



CARNARVON

REVISITED

an essay by
HAMISH LINDSAY





"Please relax, enjoy and slip into Carnarvon time."

Karl Brandenburg, Shire President.

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Extracted from content available on the
Honeysuckle Creek Tracking Station
website, developed by Colin Mackellar
www.honeysucklecreek.net

Click or scan the QR code below to see the website's Carnarvon section:



Cover illustration: Hamish Lindsay at Carnarvon tracking station site. Expanded for cover by Glen Nagle.

Station Facts

Carnarvon Tracking Station

AKA: CRO

Opened: 25 June 1964

Closing ceremony: 6 November 1974

Closed: 18 April 1975, 1700:00 WAST

Location

Brown Range near Carnarvon, Western Australia

Coordinates: 24°54'09.3"S 113°43'17.4"E

centred on the T&C building

Area: 259 hectares / 640 acres / 2.59 sq. kms

Networks

Manned Space Flight Network

Satellite Tracking and Data Acquisition Network

Solar Particle Alert Network

Missions

First track: Ranger 6 – January 1964

Last track: an AE-C pass – Friday, 4 October 1974

Supported: Gemini, Apollo and Skylab programs

Others: Meteorological and Earth resources satellites; Space weather monitoring

Organisations

Established by: Department of Supply

Funding and prime customer: NASA

M&O: Amalgamated Wireless (Australasia) Ltd

Personnel

180 – 220 people

Antennas / Towers

Acquisition Aid Antennas – 2

Acquisition Aid boresight tower

Steerable HF beam antennas – 2

FPQ-6 radar / FPQ-6 boresight tower

Verlort radar

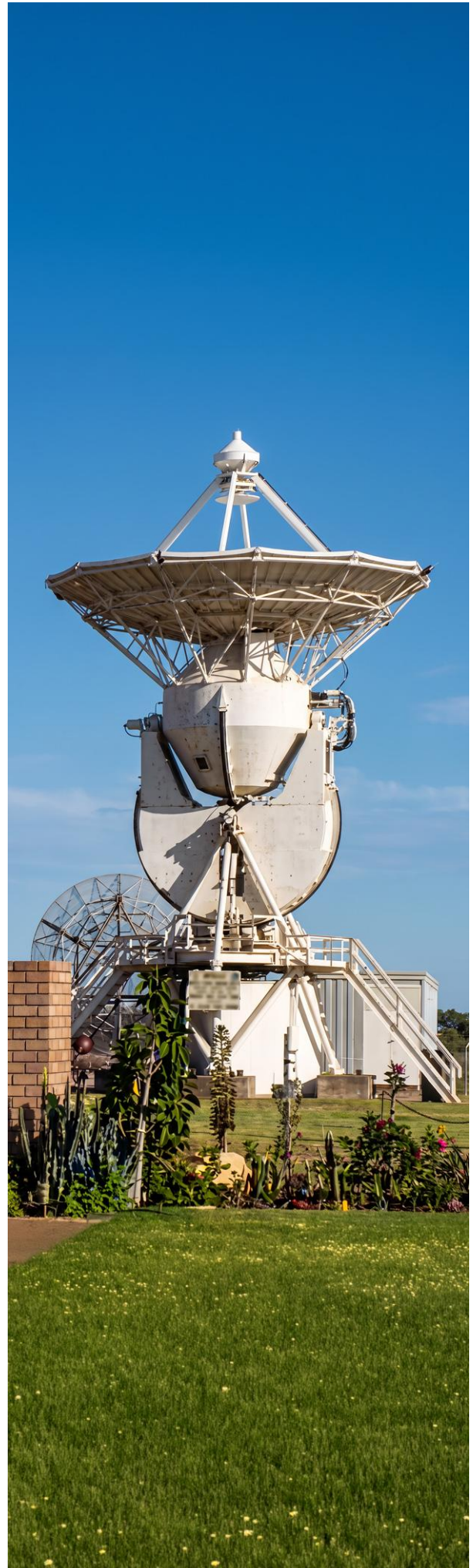
UHF towers – 2

VHF and S-band antennas

Riometer antenna array

Jupiter Monitoring array – 2

Solar radio telescope



About the content:

Essay by Hamish Lindsay, 2012-2014

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Hamish Lindsay, Colin Mackellar, and Glen Nagle.
Photos by Hamish Lindsay, otherwise by
Louise M., where noted.

Some images in this booklet have been digitally
cleaned using AI tools, with great care taken to not
change important details.

PDF formatted by Glen Nagle.

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The old OTC site is now home to the Carnarvon Space and Technology Museum.

CARNARVON REVISITED

**THE CARNARVON SPACE FESTIVAL
22-23 JUNE 2012**

"It is with excitement we welcome guests to the Carnarvon Space Festival. It is an event that has been forty years in the making and the whole region has laid out the welcome mat."

"Please relax, enjoy and slip into Carnarvon time." — Karl Brandenburg, Shire President.

As an ex-tracker from Carnarvon, I received an invitation and a program of events planned for us over the two days of festivities.

The schedule began at Perth domestic airport at 0830 on Friday 22 June with a welcome near the boarding gate. Two musicians serenaded us as the group gathered, and decorated mocktail drinks were laid out on a table.

Dr. Buzz Aldrin arrived with his partner Michelle, son James, manager Christina and bodyguard and was immediately engaged as he approached us. He spoke with many of the trackers and guests and posed for photographs. He spent some time with one boy who was promised the trip by his mother, but the father refused to pay the costs.

There were two charter flights, using Fokker Friendships. We were on the first and Buzz was

on the second (I wondered what his thoughts were as an astronaut and jet fighter pilot grinding along in an old propeller driven plane), looking at the colourful ground sliding past below, with the morning sun sparkling on the sea, golden sandbanks scattered in the blue and green waters over Shark Bay.

I realised this was the first time I had flown into the town; while living there I was always driving my car.

On arrival at Carnarvon around midday at Terminal 3, we disappointed the waiting crowd by not bringing Buzz with us on the first plane. Hundreds of people were waiting behind a high metal barred fence, including around 200 school children from the surrounding district.

While we were waiting for the second plane to arrive I heard a teacher addressing the expectant kids, *"Are you excited?"* then added, *"This could be one of the greatest moments of your life."*

The welcoming ceremony beside the airport terminal building began with an elder of the local Yinggarda community giving a traditional aboriginal welcome.



Above: Buzz Aldrin (left) chats with Hamish Lindsay at Perth Airport.

Below: John Pearce is suitably attired as he speaks with Buzz. Photo: Louise M.





Above: Some of the many school children waiting at Carnarvon Airport. Photo: Louise M.

Below: Buzz arrives at Carnarvon Airport.





Above: Buzz Aldrin is welcomed by WA Chief Scientist Dr Lyn Beazley and the crowd at Carnarvon Airport

Below: Buzz is presented with the 'keys to the city' from Shire President, Karl Brandenburg.





Getting ready for the PowerPoint presentation.
From left: Paul Dench, the hotel technician, Terry Kierans (seated) with Jim Gregg (behind).

Then Mr Karl Brandenburg, the shire president, handed over the first ever keys of the town of Carnarvon to Buzz.

Buzz addressed the crowd wearing a blue coat with a red scarf. Looking at the sea of little faces in front of him with three school colours; red, blue and purple, he said,

"I am wearing blue for you, red for you, and blue and red make purple for you, pointing to the purple school colours."

The school children and Buzz went off to a tent on the old OTC site for a question and answer session. There were around 400 school children in the tent from Carnarvon, Perth, Onslow, Exmouth and Denham. Twelve youngsters were chosen to ask questions.

It was reported that Buzz seemed taken aback by one question from a primary school student,

"Were you scared when the switch broke to the ascent engine?" Buzz's initial response was, *"Who told you that?"*

After we had booked into the Fascine Lodge in Brand Drive, we adjourned to the dining room at 1400 for a PowerPoint presentation by Paul Dench, Terry Kierans, and Jim and Alison Gregg on some memories and the role of the station, and at the end we ex-trackers had to stand up to be applauded.

The evening party labelled the *"Cosmic Cocktail Party"* began at 1730 with 400 guests. My roommate at the hotel had bought a suit especially for the occasion. Buses brought the visiting guests to a decorated entrance to a large marquee under the old OTC dish antenna. Closed down in 1987, it's all that's left of the OTC station, apart from the world's last surviving Casshorn antenna, known as the sugar scoop.

While school kids darted about handing out savouries, a jazz Band played 1960's and space music, trying to be heard above the roar of chattering groups. We had trouble enough trying to hear a conversation.



Above: The entrance to the marquee and the Cosmic Cocktail Party.

Below: The acrobat performing under the marquee to a delighted audience.





Buzz Aldrin addresses the crowd at the party.

A hoop, looking like a crescent Moon, hung from the roof in the middle of the marquee. A girl perched in the hoop stared down at us staring up at her. After about twenty minutes bright spotlights suddenly highlighted her, and she performed acrobatics in the hoop.

There were speeches by Brendan Grylls, MLA, leader of the National Party in WA, Professor Lyn Beazley, AO Chief Scientist of WA, Vince Catania, MLA, also a member of the National Party for the North West, and Phil Youd, Chairman of the Space and Technology Museum Committee, with Buzz Aldrin, Apollo 11 astronaut, the last speaker offering us his life story.

He opened his slide presentation with,

"Tonight I would like to tell you about my grand adventure, which never could have happened without the cooperation and efforts of many people including here at Carnarvon,"

... loud clapping and cheers from the vociferous audience.

Buzz then described the first flight at Kittyhawk, his first flight at age two with his father and the Korean War in F86 Sabre jets flying 66 combat missions with two 'kills.'

Buzz continued,

"In the late fifties the cold war between the Soviet Union and the United States was escalating and tensions were high.

In October of 1957, while I was still stationed in Germany, the Soviet Union pulled off a sudden and unexpected technological feat – they launched Sputnik. And in response a year later America formed the National Aeronautics and Space Administration – NASA – with the goal of reaching space. The space age was born, and the space race was about to begin

On April 12th, 1961, the Soviets made an incredible achievement by sending the first human into space – that was Yuri Gagarin – for one full orbit of the Earth. In response, only a few weeks later, NASA launched America's first



Edwin Eugene 'Buzz' Aldrin Jr. with an F86 Sabre jet, flew 66 missions during the Korean War.

Photo: US Department of Defense/ US Airforce

Mercury astronaut, Alan Shepard, on a 15 minute sub orbital flight that touched the edge of space.

This was definitely impressive, but, we wondered, what's next? President Kennedy asked NASA and its ranks of engineers and rocket scientists led by Werner von Braun, what was possible? They told him it would take at least 15 years before we could put a man on the Moon. Instead of accepting what was possible, on May 25th, 1961, just three weeks after Alan Shepard's flight, President Kennedy boldly challenged America to commit to the goal of landing a man on the Moon before the end of the decade.

We had not even put a man into orbit!

The rockets and spacecraft needed to go beyond Earth orbit didn't exist. Many thought the challenge was impossible. We didn't have the know-how. But we did have a leader with the vision, the determination and the confidence that we could get there.

By publicly stating our goal, and by putting a specific time period on a very specific accomplishment, President Kennedy gave us the back door. We either had to do it, or fail. And no one was interested in failing.

If space was going to be our next frontier then I wanted to be a part of getting there....." clapping and calls from audience, ".....so after I completed my tour of duty in Germany, where I was with my good friend Ed White (pilot in Gemini IV, and later died in the Apollo 1 fire), I decided to continue my education and to receive my doctorate in astronautics from MIT.

For my thesis I adapted my experience as a fighter pilot intercepting enemy aircraft, and I devised a technique for two manned spacecraft to meet in space called Manned Orbital Rendezvous. Little did anyone know, including me, just how critical this work would later be to our successfully landing on the Moon - and coming back home."



Buzz Aldrin (seated left) was selected as part of the Group 3 astronauts in October 1963. Image: NASA/JSC
 Standing from left: Michael Collins, Walter Cunningham, Donn Eisele, Theodore Freeman, Richard Gordon, Rusty Schweickart, David Scott, Clifton Williams.
 Seated from left: Buzz Aldrin, Bill Anders, Charles Bassett, Alan Bean, Gene Cernan, Roger Chaffee.

Buzz failed his first attempt to join NASA because he was not a test pilot, but was accepted in the third intake mainly because of his rendezvous studies at MIT. As an avid scuba diver, he was the first astronaut to train under water to simulate the weightlessness of space. He flew as pilot with Jim Lovell in Gemini XII, the last mission of the Gemini Program, setting a 5½ hour record for the longest spacewalk.

As he said, *"It was November 1966, and we only had three years left to accomplish Kennedy's challenge to land a man on the Moon by the end of the decade."*

In all there was a team of 400,000 people working together on a common goal. The engineers and technicians were designing and building the multistage Saturn V rocket, the rocket scientists, the aerospace industry, contractors, NASA administrators, and even the seamstresses, who sewed our spacesuits.

As you know, Carnarvon was chosen to host a NASA tracking station. Carnarvon's unique position being almost exactly 180° opposite the United States where the rockets were launched, became the largest tracking station outside the US. It had a staff of around 200, and from what I hear performed the tasks, in sometimes not so perfect weather conditions, extremely well.

As astronauts we required commands for the computers, and instructions from Houston. To pass on and receive data and commands NASA decided it required tracking stations all around the world so the spacecraft would never be out of contact.

The site, where we are tonight, also played an important role in relaying our first steps on the Moon from NASA's Honeysuckle Creek tracking station to Perth's TV audience via Moree earth station. The first live telecast into Western Australia – so Carnarvon really does have an important history in space exploration,"

...and the audience clapped and cheered.

"At last, we reached the day when the Saturn V rocket was first rolled out from the Assembly building. The timing of the crew rotations was just right for Neil Armstrong, Mike Collins and me to be chosen as the crew for this historic mission. And so, after training over six months, on July 16, 1969, our launch day finally arrived.

Due to the seating order, Neil, Mike and me, I was the last to board the Command Module. While Neil and Mike took the elevator up to the top to enter the spacecraft I stood two flights down..... alone..... on the gantry.

I could see the sunrise coming up over the waves of Cocoa Beach, and I thought that how wonderful my life had been up to this point....." general laughter from audience, *"..... and the many things that had worked out along the way to put me in the right position at the right time,"* clapping from audience.

"Now at 9.32 am the engines ignited with over 7 million pounds of thrust, to lift 3,000 tons of spacecraft, fuel, equipment and three astronauts. We were getting about 7 inches to the gallon," general laughter. *"As we cleared the gantry and rocketed skyward, we were pressed in our seats as the rapid acceleration of the rocket increased our body weight. Within three minutes we were 45 miles high, now experiencing 4 g's, travelling at nearly 6,500 miles an hour (10,460 kilometres an hour). By 12 minutes we were travelling at over 17,000 miles an hour (27,358 kilometres an hour), the speed required to orbit the Earth.*

For three hours we orbited our home as we ran through checklists and ensured everything was working. Then we fired the engine that accelerated us to 25,000 miles per hour (40,232 kilometres per hour) on a trajectory bound for the Moon.

On the 8 day round trip the three of us lived in the space capsule about the size of a standard automobile interior. On day three we fired our engine to slow us down for the Moon's gravity to capture us and put us into lunar orbit. Another tricky engine burn put us in the right orbit, now for landing. We'd estimated about a 60% chance of landing successfully, but with a 95% chance of returning home safely. We kind of liked that!

Thirteen orbits of the Moon later, on the morning of Sunday, July 20, 1969, Neil and I entered the lunar landing craft we had named the Eagle, and separated from the Command Module Columbia, where Mike remained. Piloting our powered descent to the Moon's Sea of Tranquillity was the most complicated and critical aspect of the whole mission. As we descended we saw that our landing site was full of boulders, so we continued manoeuvring to find a safe area to land. This expended additional fuel and when we landed we had 15 seconds of fuel left.

After 11 intense minutes Neil spoke the words, 'Houston – Tranquillity Base here; the Eagle has landed,'"

...enthusiastic applause by audience.

Buzz continued,

"There's been much discussion over the last forty years about why Neil was the first to step on the surface. It could be because he was mission commander, as in our armed forces our leaders are always at the front of their men.....it could also be because he was closer to the door....." raucous laughter from audience. *".....I'll never tell which it was.*

So, with Neil already on the surface and snapping a few photos of me, I carefully backed down the ladder and partially closed the hatch, being careful not to lock it...." more laughter from audience, *"....as I stepped on the talcum-like lunar dust the first words that came to my mind were 'Magnificent Desolation.' It was a magnificent achievement for humans to set foot on another world for the first time, yet there was the desolation of the million year old lunar landscape. No sign of life – no atmosphere – total blackness beyond the sunlit terrain.*

We spent about two and a half hours on the surface, collecting rocks, setting up experiments, and taking a few photos. In this experiment we were not supposed to walk in front of the solar collectors, but those are my footprints there....and as they might say that's condemning evidence – I want somebody to go up there and erase those footprints.

This photograph Neil took of me is known as the visor picture because you can see the reflection of the Eagle spacecraft and Neil in the visor of my helmet. People ask me why is this photo so great?..... I have three words.... location..... location..... location, " audience clapped, shouted and laughed, "We planted the first American flag on the Moon – the salute was my proudest moment. I always thought our flag looked the best of the six flags that had been planted there by December of 1972.

Finally, it was time for us to leave the surface. When we were getting ready to leave the Moon Houston said, 'Apollo 11 you are clear for lift-off.' I couldn't resist saying, 'Roger, we're number one on the runway!'" audience laughed and clapped.



Buzz Aldrin inside the Lunar Module during the flight to the Moon. Image: NASA

"There wasn't anyone else up there. It did lighten things up a bit. Nearly a billion people all over the world watched and listened as we ventured on the lunar surface. Houston was in constant communication with us even though we were further away than two humans had ever been, we felt connected to home.

The commemorative plaque we left on the lunar surface reads 'Here men from the planet Earth first set foot upon the Moon, July 1969 AD. We came in peace for all mankind.'

Since our splashdown in the Pacific, I have come to realise that more than the rocks that we brought back or the experiments that we left,

the true value of Apollo is the amazing story of innovation and teamwork that went into overcoming all the obstacles to reach the Moon. That effort was driven in part by competition, in part by scientific discovery.

Everyone on Earth felt they had participated in this incredible journey as we landed and walked on another celestial body for the first time in the history of mankind. And that feeling of participation that brought together humanity holds a value beyond measure.

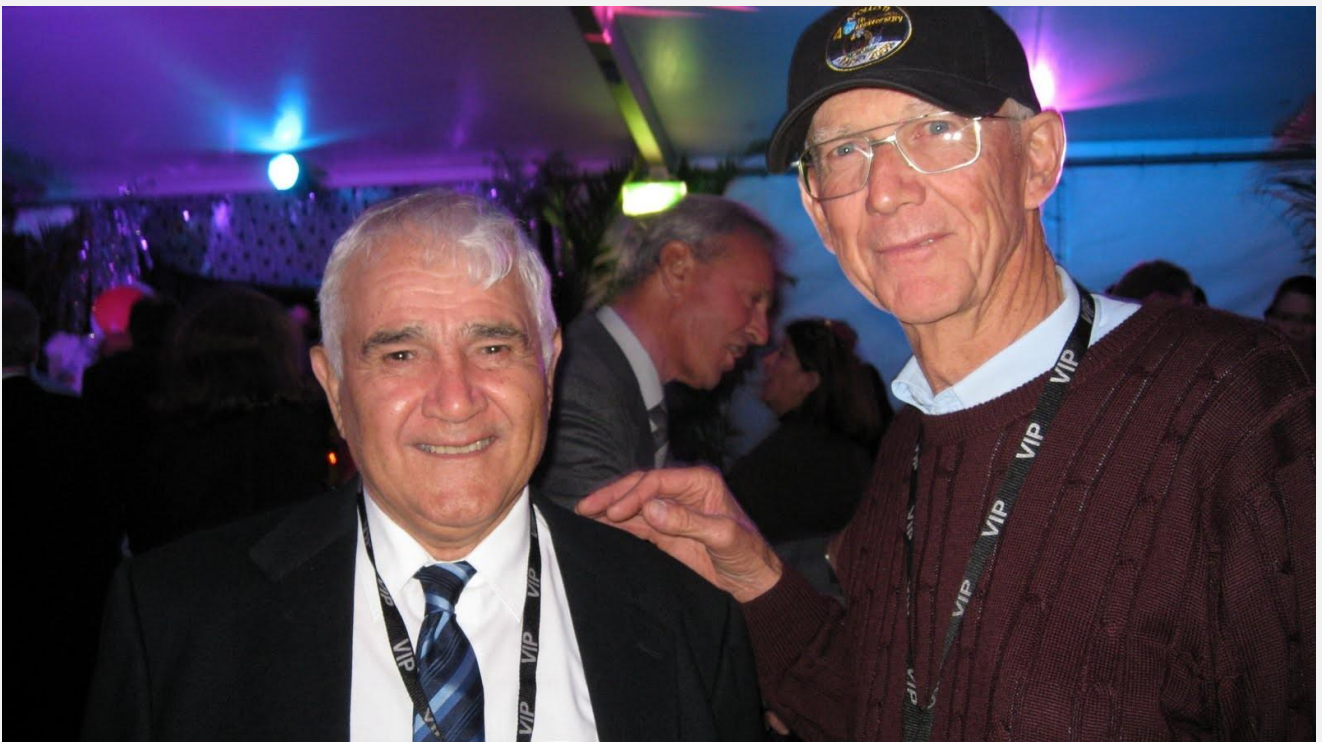
The world welcomed us back from the Moon as heroes, however I understood that people were not cheering for three guys, but for what we



Above: Bill Chandler and Ian Shardlow.

Photos: Louise M.

Below: Tito Teraci and David Johns



represented – that, by coming together we had accomplished the impossible.

It's been forty-two years since Neil, and I walked on the Moon, and I still have an adventurous spirit today.

I've been up to the North Pole on a Russian nuclear icebreaker, and down 3,810 metres, or approximately two miles, to the ocean floor to

see the Titanic, and that was in a French little yellow submarine.

My favourite thing to do on this planet is to scuba dive and to try and do it at least a couple of times a year as my schedule allows.

Here I am on a trip to the Galapagos Islands. My son Andy took this photo of me hitching a ride on a whale shark – don't you try that.



Buzz Aldrin took this 'space selfie' during his EVA on Gemini 12. Image: NASA

Buzz says that his favourite pastime, scuba diving, is the closest you can get to being weightless on Earth.

These days I continue my efforts as a global statesman for space for our future in space, and have two suggested guiding principles for our space venture. Number one: a continuously human presence in space, and two – global leadership in space.

This morning I met a group of trackers in Perth before boarding our charter flight. I was amazed to find that some of them had travelled from the east coast of Australia. Tonight I welcome those trackers back to Carnarvon and I would like to sincerely thank them for all their efforts in the Gemini and Apollo days, and for travelling to be here tonight for this special evening."

The party finished about 2130 WAST and we returned back to our hotel where I sat down in the bar and yarned with some trackers. As I was thinking of going to bed the hotel brought out two large platters of prawns and oysters and a big bowl of potato chips – all free.

Morning of Saturday 23 June at 0900 we boarded our two buses and headed off on a tour around Carnarvon. The town has changed dramatically from when I lived here. Gone was the frontier town and its welcoming drunken rusty steel arch and bare light bulbs, the weathering camel wool wagon relics by the side of the road, the red sand and desert scrub I remember.



Above: One Mile Jetty.

Photos: Louise M.

Below: Hamish Lindsay (left) and Paul Dench at the One Mile Jetty.





Above: The Fascine riverfront.
A lush green place very different from the tracking station days.
Below: A steam locomotive at the Jetty Museum





The old OTC 42 foot Casshorn and the 90 foot antenna. Photo: Louise M.



Arriving at the Carnarvon Space and Technology Museum.

Everywhere the impression was green – gardens, lush lawns, trees, modern buildings.

Our tour began with the mile long jetty and its museum. The jetty was in use when I was living here, with the train going out to meet the ships. Built in 1897 of Jarrah, it's the longest jetty in North West Australia, and was used for transferring passengers, supplies, livestock and wool from the region.

After the museum we passed amazing waterfront mansions; the Fascine where we used to sail our little boat; the fishing port, which didn't exist when I was last here, and through the old tracking

station houses where I saw our old family house in Hubble Street. I didn't recognise anything. Green lawns, gardens with trees and bushes hid the houses – when I last saw these houses they were new, so it was a sea of bare fibro walls and fences, surrounded with sand and clay and brave attempts at sowing plants and grass.

We were driven out to the OTC museum site for the official opening of the Museum at 1030.

Buses deposited us to join the 200 invited guests crowded into the small enclosure just outside the museum.



Above: Tito Teraci and Don Frost at the entrance to the Museum. Photo: Louise M.

Below: Buzz Aldrin arrives at the Museum to an excited and appreciative audience.





Western Australia's Chief Scientist, Dr Lyn Beazley.

Professor Lyn Beazley welcomed the distinguished guests and opened her speech with,

"Western Australia has a very proud history in space. From the very first astronomers, people who walked this land forty... fifty thousand years ago... perhaps earlier than that, and read the stars so knowing the time of night and the time of year could navigate over our vast continent..... that's an absolutely amazing achievement, and only by reading the patterns of the stars could you do that. Just imagine us without a GPS trying to cope on doing the same thing. Seeing the Emu in the sky – not looking at the Milky Way but seeing the dark areas that spell out the Emu and knowing from the seasons when the beak was high up that's when you collected the eggs to make the best cakes, I am told, or low towards the horizon.

And of course, many other things we see only in our beautiful southern skies – the Magellanic Clouds, the Southern Cross," she looked across at James Aldrin,

"I think, James, you have now seen it, you hadn't seen it before? He's nodding, that's wonderful. And the great globular clusters, and of course we have one of the largest meteorite collections in the world, our scientists at the WA museum are busy studying them as we speak. Coming to the modern era, John Glenn flying over our city and calling Perth the city of light and realising after crossing the darkness of the Indian Ocean there really is life on the planet to welcome him back after his first orbit around the world, the first American to do so.

And of course, coming to even more modern times, we heard about two or three weeks ago the most exciting and amazing news that Western Australia will co-host the square kilometre array radio telescope.

This is arguably the largest project that humanity has ever undertaken, certainly in the sciences. We are going to have five thousand radio telescopes in two continents, looking deep to understand the evolution of the Universe from



13.7 billion years ago. Looking at how stars and galaxies formed, and really exciting, looking into the atmosphere of planets circling other stars – to look for the molecules that are signs of life such as methane so we might not know if there are little green men and women out there, but we would get some hint whether we were the only place in the Universe that has life and one can hardly imagine that that would be the case.

But let's get more specific to Carnarvon. What an important part you have played. It's just great to know that from 1963 onwards this was the largest non-US based site for tracking what was happening in the exciting space missions for the 220 people based here.

And the jewel in the crown, of course, was the Apollo missions, with Dr Buzz Aldrin stepping onto the Moon – that's the jewel in the crown but we have lots of pearls in the crown too – the Skylab, you'll see a little piece of it inside, that landed near Balladonia; SPAN, the Solar Particle Alert Network important to watch for solar flares so we don't get all our communication systems blacked out in the fifteen hours it takes for those particles to swoop out towards us from the Sun. Observations of Jupiter and the Giotto Mission that flew past Halley's Comet that we all saw so well from down here.

And let me tell you now that we have a wonderful scientist just attracted to Western

Australia from Imperial College, London, Professor Phil Bland, whose working at Curtin Uni, who actually now has a piece of comet collected when the subsequent mission actually bumped into a comet and collected some pieces and brought them back. But without Giotto doing its work we couldn't have kept moving forward. And, of course, Woomera, was busy testing rockets, but by golly, they were being tested here as well, and tracked from this very station.

So, an honourable and noble record, but really the absolute height was the Moon landing, and that's why we're so thrilled to welcome Dr Buzz Aldrin here today. And an extra little piece of information, which I love, is that you brought back lots of rocks, and as I was telling you yesterday, three of those rocks had never been found previously on the Earth, two were found very promptly afterwards, one was named after the initials of the three who travelled to the Moon. Another was called Tranquillityite, after the Sea of Tranquillity, on which you landed.

Well, I am delighted to report that Tranquillityite has now been found, it was found three months ago by Professor Birger Rasmussen, again of Curtin Uni, and it was found right here in the Pilbara – so bringing it all home to base again.

So, it's my absolute pleasure now to introduce Phil Youd, who's the chairman of the Carnarvon Space and Technology Museum."



Phil Youd steps up to the microphone. Photo: Louise M.

Phil Youd,

"Good morning everyone, thank you all for coming. My speech will be very, very brief because I just don't do speeches. I'm one of those guys who is happy to be behind the scenes rather than standing up here in front of everyone. As I said last night, I feel like I'm part of a team."

This is phase 1 of our journey, and phase two is just over the fence there, right behind where the tent was last night, hopefully with the shire and government support. Thank you very much for coming. Thank you very much to Buzz....and Michelle....and Christina...and James for coming all this way. It's been a long, long flight for them..... back to you Lyn."

Professor Lyn Beazley,

"Well said Phil. Let me now introduce Winthrop Professor Mark Bush, who is the chair of the Heritage Committee of Engineers Australia... so Professor Mark Bush, welcome."

Professor Mark Bush,

"It's a great pleasure to have this opportunity to visit Carnarvon on the occasion of the Space Festival and participate in this ceremony, in such esteemed company."

I'm here with my fellow committee member Richard Hartley to formally dedicate Engineering Heritage recognition awarded by Engineers Australia to the NASA space tracking station."

The significance of the station is the role it played in supporting the Gemini and Apollo manned missions, and many other satellite missions. And, of course, now in the presence of Dr Aldrin in the audience today, the station would have communicated with him on various occasions on various missions and most notably the Apollo 11 mission. It would have tracked the trajectory of that spacecraft and sent it on its way to the Moon, and welcomed it back on its return journey."



Dr Mark Bush presenting the Engineering Australia heritage award.

The station was operated mostly by Australian, UK and US personnel, many of whom are in the audience today. It's been great to hear the stories of the trackers that operated the station in the last day or so.

Before proceeding, I need to tell you a bit about Engineers Australia, the body that is affording this recognition. It is the National Organisation of Professional Engineers, having around 100,000 members.

It has many functions associated with accreditation and certification and continuing professional development of engineers, but it also has a function in identifying and recognising sites and projects having engineering heritage and it does have a branch called Engineering Heritage Australia which has satellite committees..... pun intended..... throughout the country, including a Western Australian branch – Engineering Heritage Western Australia – the group Richard and I are representing today.

The heritage recognition program is now in its twenty-seventh year. It's a very select group and the result of a very rigorous process of nomination and selection.

The recognition of the tracking station here in Carnarvon is special in many ways, not the least is that it is the first site to be recognised by Engineers Australia for its international significance, namely the collaboration between the USA and Australia to develop and operate the facility.

The marker that accompanies the interpretation panel, which is the circular white and red disc sitting below the panel over here on my right, is the first of its type, and reads 'International Heritage International marker.'

The interpretation panel is headed Carnarvon's key role in space exploration and details the role of the tracking station and the shire of Carnarvon in supporting the NASA programs of the time, and recognises the inspiring technical and human achievements of these missions.



Above: The Engineering Heritage Award is unveiled – Brendan Grylls on the left.

Photos: Louise M.

Below: The explanatory panel and the Engineering Award International Marker plaque.





Above: Buzz Aldrin and 10-year old aspiring astronaut Anika Hird, getting ready to cut the ribbon.

Below: The audience watches on as the ribbon is cut, officially opening the Museum. Photo: Louise M.





Buzz Aldrin makes a presentation of his Moon-shaped book 'One Small Step' to Phil Youd.

I should stress this is not the final location of the panel - it's just mounted here today for this ceremony.

It is with great pleasure I would like to invite the Shire President Karl Brandenburg and Brendan Grylls to jointly unveil the panel."

"Before I hand back to Lyn I need to acknowledge some people who were involved in this process, in particular Ian Maitland, Don Young and Richard Hartley, Richard's sitting in the audience here.... after all the hard work they did putting the nomination together that led to this day, and in particular for the valuable input provided by Paul Dench, who worked at the station for many years there he is..... he recently co-authored a book on his experiences of that time.

I'd also like to thank the Shire of Carnarvon and its President, and to Phil Youd for allowing us to participate in the museum opening, and finally to Anne-Maree and Jody for organising it."

Professor Beazley,

"Thank you very much Mark. It's wonderful to have Engineers Australia so involved.

And now it's my great pleasure to invite Dr Buzz Aldrin, with his assistant astronaut, 10 year old Anika Hird, who won a competition to be here today, many congratulations, fully equipped in her blue space suit, which I gather came straight from Scitech. It looks fantastic.

So, Dr Buzz Aldrin and Anika, could you please officiate cutting the ribbon to this fantastic museum."

Buzz and Anika then waited while the crowd counted down to 'liftoff' and cut the blue ribbon in front of the entrance door to the cheers of the people.

Buzz then put some gloves on and implanted his hand into a concrete block, after which he climbed up onto the lectern,

"Good morning again. I would like to just present this round, Moon-like book to Phil to keep and display in the museum, or wherever he wants to.

It's called One Small Step, and I think we're preparing to get ready for the giant leap.

People will come here to visit the steps including this Gemini spacecraft. On the nose of it was not an escape tower.



A mock-up of a Gemini capsule on display at the Museum. Photo: Louise M.

If you wanted to get out of this machine you pulled a ring between your legs and the ejection seat went buuung. Just so you know how you get in and out. This hatch is the hatch that was open while I was exiting the spacecraft and going up and exploring the Agena spacecraft that we were docked with, and then going to the very back end of the adaptor and performing experiments there.

So, I have a sort of love affair for this kind of spacecraft. It was remarkable that it added to the progress between the one man Mercury that could get itself into orbit and change direction, but it couldn't move up or down, forward or back. It couldn't make any manoeuvres at all – it could just kind of turn around and pfft – fire the engines to come back down again.

But this spacecraft could do everything – it could go up or down, forward or backward, and make all the manoeuvres to carry out the joining of rendezvousing with the rocket we docked with

up front – all of that in preparation for Apollo. It's a wonderful machine."

Turning to Phil, Buzz surprised everyone with, "Anyway, I wanted to present you with this (a copy of Buzz's book *One Small Step*) and here's a token of my appreciation – it's a gold medal from where I learned discipline, duty, honour, and country, from West Point Military Academy."

Professor Beazley,

"You're going to treasure that was it unexpected?"

Phil Youd, "It was."

Professor Beazley,

"There are thirty original trackers here – they have come from across Australia and across Western Australia.

We'd like to honour them by a photo at the front, so if you could all make your way down to this end, please, while the rest of us are going to take



Above: The Carnarvon team reassembles. Photo: Louise M.

From left: John Preece, (?), Col Foster hiding(?), Jim Gregg, Don Frost, (?), Paul Dench at back, (?), George Allan, Ian Shardlow, Terry Kierans, Tito Teraci ?, Barrie Heald ?, Teeny Bopper Lauri Glocke, ?, David Johns at back, Wendy Yarnold, John Lambie at rear(?), (?), Dave Wigley, Hamish Lindsay, (?), Rosemary Williams, Kathy Franin, (?) in front. 'Jeff' Chandler, Bob Hollins, (?) Geoff Williams, (?) Names thanks to Louise M. Can [you help](#) fill in the gaps? Click on the photos for the larger versions on the Honeysuckle.net website.

Below: The Carnarvon team with Buzz Aldrin (centre).



this opportunity to relish the occasion. And thank you Dr. Buzz Aldrin for making this a reality."

After we posed with Buzz, Paul Dench remembered that "Carnarvon and Apollo," his book written with Alison Gregg, had not been presented to Buzz.

"I suddenly realised it was now or never. I grabbed Alison Gregg's arm and ushered her to the front of the crowd with me, and presented our book to Buzz with a brief speech."

I had a quick look at the museum, crowded with people. I was pleased to notice the message celebrating the opening from Chris Kraft and his picture I had arranged was on display in a frame, with an earlier letter he sent after he visited the station in 1967.

There were many panels of pictures and descriptions, video displays, a remnant from

SkyLab from Balladonia, and some items of equipment used in the station at the time.

Before I had any time to get pictures we were whisked away to drive over the dry, sandy Gascoyne River to the plantations, stopping at Bumbak's property for a talk about bananas.

We returned via the causeway to have lunch at Gwoonwardu Mia, the Gascoyne Aboriginal Heritage and Cultural Centre.

The showroom had many aboriginal artefacts and paintings for sale. We enjoyed a very tasty lunch; the long table loaded with many delights and fruits prepared by the local plantation growers.

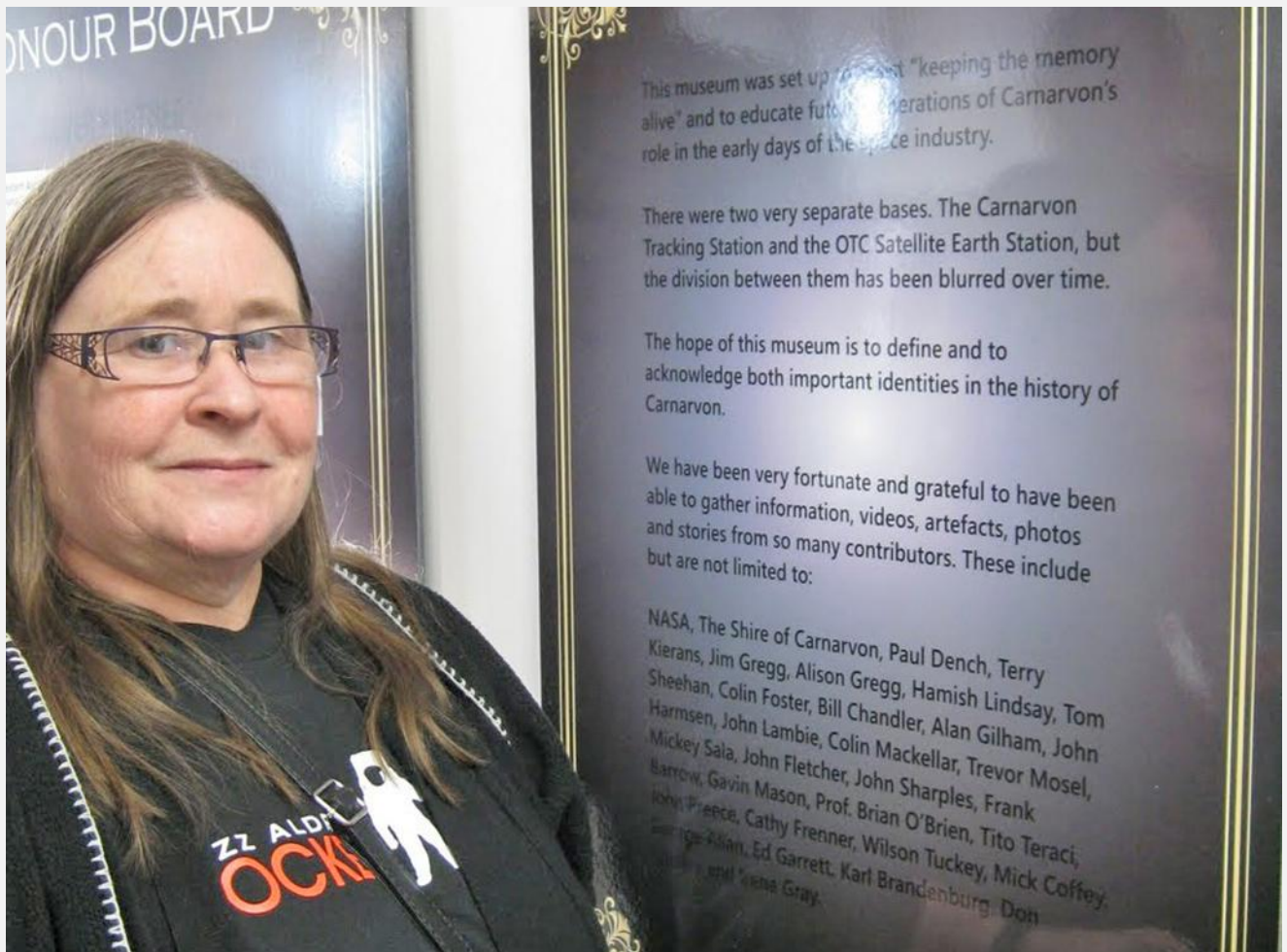
Then, to end the visit we were taken back to Terminal 3 at the airport at around 1600, and headed for Perth, to end a very successful, memorable festival.



Above: Hamish Lindsay and Terry Kierans chat inside the Museum.
Photos: Louise M.

Below: Hamish Lindsay reads the letter sent for the opening of the Museum by pioneering NASA Flight Director, Christopher Kraft. The famous 'Dallas-Fort Worth Turnpike sign is also on display.





Above: Kerrie Dougherty (former Space Curator, Powerhouse Museum, Sydney; and now with the Australian Space Agency) with the list of contributors to the Museum. Photo: Louise M.

Below: From left – Joan and Paul Dench, and Alison and Jim Greg – holding a piece of Skylab.





David Johns speaking with Dr Lyn Beazley. Photo: Louise M.



An aerial view of the Carnarvon Space and Technology Museum located at the old OTC site.

When I stepped down from the plane at Canberra airport and the winter cold bit me, for a moment I wished I was back in Carnarvon.

I would like to thank Phil Youd, and his team, for his vision of developing the museum and inviting

us, and looking after us so well, and Paul and Joan Dench for offering their wonderful hospitality during our two nights in Perth.

NEXT: A short piece on Hamish's visit to the former Carnarvon Tracking Station site.



Aerial view of the Carnarvon Tracking Station in its Apollo configuration. Image: Tidbinbilla Archives

CARNARVON REVISITED

THE TRACKING STATION SITE

There was no provision in the schedule for visiting the old NASA tracking station site, so David Johns, ex-Carnarvon tracker, offered to take us out to the site during a brief spell with nothing scheduled on the Friday afternoon. We arrived at the gate (all new to me – it was built after I left) and drove up the drive.

First we passed the SPAN building, still there operating as a transmitting station for Broadcast Australia, but all the rest of the station was gone except for the concrete foundations.

Looking around I was reminded of the ideal horizon for a tracking station – absolutely ruler flat right around for 360 degrees. I noted with surprise there was good water in Tickle Belly Flats.

My main memory of it was as a dry dust bowl, but David remembered canoeing on it in the 1970s.

I located the T&C building and found my mission post at the voice receivers, now very different from my last view of the place.

My last memory was a tiled floor, surrounded by walls and racks of communication equipment. I had no window; there were no windows in the Gemini operational areas.

The USB floor area was a smooth dark patch with swirls where cars had been doing wheelies. Only four concrete blocks remain of the 9 metre USB antenna.

On the way to the FPQ6 radar site I could see the foundations for the power house and Command and Voice Transmitter sites on the left.

The once smooth sealed road had disintegrated into ragged bits of bitumen, with low scrub crowding onto it.

The bare FPQ6 site is now surrounded by Tamarisk trees – somebody must have had thoughts of making CRO a garden site. Garden remains still here, but station gone. **– end.**



Above: The new (2012) sign at the entrance to the former NASA site.

Photos: Louise M.

Below: David Johns with the old CRO entrance gate and the Broadcast Australia tower in the background.

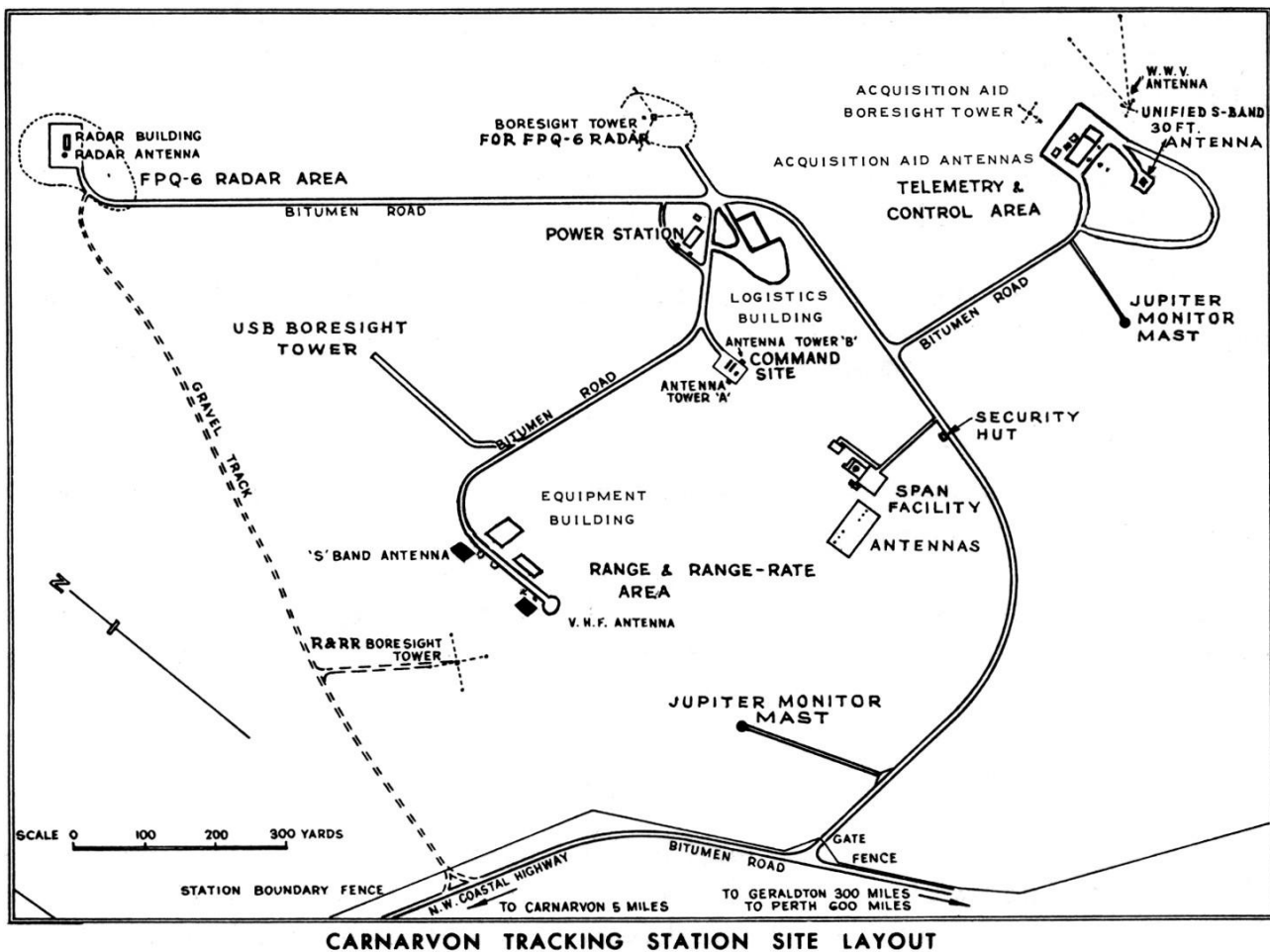




Above: The locked gates to the NASA site – ie: Not open to the public. Photo: Louise M.

Below: The original entry gate back in the days when the station was operating.





Above: A map of the layout of the Carnarvon Tracking Station.

Below: An annotated aerial view of the Telemetry and Control building and surrounding installations.





Above: David Johns stands in front of his old SPAN (Solar Particle Alert Network) building. It is now used by Broadcast Australia to service the one remaining Radio Australia tower built on the site after the NASA station closed. You can see the tower on the next page. Photo: Louise M.



Above: A wide panorama of the T&C site. Photo: Hamish Lindsay

Below: David Johns and Kathy Franin inspect the foundations of the T&C building. Photo: Louise M.





Above: David Johns and Kathy Franin inspect the foundations of the T&C building.
The Broadcast Australia tower is visible to the upper left.

Photos: (above) Louise M. and (below) Hamish Lindsay

Below: A longer view showing the concrete foundations of the T&C building.





Above: Hamish pointing to the spot where he worked at the voice receivers.

Below: Hamish Lindsay in front of the voice receivers at Carnarvon during the Gemini V mission.





Above: A panorama combining two photos from previous pages. Composite: Glen Nagle

Below: Hamish at the Aeromed console at Carnarvon in 1965. Source: Honeysuckle.net



Editor's note: In 1963 Hamish joined the Muchea tracking station team for training for the new Carnarvon Gemini Project tracking station where he was responsible for the maintenance and operation of the voice receivers and time standards. With an empty building in Carnarvon, he began as the station telephonist and draftsman until the equipment arrived and they began the installation phase. The equipment at both Carnarvon and Honeysuckle were assembled according to Hamish's drawings.



Above & Below: The concrete blocks marks the location where the 30 foot antenna stood. Photos: Louise M.



Below: The 30 foot (9 metre) antenna in 1971. Photo: Tom Sheehan





Above: The former FPQ-6 site. Photo: Hamish Lindsay

Below: A close-up of the FPQ-6 dish with Don Blackman looking out of the antenna mount. Taken from the roof of the Q6 Operations building. Photo: Hamish Lindsay. Scan: Colin Mackellar



The data from the FPQ6 was the first time NASA had ground-based confirmation that spacecraft, particularly the manned Gemini and Apollo spacecraft, launched from Cape Canaveral had achieved the planned orbit.



ABOUT THE AUTHOR



Hamish Lindsay (1937-2022) worked at the Muchae, Carnarvon and Honeysuckle Creek space tracking stations between 1963 and 1981.

He wrote many essays on the history of human spaceflight and was the author of the book, *Tracking Apollo to the Moon*.