tracking stations

It then fell to Paul, now the manager, and who had done so much to physically and technically build the station and its work teams, to dismantle those very work teams and terminate the services of the many good men and women who had given their all to the station. This involved many difficult decisions that affected people's lives and families and Paul spared no effort to do that job with fairness, honesty, and openness. Paul, who had been one of the first people to work at the station, was also one of the last to leave.

Paul's baby, the Carnarvon Tracking station, is now just a memory. Where Paul and others had once worked long hours to make the missions successful, now only the concrete bases of the buildings can be seen. But all is not forgotten. Paul and Alison Greg wrote a book "Carnarvon and Apollo, one giant leap for a small Australian Town" which describes some of the technical work of the station and how, the tracking station staff blended into the town. The Carnarvon Shire Council supported the book and it was published in 2010. Also, in 2012, a Perth based businessman and the people of Carnarvon opened a space museum at Carnarvon. Paul was

generous with his time in supporting the museum and gave books and many personal items for the displays.

When the Tracking Station closed in 1975, Paul and his family moved to Perth. Paul embarked on another very successful career. After obtaining a Graduate Diploma in Education at WAIT (now Curtin University) he taught in Government schools, was a tutor supervisor at Murdoch University and then a project leader in the Department of Education focusing on the use of computers in schools.

But Paul's skills as an engineer were not forgotten and a year after he had left Carnarvon AWA offered him the Chief Engineer position at the then expanding Tidbinbilla Deep Space Tracking Station near Canberra. It was a prestigious offer and Paul was sorely tempted but by then his work had gone off in a different direction and he declined, though he later said he often thought of what might have been if he had accepted.

The Educational Computing Association (E.C.A.W.A.) elected Paul to be its first Computer Educator of the Year in 1995 and then a Life Member in 1998. Before retiring in 1997, Paul was employed at Scotch College for six years to teach computing and to 'embed computer use throughout the whole school'.

Paul's civic contributions continued after he left Carnarvon, including being a Kings Park guide for ten years and completing 40 years of service as a JP.

Paul will be long remembered for his exceptional problem-solving skills, his fairness as a manager, his civic contributions, and his basic decency as a fellow human.

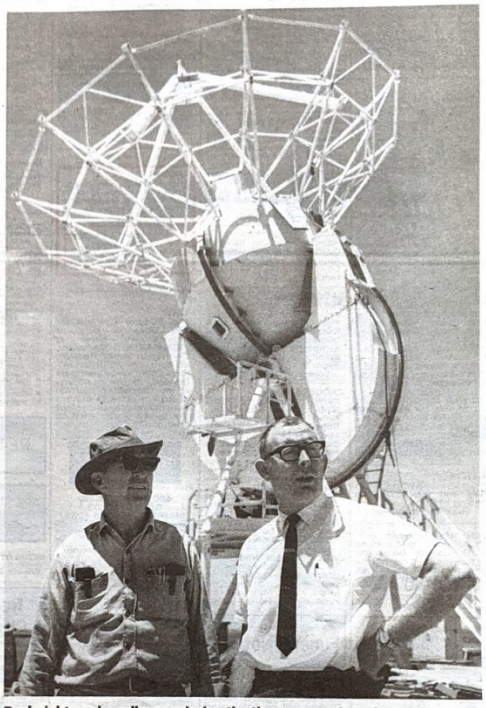
David Johns

An abbreviated version of the Obituary was also published in the West Australian

THE OBITUARIES
The West Australian
Thursday, September 3, 2020

Engineer tracked NASA moon shot

Paul Dench
Company manager at Carnarvon's Space Tracking Station
Born: Bexhill, Sussex 1934
Died: Perth, aged 86



Paul, right, and a colleague during the the construction of one of the tracking station dishes in the 1960s.

Paul started his career in the British Meteorological Office as a meteorological observer, climbing 100m towers to attach weather sensors and flying into thunder storms to study precipitation in clouds. He went on to manage Carnarvon's Space Tracking Station — the biggest NASA tracking station outside of mainland America.

In 1963, Paul, his wife Joan and their two small children embarked for Sydney where Paul had been offered a job with AWA (Australian Wireless Australasia). Two weeks before leaving England, he was advised that AWA wanted him to work at Carnarvon on the yet-to-be-built NASA Space Tracking Station.

After moving to Carnarvon, Paul's first job at the station was to help transform a sandy ridge into a functioning tracking station. Once built, this station was to receive telemetry data from NASA in America to transmit to orbiting spacecraft and vice versa.

As the station took shape its first major task was to support the manned Gemini missions. NASA would send personnel who were familiar with astronaut tasks to Carnarvon to act as voice communicators between Carnarvon and the manned Gemini spacecraft. Three astronauts who later walked on the moon, Pete Conrad, Alan Shepard and David Scott, worked closely with Paul at the station.

When NASA commenced its Apollo program, NASA would send a command to the spacecraft via the Carnarvon Tracking Station to ignite the big rockets and head for the moon. Carnarvon's geographic position allowed it the longest period of line of sight during the few hours prior to the return of an Apollo spacecraft and thus Carnarvon's reliable transmission of trajectory co-ordinates was critical.

When reminiscing about those years at Carnarvon, Paul said that some of his unforgettable moments were the receipt of downlinked biomedical data from astronauts in space, watching the lunar lander probe wake up from a lunar night and begin pixel-by-pixel transmission of close-up views of the moon's surface, and seeing Neil Armstrong stepping on to the moon. There were also worrying moments too, like receiving data from the crippled Apollo 13 spacecraft.

Carnarvon played a critical role in the return of Apollo 13.

Paul always spoke with pride about the achievements of the Carnarvon Tracking Station and the quality of the staff he worked with. His own capacity to solve a wide array of technical and management issues did not go unnoticed by AWA. In 1968 he was appointed chief engineer of the tracking station. In 1970 he was appointed company manager.

But Paul was more than just an engineer and a manager. He took an active interest in social issues in Carnarvon. He advocated for a senior high school in the town, became a justice of the peace and often was acting magistrate.

As satellite communications developed, NASA began to close many of its ground-based tracking stations. Despite Carnarvon being in a better geographic position for a tracking station than Australia's east coast tracking stations, the station, with a staff of about 200 people, closed in 1975. Paul, who had done so much physically and technically to build the station, had to dismantle the work teams. He was one of the last to leave.

Paul and his family then moved to Perth. He declined an offer to take up the chief engineer position at the Tidbinbilla Deep Space Tracking Station, and embarked on another career as a teacher. He taught in government schools then went on to be a project leader in the Department of Education focusing on the use of computers in schools. The Educational Computing Association elected Paul to be its first computer educator of the year in 1995 and life member in 1998. Before retiring in 1997, Paul was employed at Scotch College to "embed computer use throughout the school".

Today, while all that remains of the Carnarvon Tracking Station is the concrete bases of the buildings, all is not forgotten. In his retirement, Paul co-authored a book with Alison Gregg called Carnarvon and Apollo: One Giant Leap for a Small Australian Town.

A quiet man, but a man of achievement, Paul Dench, passed away peacefully on June 26. He was 86 years old. He is survived by his wife of 64 years, Joan, and his children Alan, Alison, Phil, Jo and David, six grandchildren and one great-granddaughter.

Original by David Johns, colleague at Carnarvon.
Edited by Joanne Edmondston, daughter.